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ABSTRACTS

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Author index

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Q

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1

Evaluation of hydromorphone OROS's clinical usefulness in improving sleep disturbance in Korean cancer patients: multicenter, prospective, open-label study

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Introduction: A majority of patients with cancer pain of moderate or greater severity suffer from sleep disturbance.
Objective: The objective of this paper was to evaluate the efficacy of hydromorphone OROS (once-daily, sustained-release formulation) in reducing sleep disturbance and improving cancer pain.
Patients and methods: One hundred seventeen various cancer patients, pain rating ≥3 [0 (no pain)–10 (worst pain), numeric rating scale], complaining of sleep disturbances were enrolled. Initial hydromorphone OROS dosing was based on the previous opioid dose (equivalent dose: hydromorphone OROS/oral morphine=1:5). Dose adjustment of the study drug was permitted based on investigator's discretion. Patients' pain intensity, number of breakthrough pain episodes, and quality of sleep were evaluated.
Results: All 117 patients received at least one dose of hydromorphone OROS; 98 of these completed the last assessment. Compared with the previous opioids used, once-daily hydromorphone OROS reduced the use of immediate-release opioids for the management of breakthrough pain from 0.83 to 0.39 times per night (p=0.0011). The incidence of nightly breakthrough pain decreased from 2.63 to 1.53 times ($p<$ 0.0001). Korean Brief Pain Inventory score decreased from 5.25 to 3.96 ($p<$0.0001). Of the patients who completed the treatment, 83.7 % indicated that they preferred the hydromorphone OROS to their previous medication. Health-related quality of life analysis (EORTC QLQ-C30) showed that both pain and diarrhea improved. About 25.5 % of patients showed improvement on the Clinical Global Impression-Improvement scale. Adverse events (AEs) were somnolence, asthenia, constipation, dizziness, and nausea.
Conclusions: Hydromorphone OROS, compared with previous opioid use, was efficacious in reducing cancer pain and the associated sleep disturbances. AEs were manageable.

3

Cancer preventive strategy through Emad value test

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Purpose: The purpose of this study was the early detection and minimizing the extra body growth energy (EB E_G) that could lead to cancer development to prevent the progression of tumor formation or to contribute to dose reduction for all types of cancer treatments.
Method and materials: The Emad value test (EVT) is applied in experimental animals: a dietary treatment for ad libitum-fed control rats and rats restricted in total energy intake by 40 % were performed along 16 weeks. Rats bear a transplantable prostate tumor model Dunning R3327-H adenocarcinoma. The effects of the different values of energy intake on R3327-H tumor growth in each group were investigated to determine the accumulated extra body growth energy (AEB E_G) according to the hypothesis of a presented mathematical model.
Results: Simulations of the presented model showed that energy intake (EI), total energy expenditure, and the AEB E_G during dietary treatment are always balanced with their subsequent energy stored within the body according to the law of conservation of energy. R3327-H tumors were smaller in the rats restricted in total energy intake by 40 % regardless of the dietary fat concentrations and showed a gradual and progressive reduction in the summation of tumor energy which represents the AEB E_G and, consequently, the administered dose by 77 % over the duration of the experiment ($P<$0.001) versus the ad libitum-fed control rats.
Conclusions: Implementing dietary interventions to reduce EI regardless of dietary fat concentrations contributes to EB E_G suppression before tumor formation or minimizes the administered dose of all types of cancer treatments.

6

Top ten challenges for the cancer survivor

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Objectives: With the number of cancer survivors growing each year (almost a million in Canada and 12 million in the USA), all health care providers will care for these survivors and their families in the future.
Aim: The aim was to identify key issues that health care providers must be aware of in order to educate and support cancer survivors and prepare them for the new normal that occurs after treatment is over.
Methods: An exhaustive search of the medical, nursing, and allied health literature was undertaken to identify and synthesize the most important issues for cancer survivors.
Results: The ten key challenges identified include: dealing with fear of recurrence; coping with anxiety and depression, adapting to ongoing fatigue, exercise and nutrition, surveillance, late effects of treatment, cognitive changes, back to work issues, sexuality, and fertility.
Conclusions: Supporting cancer survivors includes recognition of the challenges that they face when treatment is over as well as preparing them to be advocates for themselves. They must also know what to expect and how to identify issues that need further attention.

9

Antisense STAT3 oligodeoxynucleotide enhances radiosensitivity of B16 melanoma cells

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Objective: STAT3, one of the most important of the seven STAT family members, has been found to be constitutively activated in a wide variety of human tumor specimens and tumor cell lines. However, the role of STAT3 in radioresistance and supportive care in radiation therapy is not well known.
Methods: Antisense oligodeoxynucleotides of STAT3 (ASO-STAT3) or sense oligodeoxynucleotides of STAT3 (SO-STAT3) were used. In addition, flow cytometry, WB, DLR, MTT, CCK-8 assay, and in vivo experiments were performed.
Results: Our data also showed a significant decrease in cell viability and an increased fraction of early apoptosis in those groups transfected with ASO-STAT3 followed by different doses of γ-irradiation. Blocking the STAT3 pathway enhanced the damage of γ-irradiation to B16 cells, inhibited proliferation, and promoted apoptosis, thus heightening the radiosensitivity of tumor cells. Moreover, our data also indicated that blocking the STAT3 pathway enhanced the survival capacity of tumor-bearing mice after γ-irradiation.
Conclusions: These results seem to support the idea that STAT3 could be used as a potential molecular target for tumor therapy and supportive care in radiation therapy.

10

Hydrogen enhance living quality in radiation therapy

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Objective: Hydrogen (H_2), the most abundant chemical element in the universe, is seldom regarded as an important agent in medical usage, especially as a therapeutic gas. However, many recent studies by our lab and others provided evidence that H_2 gas has powerful therapeutic and preventive effects for many diseases. We hypothesized and showed by experimental studies that H_2 treatment could protect cultured cells and mice from radiation damage. However, whether H_2 has supportive care role in radiation therapy is not well known.
Methods: Tumor-bearing mice were used. Flow cytometry, Western blotting (WB), dual-luciferase reporter (DLR), 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) and CCK-8 assays and in vivo experiments were performed. Only two groups were used in this study—the H_2-rich saline group (H_2 (+) group) or normal saline control (H_2 (−) group)—as described in our previous works.
Results: Our data showed a significant decrease of tissue damage in tumor-bearing mice with H_2-rich saline pretreatment as detected by flow cytometry, WB, DLR, MTT, and CCK-8 assays.
Conclusions: These results indicated that hydrogen enhanced living quality in radiation therapy.

11

Safe doses and cancer treatment evaluation

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Purpose: Checking the efficacy of radiotherapies after their execution helps in preserving patients' rights against the randomized statistical dose assessment that ignores patient-specific factors.
Method: Based on studying a dose–response relationship, a mathematical model is presented that describes the initial tumor energy ($E_{0\text{Tumor}}$) prior treatment after treatment execution—even if it was not predetermined—by monitoring the mechanism of the tumor response along the treatment phases to be comparable to the administered dose energy ($E_{0\text{Dose}}$).
Results: Administered dose errors could be determined to evaluate cancer treatments and, consequently, preserving patients' rights through the provided mathematical model, where reasons for tumor regrowth are either the underestimation or overestimation of the administered dose. Safe doses of successful treatments occur only in the case of $E_{0\text{Dose}} = E_{0\text{Tumor}}$, where tumor regrowth energy in such case would be vanished.
Conclusion: Dose assessment by ignoring patient-specific factors and using standard models is responsible for a wide range of doses and, consequently, tumor regrowth and second cancer risks; thereby, the current approach suggests settling down a new protocol for the proper ranges of radionuclide doses.

16

Retrospective analysis of definitive chemoradiotherapy for inoperable advanced pancreatic cancers

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Purpose: The purpose of this study was to evaluate the efficacy and tolerability of concurrent chemoradiotherapy (CRT) for inoperable advanced pancreatic cancers.
Materials and methods: From 1993 to 2011, 36 patients with advanced pancreatic cancer treated with definitive CRT were retrospectively analyzed. The median radiation dose was 50 Gy; fractionation was 1.8 or 2.5 Gy daily, 5 days a week. The primary end point was overall survival and tumor response.
Results: Median overall survival time was 9.6 months (95% CI=6.4–12.8 months). Median progression-free survival time was 5.9 months. Toxicities were generally acceptable. Only one patient showed grade 4 leucopenia, while most of the patients developed grade 1 or 2 toxicities. Of 36 patients, 12 showed response to CRT: 1 patient with complete response and 11 patients with partial response. Nineteen patients showed stable disease and five patients progressed.
Conclusion: Definitive CRT with 50 Gy in inoperable advanced pancreatic cancer showed acceptable acute toxicities. However, the prognosis of inoperable advanced pancreatic cancer is very poor to CRT. More tailored chemoradiotherapeutic regimen should be designed for the optimal treatment of advanced pancreatic cancer.

19

CYP3A4 mutation effect on antiemetic action and CINV impact on QOL with breast cancer patients

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Objective: The aim of this study was to clarify how genetic polymorphism, i.e., CYP3A4 enzymatic action, among the three main races in Malaysia affects the clinical antiemetic action of granisetron as well as to determine the impact of chemotherapy-induced nausea and vomiting (CINV; acute and delayed) on breast cancer patients' quality of life (QOL).
Methods: In this longitudinal prospective observational study, 158 breast cancer patients treated with chemotherapy were monitored and interviewed. Valid questionnaires (MANE and ONEM) were used to report the incidence and severity of acute and delayed nausea and vomiting and to detect the impact of CINV on their QOL within the first 24 h (acute) and after 3–5 days (chronic) of chemotherapy treatment.
Results: Chinese is the highly vulnerable race in controlling CINV; about half of them (n=45, 44.6 %) suffered from acute and delayed CINV. The Malay patients showed a lower incidence of only acute nausea or vomiting as compared with the Chinese, while the incidence of acute CINV among the Indian patients was very rare as compared with the other two races. Delayed CINV has an impact on QOL greater than acute CINV. The impact of nausea was reportedly higher than that of vomiting.
Conclusion: This study showed that genetic polymorphisms among Malaysian races have a significant effect on granisetron clinical antiemetic action because each is characterized by a variant CYP3A4. Because of that, CINV has a negative impact on the QOL of breast cancer patients.

20

Retrospective analysis of pain management in an in-hospital setting in cancer patients

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Background: This retrospective study evaluates the data on breakthrough pain (BTP) and the pharmacological pain treatment in hospitalized cancer patients.

Methods: Breakthrough cancer pain (BTCP) has been evaluated by a general questionnaire per centre. The number of cancer patients who were seen monthly, the type of opioids used, the presence of BTP syndrome and hospitalisations have been recorded. One hundred fifty-six consecutive patients (32 centres) have been evaluated and completed the questionnaire. BTP is defined as follows: rapid onset of acute pain lasting from seconds to hours, factors known or unknown, co-existing chronic pain syndrome and/or an inadequate chronic treatment.
Results: Of the patients, 80 % received opioids for cancer-related pain, but 50 % remained uncontrolled. The need for specific BTP medication is 94 %. Seventy-five per cent of patients in a hospital setting have BTCP. The need for hospitalization should be reduced by 78 % with an adequate BTCP medication. The use of opioids remains the cornerstone for the management of chronic cancer pain (93 % of patients) and for rescue medication (69 % of patients) as well. Toxicity of long-term used opioids remains of concern.[1]
Conclusions: BTCP remains a challenge in terms of diagnosis and management. An effective treatment may (1) reduce the number and duration of hospitalizations, (2) reduce the overall opioid toxicity and (3) improve the quality of life.
Note that most BTCP medications are not available in Belgium, and if they are, there is no reimbursement foreseen, this explaining, in part, our data.
[1]Not really an outcome from this study.

34

A survey of physiatrist attitude regarding the care of cancer survivors: the study of Korean cancer survivor by International Classification of Functioning, Disability and Health (KoCSICF)

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Objectives: The objective of this study was to assess the level of clinical practices, attitudes, and barriers to cancer survivor care from the perspectives of Korean physiatrists.
Methods: All members of the Korean Academy of Rehabilitation Medicine received the invitation to complete the online survey by selecting a web link. The web-based questionnaire was developed three times by focused group discussion and pretesting. Of the 171 responses, 74 were ineligible; the data from 97 responses were analyzed.
Results: The response rates were 0.17 and 23 % of the respondents practicing in a community setting. Of them, 77.3 % reported that they have ever heard of a term "cancer survivors." Only 53.6 % of physiatrists agreed that patients during the treatment phase should be perceived as cancer survivors. Most of physiatrists (96.9 %) agreed with the importance of rehabilitation service for cancer survivors. The unmet need most frequently was preventing immobilization and managing sexual dysfunction. Physiatrists who perceived their setting as having an effective referring system from primary health professional reported more frequently that they were providing cares such as lymphedema treatment (OR=4.88, p=0.027) and exercise (OR=5.03, p=0.023) and acknowledging of managing lymphedema (OR=6.19, p=0.013). Of the physiatrists, 51.5 % indicated poor recognition of patients and other health professionals to cancer rehabilitation as a main problem when delivering care to cancer survivors.
Conclusions: Although most physiatrists agreed that dysfunction should be managed by physiatrists, they feel unprepared to provide the rehabilitation services. Poor recognition of cancer rehabilitation and lack of a well-cooperative system may be major barriers to prepare the rehabilitation service for cancer survivors.

35

Febrile neutropenia: most common complication in patients with malignancy

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Objectives: Neutropenia is defined as a neutrophil count of 0.5×10/9/l and fever as a single oral temperature of >38°C. The management of febrile neutropenic patients requires careful assessment and treatment of the most common types of microorganisms, frequency occurrence and the antibiotic regimen.
Patients and methods: From January 2000 to January 2011, 1,294 patients with different malignancies were analyzed at the Department oncology General Hospital "Sveti Vracevi" in Bijeljina. We analysed 265 (20.4 %) patients with febrile neutropenia.
Results: There were 67 patients who needed chemotherapy because of breast cancer, 56 because of digestive cancer, 51 because of gynaecology localisation, 43 because of urologic cancer and 48 because of pulmonary cancer. Cultures were positive in only 29 patients (10.9 %). The most common were isolated: *Staphylococcus epidermidis* in 14 patients, *Staphylococcuus aureus* in 3, *Enterococcus faecalis* in 3, *Escherichia coli* in 2, *Acinetobacter* in 2, *Serratia* spp. in 1, *Pseudomonas aeroginosa* in 2 and *Candida albicans* in 2 patients. Three patients died of sepsis.
Conclusion: Treatment of febrile neutropenia patients requires consistent, careful approach, especially for specific infection, susceptibility analysis of isolated microorganisms and expected time of recovery.

37

Clearing obstructed totally implantable central venous access ports: an efficient protocol using a second needle

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Totally implantable central venous access ports (IVAPs) are frequently used in oncology to assure intravenous chemotherapy delivery and other tasks. Obstruction of IVAPs is rare, but when it does occur, it may result in treatment delays and/or invasive surgery for the patient.
An IVAP unblocking protocol was implemented by the nursing staff of our thoracic oncology department. The protocol is based on a precise decision tree comprising several progressive steps: needle change if there is no result of placement of a second needle and flushing of the reservoir with normal saline and if there is no result in the use of urokinase (with both needles still in place). Over the last year, 12 patients with IVAP obstruction benefited from this protocol.
The rate of successful IVAP unblocking was 92 % (n=11/12). The only unblocking failure was due to a mechanical obstruction, i.e., a bent

catheter. No local or general complications were reported immediately after the intervention or in the following month. In 83 % of the cases, obstruction occurred during use. The actions underway were: infusion completed, but not flushed (50 %); administration of mannitol 20 % (25 %); and transfusion of packed red blood cells (8 %). In the remaining 17 % (two cases), obstruction was present before any action (at needle insertion).
With all due caution because of the retrospective nature of this study, the IVAP unblocking protocol presented here appears to be efficacious and safe and thus recommendable for clinical practice.

38
Detection and quantitative analysis of human papillomavirus DNA in cancers of the upper digestive tract: comparison among three countries

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Objective: The present study examined the presence of HPV DNA and viral cofactors, such as HPV types, multiple HPV-type infections, HPV integration, and HPV viral load in squamous cell carcinomas (SCC) of the head and neck (oral cavity and tonsil) and esophagus, using cancer specimens from Japan, Pakistan, and Colombia.
Methods: We examined 95 SCC of the head and neck and 166 SCC of the esophagus for HPV DNA detection using the INNO LiPA HPV genotyping assay. The analysis of HPV viral load and physical status was done using the real-time PCR method.
Results: We found that HPV DNA was detected in around half of the cases in SCC of the oral cavity (55 %) and tonsil (42 %) and in a smaller proportion of SCC of the esophagus (14 %); the high-risk type HPV-16 was the most prevalent type; the viral load of HPV-16 in SCC of the tonsil was similar to that of cervical cancer and was higher than those of the other carcinomas (~18 copies per cell). HPV-16 genomes detected in SCC of the oral cavity, tonsil, and esophagus were frequently integrated in the host genome.
Conclusions: HPV-16 was the most prevalent HPV-positive infection in the majority of SCC of the head and neck, especially with a high viral load in tonsillar carcinomas. Thus, these findings have created new potential opportunities for the primary prevention of a subset of head-and-neck cancers with the new prophylactic vaccine against HPV-16 if it is applied to adolescents of both genders.

43
Factors affecting quality of life in cancer patients undergoing chemotherapy

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Background: Cancer can produce many different symptoms, some subtle and some not at all subtle. An increasingly important issue in oncology is to evaluate quality of life (QoL) in cancer patients. The cancer-specific QoL is related to all stages of this disease.
Objective: The aim of this study was to evaluate the QoL in cancer patients with solid tumors and at the different chemotherapy cycles (CT).
Methods: This study was cross-sectional of analytical type. A total of 200 cancer patients were included.
Results: A significant relationship between the cancer type, pain intensity, and fatigue was found. However, none of the demographic variables (i.e., age, education, marital status, income) were significantly related to QoL. Nevertheless, a significant difference was found between the level of QoL in patients with two or less CT cycles and/or with three to five cycles ($p<0.001$).
Conclusions: Cancer is an important health issue influencing QoL. An appropriate treatment which may provide care to cancer patients is CT. A CT cycle may improve QoL in patients with solid tumors.

48
Role of hTERC in management of cytology interpretations of atypical squamous cells

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Background and aims: Atypical squamous cell (ASC) is the most common abnormal cytological category used for cervical cancer scanning in Pap test. Currently, there is no biomarker recommended to determine whether a patient with ASC has malignant transformation. Hence, the present study aims to determine the role of hTERC amplification in identifying high-risk precancerous lesions from ASC cytological result.
Methods: Forty-seven patients with clinical symptoms were prospectively enrolled to take liquid-based cytology screening, HPV DNA tests, and then cervical biopsies. The hTERC assay was performed by means of labeling specific hTERC genes with fluorescence.
Results: Twenty-seven of 47 patients diagnosed as ASC were conformed to be NILM (nine cases), CIN1 (four cases), CIN2 (four cases), CIN3 (six cases), and cancer (four cases). For high-risk patients (CIN2 to cancer), the analysis showed a trend of increasing sensitivity in favor of hTERC as compared to the HPV DNA test (78.6 vs. 42.9 %, $p=0.053$). Moreover, when compared to the HPV DNA test, TERC led to a non-significant rise in specificity (92.3 vs. 69.2 %, $p=0.322$), PPV (91.7 vs. 60 %, $p=0.135$), and NPV (80 vs. 52.9 %, $p=0.108$).
Conclusions: The present result might suggest that ASC patients who are hTERC-positive should be followed by colposcopy and possible biopsy rather than triggering cytological or HPV-infective follow-up. A prospective cohort study with a larger sample would be warranted to confirm or refute the conclusion in the future.

50
What does an oral metastasis of multiple myeloma mean to an oncologist?

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Multiple myeloma (MM) is a known neoplasm of monoclonal plasma cell origin. It primarily invades and metastasizes to axial skeletal bones, but also may metastasize to oral hard and/or soft tissues in the late stages of the disease. Oral cavity metastasis significantly deteriorates the patient's prognosis and management outcome. Thus, a chemotherapeutic regimen should be adapted in case of oral involvement. As a good example, we may refer to a case we reported last year in IJHOSCR. A 55-year-old patient with MM who was receiving chemotherapy for multiple myeloma came to our clinic complaining of a dull pain in his posterior mandible. Since the pain was shown to be due to a metastatic mass, we suggested to the patient's chemotherapist to change his regimen to a more intensive one.
Conclusion: In a team work, an oral medicine specialist has a critical role in the monitoring and management of multiple myeloma patients.

52

Belonging to a peer support group enhances the quality of life and adherence rate in patients affected by breast cancer: a non-randomized controlled clinical trial

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Background: Breast cancer is the most common cancer in women. It seems that breast cancer patients benefit from meeting someone who had a similar experience. This study evaluated the effect of two kinds of interventions (peer support and educational program) on the quality of life of breast cancer patients.
Methods: This study was a controlled clinical trial of women with non-metastatic breast cancer. The patients studied were divided into two groups: experimental and control groups. The experimental group took part in a peer support program and the control group passed a routine educational program for 3 months. The authors administered SF-36 for evaluating the quality of life pre- and post-intervention. Also, patient adherence was assessed by means of a simple checklist.
Results: The two groups were similar with respect to age, age of onset of the disease, duration of cancer, marital status, type of treatment currently received, and type of surgery. In the control group, there were statistically significant improvements in body pain, role—physical, role—emotional, and social functioning. In the experimental group, role—physical, vitality, social functioning, role—emotional, and mental health showed significant improvements.
Conclusions: According to the results of this study, supporting patients with breast cancer by forming peer groups or by means of educational sessions could improve their life qualities.

54

Quality of life in stoma patients: appropriate and inappropriate stoma sites

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Objective: The objective of the cross-sectional study reported here was to compare the quality of life (QoL) of patients with appropriate stoma sites with that of patients with inappropriate stoma sites.
Patients and methods: Two groups of patients with permanent intestinal stomas were assessed: 174 patients with appropriate stoma sites and 174 patients with inappropriate sites. We used the EORTC QLQ-C30 and EORTC QLQ-CR38, which evaluate 26 quality of life scales. Data analysis was performed with SPSS.
Results: From a total of nine functional scales, three scales in patients with an appropriate stoma site were significantly higher than in patients with an inappropriate site: sexual enjoyment (71.2 vs. 63.2 %, $p=0.02$), physical functioning (74.3 vs. 68.2 %, $p=0.005$), and role functioning (74.3 vs. 64.4 %, $p\leq0.0001$). From the total of 16 symptom scales, patients with inappropriate stoma sites had significantly more problems than patients with appropriate stoma sites in eight scales: micturation (27 vs. 22.5 %, $p=0.04$), gastrointestinal problems (32.6 vs. 27 %, $p=0.01$), weight loss (36.5 vs. 29.2 %, $p=0.03$), dyspnea (25.95 vs. 12.5 %, $p=0.0001$), pain (39.3 vs. 29.6 %, $p=0.001$), fatigue (43.5 vs. 34.5 %), nausea and vomiting (18.15 vs. 12.8 %, $p=0.03$), and insomnia (39.8 vs. 31.1 %, $p=0.01$). Patients with appropriate stoma sites scored global QoL significantly higher than those with inappropriate stoma sites (56.2 vs. 49.7 %, $p=0.007$). Patients with appropriate stoma sites achieved better results in at least 50 % of the scales. This abstract is republished and was originally published by: Katayoon Kiani Goodarzi, Bahar Mahjoobi, Homa Mohammad Sadeghi, "Quality of life in Iranian stoma patients-appropriate and Inappropriate stoma sites", World Journal of Surgery (January 2010), Volume 34, Number 1, pages: 147-152

55

Outpatient management of pulmonary embolism in cancer patients: data on a prospective cohort with 138 consecutive patients

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Introduction: Home management of deep venous thrombosis has become a standard therapy supported by randomized trials which have demonstrated clinical safety, improvement in quality of life, and pharmacoeconomical benefits. There is a growing interest among clinicians to extend home treatment for low-risk pulmonary embolism (PE).
Aim: The aim of this study was to assess the feasibility for home treatment of cancer patients with newly diagnosed PE.
Patients and methods: This is a prospective observational study enrolling consecutive unselected cancer patients (solid non-hematological tumors) with newly diagnosed PE (May 2006 to December 2009). The criteria for hospital admission were the following: poor clinical conditions due to the PE and/or concomitant medical comorbidities, poor compliance, active bleeding or high risk of bleeding, and renal insufficiency. Outcome variables at 3-month follow-up were reviewed for the present report.
Results: One hundred and thirty-eight patients (81 men; mean age, 63± 11 years) were recruited. Sixty-two patients (45 %) were admitted in a hospital. The mean time of hospitalization was 10±8 days (range, 1–42 days). Four patients (5 %) required admission in the intensive care unit and 11 patients (14 %) died during admission. Patients treated at home were more likely to be diagnosed with scheduled CT scans (89 vs. 15 %, $p<0.001$) and to have unilateral lung involvement (44 vs. 65 %, $p=0.014$) compared with patients admitted in a hospital. None of the patients selected for home treatment of PE required further admission due to PE complications during follow-up.
Conclusions: A high proportion of cancer patients with PE can be safely treated as outpatients, especially those with incidental PE.

56

The correlation of plasma endotoxin and components of systemic inflammatory response syndrome in terminally ill cancer patients

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Purpose: Most of terminally ill cancer patients died of multiple organ failure preceding systemic inflammatory response syndrome (SIRS). Serum endotoxin, known as the cause of multiple organ failure and shock, stimulates the secretion of various cytokines and acute-phase reactants. This study will investigate the correlation between the endotoxin and inflammation indices by the degree of systemic inflammation of terminal cancer patients.
Methods: Fifty-nine out of 66 terminally ill cancer patients referred to palliative care center, Korea University Guro Hospital, from April 2009 to October 2009 were analyzed in this study. We performed a

correlation analysis between the plasma endotoxin and inflammation indices in the degree of systemic inflammation.
Results: With increasing number of SIRS components, C-reactive protein (CRP) was increased (r=0.300, p<0.05) whereas lymphocyte was decreased (r=−0.332, p<0.01). The plasma endotoxin and ESR did not demonstrate any significant correlations with the number of SIRS components.
Conclusion: Lymphocyte and CRP correlate with the degree of systemic inflammatory condition of terminally ill cancer patients. However, the plasma endotoxin concentration does not show the correlation with the states of systemic inflammation as well as with other inflammation indices.

57
End-of-life communication barriers for doctors and patients with advanced cancer

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Objectives: The aim of the study was to identify barriers to optimal doctor–patient communication about prognosis, advanced care planning, death and end-of-life care, and strategies to overcome them.
Methods: We conducted a prospective study of 31 patients with advanced cancer and their doctors who were recruited from the city outpatient cancer clinics. Barriers to end-of-life communication were identified and assessed for frequency and importance and for an association with the occurrence and quality of end-of-life communication.
Results: Doctors have demonstrated more barriers than patients. The most common barriers include: doctors' beliefs, poor education in end-of-life care, medical system limitations, and attitudes to cancer and death in the community. Among the barriers, the following were named: "the prognosis is uncertain," "the patient isn't ready to talk about end-of-life," "it is too difficult to talk about death," and "our opportunities for caring are too limited." Some proposals for the local health care system were made to improve doctor–patient communication.
Conclusions: Doctors' barriers are numerous and more common than patients' barriers. Doctors should identify the personal psychological type of a patient and meet his/her individual needs talking about end-of-life care. Doctors' and patients' barriers could be addressed through education, advance planning, involving patients' family members, and individualizing care. Cultural and system problems can be addressed through public and professional education, alternative models of care, and changing the attitude of the society to cancer and the death phenomena.

59
The Korean version of the Symptom Experience Index: a psychometric study

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Introduction: Symptom assessment and management are vital aspects of patient care through the entire illness trajectory. Cancer patients often experience two or more symptoms concurrently. The Symptom Experience Index is a reliable and valid patient-centered health outcome measure developed in the USA to assess multiple symptoms and distress.
Objective: The objective of this study was to translate the Symptom Experience Index into the Korean language and assess its psychometric properties in Korean cancer patients and healthy adults.
Design: This is a methodological study with a cross-sectional design.
Methods: The Symptom Experience Index was translated to the Korean language using an integrative translation method to ensure its semantic equivalence and content validity. The Korean version was then pretested and tested using a contrast group and a test–retest method.
Results: Semantically, no modifications to items were needed in terms of the comparability of language and similarity of interpretation. Feedback on the pretest of the Korean version by 15 Korean adult patients resulted in one item deletion and one item modification. The Korean version demonstrated high internal consistency, with a Cronbach alpha coefficient of 0.924. Test–retest reliability was supported by high intra-class correlation coefficients (r=0.829, p<0.001). Construct validity was supported by statistically significant differences between cancer patient and healthy adult groups (p<0.001). Discriminant validity was confirmed by comparing the symptom experience scores in cancer patients having significantly different levels of functional status (p<0.001).
Conclusions: In clinical practice, the use of this instrument can help cancer patients to systematically report symptoms and assist healthcare professionals in assessing multiple symptom experience.

62
Anxiety and depression in head and neck outpatients

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Introduction: There is significant psychological distress during the patient journey from diagnosis to treatment in patients with head and neck cancer.
Objectives: The objective of this study was to investigate how prevalent psychological distress is in head and neck cancer outpatients.
Design: Using the Hospital Anxiety and Depression scale, we screened 106 patients in a London Head and Neck ENT outpatient clinic for mood disorders.
Results: Approximately 39 % may have had an anxiety disorder (10 % rated as severe), and 27 % were rated as depressed (10 % rated severe).
Conclusions: The authors recommend that a member of the Head and Neck Multidisciplinary Team should be trained to identify and correctly route these patients towards appropriate existing psychiatric services.

63
Gaps in health-related quality of life among survivors of cancer and cardiovascular disease

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Background: Although there have been a great many investigations on the health-related quality of life (HRQoL) among survivors of either cancer or cardiovascular disease (CVD), few studies performed so far have weighed the HRQoL of cancer survivors against that of CVD survivors.
Methods: This study was based on data obtained from the Third Korean National Health and Nutrition Examination Survey. Of adults aged 19 years and over, 24,390 subjects with available EuroQoL (EQ) information were included. After excluding pregnant women, subjects registered as disabled, and those with past histories of both CVD and cancer, a total of 23,370 subjects (658 CVD survivors, 389 cancer survivors, and 22,323 controls) remained in the final analytical sample.

Adjusted mean values or probabilities were extracted from multiple regression analysis, followed by adjustment for possible confounders, such as age, sex, marital status, education level, job, and the presence of each comorbidity.
Results: Cancer survivors have the lowest HRQoL scales among the three groups, independent of age. The HRQoL of young cancer survivors was as impaired as that of elder cancer survivors, while the HRQoL of CVD survivors and controls decreased with age. In addition, cancer survivors have more problematic groups in all domains of EQ-5D, especially the domains of pain/discomfort and anxiety/depression.
Conclusions: HRQoL was shown to be significantly decreased in survivors of cancer and CVD compared to the controls. Cancer survivors, especially, should receive more intensive attention in order to develop means of identifying them in clinical practice and developing interventions to improve their quality of life.

66
Validation of the Taiwanese version of the Athens Insomnia Scale and assessment of insomnia for Taiwanese cancer patients

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Introduction: It is well known that a high prevalence of insomnia exists in cancer patients. Although there are various studies using the Athens Insomnia Scale (AIS) for insomnia assessment in the literature, it has never been applied to cancer patients with insomnia.
Objectives: The purposes of this study were to establish the reliability and validity of the Taiwanese AIS version (AIS-T) and evaluate insomnia for cancer patients in Taiwan.
Methods: A cross-sectional research design was conducted and 195 cancer patients were recruited (n=195).
Results: The results show that the Cronbach's alpha for internal consistency is 0.83 and the test–retest reliability is 0.94 over an interval of 3 days in a sample of 30 patients. Moreover, the concurrent validity could be supported by significant correlations of the AIS-T with the Pittsburgh Sleep Quality Index—Taiwan form (PSQI-T; r=0.82, p< 0.001) and sleep efficiency of the Actiwatch parameters (r=−0.54, p< 0.001). Construct validity could be established by the Brief Fatigue Inventory—Taiwan form (r=0.56, p<0.001) and the Medical Outcomes Study Short Form-36 (PCS: r=-0.52, p<0.001; MCS: r=−0.53, p<0.001). AIS-T could detect significant known group validity from sleep quality (PSQI-T≥5 or <5, respectively). The Actiwatch parameters are consistent with the results of the AIS-T, and both data indicate that patients experienced sleep disturbances.
Conclusion: This study concludes that the AIS-T could be a reliable and valid instrument for assessing insomnia among cancer patients in Taiwan.

67
The role of esophagogastric anastomosis in decreasing benign stricture formation in the surgery of esophagus carcinoma

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Objective: The aim of this study was to compare two types of cervical esophagogastric anastomosis in the reduction of benign stricture formation in esophageal cancer surgery.
Methods: The subjects of this retrospective study were 223 patients who had undergone esophageal carcinoma resection from 1998 to 2007. Twenty-two patients were excluded from the study because of recurrent malignancy of anastomosis, mortality, and loss in the follow-up period. The 200 patients remaining by the end of the study were classified into two groups: 98 patients were treated by routinely transverse hand-sewn cervical esophagogastric anastomosis (group 1) and 103 patients were treated by the proposed oblique hand-sewn esophagogastric anastomotic technique (group 2). All the operations were performed using high abdominal and left cervical incisions (transhiatal esophagectomy). All patients of both groups were followed up for at least 12 months for detection of anastomotic strictures.
Results: Postoperative esophagogastric anastomotic leak rate was shown in 24 patients in group 1 versus 13 patients in group 2 (p= 0.03). Postoperative dysphagea occurred in 20 patients in group 1 versus five patients in group 2. In the workup by rigid esophagoscopy, two patients in group 2 and four patients in group 1 had no true strictures. Anastomotic strictures occurred in 16 cases in group 1 versus three cases in group 2. The statistical comparative analysis results of the two groups about stricture formation were significant (3 versus 16.3 %, p=0.003).
Conclusion: The oblique hand-sewn esophagogastric anastomotic techniques may reduce the rate of benign stricture formation after esophagectomy markedly.

70
Supportive care intervention trials as a way to improve toxicity management during concurrent chemoradiation for locally advanced NSCLC

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Introduction: Concurrent chemoradiation is the preferred treatment option for patients with stage III non-small cell lung cancer (NSCLC). This therapy, however, can cause severe morbidity and even mortality. Acute toxicity might result in early termination of the chemotherapy, which has consequences for the cure rate. In the past years, accurately monitored toxicities during and after chemoradiation inspired the development of novel supportive care strategies.
Patients and methods: Since 2008, toxicity is scored conforming CTCAE 3.0 in consecutive patients receiving concurrent chemoradiation for NSCLC. Treatment consisted of 24 times, daily low-dose cisplatin and radiotherapy. Sequentially, a literature search was performed on the management of the most severe and persistent toxicity and small intervention studies were conducted.
Results: Between 2008 and 2011, 231 patients were treated with concurrent chemoradiation. Weight loss, nausea and vomiting, dehydration, acneiform rash, hypomagnesaemia, and pain were found to be the most burdensome and/or least manageable toxicities by patients and healthcare providers. Six pilot studies were performed in cohorts of 30–150 patients. Interventions on weight loss with preventive tube feeding, renal toxicity administrating daily intravenous saline, acneiform rash using preventive minocycline, standardized analgesic steps for pain management, and prescribing magnesium hydrochloride for stabilizing hypomagnesaemia led to a significant improvement of care. A small pilot intervention study on nausea and vomiting using aprepitant and metoclopramide versus granisetron failed to reduce symptom control.
Conclusion: Toxicity management during combined modality treatment can be improved efficiently by short-term supportive care intervention trials.

71

Challenges and complication encountered while offering palliative care in our communities? Experience working with elderly with their needs

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Definition: Elderly persons are citizens who are old and accompanied by several symptoms and illness. The number is increasing, hence needing proper care and palliative services.
Aim: The aim of this study was to highlight the needs of palliative care for the elderly and share the experiences of hospices in Kenya.
Method: The study reports experience in 7 years working at the hospice with elderly persons.
Result: There are common cancers which include prostate (60 %), stomach (70 %), larynx (35 %) in men, cervix (80 %) and breast (65 %) in women, and oesophagus (40 %). Most symptoms include arthritis, hypertension, diabetes mellitus, dementia, end-stage organ failure, and visual and hearing impairment. The distressing symposiums encountered were fatigue, pain, anxiety, insomnia, anorexia, cough, and vomiting.
Strengths: center of excellence, palliative care-trained staff, holistic approach, home-based care, day care service, access to pain-relieving medications. *Challenges*: faulty assumption about the needs of older patients, language barrier, underreporting of pain and other distressing symptoms, caregiver systems, ethical dilemmas, sensory loss and dementia impeding assessment, fear of using strong opioids in the elderly, loss to follow-up, poor compliance, increased disability, limited resources, lack of awareness on palliative care, lack of integration of palliative care in primary health care, lack of policies and palliative care for non-cancer patients
Strategies for increasing access: These include sensitization, training, follow-up on those already trained, attachment programmes, research, policy on palliative care and decentralisation of palliative care services.
Conclusion: The number of elderly people in society is slowly increasing. The elderly have unmet palliative care needs, hence training for health professional is needed.

72

Breast cancer and its relationship with poverty in a rural family and the community at large

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Introduction: A diagnosis of breast cancer has a devastating impact on the patient and the family; the disease is increasing in an alarming manner, leaving many families in poverty and the young ones without parents.
Purpose: The purpose of this study was to explore the difficulties a family undergoes while taking care of a cancer patient.
Method: A survey done at a rural village has shown that in every 20 families, there is one patient with breast cancer undergoing treatment or newly diagnosed. The immediate families are more depressed and suffer with the patient, hence reducing their performance at work.
Results: Increasing poverty in families forces them to sell their properties in order to afford the treatment; the more affected are the young mothers who children depend on. Having a patient means stopping most of the daily activities, especially when a patient becomes paraplegic. One out of eight patients ends up being paralyzed, increasing dependence to others, and half of the patients' partners ends up remarrying, hence stopping the support. The illness mostly spreads to the bones, especially to the spinal cord, complicating the support and treatment and increasing finance problems. Patients had problems in accessing strong painkillers; most of the patients need wheelchairs, which our health intuitions are not able to supply to all, hence becoming a challenge to the family members. Buying is another issue since the family has spent all the savings by the time the patient is paralyzed.
Conclusion: Increased palliative care, availability of strong painkillers in affordable prices, and awareness of early signs and symptoms at the community level are needed.

74

Self-care and end-of-life care in cancer—patients and carers

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Objectives: An improved end-of-life care at home is a key issue for patients and their families around the world. This paper reviews self-care in cancer and the efficacy and efficiency of the self-care approach in controlling symptoms.
Methods: Medline, PubMed and Embase, Springer, Elseiver, EBSCO, and ProQuest were searched for literatures on self-care for cancer from 2000 to November 2011. Search terms such as "self-management" or "self-care" or "end of life care" or "self-efficacy", "carers" or "cancer" or "chronic illnesses" were used.
Results: Critique of these concepts revealed important limitations of cancer self-care and palliative care studies in assessing the cultural differences and failure to cover all of the outcome measures.
Conclusions: Researchers need to build self-care and palliative care that paralleled advances in clinical research and practice intended for cancer patients.

75

Long-term survival following supplementation of sodium selenite during adjuvant radiotherapy (RT) in patients with gynecological cancer

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Objectives: A significant benefit of selenium (Se) supplementation with regard to Se deficiency and radiotherapy (RT)-induced diarrhea in patients with carcinoma of the uterus has been shown in a prospective randomized phase III trial published in 2010. The aim of this follow-up analysis was to examine whether there is an impact of the Se supplementation on the long-term survival of these patients.
Methods: From 2000 to 2006, 81 patients with postoperative whole-blood Se concentrations <84 μg/l were randomized before RT of the pelvic region to receive 500 μg of Se (as sodium selenite) per os on the days of RT (n=39) or to receive no supplement during RT (n=42). Years after this therapy, former patients were identified and interviewed with respect to health characteristics.

Results: By a median follow-up of 67 months (0–126), the actuarial 10-year disease-free survival rate of patients in the selenium group (SeG) was calculated to be 81.5 % compared to 82.3 % in the control group (CG, $p=0.87$). By a median follow-up of 69 months (6–131), the actuarial 10-year overall survival rate of patients in the SeG was calculated to be 59.4 % compared to 41.6 % in the CG ($p=0.05$).
Conclusion: Our results demonstrate that Se supplementation during adjuvant RT neither influences the effectiveness of the anticancer irradiation nor negatively affects long-term survival. In view of the positive effects on RT-induced diarrhea, we consider Se supplementation as a meaningful and beneficial adjuvant treatment measure in patients with low Se baseline level.

76

Polyserositis (Concat disease) due to granulocyte colony stimulating factor (GCSF) therapy in lymphoma

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Polyserositis is a general inflammation of the serous membrane with serous effusion that has many causes, one of which is rare complication of granulocyte colony stimulating factor (GCSF) therapy.
A 26-year-old man with a history of lymphoma was referred due to dyspnea, tachycardia tachypnea, chest pain, bilateral pleural effusion, ascites, and massive pericardial effusion after a 5-day treatment with GCSF.
After a 7-day treatment with indomethacin and dexamethasone and withdrawal of GCSF, the patient healed and was referred to an oncologist for chemotherapy of lymphoma.
Conclusion: On the basis of this case report, we must think of several causes of pleural effusion in patients with lymphoma and use drugs with caution in these patients as they may be predisposed to dyspnea and fluid retention.

78

Unusual presentation of an uncommon tumor

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Purpose: Askin's tumor is a thoracopulmonary neoplasm of children and young adults presenting usually as a painful chest wall mass. We sought to (1) describe a case of Askin's tumor with an unusual presentation and (2) highlight the available information about this rare disease.
Method: This is a case report.
Results: A 21-year-old female patient presented mainly with pain and swelling of the hands and feet, fever, and loss of weight. She was found to have bilateral and symmetrical arthritis involving the small joints of the hands and feet and chest signs consistent with the presence of mass in the right hemithorax anteriorly compressing the lung and shifting the mediastinum. This latter sign was confirmed by a chest radiography and CT scan of the chest. Biopsy of the tumor showed features consistent with the diagnosis of an Askin's tumor.
Conclusions: Askin's tumor arises from the pleura or from the intercostal soft tissues and presents usually as a painful chest wall mass, commonly associated with pressure or constitutional symptoms. Occasionally, it is asymptomatic and seen on chest radiographs as a large chest wall mass. Even in this apparently benign presentation, metastatic lesions are common at the time of diagnosis.

82

Immune alteration (NK and T cells) in patient with pancreatic carcinoma with or without chemotherapy

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Background and aims: The effect of cytostatic treatment is nonspecific against high proliferating cells (like immune cells). Cytostatic treatment of pancreatic tumour is based on gemcitabine, which has immune-stimulating potential. The aim of our study was to assess the effect of gemcitabine on immunocompetent cells (NK and T cell) in patients with pancreatic tumours.
Methods: Twenty-one patients with local advanced pancreatic tumors (9 with and 12 without chemotherapy) were followed up from 1 December 2010 to 5 April 2011. To investigate the part of the immune system responsible for the cytotoxic response (NK and T cells), we analyzed lymphocytes from peripheral blood using monoclonal antibodies: CD3FITC, CD8PE, CD16APC, and CD56PeCy7.
Results: We demonstrated the statistically significant difference between patients with or without chemotherapy in comparison to the control group for neutrophil and lymphocyte counts (both $p=0.0001$) and for $CD3^{+high}CD8^{+high}$ T lymphocytes ($p=0.003$ and $p=0.0009$, respectively).
There were no statistical differences between patients with and without chemotherapy in the case of lymphocytes ($p=0.33$), neutrophil count ($p=0.62$), or NK cells ($p=0.49$, 9.77 ± 1.39 vs. 10.65 ± 1.53), but we observed a statistically insignificant trend in the difference of the T lymphocyte count ($p=0.14$, 27.52 ± 2.28 vs. 22.35 ± 2.53).
Conclusions: We have not confirmed a statistically significant negative effect of chemotherapy on the number of immunocompetent cells (NK and T cells). The main factor affecting the immune system seems to be, according to our study, the pancreatic tumor itself. We are aware of our limitation of a small set of patients.

83

Extravasation of doxorubicine—dreaded complication in palliative cancer treatment

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Introduction: The majority of chemotherapeutic regimens are nowadays based on intravenous administration. The most common and most frequent complication of chemotherapy is phlebitis. The most feared complication of chemotherapy, such as in case of doxorubicin, is extravasation.
Case report: A 54-year-old patient with generalized triple-negative invasive ductal breast cancer underwent palliative chemotherapy of doxorubicin and cyclophosphamide. On the day of administration, there was no sign of extravasation. The patient arrived at our department on the day of the next cycle of chemotherapy (21 days). There was already massive swelling of the entire right upper extremity and superficial necrosis. Despite intensive local treatment (dressings, saline lavage, local application of Hyiodine®) and systemic antibiotic therapy, there was progression of necrosis. Necrectomy with complete

resection of necrotic musculus biceps brachii and then skin autotransplantation was indicated by surgeons.
Result: The extravasation itself does not need to be obvious immediately; therefore, any doctor and nurse should be aware of it to be able to begin the treatment as soon as possible. Late detection of extravasation can lead not only to immense damage of the affected area but also, in the worst case, even to inability of further cancer treatment.
Conclusion: It is obvious that the extravasation is not only a medical problem but also has a great economic impact. Nowadays, there are new approaches to the treatment of doxorubicin extravasation, such as the use of specific antidote dexrazoxane. The cost of therapeutic dose is still a limitation for use in many cancer centres.

84

Drug-induced hallucinatory syndrome in a patient with breast cancer after paclitaxel infusion

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Introduction: The limiting side effects of taxanes (paclitaxel and docetaxel) are neutropenia, peripheral neurotoxicity, and hypersensitivity reactions.
Case report: A 42-year-old woman with hormonal-dependent early breast carcinoma, grade 3, was HER-2/neu-negative after total mastectomy with axillary lymph node exciton. The patient was indicated for adjuvant chemotherapy with cyclophosphamide, adriamycine, and paclitaxel rather than for adjuvant hormonal and radiation therapy. The chemotherapy with paclitaxel infusion caused the development of visual and auditory hallucinations, anxiety, disturbed concentration, and unpleasant somatic symptoms—headaches and numbness in the legs. Difficulties were escalated to the urge of committing suicide.
Result: Due to the severity and recurrence of symptomatic complaints, a small dose of antipsychotics, specifically quetiapine at a dose of 75 mg, was administered orally every day with the possibility of its further increase during intravenous administration of paclitaxel. Symptomatic psychopharmacological treatment enabled the smooth completion of adjuvant chemotherapy.
Conclusion: Psychotropic side effects can vary from mild mood disorders, anxiety, and concentration disorders to fully expressed depression and delirium with the risk of suicide. The spectrum of drugs used in cancer treatment (chemotherapy, immunotherapy, biological, and hormonal therapies) may have psychotropic side effects.
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85

Psychiatric disorders among metastatic breast cancer survivors: a prospective and cross-sectional study

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Background: Psychological disorders are seen in many cancer patients. They occur in approximately 25 % of the palliative cancer care patients.
Aim: The study evaluated the incidence and relevance of depression symptoms and level of quality of life (QoL) among metastatic breast cancer (MBC) survivors in a programme of the palliative cancer care (PPCC).
Patients and methods: This study was prospective and cross-sectional. Dates were obtained during the years 2008–2009 among 41 MBC survivors in a PPCC.
Results: The statistical evaluation presents the mean Zung self-rating depression score (ZSDS) which certifies the presence of signs of moderate depression symptoms among MBC survivors (ZSDS range, 60–69). The mean ZSDS in all survivors was 60.6. The mean ZSDS in the group of healthy females was 38.9 (normal range of ZSDS). The incidence of depression was 61 % (25 of all 41 survivors). The relevance of the depression is characterized: severe depression was proved in 5 of all 25 survivors, moderate depression in 10 of all 25 survivors, and mild depression in 10 of all 25 survivors. The QoL among MBC survivors is on a very low level. The mean EQ-5D score (dimension of QoL) was 55 %. The mean EQ-5D VAS (subjective health condition) was 59.2 %. The mean EQ-5D score in a group of the healthy females was 78.4 % and the mean EQ-5D VAS was 85 % (both QoL parameters show very good of QoL level).
Conclusion: The results showed that an association subsists between MBC, depression symptoms, and a low level of QoL.

86

Aplastic anemia as a cause of death in a patient with glioblastoma multiforme treated with temozolomide

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Introduction: Standard treatment of glioblastoma multiforme consists of postoperative radiochemotherapy with temozolomide, followed by a 6-month chemotherapy. Serious hematologic complications are rarely reported.
Case report and results: A 61-year-old female patient with glioblastoma multiforme underwent stereotactic biopsy and was treated after with external-beam radiation therapy and concomitant chemotherapy (temozolomide). After completion of treatment, the patient developed symptoms of serious aplastic anemia. The diagnosis was confirmed by trepanobiopsy from the bone marrow. The patient did not respond to stimulation with filgrastim, and repeated blood and platelet transfusion was needed. The patient died 31 days after finishing the treatment procedure due to prolonged neutrocytopenia and thrombocytopenia followed by infectious complications.
Conclusion: Lethal complications following temozolomide are, per se, extremely rare. Our case report points to the need for regular monitoring of full blood count in patients with glioblastoma multiforme treated with temozolomide in order to adequately react to the possible danger of fatal hematologic toxicity. Any treatment in patient with glioblastoma multiforme should be considered with regard to quality of life.
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87

Neurocognitive functioning in glioblastoma multiforme patients during radiotherapy plus concomitant and adjuvant temozolomide: own experience

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Background: Glioblastoma multiforme (GBM) belongs to the most aggressive brain tumours with limited therapeutic options. In clinical

presentation, it often dominates the mental changes (memory loss, impaired speech, changes in personality and temperament).
Patients and methods: Evaluation of neurocognitive function (NCF) had been performed in 2009–2010 in 11 patients with GBM (nine women, two men), with mean age of 56.8 years (range, 45–72 years). Assessment of NCF was performed by a clinical neuropsychologist using methods sensitive for organic deterioration.
Results: Because of a limited set of patients and an insufficient number of scheduled check-ups (caused by severe tumour progression), the results could not be statistically evaluated. Due to these circumstances, the results of a pilot study are presented in the form of case reports. Presented are the results of three patients with different localizations of GBM and with different types of neurosurgical intervention.
Conclusion: The diagnosis of cognitive disorders can be based on a careful assessment of personal medical history, present symptoms and physical examination. Laboratory and imaging tests help by detecting secondary cognitive changes. Targeted examination of cognitive function relies in the use of various neuropsychological tests. To monitor developments and changes in cognitive functions in patients with GBM, the following battery of neuropsychological tests has shown helpful information: Addenbrooke Cognitive Examination, Trail Making Test, Rey–Osterrieth Complex Figure and Verbal Fluency Test. It seems that this battery of neuropsychological tests is suitable for repeated long-term monitoring of NCF in cancer patients undergoing radiotherapy of the brain.

88
Depression as an alteration factor of immunocompetent cells in patients with pancreatic cancer

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Background: Depression is known as a negative factor of quality of life. There are few data on the effect of depression in the immune system in patients with pancreatic cancer. The aim of this study was to examine the alteration of the immune system in patients with or without depressive symptoms.
Methods and patients: Twenty-one patients with local advanced pancreatic tumors (10 with and 11 without depressive syndrome) were followed up from 1 December 2010 to 05 April 2011. To investigate the part of the immune system responsible for the cytotoxic response (NK and T cells), we analyzed lymphocytes from peripheral blood using monoclonal antibodies: CD3FITC, CD8PE, CD16APC, CD56PeCy7.
Results: There were significantly higher levels of leucocytes (p=0.01) and neurophiles (p=0.0001) in patients with pancreatic tumour and depression in comparison to the control group. We showed statistical difference in counts of leucocytes (p=0.001), neurophiles (p=0.001), NK cells (p=0.007), T cells (p=0.03) and $CD3^{+high}CD8^{+high}$ T cells (p=0.02) between patients with and without depressive syndromes.
Conclusions: Depression seems to be a powerful factor playing a significant role in immune alteration. There was a significant increase in unspecific immunocompetent NK cells and a decrease in specific T cells. We are aware of our limitation of a small set of patients. But our study shows how important it is to be aware of depression as a negative factor.
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89
Metastatic prostate cancer: does taxane re-introduction make sense?

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Objectives: The objective of this study was to review the oncologic outcomes of taxane introduction and reintroduction in Portuguese men with castration-resistant prostate cancer metastatic to bone (CRPC-mb).
Methods: Twenty-nine patients with CRPC-mb received taxane-based chemotherapy between January 2008 and September 2011. The therapeutic regimens included docetaxel 75 mg/m^2 every 3 weeks and paclitaxel 80 mg/m^2 weekly, 4 out of 6 weeks. Evaluation of progression-free survival was performed according to the Prostate Cancer Working Group criteria. Hematologic toxicity was graded according to the Common Toxicity Criteria of the National Cancer Institute, version 4.0.
Results: Median age was 73 years (range, 60–92 years). Median performance status was 1 (range, 0–3) and median Gleason score was 8 (range, 6–10). Median progression-free survival with taxane first-line treatment was 6.3 months (n=22). Four patients (18 %) presented grade 2–3 neutropenia and four patients (18 %) presented grade 2–3 anemia. After second-line treatment, taxanes were reintroduced in 14 patients, with median progression-free survival of 5.7 months. Grade 2–3 neutropenia was seen in one patient (7 %), and six patients (43 %) presented grade 2–3 anemia. No grade 4 hematologic toxicity was reported in this setting.
Conclusions: Taxane reintroduction appears to be effective and a good therapeutic option with no major toxicity in patients with CRPC-mb treated first-line with taxanes.

90
Taxanes in older patients with metastatic prostate cancer

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Objectives: The objective of this study was to evaluate the efficacy and safety of taxane introduction and reintroduction in elderly patients with castration-resistant prostate cancer metastatic to bone (CRPC-mb).
Methods: Twenty-eight patients aged ≥65 years with CRPC-mb received taxane-based chemotherapy between January 2008 and September 2011. The therapeutic regimens included docetaxel 75 mg/m^2 every 3 weeks and paclitaxel 80 mg/m^2 weekly, 4 out of 6 weeks. Progression-free survival was performed according to the Prostate Cancer Working Group criteria. Hematologic toxicity was graded according to the Common Toxicity Criteria of the National Cancer Institute, version 4.0.
Results: Median age was 73.5 years (range, 65–91 years). Median performance status was 0.5 (range, 0–3) and median Gleason score was 8 (range, 6–10). Median progression-free survival with taxane introduction was 6.3 months (n=26). In four patients

(18 %), a <10 % reduction of total dose was performed. Four patients (18 %) had grade 2–3 neutropenia and four patients (18 %) presented grade 2–3 anemia. After second-line treatment, taxanes were reintroduced in 13 patients, with median progression-free survival of 5.7 months. A reduction of 18 % of the total dose was performed in 38 % of the patients. Grade 2–3 neutropenia was seen in one patient (8 %), and five patients (38 %) presented grade 2–3 anemia. No grade 4 anemia or neutropenia was reported.
Conclusions: In this setting, taxanes could be reintroduced safely with no major toxicity in elderly patients with CRPC-mb. Prospective randomized studies are required to determined optimal starting dose of taxanes.

91
Medication as a quality measure in cancer care at the end of life: experts' opinion and chart review

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Objective: Despite advances in cancer treatment, patients still die in unnecessary suffering. Therefore, high-quality end-of-life care is needed. Medication use during the last days of life is a potential measure of quality. This study aimed to assess expert opinions on the appropriateness of medications and to review current medication use in cancer patients during the last days of life.
Materials and methods: An international survey among palliative care experts was conducted to assess appropriate and inappropriate medications for dying patients. Subsequently, a chart review of deceased cancer patients assessed current medication use in cancer patients in different care settings.
Results: Over 90 % of experts rated 12 medications as unlikely appropriate. Hospital patients were more likely than hospice patients to receive antiulcer drugs, antibiotics or vasodilator drugs. Before implementation of an end-of-life care pathway, hospital patients had a higher probability of receiving vasodilator drugs than after implementation. Furthermore, after implementation of this pathway, patients for whom it was not used had a higher probability of receiving replacement hormones, anticoagulants, antihypertensives or antiulcer drugs than patients for whom it was used. Hospital patients were less likely to receive appropriate medications than hospice patients, such as opioids (including morphine), midazolam, haloperidol, and drugs for pulmonary secretions or nausea/vomiting.
Conclusion: Combining expert opinion and data on actual drug use resulted in the identification of 16 medications that may be helpful in assessing quality of care at the end of life. The next step is to further validate these potential quality indicators.

92
Use of National Comprehensive Cancer Network® (NCCN) distress thermometer (DT) in oncology nursing research

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Systematic literature review describing the National Comprehensive Cancer Network® (NCCN) distress thermometer (DT) use in care of cancer patients.

Significance: The Institute of Medicine (IOM) "Cancer Care for the Whole Patient" (2008) emphasizes roles that psychosocial factors play in disease and recommends attention to these factors to become standard of care. The DT was developed as an efficient screening tool in clinical practice identifying patients' distress related to cancer. NCCN® incorporated the DT into its Clinical Practice Guidelines (2009); its application to cancer nursing research has not been fully characterized.
Conceptual framework: The IOM model for delivery of psychosocial services and interventions for cancer patients, survivors (2008) was used.
Purpose: The aims of this paper were to examine strength of evidence and develop recommendations for the use of DT in cancer nursing research.
Method: A computerized search of the NCCN, NCI, NIH, and IOM web sites, Pubmed, CINAHL, and Google Scholar was done using: cancer, stress research, distress thermometer, cancer nursing, psychosocial screening. The reports were examined for study populations, sample size, design, instrument validity, and reliability.
Findings and implications: The reports describe DT's performance as screening for depression in patients with advanced disease: growing interest in use in caregivers and non-cancer patient populations. DT use as a research instrument is rare. We suggest that DT is an efficient tool for assessing nursing-sensitive patient outcomes in studies of:

Factors associated with the use of DT by oncology nurses
APNs' prescribing practices of anti-anxiety, antidepressant medications
Psychosocial stress reduction trials throughout the cancer trajectory
Collaborative practice models for oncology psychosocial services
DT documentation for psychosocial referral insurance

94
The social determinants and risk factors associated with cervical and breast cancer in Oujda city in Morocco

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A study was conducted on 681 women from Oujda city in Morocco to estimate the incidence of cervical and breast cancer and to determine the social determinants and risk factors for these two cancers.
A questionnaire was used before the clinical gynecological examination and sampling cell for the Pap smear. Any woman with a Pap smear suspect had to do a biopsy at the reference center. Obstetricians and midwives in the consultation process did gynecological examination and breast palpation. Patients with a suspicious nodule underwent ultrasound and mammography by radiologists. Gynecological samples were carried out systematically to all ever-married women to detect cancer of the cervix.
Patients with high social status were more susceptible to develop breast cancer, whereas women with cervical cancer were poor, belonging to a class with a low marital status of widowed or divorced, having been married at an early age. The majority of women were married (81 %), poor (80 %), and illiterate (66 %). Breastfeeding women were less affected by breast cancer than women not breastfeeding. Women using contraceptives were vulnerable to both breast and cervical cancers. For cervical cancer, over 15 % of women with a family history were screened positive.
Breast and cervical cancers constitute a real challenge in Morocco. Their socioeconomic burden can be reduced by early detection and treatment. The delayed diagnosis complicates the task both in terms of survival and cost of treatment. However, the high rate of poverty and illiteracy makes a mass screening with mammography not affordable by the population.

97

Decreased bone mineral density in patients with invasive cervical cancer

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Objective: In women, osteoporosis is a common chronic disease that induces spinal compression and femoral neck fractures, resulting in life-threatening complications. It is very important to identify risk factors in order to prevent this disorder. Bone destruction is a well-recognized complication in a variety of neoplasms without bone metastasis. Therefore, in the present study, we investigated the spinal bone mineral density (BMD) in patients with cervical cancer without bone metastases.
Methods: We measured spinal bone mineral densities by dual-photon absorptiometry in 119 patients with invasive uterine cervical cancer and compared them with measurements from 135 control women.
Results: When adjusted for age and menopause duration, the mean bone mineral density in patients with uterine cervical cancer was 13.9 % lower (p=0.0003) and the age-matched percentiles 9.2 % lower (p=0.0003) than in control women. The deficits in bone mineral density and age-matched percentiles were confined to the uterine cervical cancer patients in their 50s, i.e., less than 5 years' menopause duration.
Conclusion: Our study results suggest that patients with invasive cervical cancer have a lower BMD, resulting in an increased risk of osteoporosis.

98

Effect of dietary supplementation with *Agaricus sylvaticus* fungus on the hematology and immunology systems of breast cancer patients undergoing chemotherapy

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Objective: The objective of this study was to evaluate changes in hematological and immunological parameters in patients with breast cancer undergoing chemotherapy after dietary supplementation with *Agaricus sylvaticus.*
Methodology: This is a randomized, double-blind, placebo-controlled study. The sample consisted of 46 patients in stadiums II and III, separated into two groups: supplemented with *A. sylvaticus* (2.1 g/day) and placebo. Patients received three (n=26) and six cycles (n=20) of chemotherapy. Clinical and laboratory evaluations were performed. The results were analyzed using Microsoft Excel 2003 and R, version 2.11.1, significant results at $p \leq 0.05$.
Results: The *A. sylvaticus* group showed an increase of hematocrits (p=0.04), RBC (p=0.03), mean corpuscular hemoglobin concentration (p=0.001), leukocytes (p=0.03), monocytes (p=0.2001), and total lymphocyte count (p=0.009) after 3 months of supplementation. These changes were not observed in the placebo group. With 6 months of treatment, patients with *A. sylvaticus* showed increased levels of red blood cells (p=0.02), hemoglobin (p=0.02), hematocrits (p=0.02), MCH (p=0.02), leukocytes (p=0.02); lymphocytes (p=0.02), neutrophils (p=0.02), and TLC (p=0.02). The placebo group showed a reduction in leukocytes (p=0.004), basophils (p=0.005), and TLC (p=0.01).
Conclusion: The results suggest that a dietary supplementation with *A. sylvaticus* has benefits on the hematological and immunological parameters of patients with breast cancer undergoing chemotherapy.

99

Effects of *Agaricus sylvaticus* fungus on the nutritional status and decrease of symptoms caused by chemotherapy in patients with breast cancer

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Objective: The objective of this study was to evaluate the effects of dietary supplementation with *Agaricus sylvaticus* on clinical and nutritional parameters in cancer patients undergoing chemotherapy.
Methodology: This is a clinical randomized, double-blind, placebo-controlled study conducted up to 6 months at the Base Hospital in the Federal District. The sample consisted of 46 patients, stadiums II and III following specific inclusion and exclusion criteria, separated into two groups: group supplemented with *A. sylvaticus* (2.1 g/day) and placebo group. Three to six evaluations were performed during treatment. Results were analyzed with Microsoft Excel 2003 and R, version 2.11.1 (significance at $p \leq 0.05$).
Results: Both groups were diagnosed to be overweight and obese. There was improvement in the clinical parameters and gastrointestinal functions for the group supplemented with *A. sylvaticus.* In relation to complaints of poor appetite, there was a decrease of 20 %; 92.8 % reported no changes in bowel functions, and another 80 % reported no complaints of nausea or vomiting. These changes were not observed in the placebo group.
Conclusion: The results suggest that a dietary supplementation with *A. sylvaticus* lessens the side effects caused by chemotherapy in patients with breast cancer.

100

Effects of the Brazilian mushroom *Agaricus sylvaticus* on toxicity model in vitro

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Objectives: The objective of this study was to evaluate the cytotoxicity of the aqueous extract of *Agaricus sylvaticus* on human erythrocytes by determining the lethal average concentration (CL_{50}).
Methods: Six concentrations of the mushroom (17, 8.5, 4.25, 2.125, 1.0625, and 0.5312 mg/mL) were submitted for evaluation of hemolytic activity in vitro using a suspension of A-negative blood. Through the Prism GraphPad Software, using Tukey's test for statistical analysis ($p \leq 0.05$), a curve was constructed with values of concentrations of *A. sylvaticus* mushroom versus the values determined by absorbance spectrophotometry at 540 nm.
Results: The results of the hemolytic activity for the aqueous extract of the mushroom *A. sylvaticus* were fitted using a nonlinear regression, using the equation: $Y_i = \alpha x_i/(b+X_i)$. We used values of y of hemolytic activity and x as log of the concentration of *A. sylvaticus* mushroom. The coefficient of determination of the curve (R^2) was 0.95 of the original data. The percentage of hemolysis increased in a manner dependent on the concentration of the extract of *A. sylvaticus* used. The LC_{50} value obtained in this experiment was 9.213 mg/mL.
Conclusion: The results suggest that the extract of *A. sylvaticus* mushroom has very low toxicity, proving itself safe for use in humans.

101

The final good-bye: where art meets science

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Despite great diagnostic and therapeutic advances in oncology, most patients will ultimately die of their disease. Dealing with end-of-life issues can be stressful for the oncologist and the members of the health care team. There is a wealth of data on delivering bad news to patients and families about a terminal diagnosis; these data cross disciplines of medicine and psychology. However, very little is written with regard to how the practitioner says good-bye or the impact of that interaction on the physician's well-being.
The Accreditation Council for Graduate Medical Education defines the training requirements for all medical areas. Hematologists–Oncologists are expected to gain experience in palliative care, including symptom management and appropriateness of hospice referral; yet, the specific details of an appropriate good-bye are not well defined. Our paradigm could provide a reasonable template for training programs in all areas of medicine to teach young physicians how to deal with an inevitable facet of patient care, no matter what the specialty.
While control of pain and other types of physical suffering is critical, the practitioner may be faced with the realization that, this time, interaction may be the final encounter. The manner in which the physician bows out at the end of the patient's life is equally important. Unfortunately, this art of medicine is not routinely taught. An appropriate "final good-bye" is a unique combination of skill, experience, and connection with the patient and family. A general template for this unique experience is addressed.

102
Self-treatment and innovation strategies from the lymphoedema patients' point of view

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Introduction: The aim of the study was to describe variations in women's experience of self-treatment within secondary lymphoedema.
Methods: Ten women participated in the study, and we used tape-recorded in-depth interviews. A phenomenographic approach was used. The results were presented in categories and emerging subcategories.
Results: Eight themes emerged in the study: Acceptance, Management, Physical activity, Manuel self-treatment, Ergonomics, Recovery, Social self-treatment and Routines. Innovation strategies were technical solutions, need for early information, ideas about compression sleeves and need for educated insurance personnel.
Conclusion: This study shows us self-treatment from the patients' point of view. The patients' views were: to accept, to manage and to do self-treatment. Innovation strategies were technical, but also included need for early information about lymphoedema and educated health care personnel.

103
Palliative care nursing and pain management in developing countries

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Despite the remarkable advances in cancer management, the majority of cancer patients die because of their disease; around two thirds are from developing countries, where most patients present with advanced disease and suffer terribly.
Palliative care is a vital health issue. It is concerned with suffering, dignity, the care needs, and the quality of life of people at the end of their lives. Cancer pain, which has a major contribution of the cancer patients' suffering, is not inevitable. It can mostly be alleviated by practical and achievable principles of the WHO pain ladder.
Despite mounting knowledge on pain relief and availability of effective opioid analgesics, inadequate pain management in cancer patients and others in general remains pervasive.
In this brief review, introduction to palliative care is reviewed with emphasis on pain management and the impediments to proper pain control and palliative care service.

105
Translation and validation of the Chinese version of Sexual Function after Gynecologic Illness Scale (SFAGIS)

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Background: Sexual functioning is an important aspect of quality of life. It is generally identified as compromised in gynecological cancer patients. However, there are only few validated Chinese versions of disease-specific sexual function instruments for clinical use.
Aims: The aims of this study were to translate the 28-item Sexual Function after Gynecologic Illness Scale (SFAGIS) into Chinese and to establish its psychometric properties in Hong Kong Chinese patients with gynecological cancer.
Methods: A Chinese SFAGIS was developed by the Brislin model of translation. The content validity and semantic equivalence were assessed by an expert panel. The translated version of SFAGIS was administered to 150 Hong Kong Chinese women who suffered from gynecological cancer to test its psychometric properties and assess its feasibility.
Results: The average completion time for the Chinese SFAGIS was 16.2±6.6 min; internal consistency was 0.93. Test–retest reliability was also high, with an interclass correlation coefficient of 0.76. The convergent validity of the Chinese SFAGIS was tested by correlating with the Chinese version of the sex relations subscale of Psychosocial Adjustment to Illness Scale Self-Report (PAIS-SR). Pearson product-moment correlation found strong correlations among these scales, indicating that the Chinese SFAGIS measured the same or a similar construct as the sex relations subscale of PAIS-SR.
Conclusions: The Chinese version of SFAGIS is a reliable, valid, and feasible instrument which is suggested to be used in clinical practice for assessing sexual function problems in Chinese gynecological cancer patients and to identify those in need of appropriate counseling or other forms of intervention.

106
Four years after implementation of an enhanced recovery after surgery (ERAS) in a Dutch hospital

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Introduction: Enhanced recovery after surgery (ERAS) programs are developed to improve the perioperative conditions of patients, resulting in a reduction in length of hospital stay (LOS) after colorectal surgery. Here, we report on the results of the first 4 years after introducing the ERAS program in patients undergoing colonic resections in our department.
Methods: For this study, all consecutive patients who were above 18 years and were scheduled for elective colonic resection for malignancy were entered into the ERAS program. Prospectively, data were entered into the ERAS database from January 2006 until December 2009 and retrospectively analyzed. Data from the year 2005 were used as a control.
Results: LOS in 2006 and 2007 was significantly shorter compared to that in 2005 ($p \leq 0.009$ and $p \leq 0.004$, respectively). For the years 2008 and 2009, this reduction in LOS was no longer achieved ($p \leq 0.154$ and $p \leq 0.751$,

respectively). The following items were found to be significantly associated with the disappearance of the reduction in LOS in 2008 and 2009 compared to 2006 and 2007. Fewer patients received preoperative carbohydrate-loaded drink and anti-emetics and were mobilized within 24 h after surgery, less administration of laxative at the first postoperative day and lower numbers of thoracic epidural catheters that were removed within 3 days. The year 2009 had a significantly higher number of patients with cardiac comorbidity.
Conclusion: In the first 2 years of the ERAS program, a significant reduction in LOS was achieved. After 2 years, the increase in LOS could be attributed to violations of five items in the ERAS program.

107
Enhanced recovery after surgery (ERAS) in a Dutch hospital: the Alkmaar experience

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Introduction: Enhanced recovery after surgery (ERAS) programs have been shown to improve the perioperative condition of patients, resulting in a reduced length of hospital stay after colorectal surgery. Within the ERAS program, many elements have been introduced that have changed perioperative care. It is not known which of these elements can be identified as independent predictors of the reported reduction in LOS. The aim of this study was to determine which items were associated with shorter LOS in a Dutch hospital.
Methods: Between January 2006 and December 2009, all consecutive patients who were above 18 years and who were scheduled for any elective colonic resection following the ERAS program were prospectively entered in the ERAS-database and retrospectively analyzed. To identify predictive factors, six baseline characteristics (age, gender, BMI, comorbidity, laparoscopic surgery and right-sided colectomy) and those ERAS items that were successfully achieved were entered in a univariate and multivariate linear regression analysis with LOS as primary outcome.
Results: A total of 328 patients were treated according to the ERAS program. The mean age of the patients was 70.7±0.7 years. Of these patients, 53.0 % (n=174) were male. The median length of stay was 6 days. Two baseline characteristics and two ERAS items were found to be significant independent predictors on LOS: age and laparoscopic surgery, removal of thoracic epidural analgesia within 3 days, and mobilization within 24 h after surgery.
Conclusion: According to our data, age and laparoscopic surgery, removal of thoracic epidural analgesia within 3 days, and mobilization within 24 h after surgery were independent predictors of LOS.

108
How satisfied are patients about the ERAS program?

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Introduction: Enhanced recovery after surgery (ERAS) programs are developed to improve the condition of the patient, resulting in a reduced length of hospital stay (LOS) after colorectal surgery. The endpoints addressed in the studies on the ERAS program focus on implementation issues, postoperative condition and reduction in LOS. Not much is known on patients' satisfaction with the program. Here, we show data on a patient satisfaction questionnaire in patients undergoing colonic surgery.
Methods: A questionnaire was sent to patients treated between May 2010 and April 2011. The questions asked were about the different parameters of the ERAS program, aspects of hospital stay and the situation at home after hospital discharge. Patients ranked information given by the nurse practitioner, the pain management, the way the patients felt when leaving the hospital, follow-up care given by the hospital and how strongly they would recommend the ERAS program to a friend.
Results: A response rate of 66.7 % was achieved. No significant differences were found for the type of response in relation to age or gender. Early discharge was not considered a problem. The mean score for the information provided by the nurse practitioner was 7.4, and the score for the anaesthesia was 7.8. On the question how strongly patients would recommend the ERAS program to a friend, a mean score of 7.8 was found. Overall satisfaction with the ERAS program was 7.7.
Conclusion: Patients undergoing elective surgery for colon cancer are satisfied with the ERAS program.

109
A qualitative focus group to investigate the psychosocial support needs of teenage young adult cancer patients undergoing radiotherapy in Wales

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Objective: The purpose of this small-scale study was to evaluate the psychosocial support needs of teenage young adult cancer patients undergoing radiotherapy in Wales.
Method: A focus group interview was utilised to encourage dialogue and collect rich data. Transcripts were analysed through open coding and content analysis. Emergent themes in terms of psychosocial tensions were identified and categorised as external stressors and intrinsic anxieties.
Results: All participants indicated a desire to maintain their identity as individuals and resume a normal a life as possible throughout the treatment process and beyond. Peer support was deemed as vital to achieving this goal. Participants demonstrated a distinct sense of unity and group cohesion throughout the session, with suggestions that they considered themselves to be very different from what they thought of as 'usual cancer patients'. A range of information was offered prior to radiotherapy; however, there was variation in the efficacy of this provision between centres. At variance with literature, issues related to body image were not overtly demonstrated as significant. Support services provided by external organisations were not being signposted.
Conclusion: Psychosocial support is vital to the psychological recovery and well-being of young adult cancer patients. The findings suggest that issues related to peer support and age-appropriate services and information are not being addressed within the current service provision. Key staff within radiotherapy should be identified to ensure that the specific needs of this distinct patient group are met.

110
Searching for the 6th vital sign in Romanian cancer patients: what does it mean?

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Romania still has to adopt and develop psychosocial assessment protocols which would allow appropriate screening for the sixth vital sign in

cancer patients, specifically cancer distress and quality of life. Lack of psycho-oncology specialist and services in state-financed oncology hospitals is partly counterbalanced by the most accessible private or non-profit community facilities, namely palliative and supportive care groups. For the first time in the history of Diakonia Foundation's and Romanian Cancer Association's cancer care services, we perform the psychosocial screening of cancer patients and their caregivers. Another objective was to compare the current data with the results of a previously conducted multicenter study in oncology centers and hospitals.
FACT-G 4.0 and BDI screening instruments were used in this clinical sample: 162 cancer patients, of which 108 in supportive, self-help groups and 54 in palliative care. Statistical analysis included comparative and associational statistics and covariance tests.
Statistically and clinically significant results were found only in relation to physical and functional well-being. However, with regard to overall, global and especially to the psychosocial quality of life, there are no significant differences among cancer patients in treatment, rehabilitation, and palliative care. Based on our results, it is clear that regardless of tumor status, cancer is an ongoing psychosocial challenge to patients and services.
Cancer, as both a fate- and faith-turning experience, needs standard psychosocial screening in all its forms and settings, in active treatment, rehabilitation, or palliative care. It means that in Romania, we need at least one psycho-oncology office in all four regional cancer institutions.

111
Fatigue in patients with lung cancer

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The study aimed to verify and evaluate the influence of fatigue in patients with lung cancer. It consisted of a transverse field survey, with a quantitative approach. Data were collected from 20 patients diagnosed with lung cancer from August 2010 to September 2011. Three questionnaires were used to collect data: a socio-demographic and clinical questionnaire developed by the authors, the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC–QLQ C 30), and the revised Piper Fatigue Scale. Data were analysed with the software Statistical Package for Social Sciences. It was observed that 11 patients (55 %) were female, 17 (85 %) were over 40 years, and the most common treatment was surgery, performed in 15 patients (75 %). The EORTC symptom scales that had a higher average were dyspnea (78.05), fatigue (73.45) and pain (63.10), and the average score of global health was 30.95, indicating that the patients felt they had a poor quality of life. From the analysis of the Piper Fatigue Scale, it was found that 11 respondents (55 %) reported severe fatigue. The Pearson correlation test between the EORTC fatigue score and the general fatigue scale of Piper was 0.778 and between the total fatigue and the EORTC global health was −0.65, indicating a positive result. It was concluded that it is important to have a qualified health team in order to identify symptoms such as fatigue, which compromise the quality of life of patients with lung cancer.

112
Cancer caregiver perception of an exercise and nutrition program

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Objective: The purpose of this study was to explore the experiences of caregivers who participated in a structured exercise/nutrition program with cancer survivors for whom they performed caregiving duties.

Methods: Convenience sampling identified a group of 12 caregivers varying considerably with respect to age, gender, relationship to the survivor, and the survivor's diagnosis/treatment. A set of probe questions pertaining to the experience of the exercise/nutrition program were created. Interviews were transcribed and an inductive content analysis was used to analyze the data. Raw data themes (i.e., quotations) that represented the basic units of analysis were independently identified and coded. Consensus validation of the themes and supporting quotations ensued until agreement was reached on the themes represented. Following first-level theme development, additional theme grouping (i.e., higher-order themes) on a more conceptual level was completed.
Results: The analysis indicated three separate, but interrelated, themes:

1. The program was a mechanism through which caregivers shared/supported the cancer journey concurrently with survivors.
2. The program led to physical/psychological benefits for both caregivers and survivors.
3. Caregivers perceived that participation led to increased social support.

Conclusion: While the benefits of including caregivers in psychosocial interventions for cancer survivors have been identified previously, the current study provides support for the inclusion of caregivers alongside survivors in an exercise/nutrition intervention. Greater understanding of this supportive relationship can enable practitioners to identify the most effective strategies and programmatic structure for physical activity interventions designed to improve quality of life for both members of the survivor/caregiver dyad.

115
Comparison of the effects of aromatase inhibitors and tamoxifen on radiation-induced lung fibrosis: results of an experimental study

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Purpose: The purpose of this study was to compare the effects of Anastrozole, Letrozole, and Tamoxifen on radiation-induced pulmonary toxicity.
Methods: Eighty female Wistar albino rats were divided into eight groups:

Group (G) 1 was defined as the control group.

Group 2 was radiation therapy (RT)-only group.

Groups 3–5 were Tamoxifen, Anastrozole, and Letrozole control groups, respectively.

Groups 6–8 were RT plus Tamoxifen, Anastrozole, and Letrozole groups, respectively.

A dose of 12 Gy RT was given to both lungs. Tamoxifen, Anastrozole, and Letrozole were started 1 week before the RT and continued until the animals were killed 16 weeks after the RT. As an end point, the extent of pulmonary fibrosis for each rat was quantified with image analysis of histological sections of the lung. Kruskal–Wallis and Mann–Whitney *U* tests were used for statistical analysis.
Results: The congestion, inflammation, and pulmonary fibrosis scores were significantly different between all study groups ($p<0.001$ for each). When compared with the RT-only group, concomitant RT and Tamoxifen group increased the radiation-induced pulmonary fibrosis ($p=0.005$). However; using either Anastrozole or Letrozole with RT did not increase the radiation-induced pulmonary fibrosis ($p=0.768$ and 0.752, respectively).
Conclusion: Concomitant use of Tamoxifen with RT seems to increase radiation-induced pulmonary toxicity. However, the use of both

Anastrozole and Letrozole appear to be safe with concomitant RT, without increasing the risk of pulmonary fibrosis. This finding should be clarified with further clinical studies.

116

Amelioration of radiation induced oral mucositis by beta-hydroxy-beta-methylbutyrate, L-glutamine and L-arginine: results of an experimental study

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Purpose: This study was performed to evaluate the effects of β-hydroxy-β-methyl butyrate, L-glutamine, and L-arginine (HMB/Glu/Arg) on radiation-induced acute oral mucositis.

Methods: Twenty-eight Wistar albino rats were divided into four groups:

Group (G) 1 was defined as the control group.

G2 and G3 were the radiation therapy (RT)- and HMB/Glu/Arg-only groups, respectively.

G4 was RT plus HMB/Glu/Arg group.

A single dose of 17 Gy RT was given and the active supplement consisted of 5.2 g HMB, 29.6 g arginine, and 29.6 g of glutamine, which was equivalent to a 60-kg adult dose calculated for each rat and administrated orally. HMB/Glu/Arg started from the day of RT and continued until the animals were killed 7 days after the RT. The extent of acute oral mucositis for each rat was quantified with image analysis of histological sections of the oral mucosa. Kruskal–Wallis and Mann–Whitney *U* tests were used for statistical analysis.

Results: There were significant differences in terms of epithelial thickness, subepithelial edema, inflammation, and congestion between all groups (p values were <0.001, 0.003, <0.001, and 0.001, respectively). When used with RT, HMB/Glu/Arg reversed radiation-induced epithelial atrophy (p=0.006) and decreased radiation-induced inflammation at a significant level (p=0.007; Table 1).

Table 1: Pair-wise comparisons of groups regarding to epithelial thickness and subepithelial edema, congestion and inflammation scores

Pair-wise Comparisons Groups		P*			
Group 1	Group 2	Epithelial thickness	Subepithelial edema	Subepithelial congestion	Subepithelial inflammation
G1	G2	.002	.007	.001	.001
G1	G3	.013	>0.99	.007	>0.99
G1	G4	.085	.317	.007	.007
G2	G3	.002	.007	.015	.001
G2	G4	.002	.037	.015	.001
G3	G4	.006	.317	>0.99	.007

*: Bonferroni Correction was used to evaluate the significance levels of Type-I error for pair-wise comparisons and values lower than 0.0083wereconsidered as statistically significant.

Table 1

Conclusion: Our study supports the use of HMB/Glu/Arg supplementation as being effective in preventing radiation-induced oral mucositis. Although the use of Glu in mucositis has been demonstrated in many studies, the effects of HMB and Arg on radiation-induced oral mucositis were examined firstly in the current study.

117

Palliative care nursing in sub-Saharan Africa: developments and setbacks

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Background: Specialized training for qualified nurses in sub-Saharan Africa has generally followed demand and supply, disease patterns, and the availability of resources. Post-basic specialization has been available for a number of years up to the Masters level in critical care, theatre, midwifery, mental health, and community health, and lately in HIV/AIDS care. No formal programs exist in Oncology or palliative care nursing.

Objectives: The objective of this study was to review the developments and setbacks in cancer nursing in sub-Saharan Africa in light of the increasing cancer burden.

Materials and method: The study uses a desk review on post-basic nursing education, scopes of practice, specialization, nomenclature, as well as a review of the literature and Ministry of Health/World Health Organization country reports.

Findings: Sub-Saharan African countries face a growing burden of communicable and non-communicable diseases. Though cancer has been called Africa's hidden epidemic, little effort is being made to address nurses' education needs at the national level. However, there are promising programs run by non-governmental organizations that provide some palliative care education in most sub-Saharan African countries.
Conclusions: There is an urgent need to develop formal post-basic training programs in cancer care for nurses. Any programs designed for sub-Saharan Africa should have a large component of palliative care as well as cover the issues of delivery of care in a resource-limited environment. What would constitute feasible, accessible, affordable, and effective specialist training in cancer care and how to develop and deliver such curriculum are yet to be addressed.

118
Health-related quality of life in patients with metastatic breast cancer treated with denosumab or zoledronic acid

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Objective: The objective of this study was to describe the effects of denosumab versus zoledronic acid (ZA) on health-related quality of life (HRQoL) for breast cancer patients with bone metastases.
Methods: Patients enrolled in this double-blind, double-dummy study were randomized to receive denosumab (120 mg subcutaneous, n=1,026) or ZA (4 mg intravenous, n=1,020) Q4W. Patients completed the Functional Assessment of Cancer Therapy—General (FACT-G) at baseline and each monthly visit. Higher scores (range, 0–108) reflect better HRQoL. Changes were summarized through month 18, when 30 % of patients died, had disease progression, or withdrew consent. Changes of ≥5 points in FACT-G total scores are considered clinically meaningful. Pain was evaluated by the Brief Pain Inventory-Short Form (BPI-SF). We report HRQoL in all patients and patients with no/mild (BPI-SF 0-4) or moderate/severe (BPI-SF 5-10) pain at baseline, comparing the average relative difference between treatments.
Results: Baseline FACT-G scores (mean [SD]) were similar for denosumab (72.7 [16.4]) and ZA (73.6 [16.5]) groups and improved over 18 months. On average, 10.5 % (range, 2.8–22.3 %) more denosumab patients than ZA patients experienced a meaningful HRQoL improvement, and 7.0 % (range, −1.5 to 15.3 %) fewer denosumab patients than ZA patients reported a meaningful HRQoL decrease over 18 months. Among patients with no/mild pain at baseline, 14.5 % (range, −0.8 to 32.1 %) more denosumab-treated patients had a ≥5 point increase in FACT-G score over 18 months. Similar findings were observed for patients with moderate/severe pain at baseline.
Conclusion: A greater proportion of patients with advanced breast cancer treated with denosumab than ZA had a meaningful improvement in HRQoL regardless of baseline pain severity.

119
Preoperative chemoradiotherapy in locally advanced rectal cancer: comparison of two different regimens

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Objectives: The objective of this study was to investigate the effectiveness and toxicity of preoperative chemoradiation in this setting.
Methods: Between January 2007 and January 2011, patients received 5 weeks of treatment with radiotherapy 50.4/54 Gy/25 or 30 fractions with concurrent capecitabine 850 mg/m^2 twice daily, 5 days per week (CAP), or radiotherapy 50.4/54 Gy/25 fractions with capecitabine 850 mg/m^2 twice daily, 5 days per week, and oxaliplatin 50 mg/m^2 once weekly (CAPOX). Histopathologic tumor regression (TRG) was determined by the amount of viable tumor versus fibrosis. Toxicity was monitored according to the Common Toxicity Criteria of the National Cancer Institute.
Results: Seventy-six patients were included (median age, 69 years; range, 45–88 years; 67 % male). Fourteen patients (18.4 %) had TNM stage IIA, 2 patients (2.6 %) IIB, 6 patients (7.9 %) IIIA, 50 patients (65.8 %) IIIB, and 4 patients (5.3 %) IIIC. Median tumor distance from anal verge was 7 cm (range, 2–13 cm). Grade 3 adverse events included anemia (n=3, 4 %), leucocytopenia (n=1, 1 %), gastrointestinal toxicity (n=5, 7 %), and dermatitis (n=1, 1 %). Higher-grade acute organ toxicity was associated with higher TRG. TRG 4 was recorded in 10 patients (13.2 %) and TRG 3 in 45 patients (59.2 %). T, N, and overall downstaging rates were 52.6, 65.8, and 80.3 %, respectively.
Conclusions: This study demonstrates the feasibility of preoperative chemoradiotherapy with oxaliplatin and capecitabine. Higher-grade acute organ toxicity was associated with TRG 3 and 4, suggesting an early predictor of treatment response.

122
Phenytoin mouthwash to relieve oral mucositis pain

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Objectives: Oral mucositis is a common side effect of chemoradiotherapy. Phenytoin is a membrane-stabilizing agent used to relieve some kinds of orofacial pain. The aim of this study was to evaluate the efficacy of phenytoin mouthwash on pain relief in patients with chemoradiotherapy-induced oral mucositis.
Methods: In the first phase of a triple-blind randomized clinical trial, 12 patients with oral mucositis in Naft and Taleghani Hospitals (Tehran, Iran) received 0.5 % phenytoin mouthwash or placebo for 2 weeks. The second phase was conducted on 16 patients in Shohada Hospital. Eight patients used 1 % (enhanced dose) phenytoin mouthwash three times daily for at least 2 weeks. The remainder used normal saline. The severity of pain (Visual Analogue Scale, VAS) was measured before treatment and twice more at 1-week intervals. Data analysis was performed using Mann–Whitney test.
Results: In the first phase, the mean values of VAS in the phenytoin and control groups were 5.5 and 6.5, respectively (p=0.74). After 2 weeks of treatment, VAS reached 0 in the phenytoin group and 0.4 in the control group (p=0.27). Although both groups demonstrated reduction in pain intensity, no significant difference was observed between them. Then, 1 % phenytoin mouthwash was formulated for the second phase. In this phase, the mean values of VAS in the phenytoin and saline groups were 6.75 and 8.13, respectively (p=0.10). After treatment, VAS reached 4.25 and 7.13 in the phenytoin

and saline groups, respectively. The difference between the two groups was significant (p=0.007).
Conclusion: 1 % phenytoin mouthwash caused significant pain relief in patients with chemoradiotherapy-induced oral mucositis.

123
How to decrease cardiovascular and lung toxicity in patients with early-stage breast cancer: comparison of field-in-field and conformal radiotherapy techniques

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Purpose: We aimed to compare the field-in-field technique (FIF) with conformal tangential field radiotherapy (CRT) in terms of cardiovascular and lung toxicity for early-stage breast cancer radiotherapy.
Materials and methods: Twenty consecutive left-side breast cancer patients who underwent breast-conserving surgery were included in the study. For each patient, two different treatment plans were created for the entire breast. FIF plans and CRT plans were compared for doses in the planning target volume (PTV); the organ at risk (OAR) volume, including ipsilateral lung, heart, left ascending coronary artery (LAD), and the contralateral breast; the homogeneity index; and the monitor unit counts required for the treatment. Paired samples t test was used for statistical analysis.
Results: The FIF technique significantly reduced the maximum dose of the PTV as well as the mean doses of the heart, LAD, ipsilateral lung, and the contralateral breast (p<0.001 for each). When the OAR volumes irradiated with 2, 5, 10, 20, 30, and 40 Gy were compared, the results were in favor of the FIF technique. The volume receiving <20 Gy of the prescription dose for the ipsilateral lung was significantly decreased using FIF technique (p<0.001). The FIF technique allowed us a more homogenous dose distribution with lower monitor units.
Conclusion: The FIF technique provided better dose distribution in the PTV and significantly reduced the doses in the OAR. Considering the lower monitor units required for the treatment, the FIF technique seems to be more advantageous than the CRT during whole-breast irradiation.

124
Pain management needs assessment: a survey of radiation therapists at a large academic comprehensive cancer center

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Introduction: The study aims to determine the knowledge of pain management among the radiation therapists (RTs) at the Odette Cancer Center (OCC) to aid in the development of an educational pocket reference tool to address topics of concern.
Methods: A needs assessment survey comprising eight topics pertaining to pain management was distributed to 130 RTs at the OCC. Survey topics were ranked using a four-point Likert scale based on preference for further education, familiarity, and relevance to practice.
Results: RTs rated topics pertaining to the under-treatment, pathophysiology, assessment, diagnosis, and treatment of pain as the most relevant topics requiring further education. RTs were most unfamiliar with topics concerning opioids and addiction, but did not find a need for further education. RTs also felt that breakthrough cancer pain was the most vital topic for further education.
Conclusion: Implementation of an educational intervention for RTs to address topics of concern in pain management for cancer patients is beneficial to improve patient care. Topics pertaining to the pathophysiology of pain; under-treatment of pain; and the assessment, diagnosis, and treatment of acute and chronic pain will remain a priority in the development of an educational tool for RTs.

125
Bereavement care in oncology unit: perception and experience of nurses and bereaved families in Hong Kong

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Background: Existing bereavement literature focuses on the care provided in palliative care units or community setting. However, nurses in oncology units are in a unique position to provide bereavement care, which is the care extended to the families after the death of the cancer patients.
Aim: The study aimed to explore the perceptions and experiences of nurses and bereaved family members in bereavement care in an oncology unit in Hong Kong.
Method: Semi-structured qualitative interviews were carried out in one oncology unit in Hong Kong with 15 nurses and ten bereaved family members. All interviews were audio-taped, transcribed verbatim and analysed using qualitative content analysis.
Results: Among the oncology nurses, three themes were identified: elements of good bereavement care, emotional response in providing bereavement care and educational needs in bereavement care; among the bereaved family members, the following three themes emerged: being informed, being supported and being with the patient before and after the patient's death. Some specific factors affecting their bereavement experience included information need on drug side effects and the need for flexible visiting hours.
Conclusion: The findings revealed room for improvement of current bereavement care. Family members were committed to patient care and expressed needs for more family involvement in the patient care that had a positive impact on their grief and loss experience. Nurses were committed for quality care and expressed needs for more training on their knowledge, skills and attitudes to improve their readiness and competencies in the provision of bereavement care.

126
Development of video-based problem-based learning cases in sexual health care for oncology nurses

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Objective: Oncology nurses should have a high level of sensitivity while dealing with the sexual health needs of patients. This study was a part of a problem-based e-learning (e-PBL) program in sexual health care for oncology nurses and aimed at developing video-based PBL cases.
Methods: The video-based PBL cases were developed through processes involving analysis, design, development, and evaluation

phases. The analysis phase included the study of essential contents and learner analysis. For the latter, focus group interviews were conducted for ten oncology nurses. In the design phase, the goals and activities of learning were established with the help of specific cases. Video-based PBL cases were produced in the development phase and tested for validity in the evaluation phase by three physicians, i.e., one professor of education technology and two professors of nursing.
Results: Video-based PBL cases about 3–5 min long were developed for five cases, which included breast cancer, endometrial cancer, prostate cancer, testicular cancer, and colorectal cancer. These video-based cases were evaluated by Kenny and Beagan's questions and criteria; the findings proved that these cases considered major crisis points and were explained from the patient's point of view in the patient's language.
Conclusion: Video-based case studies will enhance PBL programs and offer a more complete and holistic view of the patient as a human being and cultivate professional researchers specialized in e-PBL programs; these factors are essential for the radically changing medical environment and health needs of the subjects.

129
Safe cancer screening for patients after lumpectomy, survivors, and healthy subjects

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Purpose: Establishment of an inexpensive cancer screening for safe clinical staging convenient for all populations contributes to treatment management and helps administer the appropriate low-waste dose for all cancer therapies.
Method: Regarding cancer as a matter of energy balances, the mathematical model of the Emad Value Test (EVT) monitors the extra body growth energy (EB E_G) of the subject's whole body along dietary treatment, which permits all aberrant activation of body cells that lead to cancer development and simply describes the cancer stage of the subject. Equalizing the accumulated EB E_G through the EVT period by dose energy allows administering the low-waste dose according to the work–energy principle.
Results: Simulations of the presented model showed that energy intake (EI), total energy expenditure (TEE), and the AEB E_G are always balanced with their subsequent energy stored (E_{stored}) within the body along the diet period according to the law of conservation of energy to confirm and provide a clear-cut criterion for accepting the EVT hypothesis for the equivalence of the difference between the gained energy (EI−TEE), E_{stored}, and the AEB E_G, i.e., $[(\mathrm{EI}-\mathrm{TEE})-E_{\mathrm{stored}}=(\mathrm{AEB}\ E_{\mathrm{G}})]$.
Conclusion: Validity of EVT results as a diagnostic tool recommends EVT to be considered as a more reliable test with promising efficacy and low costs to obtain a more accurate assessment as to whether cancer is present in healthy subjects, besides staging, restaging cancer for patients, and screening survivors as well. EVT provides the possibility of investigating all effects of the human-caused background radiation and all cancer causes.

131
Coping among family caregivers of cancer patients

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Objectives: Coping among caregivers of cancer patients is an important component of the caregiving process. The aim of this research was to determine the coping levels and to compare the relationships between coping levels and demographic variables of family caregivers of cancer patients.
Methods: It was planned as a descriptive study. Ninety-three family caregivers in an oncology hospital in Ankara were included in the study in June–July 2009. Data were collected with the Rosenbaum's Learned Resourcefulness Schedule (RLRS), Karnofsky Performance Scale (KPS), and a demographic data form. Descriptive statistics, ANOVA test, Kruskal–Wallis variance analysis, and Student's t test in SPSS 15.0 for Windows program were used to analyze the data. In the reliability analysis of RLRS, the Cronbach's alpha coefficient was 0.72.
Results: The mean age of caregivers was 40.95±12.44 years. Of the caregivers, 59.1 % were female and 41.9 % were spouses. Of the caregiving duration, 50.5 % was more than 7 months. The median KPS score of cancer patients was 100. The mean score of RLRS was 66.09±7.72. The mean RLSL score did not differ with age, gender, education levels, marital status, having any illness, caregiver's illness type, caregiving duration, relationship with the patient, having any psychiatric therapy variables of family caregivers, and the performance score of cancer patients ($p>0.05$).
Conclusions: This research indicated that the level of coping in family caregivers during the cancer process is above the middle level, which means "he/she generally could cope with problems." However, family caregivers should be supported by healthcare professionals in order to provide an uninterrupted caregiving to their patients.

133
Oral mucositis daily questionnaire for older children and adolescents receiving chemotherapy: psychometric evaluation

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Aim: The Oral Mucositis Daily Questionnaire (OMDQ) is a patient-reported outcome measure that allows subjective observations of symptoms and function associated with oral mucosal toxicity. The aim of the study was to validate the Chinese version of OMDQ for older children and adolescents receiving chemotherapy.
Methods: Phase I involved iterative forward–backward translation to fit the cognitive and linguistic age level of older children (6–12 years) and adolescents (13–18 years), expert evaluation of content relevance and semantic equivalence, separate focus group interviews with older children and adolescent patients to check on the most appropriate wording, and pre-testing with ten patients with mucositis. Phase II established the psychometric properties, in which a total of 140 patients who were 6–18 years of age (mean, 11.8±3.3 years) treated with chemotherapy completed the OMDQ for 14 days. Other measures obtained concurrently with OMDQ included the WHO Oral Toxicity Scale and the Oropharyngeal Mucositis Quality of Life Scale (OMQoL).
Results: The translated OMDQ had satisfactory face and content validities. The results revealed adequate comprehensibility of the OMDQ. The OMDQ scores were concordant with clinicians' assessments of the mucositis (kappa statistics, >0.6). In addition, the mean area under the curve OMDQ mucositis and symptom scores were moderately correlated with the scores on OMQoL ($r=-0.424$ to -0.851, $p<0.01$).

Conclusion: The translated OMDQ would provide a valuable tool for the assessment of mucositis. Our use of the translated OMDQ further supports the validation and use of the measure in oncology settings in older children and adolescents.

135
Efficacy of routine dental screening and follow-up in head and neck cancer patients on intermediate and late oral radiation effects

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Objectives: Head and neck radiotherapy is accompanied by a life-long risk of developing severe oral problems. This study retrospectively assessed oral foci detected during pre-radiation dental screening and post-radiation follow-up in order to assess risk factors for developing oral problems after radiotherapy.
Methods: Charts of 185 consecutive head and neck cancer patients, subjected to a pre-radiation dental screening in the University Medical Center Groningen, the Netherlands, between January 2004 and December 2008, were reviewed. Eighty (partially) dentulous patients scheduled for curative head and neck radiotherapy met the inclusion criteria. All 80 subjects had been subjected to a standardized routine post-radiotherapy follow-up.
Results: At dental screening, oral foci were found in 76 % of patients, predominantly periodontal disease. After radiotherapy, osteoradionecrosis had developed in nine patients (11 %). Overall, patients presenting with periodontal pockets ≥6 mm at dental screening had an increased risk (19 %) of developing osteoradionecrosis compared to the total group of patients. In patients in whom periodontal disease treatment had comprised initial periodontal treatment instead of removal of the affected teeth, the risk of developing osteoradionecrosis was even higher, viz. 33 %.
Conclusion: The presence of oral foci is a common phenomenon at dental screening in head and neck cancer patients. A worse periodontal condition and initial periodontal therapy to safeguard periodontally affected teeth put patients at a high risk of developing severe oral sequelae after radiotherapy, in particular osteoradionecrosis.

136
What is the benefit of intensive care medicine in children with acute leukemia and complications requiring mechanical ventilation?

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Previous reports indicated that short-term prognosis for patients with malignant diseases and serious adverse events requiring mechanical ventilation (SAEV) is no longer dismal. The purpose of this study was to determine whether these patients can also be cured from the malignant disease or whether they survive the SAEV to succumb to relapse. We report the outcome of children with SAEV treated in the multicenter studies ALL-BFM 95 and AML-BFM 98. Data from 1,182 patients with acute lymphoblastic leukemia (ALL) and 334 patients with acute myeloid leukemia (AML) were analyzed. Eighty-eight patients (51 ALL and 37 AML) developed an SAEV. The prognosis was almost identical in ALL and AML (survival of SAEV, 48 %, 95%CI=38–58 %; overall survival after 5 years, 31 %, 95%CI=21–41 %). This was independent from the time between the diagnosis of leukemia and SAEV. Even children who required hemodialysis (n=14) or cardiac resuscitation (n=16) achieved about 20 % long-term survival, but no patient survived (n=16, 0 %; 95%CI=0–20 %) who fulfilled more than three out of six identified risk factors: age≥10 years, high-risk leukemia, C-reactive protein≥150 mg/l, administration of inotropic infusion, cardiac resuscitation, and hemodialysis. Intensive care medicine contributes to short- and long-term survival of children with leukemia. Of those children with acute leukemia who survived an SAEV, 64 % (95%CI=50–78 %) achieved long-term cure. Their prognosis mainly depends on age and leukemia risk group.

137
Cost of palliative treatment of colorectal cancer in Germany: the Northern-Bavarian IVOPAK Project

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Introduction: The objective of this study was to estimate the costs of palliative care for colorectal cancer (CRC) from the perspective of the German statutory health insurance (SHI) and to identify cost drivers for a period of 2 years after onset of palliative chemotherapy.
Methods: A prospective observational multicentre study was carried out to estimate the direct costs of care over a 2-year period. Patients from 12 different settings were included in the study. Case report forms, medical records and claims data were all applied to document medical and resource usage data in real-world settings.
Results: In total, the costs of palliative care for 101 patients (mean age, 67.09±11.13 years, 68 % male) with CRC were determined for a 2-year period from the perspective of SHI. The mean costs per quarter ranged from 12,900€ (95% CI=11,127–14,673€) for the second quarter down to 7,535€ (95% CI=4,893–10,178€) for the eighth quarter. The mean costs per patient during the first and the second year were calculated to be 42,361€ and 32,023€, respectively. Pharmaceutical expenses (70 %) and those for inpatient stays (23 %) represent the largest economic burdens.
Discussion: This is the first study assessing the costs of palliative patients with CRC in real-world health care delivery in Germany. It could be shown that CRC treatment represents an enormous economic burden to the German healthcare system. Increased efforts in promoting effective and efficient treatment options, or performance-based medication reimbursement schemes, might be helpful in reducing the costs.

139
Profile of patients with gastrointestinal cancer in a university hospital

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The objective of this study was to identify the socio-demographic and clinical characteristics of patients diagnosed with cancer of the esophagus, stomach, and colorectum at the Hospital das Clinicas of the Federal University of Triangulo Mineiro–Brazil. It consisted of a

retrospective, quantitative, and descriptive study where data were collected from records of all patients with esophageal, gastric, or colorectal cancer from 2005 to 2009, in a total of 201 patients. For data collection, a structured instrument was developed to record the following variables: age, sex, marital status, race, occupation, alcoholism, smoking, comorbidities, type of cancer, and treatment. The results showed that 123 patients (61.19 %) were male, 104 (51.73 %) were aged between 61 and 80 years, 35 (17.41 %) were alcoholics, and 53 (26.36 %) were smokers. It was observed that 88 patients (43.76 %) had comorbidities. Regarding cancer location, it was found that 50 patients (24.9 %) had esophageal cancer, 62 (30.8 %) had gastric, 35 (17.4 %) intestinal, and 58 (28.8 %) rectal. Four patients (3.6 %) had cancer of the esophagus and stomach. Surgery alone was the most frequent treatment, 115 patients (57.2 %), followed by chemotherapy plus surgery, 18 patients (8.9 %). Forty-eight deaths (23.9 %) occurred in the period mentioned, and it was not possible to get data from these patients due to lack of information in the records. The identification of the profile of patients with cancer and their risk factors may help in the formulation of strategies for implementing prevention campaigns and rapid intervention for the disease.

140
Content validity and pre-testing of the Pediatric Constipation Assessment Scale

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Objectives: Children receiving cancer treatments, opioids, and/or palliative care are at risk for constipation. The management of constipation requires accurate assessment. While children are the best reporters, there are limited pediatric measures available. The purpose of this three-phase study was to evaluate the psychometric properties of the Pediatric Constipation Assessment Scale (P-CAS), a 20-item self-report instrument, in children with cancer and hematologic disorders aged 8–17 years. Phases 1 and 2, reported here, determined content validity and pre-tested the P-CAS using cognitive interviews to refine the instrument.
Methods: In phase 1, 12 healthcare professionals (HCP) and 12 children evaluated the P-CAS. Statistical analyses included descriptive characteristics, content validity indices (CVI) estimated at the item level and scale level, and qualitative analysis. In phase 2, 12 children completed the P-CAS and then participated in cognitive interviews which were recorded and analyzed using content analysis.
Results: Item- and scale-level CVI were acceptable in HCP (0.25–1.0), children (0.58–1.0), and both groups combined (0.50–1.0). After revision, scale-level CVIs improved across all groups. Cognitive interviewing was helpful in the scale revisions and revealed difficulties with time frame, item interpretation, and comprehension.
Conclusions: The results demonstrate evidence for content validity. Pre-testing accompanied by cognitive interviews was beneficial in identifying difficulties not recognized during the content validation. These findings provide a foundation for phase 3 in which the revised P-CAS will be field tested to assess reliability and validity. Since there are no instruments for assessing the presence and severity of constipation in children, the P-CAS will fill a needed gap.

141
Feeding jejunostomy for palliative nutrition in advanced esophageal cancer

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Objective: Palliative therapy is one of the mainstays in the management of carcinoma esophagus. Various palliative procedures are used, including feeding tubes. We evaluate the role of operative feeding jejunostomy for palliative nutrition in inoperable advanced cancer esophagus patients who were expected to live for at least 30 days.
Methods: This is a retrospective review of inoperable advanced cancer esophagus from January 2008 to December 2011 in a tertiary hospital in North India. Case notes were reviewed for presentations, diagnosis, stage, and treatment.
Results: A total of 72 patients were treated surgically by the two participating surgeons during the time period. Fourteen (19.44 %) patients were found to be inoperable for various reasons. These 14 patients were the subject of this study. Out of these 14 patients, seven had metastatic disease, five patients had locally advanced disease, and two patients were medically unfit for surgery. All 14 patients had near-absolute dysphagia. Stenting, intubation, dilatation, and other palliative measures were not feasible for various reasons. Feeding jejunostomy was performed under local anesthesia and sedation. Surgery was successfully completed in all the cases. Feeding was started through the tube within 48 h. There was no major morbidity or surgery-related mortality. The median survival after the surgery was 39 days (range, 24–86 days). Four patients received palliative chemotherapy with limited improvement in dysphagia.
Conclusion: Feeding Jejunostomy is a simple, safe, and a very cost-effective procedure for palliative nutrition in inoperable cancer esophagus.

142
A randomized, double-blind, placebo-controlled trial of manuka honey for radiation-induced oral mucositis

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This investigator-initiated Canadian study recruited 90 head and neck cancer patients at risk of severe radiation-induced mucositis in Vancouver, British Columbia, or Sudbury, Ontario. Subjects were randomized to swish, hold and swallow either 5 ml of irradiated organic manuka honey or a synthetic sugar-free honey-flavoured placebo gel, four times a day from the day prior to commencement of radiation therapy and for 1 week following the last treatment. Approximately two thirds of subjects also received concurrent chemotherapy. The majority were male. The severity of oral mucositis according to the RTOG, WHO and OMAS scales; weight; and subjects' symptom severity and quality of life were assessed weekly. Sialometry was performed at baseline and at the last study visit. Subjects were unable to tell whether they were on the placebo or the honey arms, both being equally poorly tolerated. Dropouts were significant, but similar in both arms. The study results are being analysed at the time of submission of this abstract and will be presented in full at the conference.

143
Weekly paclitaxel increases substance p receptor expression in the small intestine in a rat model of breast cancer treatment

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Introduction: The anti-microtubule drug, paclitaxel, has been associated with toxicities affecting neural, immune and gastrointestinal systems. A central role for the neurotransmitter, substance P, has been suggested as an underpinning mechanism. As such, this study investigated the effect of paclitaxel on the expression of neurotransmitter receptors and tissue damage in the small intestine using a rat model of weekly cancer treatment.
Methods: Male Wistar rats were treated with intraperitoneal paclitaxel once weekly for 4 weeks. Groups of rats were killed at the end of each week over 5 weeks. Observations were made daily for diarrhoea and weight changes. Frozen sections of jejunum were assessed for mRNA expression of substance P and serotonin receptors (NK-1R and 5HT3A, respectively), and paraffin-embedded sections underwent immunohistochemistry for detection of receptor protein. In addition, measures of small intestinal injury were conducted.
Results: Moderate diarrhoea was experienced in 20 % of paclitaxel-treated rats compared to 8 % of vehicle-treated rats, without significant affects on weight gain. No significant difference in small intestinal weight or jejunum morphometry was observed between groups. mRNA expression of NK-1R was increased over fivefold at week 5 following paclitaxel compared to the controls (P=0.027), without a consistent increase seen in protein expression. mRNA and protein expression of 5HT3A was not significantly different between groups.
Conclusions: Paclitaxel treatment is associated with increased NK-1R transcript in the rat jejunum. This study provides further evidence for a role of substance P signalling in the mechanism of paclitaxel-induced toxicities.

144

Tanshinone IIA could inhibit human hepatocellular carcinoma through ER stress in vivo and in vitro

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Objectives: DanShen (*Salviae miltiorrhizae* Radix) is a widely prescribed traditional herbal medicine for cardiovascular diseases and support treatment for cancer patients. Tanshinone IIA (Tan-IIA) is one of the diterpene quinones extracted from DanShen. Tan-IIA could inhibit many human cancer cells through different pathways. However, the molecular mechanisms for Tan-IIA to inhibit human hepatocellular carcinoma (HCC) are not clear.
Methods: In this study, the cytotoxicity of Tan-IIA in HCC was measured using the MTT assay. The ER stress-related protein expressions were evaluated by Western blotting. For in vivo study, J5 cells were implanted directly into SCID mice, and then mice with J5 cells xerograft tumours were treated with Tan-IIA (i.p.) every other day for 4 weeks. These mice were killed with CO_2 inhalation. Xerograft tumours were dissected and the total protein extracted for Western blot.
Results: These results showed that Tan-IIA could inhibit HCC cells time- and dose-dependently in vitro. Tan-IIA could inhibit the growth of hep-J5 cells xenograft tumour when compared with the control group. The ER stress-related protein expressions were upregulated when compared with the control group.
Conclusions: These findings indicate that Tan-IIA was one of the pure compounds from Dan Shen and could inhibit HCC through inducing ER stress in vivo and in vitro.

145

Cognitive assessment and its effects on rehabilitation functional outcomes in patients with brain tumors

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Objectives: The purpose of our investigation was to identify cognitive function using a computerized neuropsychological test and its effects on daily activity functional outcomes in patients with brain tumors.
Methods: From April 2008 to December 2009, 29 brain tumor patients (12 men and 17 women, average age=45.0±16.8 years) were enrolled. All patients were screened for their cognitive function using the Korean-Mini-Mental Status Exam (K-MMSE) and were assessed using a computerized neuropsychological test (CNT). The motricity index, K-MMSE, and K-MBI were performed at the beginning and at the end of admission. All patients underwent conventional rehabilitation therapy for 4 weeks; if the score of K-MMSE was <24 (defined as the cognitive dysfunction), cognitive training was performed.
Results: All variables in the computerized neuropsychiatric test in all patients with brain tumor show cognitive dysfunction compared with normal adults. All patients significantly improved after rehabilitation treatment for 4 weeks. The final K-MBI scores correlated significantly with the initial K-MBI, word block, backward visual span, and trail making test A (R^2=0.875, p<0.01).
Conclusion: We suggest that the objective evaluation of cognitive function and focused cognitive training, as well as conventional rehabilitation, should be performed in brain tumor patients.

146

Measurement of fatigue in children and adolescents with cancer

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Considering that cancer treatment is aggressive and healing-centered, adverse effects, such as fatigue, may be ignored by health professionals or considered unavoidable symptoms, which need to be borne for children and adolescents. Thus, many times, fatigue is underestimated by the lack of a well-established concept, the lack of adequate instruments for assessment and measurement of the symptom, insufficient report of distress by patients, and low priority by professionals. This study analyzed scientific production on the measurement of fatigue in children and adolescents with cancer, particularly the instruments used. This integrative review, searched in PubMed, PsycINFO, Web of Science, CINAHL, LILACS, SciELO, IBECS, and COCHRANE, without any time restriction, used key words and descriptors in different combinations. The review sample comprised 21 references. The results composed two categories: instrument development and validation and fatigue measurement. American nurses developed most studies, between 2002 and 2011, using two main scales. The studies assessed the children and adolescents' self-reports and the parents' reports. They also associated fatigue with sleep pattern, quality of life, depression, survival, and dexamethasone use. Few quantitative studies have addressed the theme in children and adolescents with cancer or examined the etiology of chemotherapy-associated fatigue, or, yet, the management of fatigue. The need to educate professionals, patients, and caregivers to identify and treat fatigue is observed. The importance of research on this theme is evidenced, including studies that apply these instruments in practice. The gap in knowledge production on this theme is highlighted in the Brazilian context.

147
Does gender influence QOL in patients with advanced cancer?

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Objective: The objective of this study was to examine the impact of gender on quality of life (QOL) and mood states in response to a QOL intervention.
Methods: The study includes secondary analyses of outcome data from a randomized, controlled clinical trial to compare the efficacy of a structured multidisciplinary QOL intervention to standard care for patients with newly diagnosed advanced cancer undergoing radiation therapy and their caregivers. Outcome measures included Functional Assessment of Cancer Therapy—General and Linear Analogue Self-assessment for QOL and Profile of Mood States for mood states at weeks 0 (baseline), 4, 8, and 27. Summary statistics were calculated for subscale and total scores and compared between genders using chi-square and Fisher's exact and Wilcoxon methodologies.
Results: There were 131 completers, with 45 women (mean age, 59.3±10.79 years) and 86 men (mean age, 59.3+11.03 years). Women at baseline had worse emotional well-being (74.6 vs. 83.3, $p<0.01$), tension/anxiety (77.0 vs. 83.8, $p=0.04$), depression/dejection (85.6 vs. 90.5, $p=0.04$), and mood disturbance (70.6 vs. 75.7, $p=0.045$) than men. Women and men in the intervention group did not differ in QOL and mood pre- and post-intervention. Women randomized to intervention demonstrated better scores than usual care at week 4 on physical well-being (73.1 vs. 50.5, $p<0.01$), total QOL (75.9 vs. 66.2, $p=0.02$), fatigue (52.6 vs. 37, $p=0.03$), confusion/bewilderment (80.5 vs. 71.0, $p=0.02$), fatigue/inertia (66.1 vs. 47.3, $p=0.01$), and mood disturbance (73.3 vs. 66.0, $p=0.01$).
Conclusions: Our study demonstrated no gender-based differences in response to a QOL intervention. Both genders demonstrated clear benefits from the intervention.

148
Use of parenteral nutrition (PN) in cancer patients

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Objective: The use of parenteral nutrition (PN) in advanced cancer patients has sparked multiple discussions around the appropriateness of its use. The decision-making process and the treatment plan with respect to PN are often difficult and influenced by individual situations, education, as well as cultural and ethical issues. No official guidelines exist in the literature outlining the appropriate use of PN in this population.
Design and methods: Due to challenges encountered by health care providers around the use of PN, a PN working group was established at the British Columbia Cancer Agency consisting of physicians, clinical dietitian, clinical pharmacist, clinical nurse leader, social worker, and advanced practice nurses. The purpose of the PN working group was to develop a tool that would be useful in guiding health care providers with clinical decision making regarding the initiation, continuation, and discontinuation of PN for advanced cancer patients.
Result and conclusion: Supportive Care Guidelines were developed for the use of PN in cancer patients identifying three indications for when PN may be considered. The indications included: PN as support for acute toxicity; PN as a bridging modality; and PN as support for advanced cancer patient not receiving further active treatment, who would be candidates for home PN. To further assist with the decision-making process, an algorithm and a patient information handout were also developed.

149
Fatigue as a cause of sexual problems in breast cancer patients

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Unfortunately, the experience of breast cancer (BC) surgery may be stressful, and adjuvant therapy may considerably affect quality of life (QoL). Chemotherapy (CT) may cause early menopause, increasing fatigue, which eventually impacts on women's QoL. This study examined the impact of fatigue on the sexual life of patients.
Methods: Women spontaneously spoke to us about their sexual life. We collected socio-demographic, marital status, satisfaction with sex, symptoms and methods to communicate them, types of surgery, timing of communication, and pre-diagnosis of sexual problems.
Results: In 122 sexually active women (46 % of all BC patients), sexual problems were experienced at baseline without pre-diagnosis. Sixty-eight percent were in a stable relationship. All were younger than 68. Most participants were premenopausal. Sexual problems were greater immediately after surgery (mainly after mastectomy as compared with conservative surgery, $p<0.01$) and also within 6 months after CT. Multiple symptoms such as vaginal dryness, itching, or discharge, or painful sexual relations were determined. However, most complained about a lower perceived need for sex because they felt tired. This symptom gradually increased during CT. After finishing CT, symptoms got better over time, but were still relevant 8 months after surgery. Most of these women discussed sex with doctors because they were worried about their partners' sexual lives.
Conclusions: Surgery and CT caused fatigue and, subsequently, loss of sexual interest, with a very high incidence. We have to send these women to the psychologist as he/she can help these women improve their sexual interest.

152
The influence of Chinese cultural beliefs on the self-care strategies of patients during cancer treatment in Hong Kong: an exploratory study

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Background: In Hong Kong, Western medicine is dominant, but under the Chinese cultural influence, cancer patients also practice various cultural-specific self-care strategies in the hope of improving health and well-being.
Aim: This study aims to explore how Chinese cultural beliefs influence the practice and perception of self-care strategies of cancer patients during their course of treatment.
Method: Semi-structured interviews were conducted with 31 patients who were receiving either chemotherapy or radiotherapy. The interviews were analysed by means of qualitative content analysis.
Results: A range of self-care strategies had been used by cancer patients, such as Tai-Chi, cupping, herbal remedies and dietary modification. Two themes emerged from the patients' accounts on their

self-care strategies: the perceived effects and limitations. The perceived effects of these strategies were mainly on the basis of traditional beliefs, which include strengthening the 'origin', removing toxins and alleviating the side effects of cancer treatment. The perceived limitations of these strategies were: lacking scientific evidence and quality assurance mechanism, causing unpleasant experience, slow effects and unknown interaction with Western medicine.
Conclusion: Chinese traditional beliefs on the concept of health were deeply rooted, and cancer patients often use self-care strategies on this basis as adjuncts to Western medicine. The findings showed that they believed these strategies as being helpful to regain health and resist further health decline resulting from cancer and its treatment by achieving a state of equilibrium. Paradoxically, their beliefs were also challenged by the trend of evidence-based medicine and the prolonged time needed for outcomes.

153
Attention restoration and its potential use in fatigue management

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Objective: Fatigue is a common and distressing symptom of long-term illnesses and cancer. Attention restoration (AR) is proposed as a novel approach to fatigue management to restore mental attention within the 'person–environment interaction'.
Aims: The aims of this study were to identify activities enjoyed by fatigue sufferers and to determine core attributes of activities that could be used to restore mental attention.
Methods: A consecutive sample of 25 people suffering from fatigue as a result of a long-term illness or cancer was selected with the help of contacts within a hospice, podiatry clinic and service user group. Semi-structured interviews lasting no more 45 min were conducted using an interview guide, where the emphasis was on describing and exploring activities that were enjoyable to the person rather than on the limitations of living with fatigue.
Results: Seven categories of activities were identified: artistic pursuits, games, contributing to community, physical leisure, home leisure, going out and developing interests, alongside linked attributes of safety, social interaction, achievement and novelty. Further analysis established five thematic aspects that highlighted the importance of promoting expansive, nurturing, social and purposefully directed activities to persons who struggle with fatigue. The varied range of activities corresponded to diverse individual characteristics, as was expected. Potential implications regarding AR, the cultural context, policy and practice will be considered in the presentation.
Conclusion: The AR approach may be relevant to fatigue management through encouraging fatigue sufferers to engage in specific types of 'attention-restoring activities'. Further research is required to explore and test practice-based interventions.

154
A study of outpatient antipsychotic prescribing patterns and determinants of resource utilization at a cancer center

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Objective: This study was designed to assess the usage prevalence, prescribing patterns, exposure determinants, and resource utilization between the typical and atypical classes of antipsychotics at a comprehensive cancer center in the years 2002 and 2007.
Methods: Demographic characteristics, diagnosis, comorbidities, prescribing physician and service, type and number of antipsychotic prescriptions, and resource utilization data were collected. Pearson's chi-square and unpaired *t* tests analyzed the differences between demographic characteristics, prescription patterns, and resource utilization. Mantel–Haenszel stratified analysis was used to evaluate the effect of sex and ethnicity on usage patterns. Logistic regression was conducted to identify predictors of the antipsychotic type prescribed and the amount and type of resource used. Values of $p<0.05$ were considered significant.
Results: The study sample consisted of 287 patients for 2002 and 445 for 2007. Significant differences in sex and ethnicity were found in the prescribing and usage patterns of antipsychotics, with women seeing a psychiatrist more often than men ($p<0.0001$) and receiving more atypical agents than men ($p<0.0001$). In terms of resource utilization, females and non-Caucasians had significantly more emergency room visits ($p=0.04$ and $p=0.024$, respectively). The utilization of an atypical antipsychotic agent was significantly associated with seeing a psychiatrist, higher number of clinic visits, more prescriptions, and psychiatric diagnoses (depression, anxiety, and psychosis).
Conclusion: This study identified patterns of antipsychotic prescribing in cancer patients and areas where meaningful associations exist worthy of further investigation.

156
"DORINTA"—the support group for breast cancer patients

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Objective:

- To help breast cancer patients regain a normal life
- Patient education for developing a positive thought
- To support patients to find themselves motivations for struggle with cancer
- To realize a multidisciplinary professional group to collaborate with support group in view of surpassing the emotional impact caused by the diagnosis and treatments

Methods: The group organizes weekly meetings, with the following activities:

- Meetings with doctors for discussions about various aspects related to cancer disease: oncology new and old treatments, nutrition, immunity
- Individual or group psychotherapy
- Psychological relaxation program
- Physical exercises program
- Writing, designing, and distribution of informative materials for cancer patients
- Profession therapies: painting, clay modeling, greetings card designing

Results: Since 2007, a number of 200 patients have benefited from the activities of the "DORINTA" support group. Four exhibitions where organized, with the paintings and pottery handmade by the members of the group. Tests of anxiety, depression, and quality of life questionnaire where completed regularly by the patients. All tests showed a progressive decrease of anxiety and depression and

improvement of the quality of life with every month of participation in the group's activities.
Conclusions: The activities and the social program offered to patients in the "DORINTA" support group are very helpful for breast cancer patients. The word "dorinta" means, in Romanian language, "wish." The name of this group expresses the hope for a normal life.

157
Mechanism-based classification and physical therapy management of persons with cancer pain—a prospective case series

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Objectives: This study aimed to evaluate the efficacy of mechanism-based classification (MBC)-based physical therapy (PT) in persons with primary complaints of cancer pain.
Methods: A prospective case series of 24 adults (18 women, 6 men), age 47.5±10.6 years and cancer as a primary diagnosis, with chief complaints of chronic disabling pain (on prescribed analgesic therapy), upon their consent for participation, were evaluated and classified based upon the five predominant mechanisms for pain (cognitive-affective (CA), central sensitization (CS), sympathetically maintained pain (SMP), peripheral sensitization (PS), nociceptive (N)). Physical therapy interventions were given based on the identified mechanisms (CA—cognitive-behavioural therapy; CS—pain education, graded motor imagery and mirror therapy; SMP—sympathetic slump, thoracic spine mobilization; PS—neurodynamic mobilization; N—soft tissue massage and aerobic exercises), and home programs were prescribed with a patient log to ensure compliance. The outcome measures of the pain severity and pain interference subscales of Brief Pain Inventory—Cancer Pain (BPI-CP) and the European Organization for Research and Treatment in Cancer—Quality of Life Questionnaire (EORTC-QLQ-C30) were taken pre- and post-3 months.
Results: There was a statistically significant ($p<0.05$) reduction in pain severity (13.12±3.18), pain interference (22±5.37), and total BPI-CP scores (35.12±7.47). There were statistically significant ($p<0.05$) improvements in global health/quality of life score (25.5±5.37), functioning score (106.38±19.6), and symptoms score (117.75±13.72) of EORTC-QLQ-C30.
Conclusion: MBC-based PT provided an effective supportive care treatment for people with cancer pain.

158
Assessment of body composition amongst cancer patients undergoing stem cell transplantation: comparison between bioimpedance analysis and air displacement plethysmography

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In patients with cancer, changes in body composition can impact patient outcomes, including nutritional status. Reference methods such as dual-energy X-ray absorptiometry, hydrostatic weighing, or air displacement plethysmography (ADP) can be costly or impractical for routine assessments in the clinical setting, and as such, alternative techniques such as bioimpedance analysis (BIA) are increasingly being used in clinical practice.
Objective: The objective was to compare fat-free mass (FFM) assessed by the BIA and ADP methods.
Methods: Fifty-two patients with haematological cancer scheduled for stem cell transplantation (SCT; 57.7 % male; mean age, 58.6±10.4 years). Body composition was assessed with whole-body BIA (WB-BIA; ImpSFB7; Impedimed, Brisbane, Australia), foot-to-foot BIA (FF-BIA; TBF-300A, Tanita Inc, Tokyo, Japan), and ADP (BOD POD; COSMED, Concord, CA, USA) up to 2 weeks before admission. Agreement was assessed by the Bland–Altman approach using ADP as the reference method.
Results: The mean FFM assessed by WB-BIA and FF-BIA were significantly higher (bias=6.0 and 6.4 kg, respectively) compared to the ADP-measured value. At an individual level, the limits of agreement were wide (±9.6 and ±7.8 kg, respectively). Differences were clinically and statistically significant.
Conclusion: Agreement of the WB-BIA and FF-BIA methods with ADP was poor at the group and individual levels. ADP and BIA should not be used interchangeably to assess cancer patients undergoing SCT.

159
Impact of oral mucositis on clinical outcomes in pediatric and adolescent patients undergoing chemotherapy

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Aims: The purpose of this multicentre observational cohort study was to describe the clinical outcomes of mucositis.
Methods: A total of 140 patients who were 6–18 years of age treated with chemotherapy completed the Oral Mucositis Daily Questionnaire (OMDQ) for 14 days. Clinical data were collected from patients' medical records during the first 14 days after starting chemotherapy.
Results: Forty-one percent developed mucositis; of these, 23 % ($n=32$) and 18 % ($n=25$) reported a maximum OMDQ score of 2 (mild mucositis) and 3–4 (severe mucositis) as the worst mucositis, respectively. About 21 % (12 out of 57) of the patients with mucositis had weight loss ≥2 kg. The mean weight loss was 1.64±0.5 kg for patients with severe mucositis, which was significantly higher than those without (0.63±1.4 kg) and those with mild mucositis (1.30±0.9 kg, $p=0.002$). Also, for patients with mucositis, fluid replacement (67 vs. 36 %, $p<0.001$), analgesic (72 vs. 2 %, $p<0.001$), and antibiotics (72 vs. 65 %, $p>0.05$) were more commonly used than in patients without mucositis. Nevertheless, nausea/vomiting and neutropenia would be the cofactors in fluid replacement and antibiotic administration. Fever occurred in 72 % of patients with severe mucositis in comparison with 25 % of those without and 28 % of those with mild mucositis ($p<0.001$). No difference was observed for oral or systemic infections among the subgroups. None of the patients had dose modification, dose delay, or hospitalization due to mucositis.
Conclusion: The consequences that mucositis exerts had negative effects on clinical outcomes.

160
Thyrotropin-releasing hormone (TRH) as a treatment for cancer-related fatigue: impact on sleep, quality of life, and immune function

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Purpose: Cancer-related fatigue (CF) is a multifactorial phenomenon with negative impact on sleep and quality of life. CF is associated with

immune dysfunction. Very little evidence exists on the pharmacological interventions for CF. The efficacy and safety of thyrotropin-releasing hormone (TRH) as a treatment for CF was established in a randomized, placebo-controlled, crossover study. The present report delineates the impact of TRH intervention on sleep disturbances, quality of life, and inflammation in patients with CF.
Methods: Patients with cancer experiencing clinically significant fatigue were treated with intravenous TRH or saline (placebo) in weekly sessions. Each patient received two TRH (0.5- and 1.5-mg doses) and two saline treatment sessions in random order. CF measures included the visual analog scale for energy (VAS-E) and the profile of mood states (POMS). The secondary outcome measures (weekly) included the Leeds Sleep Questionnaire (LSEQ), quality of life assessment using the Functional Assessment of Chronic Illness Therapy—Fatigue (FACIT-F) Scale and serum C-reactive protein (CRP) as a marker of inflammation.
Results: A total of eight patients completed the study. Significant improvements ($p<0.05$) in fatigue level and sleep disturbances were seen as measured by the VAS-E, the fatigue/vigor subscales of the POMS, and the LSEQ. The FACIT-F subscales that showed improvements included emotional well-being ($p=0.055$), functional well-being ($p=0.073$), and physical well-being ($p=0.062$). Improvement in the fatigue level with TRH administration correlated with a decrease in serum CRP levels.
Conclusions: TRH administration was efficacious for the treatment of CF, with a positive impact on quality of life, sleep, and immune function.

162
Intraoral color Doppler sonography of buccal mucosa cancer: noninvasive diagnostic and prognostic indicator of primary lesion

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Objective: The present aim of the study was to investigate intraoral color Doppler sonography used in conjunction with clinical diagnosis of oral malignancy patients and to compare blood flow signals in malignant buccal masses and normal buccal mucosa by assessing the spectral waveforms obtained during color Doppler sonography.
Methods: Twenty-three patients with buccal mucosa cancer and 23 age- and sex-matched controls were selected for normal buccal mucosa; both were evaluated with color Doppler sonography. Spectral wave analysis of blood flow (specifically, the Doppler variables of pulsatility index, resistive index, systolic/diastolic ratio, i.e., S/D ratio) was used to determine the distal impedance of vessels in malignant and normal buccal tissues. Correlation between Doppler variables with T size was done. The results were subjected to statistical analysis.
Results: All buccal mucosa cancer with detectable flow signals had relatively low impedance flows, unlike the normal mucosa which usually has relatively high impedance flows. For buccal mucosa cancer, the pulsatility index was 1.06±0.41, the resistive index was 0.67±0.15, and the S/D ratio was 3.55±1.65, whereas for normal patients the pulsatility index was 3.36±0.51, the resistive index was 0.79±0.10, and the S/D ratio was 6.65±3.20. All three variables were significantly different ($p<.001$) between cancer and normal patients. Color Doppler variables for T size were compared; no significant correlation was found.
Conclusion: We conclude that color Doppler sonography is very useful for showing vascularity in oral malignancy, and low impedance Doppler flow signal is associated with malignant tumor of oral cavity.

163
The exploration of the related factors in chronic obstructive pulmonary disease patients accepted the hospice care

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Background and aims: This article aims to analyze chronic obstructive pulmonary disease (COPD) patients on their knowledge, attitude, and acceptance with hospice care.
Material and methods: There are 160 patients selected from a medical teaching hospital in Taiwan who have a confirmed diagnosis of COPD. We used questionnaires that included knowledge, attitude, and acceptance scale about hospice care. The analysis methods include independent samples *t* test, one-way ANOVA, Pearson product-moment correlation, and logistic regression.
Results:

1. The average score in knowledge of hospice care is 13.06±3.29 (total, 21). The average score in the attitude of hospice care is 34.29±5.56 (total, 45). The average score in acceptance of hospice care is 23.53±6.36 (total, 35).
2. The relationship among knowledge, attitude, and acceptance is statistically significantly positive.
3. Patients with higher knowledge of hospice care have 4.5 times possibility to accept hospice care than those with lower scores. Patients with higher attitude of hospice care have a 3.3 times possibility to accept hospice care than those with lower scores.

Patients with higher acceptance of hospice care have 15.9 times possibility to accept hospice care than those with lower acceptance.
Conclusions: We expect to determine the relevant factors of COPD patients accepting hospice care so as to assist patients in achieving comfort and attaining humane care in the early stage of the disease, to escalate the quality of the end of life, and to provide psychological and spiritual care.

164
The barriers of accepting hospice care in hospital staffs

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Background and aims: The purpose of this study was to investigate hospice knowledge and barriers of hospice care in a medium hospital in Taiwan. A structural questionnaire survey was conducted between October and November 2011.
Material and methods: A total of 277 valid questionnaires were received from doctors and nurses (doctors=22.4 %, nurses=77.6 %). The questionnaire includes basic profile, hospice knowledge, and hospice care barriers. The data were analyzed through descriptive statistics and Pearson's correlation.
Results: The important results are as follows: The most prevalent barriers of hospice in patients and families were “Family decisions without consensus” ($M=3.74$), “Too busy, no time to hear patients' needs” ($M=3.69$),” and “Treatment of patients with mood is a major challenge” ($M=3.60$). For patients with a consent form for “do not resuscitate (DNR),” hospice knowledge was higher than those without ($p=0.08$).

Conclusions: These research results are expected to serve as references for medical staff, assist the families to allow the patients to accept hospice care, reduce the families' uncertainties, and get better suitable medical care for the patients.

165
Lidocaine patch as an effective short-term co-analgesic in cancer pain

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Background: Pain from tumors involving the chest wall or from scar tissue following mastectomy or thoracotomy is a common, difficult to manage cause of neuropathic and mixed pain.
Aim: The aim of the study was to evaluate the short-term efficacy and patient perception of lidocaine patch in patients with painful scar (PS) or thoracic wall tumor involvement (TWTI).
Material and method: This is an open-label, uncontrolled descriptive study. The study population included outpatients with uncontrolled pain from either PS or TWTI. Subjective pain symptoms, current medication (morphine oral equivalent daily dose, co-analgesics), and need of interventional anesthetic techniques (IAT) for pain control were assessed at baseline and follow-up. Patients were asked to record any local adverse effects and their perception of pain control after the treatment period.
Results: Twenty patients aged 32–79 years were included. The mean duration of treatment was 29.2 days. A clinically relevant and statistically significant (non-parametric tests) improvement in all pain parameters was observed. Opioid escalation from baseline to the follow-up assessment had no clinical relevance. Only three patients required IAT for pain control. Most patients (65 %) were very satisfied with the treatment, while 15 % reported no improvement in subjective pain. No systemic or local adverse events were reported.
Conclusions: The addition of lidocaine patch as a co-analgesic in patients with PS and TWTI provides clinically relevant pain relief and is safe and well tolerated.

167
Olanzapine versus metoclopramide for the treatment of breakthrough chemotherapy-induced nausea and vomiting (CINV) in patients receiving highly emetogenic chemotherapy

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Objective: Olanzapine (OLN) has been shown to be a safe and effective agent for the prevention of chemotherapy-induced nausea and vomiting (CINV). OLN may also be an effective rescue medication for patients who develop breakthrough CINV.
Methods: A double-blind, randomized, phase III trial was performed for the treatment of breakthrough CINV in chemotherapy-naive patients receiving highly emetogenic chemotherapy (HEC; cisplatin, $\geq$70 mg/m^2, or doxorubicin, $\geq$50 mg/m^2, and cyclophosphamide, $\geq$600 mg/m^2) comparing OLN to metoclopramide (METO). Patients who developed breakthrough emesis or nausea despite prophylactic dexamethasone (12 mg, i.v.), palonosetron (0.25 mg, i.v.), and fosaprepitant (150 mg, i.v.) pre-chemotherapy and dexamethasone (8 mg, p.o. daily, days 2–4) post-chemotherapy were randomized to receive OLN (10 mg orally daily for 3 days) or METO (10 mg orally TID for 3 days). Patients were then monitored for emesis and nausea for 72 h. Eighty patients (median age, 56 years, range 38–79 years; 43 women; ECOG PS, 0.1) consented to the protocol and all were evaluable.
Results: During the 72-h observation period, 30 of 42 (71 %) patients receiving OLN had no emesis compared to 12 of 38 (32 %) patients with no emesis for patients receiving METO ($p<0.01$). Patients without nausea (0, scale 0–10, M.D. Anderson Symptom Inventory) during the 72-h observation period were: OLN, 67 % (28 of 42); METO, 24 % (9 of 38, $p<0.01$). There were no grade 3 or 4 toxicities.
Conclusions: OLN was significantly better than METO in the control of breakthrough emesis and nausea in patients receiving HEC.

168
Pyothorax revealing an intra-thoracic textilome by transdiaphragmatique migration: a case study

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Introduction: Intra-thoracic textilomes by transdiaphragmatic migration are rare; their diagnosis and treatment are often difficult. Their diagnosis is suspected on surgical history and radiological data (CT). The only treatment is surgery.
Materials and methods: We report the case of a 54-year-old man, made 10 years ago for the hydatid cyst liver, who suffered a closed chest trauma 3 days before his hospitalization. The radiographic image showed a calcified liver with a right pleural effusion. The patient was drained to of pus to 2 L. Before the non-radio-improvement clinic, the patient was subjected to CT, objectifying the presence of an inclusion. The aim of this work was to present the clinical and radiological aspects of such a condition and discuss its medico-legal consequences.

169
L'actinomycose thoracique multiple chez l'immunocompétent

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Introduction: L′actinomycose est une affection bactérienne granulomateuse, suppurative, étendue et chronique provoquée par la bactérie anaérobique gram positif actinomyces israelii. La localisation thoracique est rare, elle peut simuler une pathologie néoplasique ou une tuberculose.
Cas clinique: Il s'agit d'un patient de 54ans sans antécédents pathologiques, qui s'est présenté avec deux tuméfactions pariétales basithoarciques droites, l'une antérieure et l'autre postérieure s'accompagnant d'une altération de l'état général. L'examen clinique ainsi que le bilan radiologique ont montré deux masses de la paroi thoracique et une atteinte parenchymateuse basale droite. L'examen anatomopathologique de la biopsie de la masse antérieure a montré des foyers d'actinomycose permettant d'établir le diagnostic d'actinomycose thoraco-pulmonaire. Un bilan immunologique s'est révélé normal. Le patient est alors mis sous traitement antibiotique à base d'amoxicilline protégée avec bonne évolution clinique et radiologique.

Conclusion: Le but de cette observation est de rappeler les aspects radio-clinique, histologiques, thérapeutiques et évolutifs ainsi que les difficultés diagnostiques de cette affection.

171
A model of integrative practice for patients with lung cancer

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Objective: A poor prognosis and poor quality of life of patients with lung cancer highlight the need for a comprehensive model of practice to guide care and treatment. The main objective was to describe a conceptual model of practice derived from principles of integrative oncology with important contributions from traditional Chinese Medicine and the discipline of nursing. In the model, the whole patient is conceived, treated and evaluated from a systems perspective. The model serves as a learning-, clinical-, and research-based context for developing clinical interventions with multiple targets to optimize the wellness of the patient before, during, and after medical treatment.
Method: The model is described in terms of its purpose, values, concepts, scientific evidence, clinical approaches, and evaluation strategies. These elements delineate the initial scope and practice orientation for evaluating the effectiveness of clinical interventions in terms of treatment efficacy, quality of life, symptom management, wellness, and the innate healing capabilities of lung cancer patients. Scientific evaluation is based on whole systems research using a mixed-methods approach. Current emphasis is on identifying patterns of interrelated targets and processes that may subsequently serve as the basis for developing effective clinical interventions.
Results: Evaluation is based on selected measures with known reliability and validity.
Conclusion: The key concepts of the model constitute an essential base of practice to which other related concepts, variables, and proposed relationships will follow as research findings elucidate our understanding of the complex interrelationships among the targets that influence the lived experience of patients.

172
Effect of aprepitant added to standard antiemetic regimen on delayed phase after highly emetogenic chemotherapy: a meta-analysis

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Objectives: We performed a meta-analysis of double-blind, randomized, placebo-controlled trials to investigate the effect of adding aprepitant to the standard antiemetic regimen on the delayed phase (within 24–120 h) of chemotherapy.
Methods: A PubMed Medline search using the MeSH terms "aprepitant" filtered by "clinical trial" yielded 73 articles. Outcome measures are defined as follows: total control=no vomiting, no rescue, nausea VAS<5 mm; complete protection=no vomiting, no rescue therapy, nausea VAS<25 mm; complete response=no vomiting, no rescue; no nausea=nausea VAS<5 mm; no significant nausea=nausea VAS< 25 mm. The Mantel–Haenszel method with a fixed or random effects model (depending on the between-study heterogeneity) was applied to calculate the risk ratio (RR) and risk difference (RD) with 95 % confidence interval (CI).
Results: Seven studies including 2,159 patients (1,081 aprepitant-based and 1,078 standard) were eligible.

Outcome or subgroup	Studies	*n*	Effect estimate, RR (CI)	Effect estimate, RD (CI)	Number needed to treat
Complete protection	4	1,459	1.31 (1.17–1.46)	0.11 (0.03–0.19)	9
Total control	4	1,459	1.17 (1.02–1.35)	0.05 (0.01–0.10)	20
Complete response	6	1,863	1.30 (1.21–1.40)	0.16 (0.12–0.21)	6
No vomiting	6	1,989	1.35 (1.26–1.45)	0.18 (0.11–0.24)	6
No rescue	6	1,989	1.08 (1.02–1.14)	0.05 (0.01–0.09)	20
No nausea	4	1,459	1.11 (0.97–1.27)	0.04 (−0.01 to 0.08)	Not significant
No significant nausea	5	1,943	1.11 (1.03–1.18)	0.06 (0.02–0.10)	17

Aprepitant-based versus standard regimen

Conclusions: During the delayed phase, aprepitant-based regimen seemed to reduce vomiting incidence significantly and, to a lesser extent, lessen nausea compared to the standard regimen.

173
Pleurodesis: a palliative treatment of malignant pleural effusions and the tendency of chest physicians and thoracic surgeons on pleurodesis

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Aim: Different sclerosing agents and techniques were used for pleurodesis which is applied as a treatment of malign pleural effusions; a clear consensus on this issue could not be achieved. In our country, a study related to physicians' approaches has not been done. The aim of the study was to determine the chest physicians' and thoracic surgeons' approaches from different clinics in our country.
Method: A web-based survey consisting of 17questions was delivered via e-mail groups of the Turkish Thoracic Society and Turkish Respiratory Society to 1,000 chest physicians and via e-mail groups of thoracic surgeons to 400 thoracic surgeons. Fifteen of 17 questions were prepared as multiple choice questions, and in seven questions, marking more than one option was allowed.
Results: A total of 126 physicians including 69 chest physicians and 56 thoracic surgeons answered the survey. One physician did not report the specialization. The total pleurodesis number of respondents in a year was 3,441 (mean=30.4±44.3, min=1, max=250), and the most commonly used agents were talc powder, bleomycin, tetracycline, and talc solution

(78.5, 30, 24.8, and 24 %, respectively). A 28- to 32-F chest tube was the most commonly (67.7 %) used tube for fluid drainage and pleurodesis, and a <16-F catheter was used by 52.4 % of the respondents. The utilization rate of the thoracoscopic method for pleurodesis was32.2 %. Of the respondents, 98.3 % were applying pleurodesis for the treatment of malignant pleural effusions other than mesothelioma; this rate was 57.5 % for mesothelioma. The average time in which 126 physicians evaluated the success of pleurodesis was 1.7±1.67 (min=1; max=12)months. The question of "which specialization should make the pleurodesis" was answered by 93.5 % of the respondents as thoracic surgeons and 63.4 % of the respondents as chest physicians.

Conclusion: It was determined that as well as all over the world, different trends of physicians on pleurodesis were present also in our country; the results of our study were found to be consistent with the literature in general.

174
Pain and quality of life in patients with cancer

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Pain is present in most patients with cancer, affecting survival and quality of life. The aim of this study was to characterize a sample of cancer patients interviewed and identify the risk factors of pain along the dimensions of quality of life. Data were collected from 42 patients undergoing cancer treatment in the Association Against Cancer of Central Brazil. Three questionnaires were used: a socio-demographic and clinical questionnaire developed by the authors, the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC-QLQ C 30), and the McGill Pain Questionnaire. Main results were that 73.8 % were male, 50 % had metastasis, and 42.85 % underwent surgery, 92.85 % chemotherapy, and 73 % radiotherapy. Pearson correlations between EORTC general health and the domains were all significant (except constipation), with $p<0.05$, the correlation with pain being $p<0.000$. Fatigue, pain, dyspnea, insomnia, diarrhea, and financial difficulties had a score above 60 % in the EORTC-QLQ-C30 questionnaire, which indicates a compromised quality of life. McGill questionnaire answers were: 14 % of patients had no pain complaints, 50 % of patients reported the evaluative descriptor, 19 % affective, 10 % sensory, and 7 % miscellaneous. The study allowed an adequate assessment of pain and quality of life. The authors' view is that an effective program to control pain in cancer patients should not be limited to pain relief with analgesia but should include factors such as understanding the mechanisms of pain and minimizing treatment side effects.

177
The effectiveness of the LPS Adsorber for LPS and cytokines elimination from the blood of patients with sepsis

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Objectives: Lipopolysaccharides (LPS) and cytokines are known to play a crucial role in sepsis development, so the elimination of these triggers and mediators from circulated blood seems to be the perspective approach to the treatment of patients with sepsis.

Methods: Seven surgical cancer patients with suspected Gram-negative sepsis were treated with the LPS Adsorber (Alteco, Sweden) in an open, uncontrolled pilot study. Serum procalcitonin, lactate, cytokines (IL-10, IL-8, IL-6, IL-1β, IL-4, and IL-17), LPS levels, vasopressor dose, hemodynamic parameters, and hospital survival were monitored before and after the treatment. LPS and cytokine levels were evaluated with LAL test and ELISA, respectively.

Results: In our study, a significant difference in the infusion rate of norepinephrine (38.0±3.4 vs. 10.2±5.2 μg/min, $p<0.01$) or dopamine (16±3.3 vs. 8±2.9 μg kg^{-1} min^{-1}, $p=0.014$) and mean arterial pressure (51±4.2 vs. 62±5.7 mmHg, $p=0.024$) was observed for treated and non-treated patients. Besides, a significant decrease of the serum LPS level (1.07±0.41 vs. 0.37±0.37 EU/ml, $p=0.001$) was shown after the procedure. Although there was no significant difference in the tested cytokine levels in plasma before and after hemoperfusion ($p>0.05$), our data demonstrated a tendency to a slight decrease in the concentration of some soluble inflammation mediators (IL-8, IL-10, IL-6, IL-17). Twenty-eight-day mortality among patients was 14 %.

Conclusions: We have shown that the LPS Adsorber could eliminate from the blood not only LPS but also some cytokines and demonstrated promising efficacy results, encouraging further studies.

178
The perspectives of application of modified charcoal for significant decrease of circulated microorganisms

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The purpose of this study was to evaluate the capacity of granular charcoal from Adsorba 300 (Gambro Co., Sweden) for the elimination of bacteria and unicellular fungi from physiological solution and animal blood.

The pore structure of the sorbent was characterized using a scanning electron microscope (SEM) and surface area using the BET technique. Pore size distribution was evaluated by the density functional theory method. The sorbent has been packed in miniature models of columns for perfusion, through which the suspensions of *Bacillus subtilis*, *Lactobacillus acidophilus*, and *Saccharomyces cerevisiae* in 0.9 % NaCl solution/healthy dogs' blood have been passed. Colony formation and the number of cells were evaluated after perfusion. The live yeast concentration was determined using 5 % Trypan Blue solution by light microscopy. The charcoal granules possess a large number of open pores, resulting in high specific surface area values (945 m^2/g). The sorbent has many micropores (half width=8.068±0.076%Å, volume=46.7 m^2/g), but according to the SEM, most pores are macropores (~100 nm). Perfusion through the columns depressed the colony formation of *B. subtilis* and *L. acidophilus* 90 and 91 % in physiological solution/97 and 98 % in blood, respectively. Also, the perfusion of *S. cerevisiae* suspension in physiological solution results in the reduction of the yeast amount and a decrease of the proportion of live cells in the remaining fraction as compared with intact controls (74 and 27 %, respectively).

The results indicate that charcoal is able to eliminate different microorganisms. So the device based on the matter can be effectively used for the treatment of patients with bacteremia and fungemia.

180
Hypofractionated frameless stereotactic intensity modulated radiotherapy with whole brain radiotherapy for the treatment of 1–3 brain metastases

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Aims: The aim of this study was to evaluate the efficacy and toxicity of hypofractionated frameless stereotactic radiotherapy (HSRT) with whole brain radiotherapy (WBRT) for the treatment of one to three brain metastases.
Materials and methods: Thirty-eight patients with a total of 58 brain metastases were treated with WBRT (10×3 Gy) followed by HSRT (5×6 Gy) using thermoplastic masks followed by cone beam computed tomography as a position verification system. Patients with RPA classes I (n=8) and II (n=30) were eligible for HSRT. Acute toxicity was scored with the RTOG toxicity criteria. The response rates were scored using the McDonald criteria. Overall survival (OS), brain-specific survival, and local and distant brain control were calculated using the Kaplan–Meier method. Patient (age, Karnofsky performance score (KPS)) and tumor characteristics (number of lesions, extracranial metastases, brain tumor volume, primary cancer status, RPA class) were tested in univariate analysis.
Results: Survival rates at 6 and 12 months were 65 and 35 %, respectively. On univariate analysis KPS<90, the number of lesions and uncontrolled primary cancer status were statistic significant predictors for poor OS. Four patients (11 %) developed a grade 3 toxicity. Rates of complete remission, partial remission, no change, and progressive disease were 30, 40, 23, and 5 %, respectively. Median survival was 7.6 months. The actuarial brain-specific survival was 97 % at 6 months and 91 % at 1 year of follow-up. The 1-year actuarial local and distant brain control rates were 66 and 75 %, respectively.
Conclusion: WBRT+HSRT is an effective treatment for patients with up to three brain metastases.

181
Consensus from a multidisciplinary expert board for oral candidiasis: diagnosis and management in adults

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Oral complications including mucositis and candidiasis may occur during and following cancer treatment and infectious or endocrinologic diseases. Oral candidiasis (OC) is relatively common and may cause pain, major difficulties in swallowing, and impact the patient's quality of life. The diagnosis and management of OC is often delayed. Our objective was to propound a multidisciplinary expert consensus to facilitate diagnosis and management through a medical card with practical hints.
Meetings with clinical experts (mycologist, oncologists, otorhinolaryngologist, haematologist, radiation oncologist) were organized in 2011/2012 to explore the best strategic ways for diagnosis and management. Main questions concerned risk factors, semiology, and complications. In a second time, we explored the therapeutic strategies for prevention and treatment.
Contributing factors for OC are defined, such as age, removal dental prosthesis, treatments, diseases, nutritional status, radiotherapy, and chemotherapy. Clinical factors are erythematous and inflammatory mucosa, tongue depapillation, pseudo-membraneous, and angular cheilitis. Symptoms are mainly oral dryness, metal taste, burning sensation, and dysphagia. Regarding primary prevention, basic oral hygiene, dental care, dietary advices, and reduction of favoring factors are compulsory to reduce the risk of OC.
Concerning therapeutic decision tree, we recommend as a first line maintaining bicarbonate mouthwashes and adding a local antifungal therapy with amphotericin B, miconazole, or nystatin. In case of negative results, experts recommend reassessing the therapeutic strategy and adapting it depending on the conclusion—misdiagnostic, mycologic, and antifungigram results or no compliance—risk factor, and lifestyle. In a second line, we recommend an absorbed oral azole: fluconazole, itraconazole, or posaconazole.

182
Management of toxicity of adjuvant high-dose interferon (IFN) alpha-2b in patients with melanoma

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Objective: IFN alpha-2b is the only adjuvant therapy to increase the survival rate in cutaneous melanoma patients after surgery. However, the treatment is associated with side effects and poor patient tolerance.
Methods: A prospective study to assess the toxicity of IFN alpha-2b in the adjuvant treatment of 64 patients, stages IIb-c and III, was performed. The scheduled dose was 20 MU/m^2, i.v., 5 days/week for 4 weeks induction, followed by 10 MU/m^2, s.c., three times a week for 48 weeks maintenance therapy.
Results: Before entering the study, patients were informed about the adverse effects and potential benefit from therapy. All patients showed some kind of toxicity. Flu-like syndrome was the most common at the beginning of therapy (82 % of all patients) while fatigue (66 %), weight loss (35 %), nausea (17 %), and alopecia (16 %) in the maintenance phase. Neuropsychiatric symptoms were less frequent (depression in 26 % and insomnia in 18 %) than those described in the literature. Patients were receiving concomitant supportive management: paracetamol before the administration of IFN, increased fluid intake, antidepressants if necessary, antiemetics, and advised on proper nutrition (high protein and vitamin supplement). While hematological toxicity could be successfully managed by colony-stimulating factors, liver function abnormalities seen in 56 % of patients were the main reasons for treatment discontinuation (32 %). IFN doses were changed in 38 %, usually during the induction period (70 %).
Conclusion: Successful management of adverse events of IFN alpha-2b therapy can ensure more patients to complete the planned therapy. Supportive care, including psychosocial support of family and the treating team, will keep more patients adherent to therapy.

183
The socioeconomic costs of back pain on working children of working patients with cancer of the cervix

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Objective: Back pain is a common reason of multiple doctor consultations in patients with cervical cancer. It affects all ages, but worse at the age of >50 years. The study explored the socioeconomic effects of back pain on the working children of working patients.
Method: Data are from working children whose parents presented with back pain with a primary diagnosis of cervical cancer. A questionnaire was sent to the children. This is a cross-sectional study.
Results: Though the parents were working, children had to chip in financially and assist their parents to access better care, which became even more frustrating when the pain was not controlled. Over 30 % of the participants reported absence from work at least 10 days in a working year to assist their parents to visit doctors, buy medication, attend non-pharmacological modalities, and do chores for their parents. Forty percent reported that in 1 year, >40 days were spent away from their families, reporting that the longer the duration of pain, the more the absence time. Adjustments of work load factors, at home and at work, and socioeconomic position standing showed

that pain was a relatively independent determinant of care burden. More than 75 % reported missing a social engagement in 1 year. The scenario was worse if there were other underlying conditions.
Conclusions: The burden of back pain with cancer of the cervix affects the whole family. It is important that excellent management coupled with counseling is practiced.

185
Role of paroxetine in the treatment anticipatory nausea and vomiting in cancer patients: multicentre experience

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Background: Nausea and vomiting are the most widely investigated acute side effects of chemotherapy. The nausea and vomiting that often accompany later treatments commence even prior to the chemotherapeutic agent being given, and this phenomenon has been defined as anticipatory nausea (AN) and vomiting. AN and vomiting is a learned response to one or more distinctive features of the chemotherapy clinic (conditioned stimuli) associated with the administration of emetogenic chemotherapy (unconditioned stimuli). Paroxetine is a potent selective serotonin reuptake inhibitor with indications for the treatment of depression.
Methods: From June 2009 to January 2011, 60 patients were included in the study. All patients were candidates for the execution of at least six cycles of chemotherapy and reported the occurrence of anticipatory nausea or vomiting after two cycles of chemotherapy. Response to treatment with paroxetine was assessed after each cycle of therapy.
Results: A total of 60 patients were included, with mean age of 70± 11 years. At inclusion, all patients were enrolled to take paroxetine drops 20 mg/day; patients who did not benefit by increasing the dose after each cycle take up to a maximum of paroxetine drops 60 mg/day. Eighty percent of patients reported the disappearance of anticipatory nausea or vomiting on the first reassessment (paroxetine drops, 20 mg/day), 10 % on the second reassessment (paroxetine drops, 40 mg/day), and 5 % on the third reassessment (paroxetine drops, 60 mg/day); 5 % are non-responders.
Conclusions: Paroxetine may be considered a drug of choice for the treatment of anticipatory nausea or vomiting in cancer patients.

186
Aprepitant in the prevention of acute and delayed chemotherapy-induced nausea and vomiting (CINV) in elderly patients with advanced ovarian cancer

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Background and aims: Platinum/taxane doublets have long been considered the standard treatment regimen for advanced-stage ovarian cancer. Common side effects seen with the use of these drugs include gastrointestinal symptoms, myelosuppression, and neurological toxicity. Nausea is a significant gastrointestinal adverse event because it results in a deterioration of patients' performance-status. What determines the need to stop treatment or to use lower drug dose is the intensity. Aprepitan, a neurokin-1 receptor antagonist, is a first-class agent approved for the prevention of acute and delayed chemotherapy-induced nausea and vomiting (CINV). The purpose of this study was to evaluate the efficacy of aprepitant in preventing nausea event and preserving the quality of life of patients and the continuation of chemotherapy.
Methods: From August 2009 to November 2010, 15 patients with advanced ovarian cancer were included in the study. Patients received paclitaxel 175 mg/m^2 over 3 h on day 1, followed by carboplatin (area under the curve=5) on day 1, combined with a standard regimen of dexamethasone and ondansetron and oral aprepitant (125 mg on day 1 then 80 mg once daily on days 2 and 3). Quality of life (QoL) questionnaires were completed at baseline by 100 % of the patients.
Results: All patients were evaluable for the primary endpoint. Toxicity was grade 1 nausea (40 %) and grade 1 vomiting (5 %). No patient reported a worsening of QoL to report the side effects of treatment.
Conclusions: Aprepitant has a significant role in the management of CINV as it allows the majority of patients to complete their chemotherapies without significant morbidity.

187
Low-molecular-weight heparin (bemiparin) in cancer patients followed up by palliative care

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Introduction: Thromboembolism is a frequent complication in cancer patients. The malignant cell produces substances with procoagulant activity. Prophylaxis of venous thrombosis is currently done with low-molecular-weight heparins (LMWH). Bemiparin sodium is the heparin with the lightest weight (3,600 Da) and the longest half-life (5.3 h). It also has an anti-Xa/IIa ratio of 8:1.
Objectives:

1. Check the tolerance of the bemiparin treatment
2. Determine the number of thromboembolic episodes
3. Quantify the bleeding development

Patients: The study included 30 patients with advanced tumors participating in a palliative care program and having a life expectancy >2 months. From the primary tumor locations, we remark: 12 digestive, 9 lung, and 9 gynecological and urological. Among the subjects included, 21 had received chemotherapy while 9 had not. The average age was 73.5 years. We excluded patients with previous episodes of thromboembolism, bleeding disorders, or active bleeding. They were given subcutaneous bemiparin 3,500 IU daily.
Results: During monitoring, only two patients had local bruising, and none of them developed deep vein thrombosis or bleeding.
Discussion: Studies in cancer patients with LMWH show a reduction in the rate of venous thromboembolism and the risk of bleeding as well as an improvement in the quality of life compared to treatment with oral anticoagulants.
Conclusion: Our study confirms the two main aspects of bemiparin: safety and antithrombotic efficacy in the field of palliative care.

189
Prevalence of colorectal cancer in relatives of Iranian patients diagnosed with colorectal cancer

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A high rate of colorectal cancer occurrence is established in individuals with a positive family history of this type of cancer.
Objectives: The aim of this study was to investigate the prevalence of colorectal cancer in first- and second-degree relatives of colorectal cancer patients.

Methods: Family medical histories of 489 first-degree relatives of colorectal cancer patients were obtained by a questionnaire. Two hundred forty-nine average-risk patients with no family history of colorectal cancer were included as controls.
Results: In our study, from a total of 489 case patients, 153 (31.3 %) had at least one close relative affected by colon cancer. Case–control analysis showed an odds ratio of 3.1 (95% CI=2.07–6.27) for one and 5.7 (95% CI=2.39–13.56) for two affected relatives. Cases with a positive family history had a 3.006 times greater risk in developing colorectal cancer if a first-degree relative was affected compared with a 4.9 times greater risk if a second-degree family member was diagnosed with colorectal cancer. Our study indicated a higher risk of developing colorectal cancer in male family relatives 50 years and older. The rectal area was found to be the most affected tumor site in the case and control patients.
Conclusion: First-degree relatives of patients with colorectal cancer had an increased risk of developing this type of cancer. The risk was greater when diagnosis was in male and elderly patients and when other first-degree relatives were affected.

190
A palliative rehabilitation program improves patient functioning

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Objectives: The Palliative Rehabilitation Program (PRP) offers physical, psychosocial, nutritional, and vocational rehabilitation for patients with advanced cancer. Palliative care aims to improve the quality of life of patients with life-threatening illness and their families by prevention and relief of suffering, according to the WHO. The current presentation will focus on the interdisciplinary benefits and discuss the results of the first participants undergoing this 8-week program.
Methods: Ninety-seven patients were referred to the program following anticancer therapies. Eligible patients followed an 8-week interdisciplinary rehabilitation program. Seventy-four patients were enrolled; 46 completed the program. Measures of physical, nutritional, social, and psychological functioning were taken prior to the beginning and at completion.
Results: Significant improvements were experienced in physical performance (p=0.000), nutrition (p=0.000), symptom severity (p=0.02 to p=0.001), symptom interference in functioning (p=0.001 to p=0.000), and fatigue (p=0.01 to p=0.000).
Conclusion: An interdisciplinary program focusing on physical rehabilitation and offering other professional areas of expertise can be of significant benefit to patients living with advanced cancer. Rehabilitation can offer relief from the majority of the symptoms assessed and symptom interference in daily functioning, physical functioning, and fatigue. This suggests that palliative rehabilitation is a model of early application of palliative care. Patients in palliative care can benefit from such an intervention, if applied before patients are too ill.

191
Caring for people at the end of life: how do cancer caregivers differ from other caregivers?

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Background: Cancer is one of the most common health conditions in receipt of informal caregiving.
Methods: From 2000 to 2007, questions about end of life were asked of 3,000+ respondents in an annual, face-to-face, cross-sectional, whole-of-population sampling survey in South Australia. We compared people who cared for someone with cancer until death with caregivers of people with other life-limiting illnesses.
Results: Four thousand six hundred sixty-five in 14,624 (31.9 %, 71.6 % participation) had someone close to them die from an "expected" death in the preceding 5 years. One in ten (1,504/14,624) provided hands-on (day-to-day or intermittent) care; the majority (79.5 %) cared for someone with cancer. Compared to non-cancer caregivers, cancer caregivers were significantly more likely to have cared for a younger person (mean age, 66 vs. 74 years, p<0.0001) and to have had a palliative care service involved in that care (64.9 vs. 39 %, p=0.000). Whilst not statistically significant, cancer caregivers were less likely to be the deceased's spouse (11.8 vs. 16.8 %); more likely to be of non-English-speaking background (11 vs. 7.5 %); more likely to report that the deceased was comfortable in the last 2 weeks of life (44.1 vs. 31.7 %); and prepared to care again (81.3 vs. 71.4 %).
Conclusions: Caring for someone with cancer at the end of life appears to be fundamentally different from other caregiver populations, particularly in relation to age of, and relationship to, the patient, which may contribute to their substantially greater utilisation of palliative care services. Being a younger caregiver increases the likelihood of caring again in the future.

194
A randomised, double-blind placebo controlled study to assess the efficacy and toxicity of subcutaneous ketamine in the management of cancer pain

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Background: The dissociative anaesthetic ketamine is widely used for cancer-related pain. A Cochrane review concluded that insufficient evidence was available to support its use in this setting.
Methods: This phase III, multi-site, double-blind, dose escalation, placebo, randomised controlled study aimed to determine whether ketamine, delivered subcutaneously over 3 to 5 days, is more effective than placebo when used in conjunction with adjuvant therapy in the management of chronic uncontrolled cancer pain. Ketamine would be considered to be of net benefit if it provided a reduction in average pain scores by ≥2/10 points from baseline, with limited breakthrough analgesia and acceptable toxicity.
Findings: For the 185 participants, there was no significant difference between the proportion of positive outcomes (0.04 (−0.10 to 0.18), p=0.55) in the placebo and intervention arms (response rates, 27 % (25/92) and 31 % (29/93)). Pain type (nociceptive versus neuropathic) was not a predictor of response. There was almost twice the incidence of adverse events worse than baseline in the ketamine group after day 1 (IRR=1.95 (1.46–2.61), p<0.001) and throughout the study. Those receiving ketamine were more likely to experience a more severe grade of adverse event/day (OR=1.09 (1.00–1.18), p=0.039). The number needed to treat for one additional patient to get a positive outcome from ketamine was 25 (6–∞). The number needed to harm because of toxicity-related withdrawal was 6 (4–13).
Interpretation: Ketamine does not have net clinical benefit when used as an adjunct to opioids and standard co-analgesics in cancer pain.

197
Colorectal stenting for the management of acute malignant bowel obstruction in advanced colorectal cancer in Iran

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Enteral stenting is used increasingly as a palliative treatment of gastrointestinal malignant or non-malignant obstructions. This aim of this study was to evaluate the role of endoscopic stent implantation for palliation of acute colorectal cancer obstruction in critical patients.
Methods: This study was performed prospectively with eight patients suffering clinical manifestations of acute bowel obstruction with severe comorbid diseases that caused them to be inoperable. They were treated by semi-elective stent insertion after primary resuscitation. Gentle dilation of stricture with balloon or buginage was performed under fluoroscopy and colonoscopy in gastrointestinal ward without complete preparation. Then, an uncovered self-expanding metal stent was inserted over the guide wire in the location of the tumor.
Results: Endoscopic stent implantation could be successfully performed in six patients. In the early days after stent insertion, the general condition of patients gradually improved, and symptoms of acute obstruction were relieved. In two of the cases, the stent was inserted with difficulty due to very tortuous and complex strictures. Complications of stenting in this study were very rare. Displacement of stent after successful insertion was not seen. Of the studied patients, two died after 2 months, one after 4 months, and three of them after 7–8 months. The cause of death in these patients was advanced metastatic lesions in the liver, lung, and bone and severe underlying disease such as heart failure.
Conclusion: Endoscopic stent implantation seems to be an effective and safe palliative approach for the management of emergency conditions of acute colonic obstruction in inoperable patients with advanced colorectal cancer.

199
Effect of honey on radiation induced mucositis and xerostomia for head and neck patients: a systematic review

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Objectives: The objective of this study was to evaluate the evidence regarding the effectiveness of honey in the management of xerostomia and oral mucositis in head and neck patients undergoing radiotherapy.
Method: Inclusion and exclusion criteria that were agreed by three reviewers and a keyword strategy were developed. The keywords "head and neck cancer," "radiotherapy," "oral mucositis," "xerostomia," "controlled trial," and "honey" were used in the Embase, Medline, CINAHL, Cochrane, and PubMed databases. The citations and reference lists of the selected articles were also screened for potentially relevant articles. The methodological quality of the selected controlled trials was assessed by the Jadad score.
Results: In total, five studies were included in the systematic review. In the literature, no study assessing the potential effect of honey on radiation-induced xerostomia was found. Three studies assessed the effect of honey against other products, including golden syrup, lignocaine, and saline. Two studies assessed the effect of honey against standard treatment regimes. Four studies demonstrated a significant reduction in the mucositis levels. One study reported that there was no statistical association with less severe mucositis. Honey was also positively related to body gain in two studies. Methodologically, the studies were good, however poor in relation to their sample sizes.
Conclusion: There is a need for studies in relation to the effect of honey in the management of radiation-induced xerostomia. Honey appears to be a simple, affordable, available, and cost-effective treatment for oral mucositis. However, further multicenter randomized trials are needed to validate these findings.

200
Transition between hospital and everyday life—impact of a nurse-led intervention to improve rehabilitation in lung cancer patients after surgery

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Objective: The objective of this study was to investigate the outcome of a nurse-led systematic rehabilitation interview based on individual rehabilitation needs performed before discharge. This was to prevent concerns in the hospital-to-home gap in the rehabilitation of lung cancer patients after surgery.
Method: The study uses a quasi-experimental design. One hundred fourteen patients (dropout, 14 %), 56 men and 58 women (age range, 45–92 years, mean=69) with operable non-small cell lung cancer admitted for surgery at Department of Thoracic Surgery, University Hospital of Copenhagen, participated. A comparison group was recruited from January to May 2011 and an intervention group from June to November 2011. Seventy-five percent were scheduled for video-assisted thoracoscopic surgery. The outcome variables were patients' assessment of information, rehabilitation, and practical support measured by a validated self-rating questionnaire. Statistics was calculated with SPSS version 19.
Results: Intervention resulted in significantly more patients offered physical rehabilitation ($p=0.001$), were aware of where to seek help after discharge ($p=0.000$), had knowledge about the impact of lifestyle on health ($p=0.027$), and experienced support to get back to everyday life ($p=0.013$). In addition, the intervention significantly increased the numbers of patients who received rehabilitation with regard to financial problems ($p=0.020$), work-related problems ($p=0.010$), and psychological assistance ($p=0.022$) related to their disease. Although there were significant improvements in the intervention group, the results also showed that 59 % of patients in the intervention group were not offered physical rehabilitation and 72 % were not offered psychological rehabilitation.
Conclusion: A systematic rehabilitation interview produces significant improvements in the management of rehabilitation needs in the transition between hospital and everyday life in lung cancer patients after surgery.

201
Associations between plasma concentrations of morphine and its metabolites, renal function and symptoms in cancer patients

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Aim: The aim was to analyse whether symptoms are associated with morphine plasma concentrations, metabolites (M3G and M6G) and renal function in cancer patients.

Methods: This investigation derives from a cross-sectional multicentre study (European Pharmacogenetic Opioid Study) conducted in 2005–2008. Inclusion criteria include: malignant disease, ≥18 years and regular scheduled opioid treatment (≥3 days). Five hundred seventy-eight patients had available data regarding creatinine and morphine metabolites. Morphine and metabolites serum concentrations were analysed by quartiles. Fatigue, nausea and vomiting, pain, appetite, constipation, memory and concentration difficulties were assessed by EORTC QLQ-C30 (cutoff, 66). Renal function was analysed using Cockcroft–Gault formula (cutoffs, <60 ml/min impaired renal function and <30 ml/min severe renal impairment). Multiple logistic regressions were adjusted for age, sex and other medications.
Results: Mean age was 61.9 years (SD=12.4) and 52 % were men. Patients with higher morphine plasma concentrations (≥41.72 nmol/l) had between 2.0 (95%CI=1.07–3.75) and 2.57 (95%CI=1.24–5.32) times higher odds of having constipation than patients with lower doses. The analyses also indicated that patients with mild or moderate/severe renal impairment were more likely to report loss of appetite (OR=1.45, 95%CI=0.93–2.27 and OR=2.33, 95%CI=1.31-4.16, p=0.0154) and constipation (OR=2.16, 95%CI=1.38–3.39 and OR=1.69, 95%CI=0.95-3.01, p=0.0034). Logistic regression with M3G showed similar results.
Conclusions: A higher plasma concentration of morphine was associated with a higher frequency of constipation, while renal impairment was associated with appetite loss and constipation.
Supported by European Palliative Care Research Collaborative and Norwegian Research Council.

202
Neuropsychological measurement in cancer patients: validation of trail making test

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Aims: The aim was to validate Trail Making Test B (TMTB) in Brazilian cancer patients in palliative care.
Methods: The study was developed in October 2010–February 2011. Two groups comprised 94 patients and 39 healthy controls. The inclusion criteria included: cancer, Karnofsky index≥40 %, age≥18 years, ≥6 years schooling, and stable medications for 4 days. Exclusion criteria included: brain tumor/metastases, Hg<6.0 mmol/l, creatinine>150 mmol/l, K<3.0 or >5.2 mmol/l and iCa>1.30 mmol/l, hepatic dysfunction, psychiatric diseases, communication/physical impairment, and misuse of drugs/alcohol. The exclusion criteria for controls were: cancer and diseases interfering with cognition. Reliability analysis included test–retest and internal consistency. Validity analysis included construct, discriminant, and concurrent. The results on TMTB were analyzed with regard to time to conclude the test and number of mistakes.
Results: Patient age=53.7 years (SD=8.0), schooling=10.0 years (SD=4.7), and controls age=46.9 years (SD=15.0), schooling=11.5 years (SD=5.3). TMT B discriminated patients from controls regarding time required to complete the test in the first (P=0.014) and second (P=0.035) assessments, indicating better performance for the healthy controls, but did not discriminate with regard to the number of mistakes. The test was stable in controls regarding time (P=0.071) and number of mistakes (P=0.352); for patients, the instrument was stable only regarding the number of mistakes (P=0.913). There were no significant correlations with fatigue, depression, anxiety, and rest. However, a negative correlation was observed between the number of mistakes and pain intensity on the second assessment (P=0.018).
Conclusions: TMT-B was able to discriminate between patients and controls, but it was not stable for patients and only a significant correlation with pain was observed.
Study was supported by CAPES and CNPQ (Brazil).

203
Education or enlistment? Revisiting patient involvement in care practices

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Objectives: This presentation raises critical social science questions about current efforts to involve people with cancer in care practices (including treatment decisions and the coordination of their own care).
Methods: The presentation reports on a mixed methods study in Ontario focused on equity in cancer care. Two sources of data were used—interviews with women diagnosed with breast cancer and patient-directed documents available at a cancer center. Qualitative data were analyzed with reference to Institutional Ethnography.
Results: Involvement no longer appears only as an opportunity for people with cancer but can also be a form of obligation. As well, the focus of patient involvement initiatives appears to be widening: from making informed treatment choices, patients are now also called to monitor (and intervene to ensure) the coordination, quality, and safety of their care. Patients who have abundant social and material resources are able to bring these to bear on the health care system; patients with fewer resources may be less able to enact "successful involvement."
Conclusions: Cancer patients' involvement in care decisions and processes is a cornerstone of oncology practice. Yet, current involvement initiatives do not always align well with patients' own priorities for their cancer care and can pose challenges to care equity. The presentation ends with reflections about how insights from this study can inform education in supportive care.

205
Pilot study of scrambler therapy for the treatment of chemotherapy-induced peripheral neuropathy

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Objectives: Chemotherapy-induced peripheral neuropathy (CIPN), a common dose-limiting side effect of chemotherapy, remains without known effective interventions. Preliminary data support that Scrambler therapy (ST), a device which treats pain via noninvasive cutaneous electrostimulation, is beneficial for the treatment of CIPN. This pilot trial was performed to further investigate the accuracy of this conclusion.

Methods: Eligible patients included those aged ≥18 years, with ECOG PS≤2, with CIPN symptoms of ≥1 month, and tingling or pain ≥4/10 during the prior week. Patients were treated with ST for up to ten daily 30-min sessions. Symptoms of neuropathy were monitored daily during therapy using a numerical analogue scale questionnaire.
Results: Eleven patients were enrolled between 18 July 2011 and 12 December 2011. The table portrays data at baseline, at the end of the ten planned days of therapy, and the percent changes from baseline to the end of treatment regarding patient-reported symptoms over the preceding 24 h. There were no adverse events. Persistent benefit out to 5 weeks was seen in some patients. Descriptive summary statistics formed the basis of data analysis.
Conclusions: ST appears to be beneficial in the treatment of CIPN. A prospective placebo-controlled clinical trial should be performed to confirm these preliminary findings.

Symptom	Mean baseline score (SD)		Mean final score (SD)		Percent change (SD)	
	Mean	Worst	Mean	Worst	Mean	Worst
Pain	5.7 (2.20)	6.0 (2.10)	3.0 (2.65)	3.8 (3.06)	−48 (2.65)	−36 (3.54)
Tingling	6.5 (1.81)	7.0 (1.84)	3.8 (2.82)	4.0 (2.65)	−41 (2.34)	−43 (1.95)
Numbness	6.5 (1.57)	7.2 (1.78)	5.1 (2.43)	5.2 (2.48)	−21 (1.75)	−28 (2.14)

Effect of Scrambler therapy on CIPN score

206
Turkish validity and reliability of PEDSQL Health Care Satisfaction Hematology/Oncology Module parents form

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Objective: This study was conducted to determine the validity and reliability in Turkey of the Pediatric Quality of Life Inventory (PedsQL) Health Care Satisfaction Hematology/Oncology Module for parents with children diagnosed with cancer.
Method: The research was conducted as a descriptive study in the hematology–oncology polyclinics of two university hospitals in Istanbul, Turkey, during the period 2007–2008. The data collection instruments were the PedsQL Health Care Satisfaction Hematology/Oncology Module and a socio-demographic questionnaire. The implementation of the study involved 210 parents at the hematology–oncology polyclinics of two university hospitals in Istanbul.
Results: Cronbach's alpha coefficients for the PedsQL Health Care Satisfaction Hematology/Oncology Module were found to be 0.974 in the total scale. The scale was found to be at a significantly high level of reliability ($0.60 \leq \pm\alpha < 0.80$; Table 1).
Conclusions: It was concluded at the end of the study that the PedsQL Health Care Satisfaction Hematology/Oncology Module was a valid and reliable tool for assessing the satisfaction of parents of Turkish children diagnosed with cancer.

Table 1. Cronbach's Alpha Coefficients for the PedsQL Health Care Satisfaction Hematology/Oncology Module

Sub-Scales of the Scale	Cronbach's Alpha Coefficient
General satisfaction	0,899
Information	0,960
Inclusion of family	0,946
Communication	0,927
Technical skills	0,944
Emotional needs	0,862
Total	**0,974**

Table 1

208
Chronic pain and health-related quality of life in Danish cancer patients and survivors

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Aim: The aim of this study was to examine health-related quality of life according to chronic pain and status of cancer disease in a national representative survey.
Methods: The survey (Danish Health Survey 2010) was based on random sample of 25,000 individuals (≥16 years). In all, 60.7 % completed a mailed or online questionnaire, which included items on, e.g., chronic pain (≥6 months), socio-demographics, self-rated health, and health-related quality of life (SF-12). The sample in the present study is restricted to individuals ≥50 years.
Results: Six thousand three hundred eighty subjects were analyzed, from which 159 had current cancer and 536 were cancer survivors. The prevalence of chronic pain was higher among current cancer patients (48.7 %) than among cancer survivors (41.5 %) and individuals with no cancer history (33.0 %). Current cancer patients also had worse scores on SF-12 and self-rated health; however, there were no differences between cancer survivors and persons with no cancer history when stratifying for chronic pain. Among persons reporting chronic pain, there was no difference in the proportion of persons who rated their health as excellent, very good, or good between cancer survivors (sex- and age-adjusted percentage, 63.2 %) and persons with no cancer history (58.9 %, $p=0.16$). Regarding self-rated health, there was no difference between current cancer patients without chronic pain (59.5 %) and individuals with chronic non-cancer pain (58.9 %, $p=0.30$).
Conclusion: Patients with cancer were more likely to have chronic pain, worse health-related quality of life, and self-rated health status. Nevertheless, survivors had equivalent quality of life and health compared to subjects without cancer history.
The study was supported by the Trygfonden.

209
Pain management of inpatients admitted to a comprehensive cancer center: a cross-sectional study

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Aim: This study aimed at investigating the association between pain intensity and analgesic treatment in a sample of inpatients admitted to departments of oncology and hematology.
Methods: This is a cross-sectional study. One hundred eighty-eight cancer inpatients were invited (May/June 2011). Patients were assessed in eight wards in two rounds of 5 days. No patient was included twice. Inclusion criterion: age≥18 years. Exclusion criteria: absence at assessments or not able to complete the questionnaire. Assessments: demographics, diagnoses, WHO performance status, Brief Pain Inventory, and analgesic treatment data. Patients were classified according to analgesic treatment in:

1. No analgesics
2. Opioids only
3. Opioids+adjuvant analgesics

Results: One hundred thirty-four patients were included, 59.7 % male, mean age=59.2 years (SD=13.5); the most frequent diagnoses were leukemia (27.6 %) and lung cancer (14.2 %). Eighty-eight patients (65.7 %) had pain in the last 24 h. Pain types were registered for 54 patients: 57.4 % nociceptive pain, 27.7 % neuropathic, and 14.8 % mixed. Average pain intensity was mild in 41.9 %, moderate in 18.5 %, and severe in 3.2 %. Breakthrough pain was reported in 36.3 %. Pain relief was reported as very poor (<20 % relief) in 38.5 %. The analgesics prescribed were opioids (24.6 %), paracetamol (27.6 %), and adjuvant analgesics (11.2 %). Patients using opioids+adjuvant analgesics had higher average pain ($p<0.001$) and breakthrough pain intensities ($p=0.0009$) than patients not using opioids. Pain relief did not differ between the groups.
Conclusions: At a comprehensive cancer center, approximately two thirds of inpatients reported pain and 36.3 % had breakthrough pain. Opioid-treated patients reported the highest pain intensity. Analgesic medication was underused.

210
Nutritional assessment and support of cancer inpatients in Saudi Arabia

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Objectives: There is lack of consensus on how nutritional assessment and intervention therapy should be provided to cancer patients. Nutritional assessment and support of cancer patients is not well established in the Middle East. We report our systematic and practical experience led by a qualified specialist dietician in a cancer inpatient setting in Saudi Arabia.
Methods: This is a retrospective review of 97 consecutive inpatient's records. Every patient underwent nutritional assessment and categorized into three nutritional risk groups based on oral intake, gastrointestinal symptoms, BMI, and weight loss. Nutritional support was introduced accordingly. Statistical tests used included ANOVA, post hoc test, and chi-square test.
Results: Ninety-seven patients with median age of 48 (19–87)years were categorized into three nutritional risk groups: low, 55 %; moderate, 37 %; and high, 8 %. Nutritional intervention was introduced for 36 % of these patients. Individually, weight, BMI, oral intake, serum albumin on admission, and weight loss over 3 months significantly affected nutritional risk and nutritional intervention. Of the patients, 87, 60, and 55 % admitted for chemotherapy, febrile neutropenia, and other reasons, respectively, did not require specific nutritional intervention. There was a statistically significant relationship between nutritional risk and nutritional intervention ($p=0.005$).
Conclusion: A third of cancer inpatients require nutritional intervention. The adopted nutritional risk assessment tool is simple and practical. The validity of this tool is confirmed by its significant relation with known individual nutritional risk factors. We recommend its adoption for initial screening. Patients in moderate- and high-risk groups can be referred to a specialist dietician.

211
Effectiveness of group therapy by cognitive behavior therapy (CBT) for decreasing psychology disorder on breast cancer patients and their physical health progress

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This study was done for "Evaluation of efficacy of group therapy by cognitive behavior therapy method (CBT) for decreasing psychology disorder on breast cancer patients and their physical health progress." The main goal of this study was to determine the efficacy of group therapy by CBT for decreasing anxiety and depression due to breast cancer and its effect on the physical health progress of these patients. The statistical society of this research comprised breast cancer patients between 30 and 50 years old who were under hormone therapy with Tamoxifen and referred to Tooba Clinic. There were 50 patients, 16 of whom had been selected randomly. Patients were divided into two groups: witness and pilot. Depression from mild to moderate was diagnosed using a questionnaire and clinical interview. Twelve sessions of CBT were done for the pilot group, and a test was given to both groups. According to the covariance analysis, the result shows that CBT will decrease the anxiety and depression of patients and will increase the progress of patients' physical health.

214
The development of a model for the provision of end-of-life care in remote locations

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The Bedouin population in Southern Israel consists of some 180,000 persons. Half of them live in small homesteads dispersed over a large area within a radius of 70 km. South of Beer Sheva is the main town in the area. In these locations, there is no running water, no electricity, and no paved roads or public transportation. Access to medical facilities is very difficult, and even more so for the terminally ill.
The Negev home palliative care unit was established some 18 years ago. It consists of a project of close cooperation between the Faculty of Medicine and local health care providers. The health care providers run a series of small local home palliative care units and a palliative care

consultation service at the tertiary teaching hospital. The university provides the training in palliative care for medical students and family medicine residents. In addition, there is close cooperation between the unit and "Sial," the research unit of the division for health in the community at the Faculty for the Health Sciences.
We wish to present a model we developed for providing high-quality palliative care to the underserved and underprivileged Bedouin community using a mobile four-wheel drive vehicle and a highly trained dedicated team of health care professionals. We have prepared an oral presentation including a short film.

215
Paying attention to the search for meaning in illness: what do we learn and why does it matter?

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Using an interpretative phenomenological approach and guided by the philosophy of Martin Heidegger and the works of Viktor Frankl, this study explored the search for meaning in the lives of people who had experiences of cancer. Although previous studies have explored aspects of the search for meaning in illness, this study attempted to focus closely on, and offer an in-depth exploration of, this searching activity and what it can teach us about the personal story of illness.
In this study, the searching process moved beyond reflection to one that engaged the whole person. It was a search that led each person in this study to question aspects of their taken-for-granted world, including the realisation and challenge of not being in control of parts of their lives and of attempting to cope with this reality. This search involved making sense of the personal experience of cancer, a reality that does not occur in isolation but is influenced by many other life issues, which also may be revisited in light of the illness. Each person tried to make sense of pain and loss, including the reality of feeling separated and alone. Amidst the activity of searching, many important relationships exist, which may offer support but may also cause distress.
Paying attention to this sense-making activity may help in directing the focus away from the idea of 'the patient' and by providing a useful account of what might be demanded if we take the idea of a 'person-centred care' seriously.

217
Identifying components of a track and trigger system that are effective in predicting outcome in oncology patients

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Objectives: Patients at risk of rapid deterioration and critical illness often have preceding changes in physiological parameters. Track and trigger systems, such as the Modified Early Warning Score (MEWS) used in the UK, have been demonstrated to have some utility in identifying these patients, particularly among general medical and surgical patients. However, the system's lack of specificity for individual conditions and their effectiveness for oncology patients have not been evaluated. We examined the efficacy of the MEWS system for oncology patients and aimed to identify the key physiological parameters predicting catastrophic deterioration in this population.
Methods: We performed a retrospective analysis at the largest oncology hospital in Europe. The data for 840 patients reviewed by the Outreach Team between April 2009 and January 2011 were analysed. The effectiveness of the MEWS in predicting critical care admission and 30-day mortality was assessed. Statistical analysis to identify the key physiological parameters in predicting these two outcomes was also performed.
Results: MEWS was statistically significant in predicting both outcome measures (CCU admission, $p=0.037$, and 30-day mortality, $p=0.004$). Respiratory rate ($p=0.0003/p=0.0001$) and temperature ($p=0.033/p<0.0001$) were the key physiological variables in predicting clinical deterioration. Blood pressure ($p=0.999/p=0.619$) and pulse rate ($p=0.446/p=0.051$) did not have statistical significance in predicting either outcome.
Conclusions: Track and trigger systems have some utility in identifying oncological patients at risk of deterioration. However, an adapted score more focused upon the key predictive physiological parameters in this population needs to be developed to produce a more effective tool.

218
Pressure monitoring of multilayer inelastic bandaging and effect of padding in breast cancer-related lymphedema patients

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Objective: The purpose of this study was to compare the resting and working pressures with and without padding using a pressure sensor and determine whether applying padding has an additional effect in volume reduction.
Methods: Forty-eight patients with breast cancer-related lymphedema starting complex physical therapy were included. In 24 patients, padding was added to the forearm for additional pressure. After applying a pressure measurement device, a short stretch bandage with or without padding was applied to the affected arm. The working pressure was measured while the patients squeeze a rubber device with a force of 50 Pa three times. The forearm limb volume was calculated from the circumference measurement, which was measured before and after 2 weeks of treatment.
Results: The resting pressure was 36.3±2.2 mmHg without padding and 49.5±3.2 mmHg with padding. The working pressure was 9.5±3.7 mmHg without padding and 24.3±9.1 mmHg with padding ($P<0.01$). The volume loss after treatment was significantly greater in the group with added padding ($P<0.01$).
Conclusions: The working pressure during exercise with a force of 50 Pa is about 10 mmHg with a short stretch bandage applied. Both resting and working pressures increase with the addition of padding to a focal area. Added padding to increase focal pressure appears to be effective in increasing volume reduction.

219
A randomized phase III clinical trial of a combined treatment with megestrol acetate+carnitine+celecoxib+antioxidants vs. megestrol acetate alone for patients with cancer cachexia syndrome

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Background: Cancer disease progression is characterized by symptoms including severe loss of lean body mass (LBM), fatigue, anorexia, nausea, and worsening of quality of life (QoL), which result in the "cancer–cachexia syndrome."
Patients and methods: A phase III randomized trial was performed to establish the most effective and safest treatment to improve the key symptoms of cachexia in advanced cancer patients, i.e., LBM, resting

energy expenditure (REE), fatigue, and QoL. In addition, changes in the main inflammatory (C-reactive protein (CRP), interleukin (IL)-6, tumor necrosis factor (TNF) alpha) and oxidative stress (reactive oxygen species (ROS) and glutathione peroxidase) markers, as well as the Glasgow Prognostic Score (GPS), were assessed. Two-hundred and seventeen advanced-stage cancer patients with tumors at different sites, including 104 gynecological cancers, were randomly assigned to receive either megestrol acetate (MA, 320 mg/day) plus L-carnitine (4 g/day), celecoxib (300 mg/day), and antioxidants (lipoic acid and carbocysteine, arm 1) or MA (320 mg/day) alone (arm 2). Treatment duration was 4 months.
Results: The combination arm was more effective than arm 2 for LBM, REE, fatigue, and QoL. As for the secondary efficacy endpoints, appetite increased and the GPS score decreased significantly in both arms. The inflammation (IL-6, TNF-α, CRP) and oxidative stress (ROS) markers decreased significantly in arm 1, while they did not change significantly in arm 2. Both treatments were found to be safe with no grade 3/4 adverse events.
Conclusions: The combined treatment showed superior efficacy than MA alone with comparable safety.

220
Effects of zoledronic acid on circulating biomarkers in advanced cancer patients with bone metastases

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Background: Zoledronic acid (ZA) is a highly effective treatment approach for cancer patients with bone metastases. Recent evidence shows that ZA may also have antineoplastic effects.
Patients and methods: The study was an observational retrospective phase IV study aiming to assess the ZA activity in preventing/reducing skeletal-related events (SREs) in cancer patients with bone metastases. The study also investigated the change of N-telopeptide of type I collagen (NTX) as a surrogate marker of efficacy as well as of inflammatory (IL-6, TNF-α, IL-8, and C-reactive protein (CRP)) and lipid metabolism (cholesterol and triglycerides) indices during ZA treatment. Changes in laboratory parameters were analyzed using a two-sided Student's t test for paired data. Data were considered significant for $p \leq 0.05$. Toxicity was assessed by NCI-CTC-V3.
Results: Thirty-three advanced cancer patients (M/F, 16:17; mean age, 68 years) with bone metastases were enrolled. They were treated with ZA 4 mg q4w with a mean of 42 administrations per patient. We observed six SREs (mean time to first SRE was 34±16.9 months). As for laboratory indices, IL-8 and CRP decreased significantly at months 6 and 12; TNF-α and triglycerides decreased at month 12. NTX and IL-6 showed a trend toward a decrease (not statistically significant). As for severe adverse events, one osteonecrosis of the jaw occurred.
Conclusions: Our study confirmed the ability of ZA to prevent SREs in cancer patients with bone metastases. The downregulation of IL-8, TNF-α, and CRP seems to suggest an anti-inflammatory mechanism of the action of ZA. These results warrant further prospective studies.

221
The effect of complementary therapies on parents' anxiety of children undergoing cancer treatment: a systematic review

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Objectives: The objective was to explore the effectiveness of complementary and alternative interventions in reducing stress in parents of children with cancer.
Methods: The inclusion and exclusion criteria were agreed by three reviewers and a keyword strategy was developed. A literature search was conducted via Medline, CINAHL, Cochrane, Embase, PubMed, and SCOPUS databases from 1990 to 2012. The search strategy employed the following search terms: stress, interventions, CAM, guided imagery/relaxation, and childhood cancer. An additional subset of articles was identified through the reference lists of retrieved articles and through related articles.
Results: The review yielded 200 citations; however only seven met the eligibility criteria. Two pilot trials studies in the stem cell transplant setting explored the effectiveness of various stress reduction techniques including relaxation with imagery, massage therapy, humor therapy, and emotional expression. These trials demonstrated conflicting results. Another pilot trial studied the benefits of massage on children and parental distress with no evidence to suggest any additional benefits to parents. No significant benefits of massage for mothers were found in a randomized trial, although mothers did use more stress management techniques. Two pilot studies on massage and yoga reported lowering of anxiety in parents and a decreased anxiety along with an increase in the sense of well-being, respectively. Similar findings were found in a trial of music therapy with children and their parents.
Conclusion: There are limited studies on the topic, and mixed results are reported by researchers. There is a need for randomized control trials designed to reduce distress and promote well-being specifically for parents.

222
The impact of total laryngectomy: the patient's perspective

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Introduction: Total laryngectomy is believed to be more emotionally traumatic than any other type of surgery because of the resultant psychological and functional impairment. A dearth of national and international nursing research has been published pertaining to the experiences of people who have undergone total laryngectomy.
Purpose: The aim was to describe the experiences of patients who have had a total laryngectomy from their perspective.
Design: Using a descriptive qualitative approach, ten total laryngectomy patients took part in semi-structured open-ended interviews during a period of 6 months, with an interview guide built on the framework of the literature review. The data were analysed with descriptive content analysis. Trustworthiness of the study was enhanced through the use of verbatim quotations, audible data analysis trail and a reflexive approach.
Results: Patients who have undergone total laryngectomy report difficulties and concerns that are mainly functional and psychological. The functional difficulties reported included descriptions of altered swallow, excess phlegm, speech difficulties, weak neck muscles and altered energy levels. The psychological concerns reported included descriptions of depression, regrets and personal resolve.
Conclusions: As a group, patients experience a broad range of problems well after completion of treatment, reinforcing the need for rehabilitation management for prolonged periods after surgery.

223
Hope Herth Index (HHI): a validation study in Italian patients with solid and haematological malignancies on active oncological therapies

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We validated the Hope Herth Index (HHI) questionnaire in the Italian population of patients with solid or haematological cancers during oncological active treatment. After the translation procedures, the psychometric properties of the Italian version of the HHI were evaluated in 266 patients with non-advanced cancer. Summative scores ranged from 12 to 48, with a higher score denoting greater hope. The test/retest reliability was assessed by means of the Linn concordance coefficient (2-week interval, 80 patients). Cronbach's alpha and explorative factorial analysis were performed for assessing construct validity. The concurrent validity was assessed through convergence and divergence with the following questionnaires administered along with the following instruments validated in Italian language: Patient Dignity Inventory, Purpose in Life (PIL), Seek of Noetic Goals (SONG), System Belief Inventory (SBI-15R), ESAS, HADS and FACIT-Sp. A total of 266 patients were enrolled. Cronbach's alpha was 0.845 for the total scale, suggesting adequate internal consistency of the scale as a whole. In the 2-week test–retest study with 80 cancer patients, a test–retest reliability of 0.638 (95%CI=0.512–0.763) was found. The largest convergences were found for spiritual well-being (FACIT-Sp) and for the presence of meaning in life (PIL). Inverse correlation was found with scores of anxiety and depression (HADS). Physical symptoms, religiousness and seek of noetic goals were only slightly correlated. The Italian version of the HHI is a valid and reliable assessment tool in cancer patients on active oncological treatments with either solid or haematological cancers.

224

Patient Dignity Inventory (PDI) questionnaire: the validation study in Italian patients with solid and haematological cancers on active oncological treatments

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In oncology, little is known about the dignity-related distress and the issues that influence the sense of dignity for patients. We validated the Patient Dignity Inventory (PDI) questionnaire in Italian patients on oncological active treatments.
After the translation procedures, the PDI was administered to 266 patients along with other questionnaires to assess the psychometric properties of the Italian version of PDI. Factor structure was tested by both explorative and confirmatory factor analyses. Concurrent validity was tested through convergent and divergent validity with validated questionnaires inquiring about physical and psychological symptoms and religiosity. The test/retest reliability was assessed through the concordance coefficient of Linn (2-week interval, 80 patients).
The explorative analysis suggested one factor only loading highly on all the 25 items (>0.45) and explaining 48 % of the variance; confirmative analysis and Cronbach's alpha (0.96) confirmed the adequacy of the one-factor model. In the 2-week test–retest study, a concordance coefficient of 0.73 (95%CI=0.64–0.83) was found. High correlations of problems with dignity were found with both physical and psychological symptoms (0.52 and 0.64 rho coefficients, respectively) and moderate inverse correlation with spiritual well-being (−0.40). The dignity construct, as measured by PDI, showed to be orthogonal to that of religiosity (−0.02).
The Italian version of the PDI is a valid and reliable tool to evaluate dignity-related distress in outpatients with either solid or haematological cancers, on active oncological treatments, in the non-advanced stage of the disease.

225

Patient-reported barriers to cancer pain control: effects of physical and psychosocial factors

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Introduction: Pain is one of the most common and devastating symptoms for cancer patients, and misunderstandings of patients can cause major obstacles in pain management.
Objectives: We evaluated factors relating to higher patient-reported barriers to cancer pain management using the Barriers Questionnaire II (BQ II).
Methods: Two hundred one patients with cancer pain from nine oncology clinics in university hospitals and a veterans' hospital in South Korea completed this survey. Patients completed the BQ II, Brief Pain Inventory—Korean, Korean Cancer Pain Assessment Tool, EORTC QLQ-C30, and Korean Beck Depression Inventory. The pain management index (PMI) was assessed.
Results: The median pain severity index (0–10) was 3.5, and the median percentage of pain improvement during the last 24 h was 70 %. One hundred fifty patients (75 %) received strong opioids. Adequate analgesia (positive PMI) was found in 83 %. Mean scores on the BQ II were from 1.54 to 2.77, with the harmful effects subscale the highest. In the multiple regression model, depression was an independent negative predictor for every subscale and total BQ II score ($P<0.001$). The number of physical symptoms was a positive predictor for the physiologic effects subscale. Current working status, history of smoking, morphine equivalent daily dose, and percentage of pain reduction during the last 24 h were significant predictors for the fatalism subscale.
Conclusion: Depression was the most predictive factor for high barrier scores in patients with cancer pain. Management of cancer pain should include screening for depression, and management of depression could reduce patient-reported barriers to pain management.

226

Physical and psychological symptom distress and quality of life in cancer patients

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Psychological and physical distress can emerge at any point along the continuum of care for cancer. Screening for psychiatric disorders does

not occur routinely, while physical symptoms may be unreported by patients.
Objectives: The objective was to examine the impact of psychological and physical symptom distress on quality of life (QoL) in cancer outpatients.
Methods: This is a cross-sectional survey. Cancer patients receiving chemotherapy were asked to complete the SF-36 and GHQ-12. Medical data were abstracted from clinical records. GHQ-12 global score for caseness have been established at 4. Symptoms was determined by the number of core symptoms endorsed at ≥1.
Results: One hundred twenty-three patients (71 women), aged 29–85 years, participated in the study. Thirty-four patients had breast cancer, 23 colon cancer, 23 lung cancer, 14 melanoma, and 29 other types of cancer. Sixty-three patients had metastases. Of the patients, 72 % were symptomatic (median of three symptoms experienced simultaneously); 32 % scored positive for psychiatric disorders. The worst physical and mental conditions (PCS<50 and MCS<50) were both predicted by the symptoms (OR=5.00 and 8.08, respectively) and changes in patients' health status (OR=2.34 and 3.21) after adjustment for potential confounders (gender, age, educational attainment, and length of disease), but not by psychiatric disorder.
Conclusions: It has been estimated that up to 70 % of cancer patients experience treatment-related symptoms. The need to manage side effects and to provide patients with more information about this aspect is evident. Given the new emphasis on QoL, we suggest that physicians should openly discuss therapy efficacy, prognosis, as well as the potential for adverse events with their patients.

227
Relationship between severity of cancer and disease controllability in patient perception and psychological distress

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Objectives: Risk perception and efficacy beliefs affect health behavior. The objective of this study was to measure patient-perceived cancer severity and curability, and their association with psychosocial variables.
Methods: A consecutive sample of cancer patients were assessed for socio-demographic and medical data, patient perception of cancer severity and curability, and quality of life. The main outcome measures were the depression and anxiety components of psychological distress as measured by HADS.
Results: Twenty percent of patients scored positive for depression and 32 % for anxiety. In the whole sample, 58 % perceived their disease as severe and 44 % as poorly curable. Seventy-one percent of non-metastatic patients considered their cancer as curable; 70 % of metastatic judged their disease as severe and 62 % as difficult to cure. Subjective and objective measures of severity and curability were found to be associated. Multivariate regression models show that to judge one's own disease as severe/difficult to cure, with respect to judging it as severe/easy to cure, is associated with depression (OR=6.93); it is also associated with anxiety (OR=23.44). No effects on quality of life were found.
Conclusions: Cancer diagnosis is regarded as a low-control situation. In our sample, a more severe cancer is not considered a threatening situation by all patients; it is the perception of curability that makes the situation more or less controllable. These findings suggest that the awareness of disease seriousness is increased among Italian cancer samples. Validated screening questionnaires, facilitating recognition of psychological problems, and easy tools to measure severity and curability are useful in identifying individuals who may benefit from professional treatment and should become part of the routine management of cancer patients.

228
Spiritual needs in cancer patients: the uniqueness of the experience

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Objectives: Spiritual awareness varies between individuals and in different phases of life. Spirituality enables us to search for meaning in life, and it affects and is affected by our physical state, feelings, thoughts, and relationships. The cancer experience provides a unique opportunity for the study of spirituality and its relation to psychological outcomes in the face of a "limit-experience."
Methods: A qualitative study was conducted using unstructured, in-depth interviews. Interviews were tape recorded and transcribed verbatim.
Results: Most patients found friends who understand their situation; some were afraid of what the future would bring. Patients refer to the spiritual resources they drew to cope with suffering. For example, they can describe themselves as very vulnerable and suffering persons and compare their experiences with the Way of the Cross to highlight the disruptive effects of chemotherapy, and presents themselves as very lucid persons who dialogues with Jesus, understanding the reasons for his suffering and therefore accepting it.
Conclusions: Analysis of spiritual views as expressed through women's reflections, narratives, and representations of cultural values and religious beliefs allowed an understanding of women's relationships with themselves, with others, and with a transcendent dimension. Spirituality can be expressed religiously, but women with cancer assign meaning by redefining their experiences within a broader perspective. A better understanding of the psychosocial needs of patients and getting insight into what it means to live with this condition will assist healthcare professionals to target interventions that are timely and effective in long-term care.

229
Breast cancer in women: the burden of disease in their children

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Background: Having cancer may result in intense physical, emotional, and social suffering. Parents coping with a cancer experience distress about the diagnosis, treatment, prognosis, and sense of guilt about the impact of the disease on their children. The aims of this study were to explore: (a) who communicated mother's diagnosis to the child; (b) features of the communication; and (c) unusual behaviors in children.
Methods: Forty-three women in treatment for breast cancer and with at least one child, aged 4–18 years, participated in this study. Patients were recruited and assessed for socio-demographic and medical data. Semi-structured interviews were used to explore the variables in study.
Results: Eighty-three percent of children know their mother's diagnosis. Sixty-six percent conveyed communication by parents. Information about the disease of the mother was clear and complete (24 %), gradual (17 %), without using the word "cancer" (15 %), and reassuring (15 %). Fifty-five percent of mothers reported unusual behaviors of their children. Fifty-three percent of children act hotly, 13 % demand

attention, 13 % regress to an early age, 13 % show low performance in school, and 7 % appeared isolated. Fear of loss is shown by 75 % and greater closeness, with respect to that before the diagnosis, by 25 %.
Conclusions: Cancer diagnosis and treatments in mothers impact children's emotion and behavior. These data complement the few existing data in Europe and highlight the need to improve family-centered care in cancer care units. Children may be included in specific psychoeducational programs.

230
Burden of care in caregivers of cancer patients

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Objectives: Changes in health care have shifted much of cancer care to the home. "Burden of care" is a complex construct that challenges a simple definition, and frequently, it is more defined by its impacts and consequences on caregivers. The aim of the study was to the assess characteristics, care tasks, and needs of informal caregivers of cancer patients.
Methods: One hundred fifty-two caregivers, aged 24–78 years (average age, 51 years, 60 % females), of cancer patients completed the FSQ, HADS, IES, and COPE. We combined this information with patient survey and chart abstraction data. All caregivers reported providing, unpaid, at least 50 % of patients' informal cancer care.
Results: Among caregivers, 75 % of males cared their spouse and 25 % their parent; 37 % of females cared their spouses, 36 % parents, 10 % sons, and 18 % brothers/sisters/others. Six percent of females retired definitively from work to assist the patient. High scores in FSQ—satisfaction for family relationships and FSQ—(need of information about cancer and low scores in FSQ—death thoughts are reported. FSQ—emotional burden and FSQ—restricted social relationship are the areas more compromised for women. Seventy percent of women and 51 % of men resulted positive when screened for mood disorders, and 14 and 5 % for PTSD. Women, with respect to men, use more emotional-oriented coping strategies. The factors independently associated with mood disorders included high scores in PTSD, restricted social relationship, and low self-care of the caregiver; reinterpretation coping strategy decreased this risk.
Conclusions: Caregivers reported anxiety disorders more frequently than patients. These results highlight the need to develop family intervention strategies to minimize the disease's impact on caregivers' physical and mental health.

232
Off-label prescribing in palliative care—a cross-sectional national survey of Australian palliative medicine doctors

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Introduction: Regulatory bodies such as the Food and Drug Administration (USA) register specific medications (formulation and strength) in specific doses (range, frequency, and duration) for specific indications (population and disease). Once registered, medications may be prescribed at clinician's discretion. Off-label use is beyond the registered (licensed) uses. While off-label prescribing is prevalent and may be clinically appropriate, such prescription may expose the patient to uncertain efficacies and increased risks of toxicities.
Aim: The aim was to examine the understanding and practice of off-label prescribing in Australian palliative medicine clinicians.
Methods: A cross-sectional survey of palliative medicine clinicians examined the understanding and practice of off-label prescribing. Participants were asked about off-label prescribing, consent, and commonly used off-label medication/indication dyads. These were classified into off-license, off- and on-label, and whether medications were reimbursed.
Results: One hundred five clinicians responded (53 % response rate). The majority had poor documentation of consent. Two hundred thirty-six medication/indication dyads were proposed, covering 36 medications. Forty-five dyads (19 %) involving two medications were unlicensed. One hundred eighteen dyads (50 %) involving 26 medications were off-label, and the remaining 73 dyads (31 %) involving 12 medications were actually on-label.
Conclusion: Off-label prescribing is common, not guided by a clearly defined policy, and is often poorly recognized. This has clinical, legal, and ethical implications for the management of complex palliative care patients. Further research is required to determine the prevalence, clinical benefit, and resultant iatrogenic morbidity and premature mortality, particularly of commonly used off-label medications. System-level policy on off-label prescribing is required to protect patients and clinicians.

234
Cancer–gender differences in a supportive care perspective

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Introduction: Cancer is also a subjective experience, and the impacts on cognitive and existential matters in life are individual. In a supportive care perspective, it is important to tailor the disciplinary action to the perceptions and needs of the patients.
Purpose: The purpose was to investigate respectively male and female patients' salient beliefs about cancer.
Methods: The method is based on Salient Belief Assessment (SBA). Seventy-three male and 57 female patients with different diagnoses in curative cancer therapy completed a self-administered questionnaire. Only one question was asked: "*What are your thoughts when you hear the word Cancer?*" According to the SBA, these answers were divided into topics and rated. The first answer on the questionnaire is given 10 points, the second 9 points, and so on. The total score was added for each response [1].
Results: *Male* responses generated on average 3.4 expressions.
Total scores:

Hope/struggle=5.8
Uncertainty/insecurity=5.7
Psychological reactions=5.5
Death=5.1
Disease/treatment=4.5
Family/children=3.0
Loss of control/powerlessness=1.4

Female responses generated on average 4.6 expressions.
Total scores:

Psychological reactions=7.5
Death=6.0
Hope/struggle=5.6
Disease/treatment=4.9
Uncertainty/insecurity=4.7
Family/children=3.7
Loss of control/powerlessness=2.2

Conclusions: Male and female patients' salient beliefs about cancer can be divided into the same themes. The two highest scores in male patients are hope of healing/the struggle to attain this and uncertainty/insecurity. The two highest scores in female patients are thoughts about psychological reactions and death. SBA requires that clinicians address patients' salient beliefs.
Reference: [1] Lorig K (2001) Patient education. Sage, Thousand Oaks

235
Cognitive symptom and quality of life of patients receiving cancer therapy

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Aims: Cognitive symptoms affecting patients throughout cancer treatment include memory loss, lack of attention, and concentration difficulties. This paper describes the prevalence of concentration difficulties and determines its correlates, as well as affect, on the quality of life (QoL) reported by patients during cancer therapy.
Methods: This study used secondary data from a sample of 214 patients, 18 years of age and older, with solid tumor receiving chemotherapy or radiotherapy. Instruments included the respective items from the Memorial Symptom Assessment Scale and Functional Assessment of Cancer Therapy-General (FACT-G).
Results: Forty-two percent (n=90) of the patients reported concentration difficulties, with mean severity score of 1.98±0.7 and mean distress score of 1.86±0.8. Significant moderately high correlations were found between concentration difficulties and feeling drowsy (r=0.762), feeling irritable (r=0.683), feeling sad (r=0.667), worrying (r=0.665), lack of energy (r=0.622), feeling nervous (r=0.539), and sleeping difficulties (r=0.543, p<0.01). In the multivariable model, only feeling drowsy (β=1.19) and worrying (β=1.09) showed significant independent effects for the concentration difficulties score (p<0.05). The mean FACT-G physical (18.1±5.9 vs. 22.2±5.1), social (18.5±3.9 vs. 19.8±4.2), emotional 16.4±4.4 vs. 18.1±4.2), functional subscale (11.6±5.9 vs. 14.9±6.6), and total scores (70.4±16.5 vs. 80.4±16.6) of patients with concentration difficulties were significantly lower than those without cognitive symptoms (p<0.001).
Conclusion: Our results suggest that cognitive symptom is prevalent and may negatively influence patients' QoL during cancer therapy. Also, cognitive symptom is associated with physical and psychological symptoms. Our findings would provide a guide for assessments and interventions to alleviate cognitive symptoms.

236
Palliative hypofractionated radiotherapy and chemotherapy in advanced head and neck squamous cell carcinoma (HNSCC)

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Objectives: Patients present with advanced stages of head and neck squamous cell carcinoma (HNSCC) in developing countries. The treatment modality is local palliation with radiation±chemotherapy based on the performance status of the patient. We proposed a short course hypofractionated radiotherapy (RT) and chemotherapy for local symptom palliation in recurrent HNSCC.
Methods: Eight patients with recurrent HNSCC with limited life expectancy were chosen. The inclusion criteria were bleeding, fungating nodal mass, and excruciating pain with sleep deprivation. Hypofractionated RT was planned encompassing the nodal mass only. Radiation dose was 16 Gy/2 days (8 Gy/day, two times delivered 6 h apart). All had received prior radiation. Paclitaxel (40 mg/m^2) was given on days 1 and 2. All patients were admitted to hospice care.
Results: Palliation was assessed as a subjective response through the visual analog scale (VAS) for literate and through Happy Face–Sad Face Scale (HFSFS) for illiterate patients. Prior to treatment, all experienced VAS 90–100/HFSFS 4–5. All were available for analysis. Subjective assessment of pain revealed improvement in seven of eight patients (87.5 %) with VAS 10–20/HFSFS 0.1 corresponding to excellent pain and symptom relief. One patient had HFSFS 2. Objective assessment showed bleeding and foul smell stopped for all patients (100 %). All patients completed treatment. Patients were symptom-free for a median of 26 days (range, 16–38 days). All patients died within 55 days.
Conclusion: This approach is feasible and effective in palliating symptoms in recurrent HNSCC.

237
Black cumin: a natural tool to address lifestyle-related disorders

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In the present research project, black cumin seed oil (fixed and essential) was characterized, used in cookie formulation, and tested for its nutraceutical potential against oxidative stress through rat modeling studies. Compositional analysis revealed that fixed oil is a rich source of polyunsaturated fatty acids, tocopherols, and, to some extent, thymoquinone, while essential oil was abundant in bioactive molecules like thymoquinone, p-cymene, carvacrol, α-thujene, and thymol. Both oils inhibited in vitro lipid peroxidation and scavenged DPPH radicals significantly. Afterwards, fixed and essential oils were added in the cookies at varying levels to enrich the formulation. The functional ingredients of the respective oils improved the oxidative stability of the cookies with better hedonic response over the control. Considering the results of characterization and product development, fixed oil at 4 % and essential oil at 0.3 % were selected for further use in efficacy study. In the efficacy studies, the experimental rat modeling comprised four segments including normal, oxidative stressed, diabetic, and hypercholesterolemic Sprague–Dawley rats. Initial trials were conducted in normal rats, which indicated that diets prepared with fixed and essential oils hold hypoglycemic and hypocholesterolemic perspectives. Moreover, reduction in oxidative damage, improvements in antioxidant status, and modulation of hepatic antioxidant enzymes were also observed in groups fed on diet containing fixed and essential oils. In oxidative stressed rats, serum MDA and conjugated diene levels were significantly reduced by 20.58 and 51.62 % in black cumin fixed and essential oils groups, respectively.

238
Palliative and supportive care in oncology—a pilot study of supportive program in outpatient clinic

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Program of palliative care in oncology is developed within the current concept of the Czech Oncological Society. Outpatient health care represents an important change in the concept of health care. In the period from January 2008 to October 2010, 446 patients, 288 women (mean age, 61 years; range, 20-81 years) and 158 men, (average age, 56 years; range, 18-96 years) were treated in palliative oncology services. The performance status were 39.7 % of patients PS-0, 36.2 % PS-1, 17.7 % PS-2, and 7.3 % PS-3. The total number of patients who were given home care were 119 (26.7 %), 65.5 and 5 % for PS-2 and PS-3, respectively. The number of patients who were given home care according to the uniform indicator criteria (nursing screening, rehabilitation, nutritional counseling, nursing care, and administration of medication) were 47 (39.5 %), 53.1 and 46.9 % for PS-2 and PS-3, respectively. The average length of home care was 27.8 days (range, 16–61 days). In the reporting period, 169 patients died: 95 women (average age, 69 years; range, 20–81 years) and 74 men (average age, 59 years; range, 18–96 years). Seventy-seven (45.6 %) patients died at home, 51 (30.2 %) patients died in the hospital (oncological center and other hospitals in the region), and 41 (24.3 %) patients died in a hospice. This pilot study of palliative oncology services documents the need for the early inclusion of patients into a system of palliative care in oncology according to the uniform indicator criteria, which include assessment of disease stage and general performance status.

239

FERPAC: a practice survey on the administration of IV iron complexes on a central venous access port in cancer patients in France

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Introduction: Iron deficiency anemia is commonly treated with intravenous (IV) iron in oncology. Central venous access port—PortaCath (PAC)—is used to provide long-term venous access and to deliver chemotherapy in this setting. However, there is a lack of data on the use of PAC for the administration of IV iron in cancer patients. The aim of this survey was to assess the frequency of this practice and the reasons supporting it.
Methods: FERPAC was a declarative survey conducted in France. Four hundred ninety-seven oncologists/hematologists were contacted to answer a survey on their practices regarding the use of IV iron. Answers were collected and registered into a central-based server.
Results: One hundred forty-one oncologists/hematologists responded (29.5 %). Irons most frequently used were iron sucrose and ferric carboxymaltose: 77.4 and 77.6 % of all physicians reported using the PAC for these IV irons. The main reasons were the easy way of administration (28.2 %) and the preservation of venous capital (26.1 %), given that efficacy and safety were expected to be equivalent to peripheral administration. IV iron administration was planned strictly after chemotherapy (45.7 %), strictly before (37.2 %), or without any preference (17.0 %). Reasons for not using the PAC were either a history of thrombosis (45.1 %) or potential drug–drug interactions (17.7 %).
Conclusion: IV irons are commonly administered through the PAC in cancer patients in France. There is a clinical interest to use this route of administration in these settings, but further studies are needed to confirm the efficacy and safety of this modality of use.

244

Determinants of burden in family caregivers of patients with advanced cancer

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Objective: Family caregivers (FCs) are involved in the care of most oncology patients because cancer care has moved from the inpatient to the outpatient setting. Most FCs care for patients with complex problems which requires extensive role modifications. The aim of this study in a sample of FCs of patients with advanced cancer was to evaluate the effects of select FC and patient characteristics on FC burden using the Caregiver Reaction Assessment (CRA) scale.
Methods: Oncology FCs and patients (n=112) completed a demographic questionnaire, the Herth Hope Index, and the Hospital Anxiety and Depression Scale. FCs completed the CRA. Data were analyzed using descriptive statistics and multiple linear regression analyses.
Results: The variance in each of the CRA subscales was explained by different factors. The total explained variance ranged from 5.5 % (i.e., "Lack of family support") to 31.8 % (i.e., "Impact on daily schedule"). FC characteristics, such as female gender and lower educational level, distress regarding the patient's pain, anxiety, depression, and level of hope, as well as the patients' number of comorbidities, depression, and hope, contributed to an increase in various domains of FC burden. FCs' level of hope was a significant predictor of variance in three of the CRA subscales (i.e., "Self-esteem," "Lack of family support," "Impact on health").
Conclusions: The findings from this study suggest that FCs' and patients' levels of hope are important determinants of caregiver burden. These findings suggest that FCs with lower levels of hope represent a high-risk group for higher levels of caregiver burden.

245

Use of AgNORs index in gray areas of breast cytology: suspicious for benignancy and suspicious for malignancy for the management of breast lesions and management of patients care

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Background: Breast cancer is one of the most important diseases for women in Pakistan. Unfortunately, approximately 75 % of all of our patients, as with all our cancer patients, present with advanced disease, where cure is not possible.
Objective: The study was designed to use AgNORs index to overcome the gray areas of breast cytology like suspicious for benignancy and suspicious for malignancy for the management of breast lesions.
Study design: Experimental.
Study population: One hundred patients form different areas of Pakistan comprised the study population.
Study settings: A prospective analytical study was designed for patients who were underwent FNAC. AgNOR index was calculated in benign and malignant lesions. The index was also correlated with age, size, lymph node, ER/PR and *HER2* status.
Major outcome: Successfully divided into benign and malignant breast smears.
Results: The AgNOR index was high in malignant tumors as compared to benign lesions. The mAgNOR counts (7.8) were statistically significantly higher in carcinomas in comparison to benign tumors (2.7) like fibroadenomas or fibrocystic changes (p=0.01). The

mAgNOR count was low in lobular carcinoma compared to ductal carcinoma. The AgNOR index was directly proportional to size and lymph node status. This parameter was low in ER/PR-positive breast carcinomas compared to HER2-positive lesions. AgNOR index was significantly higher in triple-negative breast carcinomas.
Conclusion: The AgNOR technique could be of use in cytology as an adjunct to fine-needle aspiration of breast lesions. The AgNOR index was helpful in classifying breast smears into benign and malignant categories. Two groups were defined for diagnosis: benign and malignant. AgNOR was useful in the management of breast patients.

247
Pain flare after stereotactic body radiotherapy for bone metastases

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Objectives: Pain flare (a transient increase in pain often during the 10 days post-radiotherapy) has been reported in 40 % of patients receiving conventional palliative radiotherapy for bone metastases. With stereotactic body radiotherapy (SBRT) emerging as a high-dose alternative, the potential for pain flare and its incidence require prospective evaluation.
Methods: Forty-one patients were enrolled on the prospective spine SBRT pain flare study from February 2010 to January 2012. Patients completed the Brief Pain Inventory prior to, during, and 10 days post-SBRT. Pain medications including steroid use were recorded. Pain flare was defined according to published criteria. We modified the definition such that pain flare was scored if steroids had been initiated during treatment or the first 10 days.
Results: Median age and KPS were 58 and 80, respectively. Seventeen of 41 patients were treated with single-fraction SBRT (SF; dose range, 20–24 Gy); otherwise, patients received two to five fractions (MF; 24–35 Gy). A total of 27 (66 %) patients experienced pain flare, most commonly on the first day after SBRT (13/27, 48 %); those treated with SF had a slightly higher incidence (12/17, 71 %) than those who received MF (15/24, 63 %). No patients on steroids prior to SBRT (n=4) had a pain flare.
Conclusions: The incidence of pain flare after SBRT for spine metastases is much higher than reported following conventional palliative radiotherapy. It is suggested that the radiation dose and not the volume of tissue radiated that result in pain flare. Further studies evaluating the use of steroids as a prophylactic therapy are required.

248
Peptide-conjugated PEGylated polymeric nanoparticles for targeted delivery of docetaxel

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Certain tumor cells overexpress a membrane-spanning molecule, aminopeptidase N (CD13) isoform, which is the receptor for peptides containing the NGR motif. NGR-modified docetaxel (DTX)-loaded PEG-b-PLGA polymeric nanoparticles (NGR-NP-DTX) were developed and evaluated for their in vitro (HT-1080 cell line) and in vivo (Balb/c mice) potential. The NGR-NP-DTX-containing DTX were about 148 nm in diameter with a spherical shape and high encapsulation efficiency. Cellular uptake was confirmed both qualitatively and quantitatively by confocal laser scanning microscopy and flow cytometry. Both quantitative and qualitative results confirmed that the NGR-conjugated nanoparticles revealed a higher uptake of nanoparticle micelles by CD13-overexpressed tumor cells. Free NGR inhibited the cellular uptake of NGR-NP-DTX, revealing the mechanism of receptor-mediated endocytosis. In vitro cytotoxicity studies demonstrated that the NGR-NP-DTX formulation was more cytotoxic than the unconjugated one, which was consistent with the observation of cellular uptake. The in vivo antitumor activities of formulations showed that NGR-NP-DTX efficiently suppressed the tumor growth and less body weight changes in comparison to the other. Hence, the selective delivery of NGR-NP-DTX formulation in CD13-overexpressing tumors represents a potential approach for the design of nanocarrier-based dual targeted delivery systems for targeting the tumor cells and vasculature.

250
Caregivers of older adults with cancer: a subjective burden measure as an important screening tool for psychological morbidity and resilience

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Objectives: This study aimed to identify the characteristics of caregivers of older adults with cancer (an under-researched group), their degree of psychological morbidity and resilience, and the psychological variables and caregiver or cancer survivor characteristics which predict subjective carer burden.
Methods: In this cross-sectional self-report study, 76 caregivers of cancer survivors ≥70 years of age completed study-specific questionnaires on caregiver and survivor demographics, personal, and health characteristics alongside standardized measures of depression, anxiety, stress, coping, quality of life, mindfulness, and subjective burden.
Results: Caregivers were mainly female, elderly spouses, not working, solely caregiving >20 h per week. According to the DASS21, 19.1 and 23.6 % reported moderate to extremely severe anxiety and depression, respectively. Daughters compared to spouses showed higher degrees of psychological morbidity, as did those caring for survivors >5 years post-diagnosis. Univariate analyses where $r \geq 0.30$ were included in a linear regression predicting subjective burden (adjusted $R^2=0.59$, $p=0.000$). Of individual predictors, higher depression, use of emotion-focused coping, and more years since diagnosis were significant. Other predictors (stress, quality of life, problem-focused, and dysfunctional coping) were not significant.
Conclusions: The Brief Assessment Scale for Caregivers of the Medically Ill (BASC), a 14-item measure of subjective caregiver burden, appears to be logical, short, and easy to administer and thus could be successfully employed as a screening tool for psychological morbidity (or resilience) in caregivers of older adults with cancer. Future research should test the BASC for identifying at-risk individuals who may require further psychological intervention.

251
Cancer patients' self-efficacy and perception of quality of self-management support in ambulatory care

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Introduction: Cancer is considered a chronic disease, but evidence from chronic disease self-management (CDSM) programs have not been applied to cancer. Cancer patients must assume responsibility for daily management of the physical and psychosocial consequences of cancer on a short- and long-term basis to reduce impact on daily living. But there are few empirical data on which to base the widespread changes necessary for tailoring CDSM approaches to cancer.
Aims:

1. Characterize the quality of self-management support as perceived by patients and health care professionals
2. Explore the self-management knowledge and skills of providers
3. Design CDSM approach for cancer

Methods: Using a mixed-method study design, we collected quantitative survey and qualitative focus group data in breast, prostate, and colorectal cancers (n>150/cohort), health care professional skills and competencies, and program needs across a range of stakeholders. The patients' perceptions of their level of activation for chronic illness care (PACIC), illness intrusiveness, and symptoms (MSAS) were analyzed using descriptive and multivariate analysis methods. The major qualitative themes from interviews and focus groups were derived from content analysis methods. In this paper, only the patients' levels of activation will be presented.
Results: The lowest scores were noted for the core self-management skills, specifically problem-solving/contextual counseling and goal setting. Self-efficacy was lowest for the management of disease and symptoms. Illness intrusiveness was highest in instrumental categories and intimacy.
Conclusion: The study findings suggest that patients are not receiving the support to be activated or to feel confident (self-efficacy) in the management of symptoms and psychosocial aspects of cancer.

252

Chemotherapy-induced gut injury: implications for central inflammation, pain and behavioural changes

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Introduction: Chemotherapy-induced gut damage is frequently associated with significant pain. Pain is known to influence gut function, suggestive of bidirectional modulation of organ-centric and central mechanisms. We aimed to examine the time course of chemotherapy-induced gut injury and central pain in rats. We hypothesize that time of peak gut injury will mirror peak central pain.
Methods: Gut injury was induced via irinotecan (175 mg/kg, n=35) or vehicle control (n=5) in female tumor-bearing DA rats. Rats were assessed by a blinded investigator four times per 24 h for gut toxicity (diarrhoea, weight loss) and central pain (facial pain model: orbital tightening, nose bulge, cheek bulge, whisker change and ear position). Rats (n=5-8) were killed at 6, 24, 48, 72, 96 and 120 h following irinotecan.
Results: All rats receiving irinotecan developed gut injury in a biphasic response, with maximal symptoms observed 72 h post-irinotecan: median (25% and 75% percentiles)=2 (1–2) versus 0 (0–0) at baseline. Peak weight loss compared to baseline in these rats was observed 72 h (mean±SD=11.1±6.6 %) before recovery at day 5 (mean±SD= −0.25±6.7 %). Central pain scores varied over time in a biphasic manner, with peaks occurring at 72 h: median (25% and 75% percentiles)=4 (3–5) versus 0 (0–0) at baseline.
Conclusion: Peak gut injury coincided with peak pain scores, implicating a link in the mechanism between the two. This is possibly mediated through peripheral inflammation caused by gut toxicity which modifies central inflammatory pathways and status, causing a pro-inflammatory central reaction manifested in facial pain.

255

Addressing oral care in cancer treatment and palliative care: presenting the work of the United Kingdom Oral Mucositis in Cancer Care Group (UKOMIC)

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It is widely recognised that oral problems including oral mucositis can be a significant health burden for the individual whilst making substantial demands on health care resources. Both these can be greatly reduced by the correct proactive care and treatment of oral problems. This presentation will give an overview of the work of the United Kingdom Oral Mucositis in Cancer Care Group, a multi-professional group of oral care experts working in a variety of cancer and palliative care centres who formed to raise awareness and address the often underreported impact of oral problems in cancer care.
Recognising that many clinical teams are unsure about the best way to prevent and treat oral problems and drawing upon their expertise and the most up-to-date evidence, the group developed practical guidance on the assessment, prevention, care and treatment of oral problems secondary to disease and treatments. These guidelines can be adapted to other clinical settings, including palliative and terminal care and specialist areas such as gerontology.
The development and the implementation of this expert guidance in multiple cancer settings support the multi-professional team to anticipate and attempt to minimise oral side effects in all patients undergoing care and treatment for cancer. Along with developing the guidance, the group continues to highlight and address oral care in cancer and palliative care by supporting clinical teams through developing and delivering practical workshops, educational days and online teaching.

256

Laser parameters drawn from meta-analysis on the efficacy of LLLT in oral mucositis (and French experience at CHU Poitiers)

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Photomedicine using low-level laser therapy (LLLT) is highly promising for the prevention and treatment of oral mucositis (OM) in cancer patients.
Objective: The objective was to determine optimal LLLT parameters for OM in cancer patients.
Methods: A systematic review identified 33 relevant articles. Of these, nine reviews, six case studies, three animal studies, and four research

studies did not qualify for the meta-analysis. The meta-analysis was conducted using data from 11 randomized placebo-controlled trials of intra-oral or extra-oral LLLT devices in OM secondary to cancer therapy.
Results: Meta-analysis showed that LLLT reduced the risk of OM (relative risk (RR)=2.45, CI=1.85–3.18), reduced the duration and severity of OM, and reduced the number of days with OM (4.38 days, p=0.0009). RR was similar between the red (630–670 nm) and infrared (780–830 nm) subgroups. Pain-relieving effect based on the Cohen scale was at 1.22 (CI=0.19–2.25). No adverse side effects of LLLT were reported. We recommend red or infrared LLLT with diode output between 10 and 100 mW (RVL1), a dose of 2–3 J for prophylaxis and no less than 4 J for therapeutic effect and application on a single spot rather than scanning. Lesions must be evaluated by a trained clinician, and therapy should be repeated daily or every other day or a minimum of three times per week until resolution (our protocol at CHU Poitiers, France).
Conclusions: There is moderate to strong evidence in favor of LLLT at optimal doses as a safe and relatively inexpensive intervention for cancer therapy-induced OM.

258
Health-related quality of life (HRQOL) in patients with glioblastoma (GBM) and their caregivers in the end-of-life phase: a retrospective study

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Objective: Glioblastoma multiforme (GBM) still harbours a fatal prognosis. The involvement of the psyche and neurocognition poses unique challenges in care provision to the relatives. We still lack data about the end-of-life phase of GBM patients to improve counseling and supporting them and their proxies.
Methods: In this retrospective study, we included 52 caregivers of deceased GBM patients treated in Vienna, Austria. We used a specially developed questionnaire by the MU of Amsterdam to explore and document the last 3 months of life in GBM patients.
Results: eighty-eight per cent of the caregivers were the partners of the patients. The most common symptoms in GBM patients were fatigue (87 %), reduced consciousness (81 %) and aphasia (77 %). Twenty-two per cent of patients were bedbound during their last 3 months, increasing to 80 % in the last week of life. Thirty per cent of the caregivers said that they felt incompletely informed for their task and about the illness of their loved one. Forty-six per cent of the patients died in hospitals and 38 % at home, which was the most often expressed wish for place of death by patients. Sadness (90 %), fear (69 %), burnout (60 %) and less interest in others (54 %) were the leading caregivers' symptoms and did not differ significantly in between the places of death.
Conclusion: The end-of-life phase of GBM patients differs from that of patients dying from other cancers. Most alarmingly, one third of their caregivers feel poorly informed. About two thirds of the caregivers feel overstrained and stressed, hence the urgent need for support and dedicated educational programs.

260
Prevention and treatment of acute skin reactions in cancer patients receiving external radiotherapy

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Objective:

- To prevent and treat acute skin problems in cancer patients resulting from radiotherapy
- To systemize the analysis of acute skin reactions in cancer patients receiving radiotherapy

Patient group: Patient group includes all patients regardless of age and cancer diagnosis who receive external curative radiotherapy and excludes all patients regardless of age and cancer diagnosis who receive external palliative radiotherapy, all patients regardless of age who receive radiation treatment of the perineum and genitals, and all patients regardless of age who receive curative radiotherapy of the brain.
Method: Questionnaire:

- What resources/approaches are most effective in preventing and treating acute skin reactions in cancer patients caused by external radiotherapy?
- When and how should the preventative skin care be done?
- When and how should the acute skin reactions be treated?
- How can a uniform analysis of skin reactions be achieved?

Literature search: Databases: PubMed, Cochrane, Embase, Web of Science. The keywords used were "Radiodermatitis," "Skin care," and "Toxic Epidermal Necrolysis."
Results:
Instructions: Prevention and treatment of skin reactions by external radiotherapy, predefined medical treatment plan, preprinted care plan (nursing care documentation).
Patient information: Skin care during and after radiotherapy. Treatment of skin problems resulting from radiotherapy of the genitalia and perineum and use of hydrocortisone cream during radiotherapy.

261
Prospective assessment of quality of life and psychological distress in patients with gynecological malignancy: a preliminary report

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Purpose: We aimed to evaluate the HRQoL and psychological distress in patients treated with radiotherapy for gynecologic malignancy.
Methods and materials: Fifty-seven women with either cervical or endometrial cancer were prospectively enrolled to the study. We assessed HRQoL at baseline, at the end of radiotherapy, and during follow-up using the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire 30 (EORTC-C30),

European Organization for Research and Treatment of Cervical Cancer Quality of Life Questionnaire 24 (EORTC QLQ-CX24), and Hospital Anxiety and Depression Scale (HADS).
Results: We demonstrated changes in appetite loss (p=0.03), nausea and vomiting (p=0.02), and role function (p=0.003) scores of EORTC QOL-C30. Only the mean body image score of EORTC QLQ-CX24 was significantly different during follow-up (p=0.02). Type of surgery, histopathological diagnosis, and the menopausal and marital status of the patients affected baseline body image scores (p=0.032, 0.004, 0.019, and 0.005, respectively). The patients who underwent chemotherapy had higher baseline body image scores when compared to patients who did not have any chemotherapy (p=0.028). All the complaints of the patients, except for the body image scores, improved during the follow-up period. The baseline and follow-up anxiety and depression scores did not differ significantly.
Conclusion: Our results suggested that although pelvic radiotherapy deteriorated HRQoL in gynecologic cancer patients, there were improvement in HRQoL during follow-up. However, further studies with a longer follow-up duration and with larger patient populations are needed to come to a final conclusion.

263
Edmonton Symptom Assessment Scale (ESAS) for routine symptom assessment of non-advanced patients with solid or haematological malignancies on oncological therapies

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The Edmonton Symptom Assessment Scale (ESAS) was developed for use in daily symptom assessment of palliative care patients. We used the ESAS validated version in Italian language to assess the presence and intensity of symptoms (not at all=0, mild=1–4, not controlled≥5) in 108 patients with solid and 86 with haematologic malignancies and no metastases on active oncological treatments (156 patients) or during follow-up.
In the haematologic group, dyspnoea was ≥5 in 12 % of the patients with respect to 3 % of the solid tumour group (chi-square test, p=0.002). Not controlled fatigue, drowsiness and dyspnoea were significantly more frequent in patients on cure (p=0.041, p=0.026 and p=0.010, respectively). The intensity of all the symptoms was higher in patients with a KPS of 70–90 with respect to those with KPS>90 and in patients above the clinical HADS cutoff (10/11) with respect to those below. The intensity of psychological suffering was higher for patients who requested psychological support.
The correlation (Pearson's rho) between the anxiety and depression items of ESAS with HADs was >0.5, whereas the feeling of well-being in ESAS was inversely strongly correlated with all the other ESAS symptoms (ρ>0.4); anorexia with nausea and drowsiness; drowsiness with fatigue; and anxiety with depression.
As the ESAS assesses the most frequent symptoms referred to by the patients during oncological treatments, its administration to patients in routine practice before each visit with the oncologist can give him/her information on the presence and intensity of physical and emotional symptoms.

264
Fentanyl buccal tablets for breakthrough cancer pain

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Introduction: Breakthrough cancer pain (BTcP) is a transitory exacerbation of pain that occurs on a background of otherwise controlled persistent pain. The incidence of BTcP is reported to be up to 95 %, although the figure varies from study to study, and many patients experience several episodes of BTcP per day, which often strike unpredictably [1].
Methodology: This review analyses the efficacy of fentanyl buccal tablet in the management of BTcP.
Discussion: The characteristics of BTcP are different from those of patients' persistent background pain. In addition, by definition, BTcP occurs in the context of well-controlled persistent pain. Therefore, the management of BTcP episodes should be considered separately from the management of patients' persistent pain.
Various approaches have been taken to the management of BTcP, including the development of rapid-onset opiods based on fentanyl. These rapid-onset opioids have pharmacokinetic profiles that fit closely with the temporal characteristics of BTcP episodes. They therefore have a rapid onset of effect to produce fast analgesia.
With fentanyl buccal tablet (FBT), the patient should start taking this drug at the lowest dose of 100 μg when they experience the first BTcP episode. After 30 min, if the patient has not experienced adequate analgesia, the patient should take another 100-μg tablet. On subsequent episodes of BTcP, the patient then continues to take the cumulative dose of 200 μg at the onset of pain.
Conclusion: Patients who achieve a successful dose from the titration process with FBT benefit from rapid and effective pain relief, leading to a high level of patient satisfaction.
References: [1] Portenoy RK, Hagen NA (1990) Breakthrough cancer pain: definition, prevalence and characteristics. Pain 41:273–281

265
Evaluation of enteral versus parenteral feeding as nutritional support in allogeneic hematopoietic stem cell transplantation

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Introduction: Allogeneic hematopoietic stem cell transplantation (allo-HSCT) procedure is associated with malnutrition which could participate in transplant-related morbidity. Optimal nutrition is poorly known, while both enteral nutrition (EN) and parenteral nutrition (PN) are effective. We proposed to evaluate EN versus PN as nutritional support on the early outcome of allo-HSCT.
Patients and methods: We retrospectively analyzed all the 56 successive patients who underwent allo-HSCT in our center from January 2009 to October 2010. Data were compared in an intent-to-treat analysis according to an initial nutritional support strategy.
Results: Twenty patients received myeloablative conditioning regimen and 36 a reduced intensity one. Twenty-eight agreed to receive EN via a nasogastric feeding tube and 28 received PN. No significant difference in terms of age, diagnosis, disease status at transplant, conditioning regimens, stem cell source, graft versus host disease (GVHD), or antifungal prophylaxis could be observed between groups. We found a lower median duration of fever in EN [2 (0–8) versus 5 (0–17)days, p=0.0026] and a lower need for antifungal therapy in EN (7/28 versus 17/28, p=0.0069). The incidence of bacteremia was not different. We

observed a lower rate of replacement of the central venous catheter in EN (3/28 in EN versus 9/28 in PN, $p=0.051$) and a lower rate of transfer to the ICU in EN (2/28 in EN versus 8/28 in PN, $p=0.036$), but early death rate (<100 days) was the same in each group (4/28 versus 4/28, p=NS).
Conclusion: Compared with PN, EN directly decreases the infectious risk, particularly the fungal risk, and its complications in allo-HSCT without influencing hematopoietic toxicity or GVHD incidence.

267
Assessment of relationship between social support levels and their reactions to cancer of cancer patients

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Purpose: The purpose of this research was to review the relation between social support levels and cancer patients' reaction to cancer.
Material and methods: The descriptive study has been implemented in a university hospital in Turkey. The Reaction Manner Scale to Cancer (RMSC) has been used to determine the reactions of patients to cancer diagnosis, and the Multi-dimensional Perceived Social Support Scale (MDPSSS) has been used to determine the social support levels of individuals. Data have been collected by using the face-to-face meeting method. SPSS 15.0 software package has been used in evaluating the data.
Results: The average age of 128 patients is 37.97±17.04 years. Of the patients, 75 % are men, 53.9 % are single, and 49.2 % live with their mother and father. The average total score of the MDPSSS of patients is 66.48±12.86, and the most perceived social support is that arising from family (24.60±4.35). The highest score of the RMSC subgroup average score of patients, "fighting spirit," is 47.79±7.26. A meaningful and positive relation has been found between social support average score and "fighting spirit" reaction of patients ($r=301$, $p=0.010$).
Conclusion: The high score from MDPSSS shows that social support perceived by patients is high. In our study, the high level of social support perceived by patients has been considered a positive result. The high score of the "fighting spirit" subgroup shows that patients have a positive reaction to cancer. The level of social support has also been found to be related to a positive reaction to cancer. We suggested strengthening the existing sources of social support of patients.

269
Multidisciplinary prediction of survival in advanced cancer patients

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Objectives: The expected survival of patients with advanced cancer can significantly impact decisions regarding treatment, care setting, and future planning. We evaluated the survival prediction ability of health care professionals (HCPs) experienced in providing team-based supportive care and palliative radiotherapy (RT) for patients with brain or bone metastases.
Methods: After usual clinical assessment of consecutive patients at the time of initial consultation, survival predictions were prospectively and independently made by each HCP. Factors influencing each prediction, patient demographics, and actual date of death were collected. Estimated survival was considered correct if within 30 days of actual survival. Summary statistics, Pearson correlation coefficients, and Student's t tests were calculated.
Results: Two hundred forty-three predictions were made for 84 patients (89 clinic visits, June 2010–March 2011). Of the patients, 70.2 % were male, average age was 67 years, 47.6 % had lung cancer, and 87.6 % received palliative RT. The most frequent factors influencing predictions of the ten involved disciplines were performance status, extent of cancer, and comorbidities. Survival was overpredicted 74.1 % of the time. Overall correlation for all predictions was $r=0.47$ ($p<0.001$). Of the radiation therapists' predictions, 32.2 % (28/87) were correct compared to 24.5 % (23/94) of physicians', 21.6 % (8/37) of nurses', and 16.0 % (4/25) of other HCPs'; these differences were not statistically significant.
Conclusions: HCPs from different disciplines providing collaborative care for advanced cancer patients utilize similar factors in predicting survival with comparable accuracy.

270
Knowledge about cervical cancer and health beliefs in married immigrant women in Korea

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Objectives: This study was performed to explore knowledge of cervical cancer and health beliefs in married, immigrant Korean women.
Method: This study employed a descriptive correlation design with 139 immigrant women who live in a certain region of Korea. Data were collected using self-reported questionnaires that included items on knowledge of cervical cancer and health beliefs about human papillomavirus (HPV) vaccination. Knowledge of cervical cancer and health beliefs about HPV vaccination were positively correlated.
Results: The mean of cervical cancer knowledge score was low (11.42). Regarding health beliefs about HPV vaccination, the scores are as follows: levels of perceived susceptibility, 4.76; seriousness, 5.66; benefit, 5.82; levels of perceived barrier, 10.75.
Conclusion: There is a need for cervix cancer and HPV awareness and education for immigrant women. Women's health care professionals are well positioned to act as catalysts to improve cervical cancer knowledge and health beliefs to ensure optimum health promotion in married, immigrant Korean women.

271
Symptoms among elderly cancer patients receiving chemotherapy

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Background: To understand palliative care needs among elderly cancer patients, it is essential to provide effective palliative care to the geriatric population with cancer.
Objectives: The objective was to estimate symptom prevalence, concerns, and service needs in elderly cancer patients receiving outpatient chemotherapy.
Methods: Questionnaires were distributed to consecutive cancer outpatients newly starting chemotherapy at the first appointment and at every hospital visit during calendar years 2007–2010. The questionnaire included the severity of 11 symptoms (pain, dyspnea, nausea, appetite loss, somnolence, fatigue, constipation, numbness, insomnia, oral problems, and psychological distress); concerns (decision making, economic problems, transportation, and daily activities); and the need for services (specialized palliative care service, medical social worker, and home care coordination nurse). Symptom severity, concerns, and

service needs were compared across two age groups: younger, <70 years and older, ≥70 years.
Results: The mean age of the patients was 64±11 years and 52 % were men. Two thousand six hundred ninety-seven (36 %) were older. The prevalent symptoms seen in more than 10 % of the older patients were psychological distress (30 %), fatigue (23 %), pain (22 %), oral problems (21 %), somnolence (17 %), appetite loss (16 %), constipation (12 %), dyspnea (11 %), and numbness (10 %). When comparing symptom prevalence among younger and older patients, it was generally lower in older patients. No differences in concerns and service needs were observed.
Conclusion: Clinicians should be aware that although symptom prevalence was generally lower in older cancer patients, a substantial number of them do have symptoms.

272
Strontium-89 (SR-89) for various cancer patients with painful bone metastases

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Objective: Although there are a lot of reports about the clinical profile of Sr-89 for prostate or breast cancer patients, there is little information about those for patients with other malignancies. The aim of this retrospective analysis was to clarify the clinical profile of Sr-89 for patients with painful bone metastases from various origins.
Methods: The entry criteria were as follows: (1) pathologically proven malignancies; (2) clinically diagnosed multiple bone metastases; (3) adequate organ function. Sr-89 chloride was given as a single intravenous infusion at 2 MBq/kg over 2 min. Self-reported outcome measurements including pain diary data on a 0–10 numeric rating scale was used as the response index.
Results: Fifty-four consecutive patients with painful bone metastases were treated with Sr-89 chloride at the National Cancer Center Hospital East between March 2009 and July 2011. Twenty-six patients had breast/prostate cancer and 28 had other malignancies (lung 8, head and neck 8, colorectal 6, and others 2). Thirteen (24 %) patients experienced a transient increase in pain, which were a flare-up response. Grade 3–4 anemia was observed in six (11 %) patients, three of whom required blood transfusion. As for efficacy, the response rates and complete response rates were 71.2 and 34.6 %, respectively, and time to response from the initiation of treatment was 36 (13–217)days. There was no significant difference in the response rate between breast/prostate cancer and other malignancies (breast/prostate, 69.2 %; others, 73.1 %, $p=0.76$).
Conclusions: Sr-89 may be a promising agent for painful bone metastases not only from breast/prostate cancer but also from various malignancies.

273
'You cannot manage what you cannot measure': development of a prototype remote monitoring system for haematological cancer patients undergoing chemotherapy

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Introduction: A mobile phone-based system (ASyMS-H) was developed to remotely monitor key chemotherapy toxicities in 'real time' (e.g. fever/infection, bleeding, nausea/vomiting, mucositis, diarrhoea) alongside algorithms to alert treating clinicians (via SMS) of significant toxicities and to provide tailored evidence-based self-care information to patients.
Objective: The objective was to pilot ASyMS-H with patients/nurses and obtain feedback for system refinement.
Methods: A convenience sample of haematological cancer patients used ASyMS-H twice daily for one cycle of chemotherapy. Nurses monitoring automated alerts, as well as patients, completed semi-structured interviews which were audio-recorded, transcribed and underwent qualitative analyses. Basic system usage frequencies were collected.
Results: Seventeen patients (mean age, 49 years) with non-Hodgkin (ten), Hodgkin's lymphoma (five) or chronic lymphocytic leukemia (two) used ASyMS-H for a total of 365 days and competed interviews. Thirty-two alerts (red, 11; amber, 21) were generated most commonly for nausea (nine) and mucositis (eight). Nine cancer nurses used ASyMS-H and completed interviews. The use of ASyMS-H was supported by patients/nurses with common themes, including: good fit with patient/nurse routine; ease of use; source of patient reassurance/empowerment; enabling early intervention, promoting communication and potential use for predictive symptom modeling. Patient guilt over generating alerts was noted; however, nurses felt alerts were appropriate for clinical intervention. Suggested changes to the system included additional symptoms and disease-specific information and improved symptom descriptors.
Conclusions: ASyMS-H was highly valued and the feedback used to build an amended version of the system. ASyMS-H is currently incorporated into a unique nurse-led supportive care/educational intervention, with improvements in patient outcomes/cost effectiveness investigated in a randomized controlled trial.

274
A multi-site, fixed dose, parallel arm, double-blind, placebo-controlled, block randomised trial of the addition of infusional octreotide or placebo to regular ranitidine and dexamethasone for the evaluation of vomiting associated with bowel obstruction at the end of life

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Introduction: Bowel obstruction due to advanced cancer that is surgically inoperable is a major management problem. Studies to date have either been underpowered or have used comparators that may not draw on the best available evidence.
Background and aims: This double-blind, block randomised, placebo-controlled, set dose, parallel-arm study was conducted across 12 sites in Australia. Eligibility included inoperable bowel obstruction secondary to cancer or its treatments. The intervention was the addition of infusional octreotide or placebo in addition to 200 mg ranitidine per 24 h parenterally and 4 mg per 24 h parenterally of dexamethasone. The primary outcome measure was the number of days free of vomiting up to 72 h after all medications were administered the first time. Participants were also administered between 10 and 20 ml/h of subcutaneous isotonic fluid over the 72-h period.
Results: This study will close to recruitment in March 2012. To date, 89 of 92 required participants have been randomised.

Conclusion: This adequately powered study will define the additional net clinical benefit derived from octreotide over placebo in people who have an anti-secretary agent (ranitidine) and glucocorticoids (dexamethasone).

275
Physical and emotional symptoms in patients with solid and haematologic malignancies without metastases on cure or follow-up: are they overlapping?

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In a prospective study carried out on 88 patients with solid cancer on cure and 20 on follow-up (group A) and 86 patients with haematologic malignancies (68 on cure, group B), we assessed the presence and intensity of physical and emotional symptoms through the Edmonton Symptom Assessment Scale (ESAS). In both groups, whereas no correlation was observed between age or religiousness and ESAS symptoms, a score above the clinical cutoff for HADS (10/11) was associated with a higher intensity of almost all symptoms. Drowsiness was less reported by patients with HADS<10 (p=0.005). With respect to group A, where a significant association was observed, in group B, uncontrolled pain was not correlated with a HADS score above the cutoff. Being on cure (rather than in follow-up) was associated with dyspnoea for group B only. Uncontrolled pain and drowsiness (score, ≥5; p=0.054 and p=0.013, respectively) were reported more often in patients with KPS 70–90 vs. those with KPS>90 for group A only, whereas for group B, the associations with low KPS were for uncontrolled anorexia, not-well being and dyspnoea (p=0.002, p=0.029 and p=0.018, respectively). In both groups, patients with a higher proportion of uncontrolled depression or drowsiness were significantly associated with receiving psychological support. Pain, anxiety and not-well being were correlated with psychological support for group A only. We believe that a routine assessment of physical and emotional symptoms in patients with both malignancies is mandatory to recognize all the symptoms, with a particular attention to the emotional ones.

278
Anticancer potential of curcumin: recent updates and perspectives

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Curcumin, a naturally yellow coloring compound derived from turmeric, has long been suggested to have a strong therapeutic or preventive potential against several major human ailments. The literature pertaining to the current review article has mainly emphasized on the different anticancer perspectives of cucurmin, i.e., pancreatic cancer, esophageal cancer, bladder cancer, gastric cancer, prostate cancer, colorectal cancer, cervical cancer, ovarian and endometrial cancer, uterine cancer, pulmonary cancer, head and neck cancer, bone cancer, oral cancer, and breast cancer. It contains a mixture of powerful antioxidant phytonutrients known as curcuminoids that inhibit cancer at the initiation, promotion, and progression stages of tumor development. It is a potent inhibitor of mutagenesis and chemically induced carcinogenesis in animal tumor models. In particular, these compounds block several enzymes required for the growth of tumors and may therefore have a role to play in future cancer treatments. It is important to note that curcumin is absorbed in very low amounts and may be distributed only in a limited number of organs/tissues. Moreover, it regulates an array of cellular processes such as inhibition of lipid peroxidation, nitric oxide synthetase activity, epidermal growth factor receptor intrinsic kinase activity, NF-kB activity, protein kinase C activity, and the production of reactive oxygen species. Furthermore, it also inhibits diverse targets such as NF-kB, COX-2 and kinases associated with survival signaling (IKK, NIK, and AKT), cell proliferation (ERK), and cell cycle regulation.

279
Protein energy malnutrition: a risk factor for various maladies

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Innovations throughout the last century resulted in urbanization coupled with modifications in lifestyles and dietary habits. Owing to these factors, the prevalence of protein energy malnutrition is increasing in developing economies. In developing countries, especially Pakistan, protein malnutrition is the serious menace. Currently, it has been accepted that the immunity or susceptibility to infect-parasitic diseases are directly related to the nutritional status of the host. Early recognition, prompt management, and robust follow-up are critical for the best outcomes in preventing and treating protein energy malnutrition (PEM). Protein energy malnutrition is a major syndrome which occurs commonly in older subjects. In contrast, disease-related malnutrition includes an inflammatory component which is commonly observed in diverse clinical practice settings throughout the world. Its relation to increased morbidity and mortality is the main focus of the article. Most of the causes of protein energy malnutrition are treatable. Despite this, physicians rarely diagnose the presence of protein energy malnutrition and even more rarely institute appropriate therapy. Early detection is a key to the appropriate management of protein energy malnutrition. Subjects with depression are particularly prone to develop protein energy malnutrition. Moreover, the management of protein energy malnutrition requires an aggressive partnership between the physician and the dietitian, with psychiatric consultation being obtained when appropriate. This review mainly attempts to describe the pathophysiology, prevalence, and consequences of PEM and aims to highlight the importance of this clinical syndrome and the recent growth in our understanding of the processes behind its development. Some management strategies are also the highlight of the article.

280
Palliative care needs of patients with cancer

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Objectives: The aim of the descriptive study was to evaluate physical and psychological symptoms so as to determine palliative care needs of cancer patients.
Methods: A total of 142 patients who were treated in an oncology clinic at a university hospital were enrolled in this research. A Descriptive Information Questionnaire was developed by the authors, and the adapted Edmonton Symptom Assessment System, Beck Depression Inventory (BDI), and Beck Anxiety Inventory (BAI) were used to collect data.

Results: The mean age was 49.35±36.61 years, and 53.5 % of them were male. Of the patients, 16.2 % were diagnosed with colon cancer. The mean BDI score was 8.59±6.36 and the mean BAI score was 11.39±7.53. The three most frequent problems were fatigue (87.3 %), breathlessness (76.1 %), insomnia (67.6 %), and anorexia (64.8 %). The mean values of the highest ranking problems were 6.02+2.77 (for anorexia), 5.33+2.09 (for fatigue), 0.04+2.42 for (insomnia), and 5.03+2.52 (for sadness). There is a significant relationship between the mean severity of anorexia and primary sites of cancer, status of taking chemotherapy, and being outpatient or inpatient. There is also a significant relationship between the total BDI score and primary sites of cancer and metastatic status of primary cancer.
Conclusion: It is shown that some symptoms might be experienced by most patients and some symptoms might be felt more severe by fewer patients. To reduce the adverse affects of both physical and psychological symptoms that patients experienced associated with cancer and its treatment, nurses should evaluate these symptoms and implement and assess the results of the nursing attempts appropriate to each individual within the symptom management.

281
Quality of life, preparedness, and perceived burden of family caregivers in lung cancer

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Objective: Family caregivers (FCGs) play a key role in the care of patients with non-small cell lung cancer (NSCLC). Although profoundly impacted by their loved one's diagnosis, FCGs typically receive minimal attention in healthcare. This abstract reports descriptive findings about quality of life (QOL), preparedness, and burden of FCGs from the usual care phase of a NCI-supported Program Project Grant.
Methods: FCGs (N=163) of patients receiving usual care for NSCLC were recruited into this prospective longitudinal study over a 1-year period. Questionnaires were completed at baseline, 7, 12, 18, and 24 weeks following accrual. Initial measures included demographics and chronic illnesses. Using validated tools, FCGs were assessed for QOL, distress level, level of preparedness for caregiving, and caregiver burden.
Results: The majority of FCGs were female (64 %), spouses (70 %), and daughters (17 %). The majority of FCGs (64 %) had at least one chronic illness including arthritis, hypertension, diabetes, anxiety, and depression. The majority worked full-time and 28 % were retired. FCGs reported moderate overall QOL (x=6.1), with the psychological well-being domain having the worst score (x=5.3). Distress levels were moderate (x=4.3). Only 26 % of FCGs perceived that they were well prepared for caregiving, while 49 % did not feel prepared for the stress of caregiving. Caregiver burden scores were worse for the emotional impact of caregiving responsibilities.
Conclusions: The emotional impact of caregiving remained a high burden for FCGs of patients with NSCLC. Evidenced-based supportive programs for FCGs of lung cancer patients should be developed and tested to meet their needs and support caregiving roles.

282
Palliative care in neuro-oncology: end of life treatment decisions and symptom management in 374 brain tumour patients assisted at home

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Objective: The complex needs of patients with advanced malignant brain tumors (BTs) are not well documented. Since October 2000 in the Regina Elena National Cancer Institute of Rome, we started a palliative home care project for patients affected by malignant BTs, with financial support of Regional Health System. The aims of this model of assistance were to meet patient's need of care during the evolution of the disease, to provide palliative care and to facilitate death at home.
Methods: In the first 10 years of our program, 572 patients have been assisted at home and 374 died.
Results: Among the 247 patients who died at home (247/374, 66 %), the most frequent symptoms in the last 4 weeks of life were: epilepsy, 37 %; headache, 36 %; drowsiness, 85 %; dysphagia, 85 %; death rattle, 12 %; and agitation and delirium, 15 %. The large majority of BT patients die with a process that has been defined as 'peaceful death', with progressive neurological deterioration. In some case, however, patients may present bad symptom control with agitated death that requires pharmacological sedation. Seizures in the last months of life represent a major issue and require adequate modification of anticonvulsant treatment. In BT patients, end-of-life treatment decisions concern mainly 'no-treatment' decisions: withdrawal of supportive treatment (steroids), withdrawing/withholding of artificial nutrition/hydration and palliative sedation.
Conclusion: The complex needs of care of BT patients and their families should be managed by well-trained multidisciplinary teams. Nevertheless, there is a great need for education in BT palliative and end-of-life care.

285
Preventive effect of electrical acupoint stimulation on lower limb thrombosis: a prospective study of elderly patients after gastrointestinal cancer surgery

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Objective: The objectives of this study were to assess the efficiency of electrical acupoint stimulation in the prevention of post-surgery lower deep venous thrombosis (LDVT) in elderly patients with gastrointestinal cancer and to validate an effective and safe nursing approach that integrates traditional Chinese medicine (TCM) and Western medicine.
Background: Electrical acupoint stimulation, an established technique of TCM, can be well combined with Western medicine to reduce the incidence of postoperative LDVT, especially in elderly patients.
Methods: A total of 120 patients (none <60 years of age) who underwent gastrointestinal cancer surgery between July 2005 and May 2007 were randomly divided into three groups: routine nursing group (group C1), graduated compression stockings group (group C2), and electrical acupoint stimulation group (group T). Hemorheological parameters (color Doppler flow image, blood viscosity, etc.) were measured and compared before and after surgery.
Results: Compared with groups C1 and C2, group T showed a significant difference in blood viscosity and blood flow velocity (P<0.05). However, there were no statistical differences among groups C1, C2, and T in other hemorheological parameters.
Conclusions: By speeding up the blood flow in patients, lower limb electrical acupoint stimulation showed great potential in preventing symptomless deep vein thrombosis in elderly patients after gastrointestinal cancer surgery. Western medical care combined with TCM can reduce the occurrence of LDVT in elderly patients after gastrointestinal cancer surgery. This approach may help nurses plan effective care for elderly patients.

286
Usefulness of medical oncologists' estimates of survival time in people with advanced cancer

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Objectives: The objective was to determine the usefulness of estimated survival time (EST) as a basis for estimating life expectancy.
Methods: Oncologists recorded EST as the "median survival of a group of identical patients" in patients with advanced cancer and a life expectancy >3 months. Calibration and precision were defined by the proportions of patients whose observed survival times (OST) were bounded by simple multiples of their EST. We expected 50 % to live longer (or shorter) than their EST; 30 % to live 0.75–1.33 times their EST (arbitrary criterion for precision); 50 % to live 0.5–2 times their EST (typical scenario); and 10 % to live >3 times (best-case scenario) or <0.25 times (worst-case scenario) their EST.
Results: The characteristics of the 114 patients are as follows: median age, 63 years; Karnofsky performance status (KPS), ≤70 in 25 %; and median survival, 8.5 months since advanced cancer diagnosis. Median survival was 10.6 months after a median follow-up of 14 months and 68 deaths. ESTs were well-calibrated (54 and 46 % lived longer and shorter than their ESTs, respectively) and imprecise (21 % within 0.75–1.33 times the OST), but equally likely to be overoptimistic (34 % >1.33 times the OST) or overpessimistic (39 % <0.75 times the OST); 6, 62, and 9 % lived <0.25, .05–2, and >3 times their EST. Independent predictors of OST included EST (HR=0.92, p=0.004), dry mouth (HR=5.07, p<0.0001), alkaline phosphatase >101 U/L (HR=2.80, p=0.0002), KPS≤70 (HR=2.30, p=0.007), prostate primary (HR=0.23, p=0.002), and steroid use (HR=2.35, p=0.02).
Conclusion: ESTs were well-calibrated, imprecise, independently associated with OST, and useful for estimating scenarios for survival.

287
Using scenarios to explain survival time: attitudes of people with a cancer experience

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Aim: We sought the attitudes of people with cancer experience to using best-case, worst-case, and typical scenarios for survival to explain life expectancy.
Methods: Oncology clinic attendees and Breast Cancer Network Australia (BCNA) members completed a survey describing two formats for explaining life expectancy to a hypothetical patient with advanced cancer—providing either three scenarios for survival or just the median survival time.
Results: Characteristics of the 505 respondents from outpatient clinics (n=251) and BCNA (n=254) were: median age, 58 years; female, 74 %; breast primary, 64 %. More respondents agreed that explaining three scenarios (vs. median survival) would make sense (93 vs. 75 %), be helpful (93 vs. 69 %), convey hope (68 vs. 44 %), and reassure (60 vs. 40 %), while fewer respondents agreed that explaining three scenarios (vs. median survival) would upset people (24 vs. 36 %, all p< 0.001). Most respondents agreed that each scenario should be presented: best case, 89 %; worst case, 82 %; and typical, 92 %. For information about their own prognosis, 88 % preferred all three scenarios and 5 % a single estimate of the median. Respondents with higher education were more likely to agree that presenting three scenarios would be helpful (95 vs. 90 %, p=0.05). Respondents with breast cancer were more likely to agree that explaining three scenarios would upset people (31 vs. 13 %, p<0.001).
Conclusion: Most respondents judged the presentation of best-case, worst-case, and typical scenarios preferable and more helpful and reassuring than the presentation of just the median survival time when explaining life expectancy to patients with advanced cancer.

288
Hyponatremia of non-small cell lung cancer: Indian experience

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Background: Hyponatremia is a hazardous complication of lung cancer and its treatment. It is seen at presentation in approximately 15 % of patients with small cell lung cancer (SCLC) and 1 % of patients with non-small cell lung cancer (NSCLC). Platinum compounds used as first-line agents along with taxols frequently cause hyponatremia. Up to this date, there are no data on its prevalence in patients with advanced lung cancer in the Indian subcontinent.
Material and methods: Forty patients with advanced lung cancer (25 patients with stage III disease and 15 with stage IV disease) were included in the study. The variables looked at included, but were not limited to, serum sodium, serum albumin, serum alkaline phosphatase, serum lactate dehydrogenase, and hemoglobin. These variables were measured as per the standard clinical laboratory procedure. No ethics approval was required as these parameters are routinely measured in such patients.
Results: In the chemo-naive state, one out of five cases with SCLC (20 %) had hyponatremia at presentation; among the 35 cases of NSCLC, seven patients (20 %) had hyponatremia at presentation, which is in sharp contrast to earlier reports of 1 % prevalence of hyponatremia in this group. Among the 27 cases who died within 6 months, 11 had hyponatremia; this finding was highly significant.
Conclusion: In India, NSCLC patients are at high risk of having hyponatremia at presentation, and this is significantly associated with a worse outcome. Vaptans are not available in India. Management upgrade is an utter necessity.

289
Subjective sleep quality in patients undergoing surgery and adjuvant chemotherapy for early-stage breast cancer

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Introduction: Women with a recent diagnosis of early-stage breast cancer report a higher incidence of sleep disturbance than patients with other early-stage malignancies. Both surgery and adjuvant chemotherapy have been demonstrated to increase the prevalence of sleep disturbance in patients undergoing treatment for early-stage breast cancer. Numerous contributory factors have been postulated.
Objectives: The objective was to assess and compare subjective sleep satisfaction and use of sleep medication in patients both prior to and during chemotherapy for early-stage breast cancer.

Methods: Patients were surveyed with a six-point self-reported questionnaire. Thirty patients were pre-chemotherapy, while 36 had completed one to six treatment cycles. Patients were asked to report their satisfaction with baseline sleep, change since commencing chemotherapy, and use of sleep medication. An average of 40–44 mg dexamethasone was administered with each cycle (per MASCC guidelines).
Results: Postoperative patients demonstrated a trend toward improved sleep without evidence of change in overall sleep quality or sleep medication use. The majority of patients undergoing chemotherapy reported decreased sleep quality. While 19 % reported initial dissatisfaction, 64 % described deterioration, with 39 % of this group reporting "much worse" sleep than at baseline. Seventy-eight percent never used sleep medications at baseline, increasing to 17 % requiring them "every night" at survey.
Conclusions: Patients with early-stage breast cancer receiving adjuvant chemotherapy have poorer subjective sleep quality compared with postoperative patients. Sleep medication use only slightly increased in our chemotherapy population and not at all in the postoperative group. Corticosteroid dosing could be further investigated as a contributing factor.

290
Long-term outcome after total nodal irradiation for childhood Hodgkin's lymphoma

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Purpose: The purpose was t o evaluate long-term results after total nodal irradiation for childhood Hodgkin's lymphoma (HL).
Methods: From 1968 to 1985, 63 patients younger than 15 years with HL were treated with total nodal irradiation. The male-to-female ratio was 2.1:1. All patients were clinically staged as follows: I—13 cases (21 %), II—22 cases (35 %), III—27 cases (43 %), and IV—1 case (2 %). B symptoms occurred in seven patients (11 %).
Results: Median follow-up was 16 years. Overall survival for patients was 80 % (SE=5 %), disease-specific survival was 83 % (SE=5 %), relapse-free survival was 46 % (SE=6 %), and freedom from treatment failure was 41 % (SE=6 %). Thirty-one relapses (49 %) occurred within and/or outside the irradiated field. There were six (16 %) parenchymal recurrences.
Conclusion: Patients treated with total nodal irradiation showed poor survival. The cure rate was further increased after the addition of chemotherapy. In modern-day radiation, the fields and dose have been reduced in the randomized trial. But radiation should continue to play an important role in Hodgkin's lymphoma therapy.

291
De-escalation therapeutic strategy SPbHL-05: is it valuable for good prognosis childhood Hodgkin's lymphoma?

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Purpose: The purpose was to evaluate the outcome after SPbHL-05 in children with good prognosis Hodgkin's lymphoma (HL).
Methods: We analysed the outcome of 70 pediatric patients with HL who were treated according to protocol SPbHL-05 between 2000 and 2011. Patients were stratified for risk groups depending on the six unfavourable prognostic factors. Seventeen patients (24.3 %) with zero to two adverse factors (the favourable group) received two cycles of chemotherapy, 27 (38.6 %) with three to four signs (the intermediate group) received four cycles, and 26 patient (37.8 %) with five or more factors (the unfavourable group) received six cycles. Patients in the favourable and intermediate risk groups (44 children) were included into the de-escalation group with good prognosis HL.
Results: Event-free and overall survival rates were 97.2 % (95% CI= 94.5–99.9 %) and 100 %, respectively. De-escalation therapy for good prognosis HL was associated with a trend towards a lower treatment failure, a 1- to 2-week shorter median duration and a ˆ320.388–612.366 per child lower median cost of chemotherapy.
Conclusion: Patients in the de-escalation groups showed a high survival rate. De-escalation therapy can be safely provided to patients with good prognosis childhood Hodgkin's lymphoma.

293
The effect of negative air ion on NK cell and morphine or fentanyl patch dose in hospice terminal cancer patients

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Objective: Natural killer (NK) cell activity increased in cancer-induced animals by negative air ion, and NK cells decrease in cancer patients treated with morphine and fentanyl. There is no study about NK cell and pain in cancer patients by negative air ion. Accordingly, we investigated the effect of negative air ion inhalation on NK cell rate and the dose of drugs in terminal cancer patients who use morphine and fentanyl.
Method: From July 2010 to March 2011, a device that releases 16 million of negative air ions per cubic centimeter was installed in one of two wards. A total of 29 patients with terminal cancer were randomly assigned to the wards. The NK cell rate, the morphine and fentanyl administered, and some laboratory tests were measured three times in an interval of 1 week. Descriptive statistics and repeated measures ANOVA were performed using SPSS 13.0.
Results: The NK cell rate was increased in the test group as time passed by, whereas it was decreased in the control group. The doses of morphine and fentanyl were lower in the test group than in the control group ($p<0.05$). Significant differences in NK cell rate and the dose of morphine and fentanyl were found between the female patients ($p<0.05$).
Conclusion: The NK cell rate was increased. The doses of morphine and fentanyl were lower in the test group. The NK cell rate and the dose of morphine and fentanyl show differences in the female patients.

294
Phyto-pharmacological, nutritional, and functional potential of turnip (*Brassica rapus* L.): an overview

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Plant-based foods contain a significant amount of bioactive compounds which provide desirable health benefits beyond basic nutrition. Epidemiological evidences suggest that consumption of a diet rich in vegetables and fruits has positive implications for human health. In the last decades, special attention has been paid toward edible plants, especially those that are rich in secondary metabolites (frequently called phytochemicals); nowadays, there is an increasing interest in the antioxidant activity of such phytochemicals present in the diet. Research on plant-based functional foods presents several challenging opportunities for cancer biology and nutrition science. However, issues of taste and behavioral nutrition ought to be considered as well. Nutritional therapy and phytotherapy have emerged as new concepts of health aid in recent years. Among phytochemicals, turnip is rich in

these precious ingredients, though it can be employed as having health-promoting and healing properties. Several bioactive substances are also present in turnips; hence, they have their prime role in daily intake and alimentation. In this context, turnip peroxidase has good potential for the treatment of phenolic-contaminated solutions. This review will focus on the significance of plant-derived, especially turnip, phenolic compounds as a source of beneficial compounds for human health and the influence of environmental conditions and processing mechanisms on the phenolic composition of *Brassica* vegetables, especially of turnip. Strong recommendations for the consumption of nutraceuticals from plant origin have become progressively popular to improve health and to prevent and treat diseases.

296
Diagnostic instruments for malnutrition in head neck cancer patients

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Objective: Instruments of nutritional diagnosis include screening and assessment tools as well as anthropometrical measurements. Until today, we have no information about their usefulness in head and neck cancer patients.
Methods: Between 01 September 2008 and 31 August 2009, we performed nutritional diagnostics in 97 consecutive patients with tumours of the ENT region. We used two screening tools (Nutritional Risk Screening 2002 and Malnutrition Universal Screening Tool) and one assessment (Subjective Global Assessment). The Mini Nutritional Assessment was used in patients >70 years old (n=28). The following anthropometric parameters were measured: body mass index, dynamic hand craft, triceps skin fold and bioimpedance analysis (BIA). We calculated the sensitivity of each parameter regarding the identification of an individual with malnutrition.
Results: Malnutrition will be identified in head neck cancer patients with the following sensitivities: body mass index, <10 %; NRS-2002, 50 %; MUST, 15 %; SGA (B+C), 80 %; dynamic hand craft, 35 %; triceps skin fold, 65 %; BIA, 90 %. Hand craft and skin fold have shown high intra-individual changes. The sensitivity of MNA was 55 % for patients older than 70 years.
Conclusions: NRS-2002, SGA, and BIA were established as diagnostic standards for all cancer patients of our department. MNA seems to be useful in older populations.

300
Effect of pamidronate on the quality of life of patients with malignancy

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Background and aims: Bone metastases induce harmful potential complications on the quality of life of patients. Pamidronate reduces skeletal complications in patients with bone metastases. This study evaluated the effect of pamidronate on the quality of life of cancer patients.
Methods: This was a quasi-experimental study carried out at Imam Sajjad hospital in Ramsar on 30 patients with malignancy using convenience sampling. In this study, 90 mg of pamidronate monthly for 3 months was injected intravenously. Data collection was done through a demographic and clinical data questionnaire, the Aronson Quality of Life Questionnaire. The data of before and after intervention were compared. Statistical analysis was performed using paired t tests, chi-square, and Wilcoxon tests with SPSS version 18; $p<0.05$ was considered as significant.
Findings: Statistical analysis shows the age group (36.7 %), 59–49 years and that most patients (65.9 %) were females. The most common types of cancer, breast (43.9 %) and bone metastasis point in most patients (65.9 %), were diffuse. Before treatment, most patients (41.5 %) evaluated their quality of life as moderate, whereas after treatment the majority of them (51.2 %) evaluated it as good.
Conclusion: Considering the role of pamidronate in the prevention of bone complications and improved quality of life, its use as a primary and routine treatment is recommended. Because of the highly expensive foreign bisphosphonate, further studies to compare the effectiveness of foreign products with domestic products would be valuable.

301
Effect of Tai Chi Chih on systolic blood pressure and salivary cortisol in senior female cancer survivors: a randomized trial

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Background: Advancing age is a major risk factor for cancer, and the majority of cancer survivors are over the age of 60 years. With improved cancer survival rates, it is becoming widely recognized that survivors' cancer experience can be a chronic stressor. To address the mechanisms underlying Tai Chi Chih's (TCC) potential stress reduction benefits, we compared the cardiovascular and stress hormonal responses of female cancer survivors who participated in TCC and a health education control (HEC) group.
Methods: We conducted a two-arm, single-blind randomized trial to determine the feasibility and efficacy of TCC for senior female cancer survivors, with physical function limitations (SF-12), who completed cancer treatment (except hormone therapy). Sixty-four women were randomly assigned to 12 weeks of TCC or HEC. Systolic blood pressure (SBP) and salivary cortisol specimens were assessed at baseline and 1 week post-intervention.
Results: The median age was 66 years (range=55–90 years). The majority (83 %) had breast cancer. ANCOVAs, adjusting for the pre-intervention group differences, demonstrated that TCC had significantly lower SBP (p=0.02) and log-transformed cortisol concentrations for the awakening specimen (p=0.02) than did HEC. However, there was no difference between the two groups for the cortisol awakening response (computed from the awakening and the awake+30-min sample, p=0.63).
Conclusions: Our findings indicate that TCC has potential health benefits in senior female cancer survivors with some physical function limitations. Further studies are needed, including a multi-site randomized trial with a larger number of participants, to confirm the effects of TCC in this patient population.

304
Observational study of methadone for cancer pain in palliative care unit (PCU)

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In France, methadone is only authorized for substitution and available by oral way. In our palliative care unit, we can use it for opioid rotation if we do the titration during a 48-h hospitalisation.
Aim: The aim of this study was to describe the level of pain relief and side effects after switching to methadone using a conversion ratio of 1/5:1/20 according to the baseline oral morphine equivalent dose (OMED, 100–1,000 mg).

Methods: Patients with methadone from 2006 where included, and pain assessment was undertaken with the visual analog scale (VAS), Brief Pain Inventory (BPI) and pain relief at day 0 (T0), day 3 (T3), day 7 (T7) and day 14 (T14).
Results: Fifteen patients (eight women) had methadone, aged 54 years (range, 40–75 years); cancer localisations were rectum (six), head and neck (four) and others (five). All of them experienced a mix of nociceptive and neuropathic pain. Baseline OMED was 578 mg (0–2,000 mg), and two opioid rotations had already been done. All patients received co-analgesics (anticonvulsants and tricyclics). Between T0 and T3, the VAS score decreased from 2.59 (0–5), between T0 and T7 decreased from 3.27 (0–7), and between T0 and T14 from 4.5 (2–5). Pain relief was important for nine patients, mild for four, and none for one. BPI score was improved for walk, sleep and well-being. Methadone was stopped because the oral way was not possible anymore (five) or ineffective (one).
Conclusion: Methadone switch was safe and efficient. Pain relief was better at T14, probably due to the slow process of titration in this frail population.

305
Breakthrough pain in cancer patients admitted to a palliative care unit: a prospective pilot study

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Background: Breakthrough pain (BtCP) is a complex heterogeneous pain which is difficult to manage. Our aim was to characterise BtCP and assess the efficacy of its medication.
Methods: Patients admitted between September 2008 and August 2009 with stable background pain and experiencing one to four BtCP episodes daily were surveyed. BtCP characteristics and associated symptoms were assessed using the Brief Pain Inventory; speed of onset of BtCP medication was assessed using a stopwatch.
Results: Two hundred thirty patients were assessed; 139 had BtCP, of whom 30 met the inclusion criteria. Twenty were women, with mean age of 59 years and performance status ranging between 2 and 3. Background pain was managed with a daily average oral morphine equivalent to 220 mg. BtCP was treated with immediate-release morphine (11 patients), IV morphine (4) and oral transmucosal fentanyl (15). The most common BtCP subtype was spontaneous nociceptive pain identified in 23 patients, with an average peak pain intensity of 8/10. Almost all patients described a negative impact on their daily function. Seventeen patients were able to use a stopwatch to assess the speed of onset of their rescue medication. The average delay in receiving BtCP medication and the mean time to relief were 5.42 and 36.5 min, respectively; no difference was seen between BtCP treatments.
Conclusion: BtCP had a significant impact on all patients surveyed. There was no difference in the speed of analgesic onset between BtCP treatments; however, only approximately half of patients were able to use the stopwatch.

306
Self-reported constipation in patient with advanced cancer

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Background: Constipation is often inadequately assessed and underdiagnosed in patients with advanced cancer. Many studies use patient-reported constipation as an outcome.
Objectives: Our aims were to compare the accuracy of the patient-reported constipation as compared to the modified Rome III (ROME) criteria and to determine the agreement between patient-reported constipation, physician's assessment of constipation (yes or no and rated 0–10), and objective assessment of constipation by the modified Rome III criteria among advanced cancer outpatients.
Methods: Patients with advanced cancer attending a supportive care clinic were screened. Constipation was assessed using the modified Rome III criteria, patient's reports (yes or no and rated 0–10; 10=worst possible symptom), and physician assessments.
Results: One hundred patients were enrolled, and 50 of 100 (50 %) patients met the modified Rome III criteria for constipation. Disagreement between Rome III criteria and the patient report (yes/no) was found in 33 patients (33 %) and between Rome III criteria and the physician assessment (yes/no) in 39 (39 %). The best combination of sensitivity (0.84) and specificity (0.62) was found with a score of ≥3/10 for patient-reported constipation.
Conclusions: We found a high frequency of constipation. The limited agreement with modified Rome III criteria suggests that a patient's self-report as yes or no is not useful for clinical practice. Patient's self-rating≥3 on a 0–10 scale seems to be the best tool for constipation screening among this population. More research is needed to identify the best way to assess constipation in advanced cancer patients.

307
What is the nurses' understanding of palliative care?

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Background: Very often, specialized palliative care service access for patients who needed it is delayed. Early intervention in the course of illness could improve the quality of care and prevent the crisis events by improving symptom management and quality of life. Our hypothesis is that nurses have misconceptions about palliative care, considering referral only when the disease is at the terminal stage.
Methods: First, our team conducted a study exploring physicians' representation in 2008, and we replicate this study using the same questionnaire, but for nurses in the same university hospital.
Results: One hundred seventy-two questionnaires were sent; we received 107 answers (62 %). One of two nurses thinks that that the palliative care, referral is not adapted at an early stage. They are afraid of generating patient anxiety. They felt it difficult to determine the right time for a palliative care referral. Pain was the first symptom justifying a referral to the palliative care team, but they did not report any other symptom. The other reasons reported for referral to palliative care were support, comfort, and accompaniment. Psychosocial distress or family distress was quoted less often.
Conclusion: Despite 5 years of training and information with nurses, palliative care understanding is still linked with end-of-life care.

308
Refusal of care at the end of life

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Background: Although anticipated by law, refusal of care from competent patient at end of life raises questions about the relationship with health professionals, thus creating tension.
Objective: The main objective of this research was to study nurses' representations and attitudes regarding refusal of care from dying patients in order to provide benchmarks for a clinical approach.
Methods: We conducted a qualitative study with 12 interviews recorded and fully transcribed. Discourse analysis was done manually and with software Alceste.
Results: Health professionals are willing to respect the refusal of care, particularly at end of life, without always seeking for a meaning. Their representations, their projections, and their feelings lead to some

specific attitudes. For nine nurses, defensive coping strategies were used, with, for the majority, not only some avoidance behavior (not listening, trivialization, avoidance) but also negotiation. Only three nurses adopt an open-mind and questioning attitude.
Conclusion: This research should lead us to be more aware about the meaning of the refusal of care, beneficence, respect for autonomy, its limits, and the underlying conflicts of values. Only a relationship involving all the multidisciplinary team in a clinical approach focusing on communication, trust, and patience promotes the emergence and respect of patient autonomy.

310
Disparities in unmet need for support services among US lung cancer patients in the Cancer Care Outcomes Research and Surveillance (CANCORS) Consortium

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Objective: The objectives were to examine whether perceived unmet need for support services in lung cancer patients varies by race/ethnicity and nativity and whether it is associated with perceived quality of cancer care.
Methods: A cohort of 4,334 lung cancer patients diagnosed in 2003–2005 in multiple US regions and integrated healthcare systems was surveyed 4 months post-diagnosis. Perceived unmet need was defined as not receiving any of eight needed services—home nurse, support group, psychological services, social worker, physical/occupational rehabilitation, pain management, spiritual counseling, smoking cessation. Hierarchical logistic regression models controlled for covariates.
Results: Patients with perceived unmet need (9 % overall) included 7 % Whites, 13 % Blacks, 8 % US-born Latinos, 24 % foreign-born Latinos, 4 % US-born Asians, 14 % foreign-born Asians, and 11 % other race/ethnicity ($p<0.001$). Even after controlling for socioeconomic status, healthcare access, and health status, Black, foreign-born Latino, and foreign-born Asian patients had greater odds of unmet need than White patients (adj. ORs=1.9, 3.3, and 1.9, respectively, all $p<0.05$). Patients who were younger, female, uninsured, current smoker, had a surrogate, completed the interview, or had a comorbid condition, anxiety, or depression also had increased odds of unmet need. Patients with unmet need had increased odds of reporting less than "excellent" care than those with no unmet needs (adj. OR=1.9, $p<0.001$).
Conclusions: Significant disparities in unmet need for support services exist by race/ethnicity and nativity. Delivering supportive, psychosocial care more equitably may improve perceived quality of lung cancer care, particularly among Black and foreign-born patients.

312
Effects of rehabilitation program according to breast cancer patients' underlying characteristics

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Objective: The objective of this study was to determine the effects of the outpatient rehabilitation program on breast cancer patients during radiotherapy (RTx) according to the patients' characteristics.
Method: Breast cancer patients receiving RTx participated. They underwent stretching exercise (5 min), resistance exercise (15 min), and aerobic exercise (30 min) 5 days a week for 6 weeks. Evaluations were performed before and after intervention. We evaluated the differences between the effects according to age and lymphedema, chemotherapy (CTx), and hormone therapy (HTx). The Fatigue Severity Scale (FSS), European Organization for Research and Treatment of Cancer Quality of Life questionnaires core 30 (EORTC QLQ-C30), the Breast Cancer Specific Quality of Life Questionnaire (EORTC-BR23), and submaximal exercise test were evaluated.
Results: Ninety-five patients (mean age=44.5 years) were recruited. After participating, there were significant improvements in the global health status and functional scale of EORTC QLQ-C30, the functional scale of EORTC-BR23, the FSS score, and in their cardiopulmonary function. In the non-CTx group, the global health status and functional scale of EORTC QLQ-C30 score and the symptom scale of EORTC-BR23 were more improved, although the FSS score was less improved than in the CTx group. In the non-HTx group, the symptom scale of EORTC-BR23 was more improved than that seen in the HTx group. There was no significant difference according to patients' age.
Conclusion: Our results suggest a rehabilitation program for breast cancer patients undergoing RTx, improves their quality of life, lessens their fatigue, and increases their cardiopulmonary function, especially in those patients who did not receive CTx or HTx.

313
The investigation of quality of life and its influencing factors of cancer patients with bone metastasis

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Purpose: The purpose was to investigate the cross-section of quality of life (QoL) and its influencing factors to patients with bone metastasis.
Method: We use the questionnaire designed by us according to EORTC QLQ-C30, MADSI-C, and HADS. We examined the association between symptom burden or emotional status and QoL using Spearman's rank correlation and multiple linear regression correlation with statistical software SPSS 17.0.
Results: The data of 122 recruited patients were completed. The total standardized score of quality of life in cancer patients with bone metastasis was 54.32±19.12. In the function subscale, social function has the lowest score, which was 45.89, while in the symptom subscale fatigue has the highest score, which was 57.23. In MDASI-C, the most serious symptom burden was fatigue, distress, and pain; function of working and walking had the most interference. Symptom burden such as pain and fatigue significantly correlated with decreased level of QoL (Spearman correlation coefficients, −0.528 and −0.462, respectively, $P<0.01$). Thirty-seven (30.3 %) patients were diagnosed with anxiety and 26 (21.3 %) with depression. Anxiety and depression continued to be significantly associated with the global quality of life and various dimensions of quality of life ($P<0.05$).
Conclusions: Symptom burden such as fatigue and pain, as well as anxiety and depression, were significantly associated with impaired quality of life of cancer patients with bone metastasis, and the functions of work and walking were most severely affected. Comprehensive treatment of patients with bone metastasis should pay attention to psychological rehabilitation and provide appropriate rehabilitation to enhance function, relieve symptoms, and improve quality of life.

314
Oncologist perception of palliative care

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Background: In a simultaneous care model, patients have concurrent access to both cancer-directed therapies and palliative care. As oncologists play a critical role in determining the need/timing of referral to palliative care programs, their understanding of the service and ability to communicate this with patients is of paramount importance. Our study aimed to examine oncologists' perceptions of the supportive care program at our institution and to determine whether renaming "palliative care" to "supportive care" influenced communication regarding referrals.
Methods: This qualitative study used semi-directed interviews and analyzed data using grounded theory and qualitative methods.
Results: We interviewed 17 oncologists. Supportive care was perceived as an important time-saving application, and symptom control, transitioning to end-of-life care, family counseling, and improving patients' ability to tolerate cancer therapies were cited as important functions. Although most claimed that early referrals to the service are preferable, oncologists identified several challenges related to the timing and communication with patients regarding the referral, as well as with the supportive care team after the referral was made. While oncologists stated that the name change had no impact on their referral patterns, the majority supported it as they perceived their patients preferred it.
Conclusions: Although majority of oncologists favorably viewed supportive care, communication barriers were identified, which need further confirmation. Simultaneous care models that effectively incorporate palliative care with cancer treatments need further development.

316

NEKI (Nausea and Emesis Kommunikations Instrument): development of an evidence-based protocol for clinical practice in German-speaking Switzerland

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Background: The prevalence of chemotherapy-induced nausea and vomiting (CINV), especially after highly (HEC) or moderately (MEC) ematogenic chemotherapy regimens, is still considerably high. There is a need to improve clinical practice with regard to the prevention and management of CINV based on available scientific evidence.
Aim: The aim of this project was to refine, pilot and evaluate a multicomponent evidence-based practice tool for the clinical management and prevention of nausea and emesis in patients with HEC/MEC in the German-speaking part of Switzerland.
Methods: Based on a review of research and guidelines with focus on CINV prevention and management, as well as patient education, a two-page protocol for the whole treatment team and patients was developed. Feasibility, occurrence of nausea and emesis, and satisfaction were assessed as outcome variables in survey format from May 2011 to February 2012 in $N=50$ consecutive patients with HEC/MEC at one clinical site.
Results: The tool contains three components: (a) standardised medication plan according to anti-emesis MASCC guidelines, (b) patient education information and (c) the German version of the MAT tool for patient self-reported symptom assessment at 24 and 72 h post-chemotherapy treatment. Occurrence of CINV and satisfaction with the tool will be presented.
Conclusions: Preliminary analysis indicates that the NEKI tool appears to be a feasible and effective way to enhance evidence-based routine practice and patient outcomes with regard to the prevention and management of CINV.

317

Effectiveness of Evoskin cream gel in the prevention of acute radiation-induced dermatitis in patients treated by postoperative radiotherapy for breast adenocarcinoma (conservative treatment): experience at the University Hospital of Poitiers (France)

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We report the preliminary results of a study with draw, testing Evoskin* gel (Evolife* Laboratories, France), water-based thermal Evaux, naturally containing the following trace elements—lithium, strontium, and manganese (EVO arm)—compared to the only local treatment reimbursed by social security in France, Dexeryl* (DEX arm).
The inclusion criterion included patients treated with postoperative radiotherapy after conservative surgery at a dose of 50 Gy in 5 weeks on the entire breast and 60 Gy to the tumor bed. The exclusion criteria included history of chronic skin disease, history of mastectomy, radiotherapy alone, and phototype VI.
Objective: The objective was to compare the rate of grade 2 dermatitis during and after treatment in the two groups.
Methods: Local treatment was applied twice daily (with distance from the radiation therapy session) for 6 weeks of treatment on the skin of the treated breast. Patients are followed biweekly by clinical exam and photography. A simple questionnaire is also completed by patients at the end of treatment.
Preliminary results: On 02 February 2012, 34 enrolled patients completed treatment (17 EVO arm, 17 DEX arm). The acceptability and the adherence to treatment were excellent in the two groups, without interruption of treatment, and no side effects were noticed by patients or medical examiners. The rate of grade 2 dermatitis is identical in the two groups at the end of irradiation (five patients in the two groups, 29 % rate). The preliminary results of a questionnaire show patient satisfaction as higher in group EVO (82.4 vs. 64.7 %, NS). We will present the final results of this study on 60 patients.

318

The influence of external breast prosthesis on the spatiotemporal gait parameters in women after mastectomy

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Objectives: The aim of the study was to determine whether breast prosthesis affects gait in women after one-sided mastectomy.
Methods: Forty post-mastectomy women, aged 37–70 years, took part in the study. They were divided into two subgroups: young (aged 37–54 years) and old (aged 55–70 years). The spatiotemporal parameters of the gait pattern were measured using accelerometers (DynaPort MiniMod Nederlands). The patients walked at a self-selected comfortable walking velocity with or without the external breast prosthesis. Instrumental data included walking velocity (WV), cadence (C), step length (SL), step time (ST), and left–right asymmetry. Statistica software (Statistica 9.0) was used to analyze the data at the standard level of statistical significance $p \leq 0.05$.
Results: Significant differences were founded between gait with and without prosthesis in WV ($p=0.001$), SL ($p=0.011$), and ST ($p=0.008$). We found a strong correlation during gait without prosthesis in subgroup A between weight with WV ($r=-0.60$), C ($r=-0.49$), ST ($r=0.47$), as well as BMI with WV ($r=-0.65$), C ($r=-0.49$), ST ($r=0.47$); in subgroup B, between height and WV ($r=0.47$), C ($r=0.49$), ST ($r=-0.52$).
Conclusion: The results indicate that prosthesis usage changes the spatiotemporal parameters of gait. The anthropometrical data were shown to have no influence on the gait pattern while wearing prosthesis, in contrast to the gait parameters without prosthesis.

319

The association between changes in body build and quality of life in premenopausal breast cancer women undergoing endocrine therapy during exercises

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Objectives: Endocrine therapy (ET) is a basic method of treatment in breast cancer (BC). However, its impact on body composition and quality of life (QoL) remains controversial. We sought to assess the impact of physical activity (PA) during ET on body build changes and QoL in premenopausal women with BC.
Methods: The study was conducted in 53 women with breast cancer before and after 6, 12, and 18 months of ET. Between 6th and 12th month, aerobic training (AT) was performed and after 12 months additional weight training (WT) was included. Outcome measures were: body composition (DXA) and QoL using EORTC questionnaires.
Results: A 6-month period of ET without PA resulted in a reduction ($p<0.05$) in free fat body mass (FFBM) and lean body mass as well as an increase in fat body mass (FBM). We observed a decline in QoL scale, including physical functioning (PF), and an increase in the side effects of therapy. AT resulted in reducing FBM (percent android fat) and had a significant impact on the improvement of QoL, especially in areas regarding PF and on experiencing the less intensive adverse effects of therapy. The introduction of WT for the next 6 months led to a further reduction in percent android and percent gynoid fat. The increase in FFBM including muscles was also observed, and so was an increase in the positive assessment of QoL during ET.
Conclusion: ET impacts the deterioration of body build and QoL of patients with BC. PA affects their QoL improvement and reduces the adverse effects of this form of cancer therapy.

320

The impact of endurance training on the assessment of exercise tolerance in breast cancer women during radiotherapy

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Objectives: In spite of the introduction of the dose constraints based on patient's individual assessment techniques for radiation therapy, some complications from the heart and lungs are still observed. Regular physical exercises improve efficiency in cardiologically and pulmonologically treated patients, which was confirmed in clinical trials. The study was designed to evaluate exercise tolerance and the impact of regular endurance training (ET) on the selected clinical parameters in breast cancer women during radiotherapy (RT).
Methodology: Forty-six women with breast cancer were evaluated in Department of Radiotherapy in The Greater Poland Cancer Centre. Twenty-five patients (group A) were simultaneously treated in the Rehabilitation Ward and received (for 6 weeks) ET. The rest of the patients, without rehabilitation (group B), took irregular physical activity on their own. In the study, exercise tolerance was assessed through the 6-min walk test (6MWT) using the following: saturation, heart rate (HR), blood pressure (BP), 6-min walk distance (6MWD), fatigue and dyspnoea scale.
Results: The statistical analysis showed that after 6 weeks, in group A, diastolic BP before 6MWT and HR before and after 6MWT significantly decreased and 6MWD greatly increased. In group B, after RT, there was a significant increase in both HR and fatigue/dyspnoea after the test. There was no statistically significant change in saturation in both groups.
Conclusion: The results showed that regular ET after just 6 weeks caused an improvement in exercise tolerance parameters with a substantial decline in fatigue and dyspnoea in breast cancer patients receiving RT.

321

Assessing extrapyramidal side effects (EPSES) in palliative care: are any instruments available?

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Objectives: Many medications prescribed to palliative care patients for symptom management, especially neuroleptics and other anti-dopaminergic medications, have the potential to cause acute extrapyramidal side effects (EPSEs). Acute EPSEs are often unrecognized or even misdiagnosed, potentially leading to deleterious treatment with further neuroleptics. Systematic use of a reliable brief EPSE screening instrument would help improve detection and patient management.
Methods: We conducted a descriptive review of the literature to examine acute EPSE assessment instruments to examine their potential utility in a palliative care population.
Results: Twelve instruments measuring drug-induced akathisia, drug-induced parkinsonism, and/or dystonia were found (these will be presented in table form on the poster). The majority of these instruments were developed for the assessment of acute EPSEs in acutely psychotic or schizophrenic patients. The instruments are lengthy and require the patient to be moving and with varying degrees of observer/assessor training.
Conclusion: Currently available EPSE instruments have limitations for use in palliative care patients due to the need to stand or examine gait and/or due to burden of administration. Further research is required.

323

Toll-like receptors: potential biomarkers of gut damage following chemotherapy?

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Introduction: Gastrointestinal mucositis is a major problem caused by chemotherapy. Toll-like receptors (TLRs) play a key role in gut homeostasis, with previous research indicating that TLR expression may be altered following chemotherapy. This study examined the time course of TLR expression following chemotherapy-induced mucositis in tumor-bearing rats.
Methods: Female DA rats received either a single dose of irinotecan (175 mg/kg, $n=35$) or vehicle control ($n=5$). Rats were assessed four times daily for mucositis (diarrhea, weight loss) and groups ($n=5$–8) killed at 6, 24, 48, 72, 96, and 120 h following treatment. Immunohistochemistry for TLR2, TLR4, TLR5, and TLR9 was conducted on sections of the jejuna and colon.
Results: Rats receiving irinotecan developed diarrhea, with maximal symptoms observed 72 h post-irinotecan: median (25 and 75 % percentiles)=2 (1–2) versus 0 (0–0) h at baseline. Similarly, peak weight loss was observed at 72 h (mean±SD=11.1±6.6 %). Rats receiving irinotecan had a significant decrease in jejuna crypt expression of TLR4 and 5 at 96 h ($p<0.0001$ and $p<0.0008$) and 120 h ($p<0.0001$ and $p<0.0008$) compared to controls. No significant differences were seen in the expression of TLR2 and TLR9.

Conclusion: TLR4 and TLR5 expressions were decreased during the healing phase of gastrointestinal mucositis. This supports the hypothesis that pharmacological inhibition of TLRs should increase healing (reduce damage) in the small intestine following chemotherapy. Further more detailed studies of the impact of TLRs are now warranted.

325
Ginger for chemotherapy-induced nausea and vomiting (CINV) control? Current evidence of ginger as an antiemetic modality for CINV management: a systematic review

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Introduction: Ginger is a traditional antiemetic whose effect has been the interest for many years; however, the results of ginger trials are inconclusive.
Objective: The purpose of this systematic review was to evaluate the effect of ginger as an antiemetic modality for the control of chemotherapy-induced nausea and vomiting (CINV).
Methods: Databases were searched including Medline (PubMed), Embase, CINAHL, Cochrane CENTRAL, and Dissertation Central using keywords: chemotherapy, nausea, vomiting, chemotherapy-induced nausea and vomiting, ginger, ginger extract, and *Zingiber officinale*. A systematic review was conducted and the incidence and the severity of acute and delayed nausea and vomiting were meta-analyzed.
Results: Five randomized controlled trials were included with a total of 872 cancer patients. Ginger was compared with placebo or metoclopramide. There was no statistical differences between the ginger and the control groups in the acute nausea incidence (RR=1.05, 95% CI=0.84–1.31, p=.67), acute vomiting incidence (RR=1.17, 95% CI=0.83–1.64, p=.37), or acute nausea severity (RR=−0.61, 95% CI=−1.37 to 0.16, p=.12, and RR=−0.64, 95% CI=−1.45 to 0.16, p=.12).
Conclusions: Current evidence does not support nor oppose the use of ginger for the control of CINV. Ginger did not contribute to the incidence control of acute nausea and vomiting or the severity control of acute nausea. Control of chemotherapy regimen, antiemetic use, risk factors of CINV development, preparation of ginger capsules, dose of ginger administered, and duration of ginger treatment in future ginger trials would help us better understand the effect of ginger in CINV control.

329
The use of complementary and alternative medicine in Filipino women with gynecologic malignancy

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Objectives: The objective of this study was to determine the prevalence and patterns of use of complementary and alternative medicine (CAM) among Filipino gynecologic cancer patients.
Methods: Patients consulting in our clinic between April and August 2007 were given a consent form and a questionnaire to answer. The first part included age, marital status, location, diagnosis/type of gynecologic cancer, type of intervention, educational attainment, occupation, and monthly income. The second part asked about the use of complementary and alternative medicine. Data were recorded in a computerized database via Microsoft Excel. Descriptive statistics were presented as the mean, median, standard deviation, minimum, maximum, and frequencies.
Results: A total of 102 patients responded to the survey. The mean age was 50.97 years. The most common diagnosis was cervical carcinoma (54.9 %). CAM use included spiritual prayers (87.3 %), use of vitamin supplements (58.8 %), and a vegetarian diet (57.8 %). Patients expressed that CAM use was most commonly discussed by a cancer doctor at the hospital and encouraged its continued use. Reasons for CAM use included: to do everything possible to fight the cancer; "Might help, can't hurt"; and improve emotional well-being, provide hope, increase optimism, etc.
Conclusion: Knowing patients' perspective on CAM use even with standard cancer treatment, it calls upon us gynecologic oncologists to increase our knowledge and educate our patients about CAM use.

330
Evaluation of oncology patients' stress by treatment status and social factors

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People who suffer from cancer have significant emotional difficulty. Recent meta-analysis showed that stress caused by psychosocial factors is associated with a poorer outcome in patients with cancer and with increased cancer mortality. We aimed to evaluate stress level in our medical oncology department.
Six hundred fifty-three patients with a diagnosis of cancer were involved in our study. Median age was 56 years. Of the patients, 209 (32 %) were taking chemotherapy as adjuvant setting, 321 (49.2 %) were taking chemotherapy as palliative intent, and 123 (18.8 %) were control patients who are not on chemotherapy. Of them, 48 (7.4 %) have poor social support, 272 (41.7 %) patients have moderate social support, and 237 (36.3 %) patients have good social support. One hundred thirty-four (20.5 %) patients have no educational background, 285 (43.6 %) graduated from elementary, 174 (26.6 %) patients from middle and high school, and 58 (8.9 %) patients from university. The stress scale, a numeric scale from 0 to 10 (high stress) points, was used for the measurement of objective assessment of patients' stress status. The median of stress point was 4.0 for all patients. We did not find any difference in patients' stress points for educational status and family social support, but the median of stress point in patients with surveillance was lower than in other groups, and this difference was statistically significant (p=0.0001).
Our findings showed that all patients admitted to the oncology department experience stress, but this stress is much higher in patients taking chemotherapy, and there was no difference in stress score by educational status and family social support.

331
Patients' perceptions of nausea: is it clusters of symptoms?

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Objectives: Despite improved chemotherapy-induced vomiting, nausea remains problematic. We tested the hypothesis that nausea is an individual cluster of symptoms.
Methods: Two groups of cancer patients (N=42) with current or past experience of chemotherapy-induced nausea consented to semi-structured interviews about nausea, which were transcribed and analyzed. At interview, survivors had a median of 3.5 years (range, 4 weeks–15 years) post-treatment, with median age of 50 years (range, 25–80 years); current patients were being treated as outpatients, with median age of 54 years (range, 39–72 years). Both groups comprised 12 women and 9 men.
Results: Across both groups, the nature, number, location, duration, and intensity of experiences described as nausea varied; no single symptom was common to all descriptions. Physical and psychological symptoms sometimes, but not always, included: dry retching, vomiting, loss of appetite, indigestion, change of taste, dizziness, bloating, reflux, inability to concentrate, fatigue, and physical restlessness. Patients located nausea in various sites. Onset ranged from immediate to day 5 post-chemotherapy.

Duration was from 1.5 h to 6 months, but conditioned stimuli could trigger nausea for years post-treatment. For most, distinguishing features of chemotherapy-induced (as opposed to other) nausea were its constant presence over time, fatigue, and emotional associations with the cancer diagnosis; for many, nausea had a negative impact on social and work interactions. Antiemetics reduced the intensity, but did not alleviate, nausea; distraction and relaxation were preferred management techniques.
Conclusion: Control of nausea will require personalized management of the range of physical and psychological symptoms which patients describe as nausea.

332
Predictors of low health-related quality of life in colorectal cancer survivors

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Objectives: Evidence is mounting that health-related quality of life (HRQoL) may be a prognostic factor in cancer. It is therefore important to develop approaches to identify survivors at risk of low HRQoL. We investigated factors associated with HRQoL in colorectal cancer survivors.
Methods: Colorectal cancer survivors (ICD10 C18-20) diagnosed 6–30 months previously were identified from the National Cancer Registry Ireland and invited to complete a postal questionnaire. This collected socio-demographic and treatment details and assessed cancer-related financial stress (impact of the cancer diagnosis on household ability to make ends meet) and cancer-related financial strain (feelings about household financial situation since the cancer diagnosis). Low HRQoL was defined as an EORTC QLQ30 global health score in the lowest quartile (≤33). Logistic regression was used to identify predictors of low HRQoL.
Results: Four hundred ninety-five completed questionnaires were received (response rate=39 %). Of the respondents, 63 % were male; 40 % were aged <65 years; 61 % had colon cancer; and 37 % were <1 year post-diagnosis, 47 % were 1–1.99 years, and 16 % were 2+years. In adjusted models, risk of low HRQoL was significantly higher in survivors without children (OR=2.27, 95%CI=1.29–4.01), with primary education (OR=1.91, 95%CI=1.18–3.09), and who currently had a stoma (OR=1.82, 95%CI=1.12–2.94) and was lower in those who had had chemotherapy (OR=0.60, 95%CI=0.36–0.99). After adjusting for these factors, those reporting cancer-related financial strain had significantly increased risk of low HRQoL (OR=2.63, 95%CI=1.68–4.14). A similar association was found for cancer-related financial stress (OR=1.78, 95%CI=1.13–2.81).
Conclusions: Family and socioeconomic and financial circumstances predict low HRQoL in colorectal cancer survivors.

333
Posttraumatic growth after cancer: manifestations in an Italian sample

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Objectives: In spite of the fact that many cancer survivors report increased stress and poor adjustment, many survivors also report positive outcomes and periods of psychosocial growth after their diagnosis. The term "posttraumatic growth" (PTG; Tedeschi and Calhoun 1996) describes positive life changes following a stressful experience like cancer. In the present research, PTG's manifestations have been investigated in a sample of Italian cancer survivors.
Methods: The Posttraumatic Growth Inventory, the Coping Orientations to Problems Experienced, and a form for the collection of personal identification and clinical data have been administered to cancer survivors 1 year (N=62) or 3 years (N=65) after diagnosis.
Results: Among the five identified domains, growth was not homogenous [$\chi^2(4)=101.77$, $p<0.0001$]: higher changes were recorded in life appreciation (M=2.9) and lower changes in spirituality (M=1.7), whereas intermediate scores were registered in personal strength (M=2.3), relationships (M=2.2), and recognizing new possibilities (M=1.9). No associations between PTG and years since diagnosis, gender, or age have been recorded. Comprehensive PTG correlated positively ($p<0.001$) with coping strategies such us active coping, planning, positive reinterpretation, seeking instrumental social support, and seeking emotional–social support.
Conclusions: Our data differ from previous published findings where no association between PTG and registered personal/clinical data was found. We plan to continue our research by enrolling a larger survivors' sample in order to corroborate our present results and to explore their clinical implications in more depth.

334
Health-related quality of life after cancer: a cross-sectional comparison between 1-year and 3-year post-diagnosis survivors

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Objectives: As cancer survivorship becomes the reality for a growing number of persons diagnosed with cancer, investigation of their health-related quality of life (Hr-QoL) is highly relevant from a clinical perspective as well as for research purposes. In this study, we set to assess Hr-QoL in a sample of Italian cancer survivors who had been diagnosed with cancer from 1 or 3 years prior to enrollment.
Methods: The Health Status Short Form (SF36) and a form for the collection of personal identification and clinical data have been administered to cancer survivors 1 year (N=62) or 3 years (N=64) after diagnosis.
Results: Physical functioning and role—physical limitation were higher ($p<0.05$, one-tailed) in the 3-year since diagnosis subsample than in the 1-year since diagnosis one, but the two subsamples did not differ in bodily pain, vitality, general health, social functioning, role—emotional limitation, and mental health. In both subsamples [$\chi^2(7)=57.57$, $p<0.001$, and $\chi^2(7)=73.13$, $p<.001$], there were differences in Hr-QoL dimensions' intensity: if physical functioning was the best dimension in both (M=74.5 and M=78.4), role—physical limitation (M=48.8) and vitality (M=56.4) were the worst in the 1- and 3-year after diagnosis subsamples, respectively.
Conclusions: Hr-QoL components seem to change during cancer survivorship. Knowledge of these and other changes over time during survivorship is needed to define more tailored supportive interventions for our patients.

336
Health-related quality of life of cancer patients undergoing chemotherapy

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Objective: The objectives were to evaluate the health-related quality of life (HRQoL) and symptoms of depression in cancer patients undergoing chemotherapy, to identify the domains affected, and to correlate them with socio-demographic and clinical–therapeutic data of the sample.
Methods: This is a cross-sectional study performed with 152 patients between 2007 and 2011. The instruments Quality of Life Questionnaire–Core30 and the Beck Depression Inventory (BDI) were used.
Results: Quality of life (QoL) was considered satisfactory (mean=74.91). The domains affected were: emotional and functional function,

pain, fatigue, insomnia, and loss of appetite. According to the BDI, 9.2 % of the patients had depression and 14.5 % dysphoria. It was found to be statistically significant ($p<0.05$) with the following correlations: women had worse scores for cognitive function; patients aged between 40 and 60 years reported more diarrhea and major financial difficulties; retirees and housewives reported better QoL; patients with gastric, lung, neurological, and skin cancer had more fatigue and dyspnea; those with metastasis reported poorer physical functioning; patients who underwent surgery to remove tumor and palliative had worse scores for QoL, physical, emotional, cognitive, and social function, besides presenting more nausea and vomiting, dyspnea, insomnia, loss of appetite, and constipation; patients undergoing radiotherapy reported more pain than others; and some chemotherapy protocols worsened the social function and caused fatigue, nausea, and vomiting.
Conclusion: The cancer and its treatment somehow affected patients, causing more symptoms and deficits of the performed functions, worsening their HRQoL.

338
Acupuncture and relaxation with visualization in the symptoms of depression, fatigue and health-related quality of life of cancer patients undergoing chemotherapy

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Objective: The objectives were to assess acupuncture and relaxation with visualization in the symptoms of depression, fatigue, and health-related quality of life (HRQOL) in patients undergoing cancer chemotherapy; identify the affected domains; and correlate these with the socio-demographic and clinical data.
Method: This is a longitudinal study conducted with 31 patients in the intervention group (IG) who received sessions of relaxation with visualization and acupuncture and 23 patients in the control group (CG). Data were collected through the Quality of Life Questionnaire–Core30, Beck Depression Inventory (BDI), and the Piper Fatigue Scale at the beginning and after 6 months of intervention in the IG and at the beginning and in the end of chemotherapy in the CG.
Results: Quality of life (QoL) of the IG increased while that of the CG decreased; the BDI scores improved in the IG and remained stable in the CG. By correlating the socio-demographic and clinical data with HRQoL, it was found to be statistically significant ($p<0.05$) in the GI in which marital status, surgery, radiotherapy, and chemotherapy influenced the HRQoL and in fatigue symptoms. In the correlations with the CG, significant differences among sex, age, location of tumor, and metastasis in the presence of symptoms such as loss of appetite, fatigue, constipation, insomnia, and dyspnea were found, therefore worsening the HRQoL.
Conclusion: Difficulties were found with respect to the stay of patients in the study, harming the long-term data analysis; however, the results are promising and these complementary therapies are important in the treatment of patients with cancer undergoing chemotherapy.

339
An analysis of using pamphlets of oral chemotherapy guidelines and calendars for patients less educated

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Introduction: Oral chemotherapy, usually capecitabine, is taken by outpatients after surgery, such as colostomy, rectostomy, and coloproctectomy, which is usually neglected by the staff and hard to follow up, particularly in less educated patients. To avoid dangers and monitor patients' medication adherence, we modified the pamphlet of GlaxoSmithKline[(1)] and distributed to patients who would bring our pamphlets and missing tables back.
Methods: Patients of the control group (40 patients) and the random group (39 patients) were given traditional verbal and written education by nurses before their first cycle, but pamphlets of oral chemotherapy guidelines and calendars were given only to the control group. Both groups took the Medication Adherence Questionnaire designed by Morisky (2008) and three symptom scales (fatigue, pain, nausea and vomiting) of the EORTC QLQ-C30[(2)] for data collection; both of them were discharged from 21 February to 31 August 2011 in two departments.
Results: All patients are under 65 years, with 21 (27 %) of them having gone to high school or college while 58 (73 %) have not. The data from the questionnaire showed an obvious relationship between diploma and medication adherence. The data also showed statistically significant increases in medication adherence and lower scores in symptom scales, especially in less educated patients, which means the pamphlet worked effectively.
Conclusion: The vivid sign of sunrise and sunset in our pamphlet helped less educated patients from some developing areas with their medication adherence. The rate of medication adherence of the control group was highly enhanced compared to the random group. Using our pamphlet is a better way of keeping patients to follow the prescriptions than conventional instruction.

340
Hematologic cancer patients undergoing chemotherapy: an assessment of health-related quality of life

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This is a cross-sectional and descriptive study conducted in the Hospital de Clínicas at a University in the interior of the state of Minas Gerais, Brazil. This study aimed to assess the health-related quality of life (HRQoL) of patients with onco-hematological diseases undergoing chemotherapy. Two instruments were used for data collection: the clinical and socio-demographic data and the Quality of Life Questionnaire–Core30. The sample consisted of 32 patients who met the inclusion criteria; 18 (56.25 %) of them were men and 14 (43.75 %) were women; 8 (25 %) were diagnosed with Hodgkin's lymphoma, 9 (28.12 %) with non-Hodgkin's lymphoma, and 15 (46.87 %) with leukemia. The results showed that the general health/QoL was good, with an average of 82.38, despite the physical, cognitive, emotional, social functions, and role performance showing means ranging from 54.81 to 41.18, which means an unsatisfactory level. In the symptom scales, there was a predominance of fatigue, with an average of 64.57, followed by insomnia with 56.90, loss of appetite with 50.71, dyspnea with 45.30, nausea and vomiting with 35.93, diarrhea with 27.96, pain with 18.59, and constipation with 14.46. The results showed the need for the health team to be aware of the impact that treatment brings in the aspects of the life of patients with blood cancer undergoing chemotherapy, considering the domains of HRQoL affected in the rehabilitation process.

341
An evaluation of the degree of neurokinin-1 receptor occupancy in the human brain after netupitant single-dose administration

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Objectives: Netupitant (NETU) is a highly selective neurokinin-1 (NK_1) receptor antagonist for the prevention of nausea and vomiting associated with emetogenic chemotherapy. In this study, PET imaging with the NK_1 receptor binding-selective tracer ^{11}C-GR205171 was used to determine the levels and the duration of central NK_1 receptor occupancy (RO) achieved by therapeutic doses of NETU.
Methods: This was a single-dose, randomized, open-label, PET study investigating the degree of NK_1 RO in human brain after single oral doses of NETU (100, 300, or 450 mg) in six healthy male subjects. PET scans and blood samples for NETU determination were obtained up to 96 h post-dose.
Results: A NK_1 RO of 90 % or higher was achieved with all tested single oral doses in the majority of the outlined brain regions 6 h after dosing (corresponding to NETU C_{max}). All doses had a long duration of blockade of NK_1 receptors, with the 300-mg dose showing moderate (62 %) to high (94 %) NK_1 RO for all investigated brain regions at 96 h post-dose. The relationship between NETU concentrations and NK_1 RO indicated that in the striatum, the reference brain area with the highest NK_1 receptor expression, a concentration of 225 μg/L of NETU corresponded to an NK_1 RO of 90 %.
Conclusions: PET results demonstrate that NETU is a potent agent targeting NK_1 receptors with a high degree of occupancy for a long duration. NETU, given as single doses of 100–450 mg, was well tolerated.

342
A phase I study evaluating the potential drug interaction between netupitant and digoxin

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Background: The new selective neurokinin-1 receptor antagonist netupitant (NETU) is being developed to provide protection from nausea and vomiting induced by emetogenic chemotherapy. There is evidence from in vitro studies that NETU is a substrate for and a weak inhibitor of the P-glycoprotein (Pgp). Pgp plays a major role in the pharmacokinetics of digoxin (DIG). The possible interaction between NETU and Pgp has been assessed by analysing the effect of NETU on DIG pharmacokinetics.
Methods: This was an open-label, fixed sequence study designed to evaluate the effect of NETU on DIG at steady state in 16 healthy volunteers. A loading dose of 3×0.5 mg DIG (0.5 mg, every 6 h) was given on day 1, followed by a daily oral dose of 0.25 mg DIG for 11 consecutive days (days 2–12); NETU was administered as a single oral dose of 450 mg on day 8. Serial blood and urine samples were collected for the determination of pharmacokinetic parameters.
Results: Based on the $AUC_{(0–24\ h)}$ parameter, the extent of DIG exposure was not influenced by NETU co-administration. The confidence intervals of C_{min} were within the 80–125 % equivalence limits, while the C_{max} was slightly over 125 %, which was not considered clinically relevant. The excretion of DIG alone in urine was 55 % compared to 57 % after NETU co-administration.
Conclusions: No clinically relevant interactions occurred between NETU and DIG. The results of this study suggest that the co-administration of NETU with Pgp substrates may not require dose adjustments. The study treatments were well tolerated.

343
Technological preferences of Asian patients for solving drug-related problems in oncology

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Objectives: Our study determined the technological preferences of Asian cancer patients to help them solve three drug-related problems (DRPs)—medication non-adherence due to polypharmacy, lack of medication knowledge regarding their chemotherapies and side-effects management.
Methods: A cross-sectional study was conducted at the National Cancer Centre Singapore from May-August 2011, targeting patients 50 years and above. An interviewer-administered questionnaire documenting their demographics and preferences for various technologies were analyzed using descriptive and chi-squared statistics.
Results: Of the 460 patients (67.5±17.5 years old) analyzed, large proportions preferred voice (27.4 %) and electronic message reminders (18.3 %) to improve medication adherence. Majority chose helplines to aid their management of side effects (49.1 %) and understanding of chemotherapies (55.2 %). Younger patients (≤65 years, 71.0 versus 57.6 %, p=0.006) and those with tertiary education (75.8 versus 65.3 %, p=0.049) were more receptive to using technologies for improving medication knowledge. Tertiary educated patients were also more willing to use technologies for improving medication adherence (70.7 versus 58.6 %, p=0.029).
Conclusion: Asian cancer patients are generally accepting of technologies to help them address DRPs. Developers of devices for medication management in cancer patients undergoing chemotherapy should leverage on their preferred technologies to promote a smooth transition in supportive cancer care.

Drug-related problems	Medication non-adherence (N=460)				Lack of medication knowledge regarding chemotherapies[a] (N=460)		Side effect management[a] (N=460)	
Technologies for drug-related problems	Voice reminders	Electronic messages (e.g., SMS)	Voice-activated dispensing	Helplines	Helplines	Educational devices	Helplines	Online portals or mobile phone apps
No. of patients who chose this technology (%)	126 (27.4)	84 (18.3)	43 (9.3)	28 (6.1)	254 (55.2)	156 (33.9)	226 (49.1)	72 (15.7)
No. of patients who did not want technologies (%)	179 (38.9)				150 (32.6)		170 (37.0)	

[a] Total percentages may not add to 100 % due to multiple selections by patients

Patient preferences for technological solutions

344

National Clinical Breast Cancer Registry: views and approaches

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Background: Cancer registries providing health professionals/researchers detailed information on the incidence, trend, and survival statistics cancer registries are population-based and seek to describe the incidence, rates, and trends of breast cancer within set populations. They also provide information on the staging, treatment, and allied clinical data required to monitor clinical care/outcomes.
Objective: Our cancer NGO developed a primary plan in consultation with four division hospitals and the Health Ministry. We aim to establish a platform for a multi-clinician, multi-centric collation of oncology datasets with breast cancer as the pilot disease entity. We plan to integrate this concept at major cancer institutes with expertise from MASCC/WHO. The proposal of intent has been approved at the national level.
Methods: Here, we relate our experience of an initiative aimed at establishing methodology, statistical analysis, and supportive control center for multi-collaborator breast cancer data collection, aiming to establish a national breast cancer data repository.
Results: Initiated from four sites, modern technology of data collection, storage, and analysis and distribution is optimized toward the implementation of sustained comprehensive and multi-collaborator data registry. There is a need for minimum datasets, customization of technology to suit needs, data capture, storage, and retrieval. These can be leveraged to inform future direction of initiatives: expanding the scope of the database; optimizing variables for data analysis; and addressing data privacy, security, and ownership concerns. We have developed our model database.
Conclusion: A multicenter, multi-clinician collaboration is possible with collaborative efforts of the MASCC/ASCO/WHO. The major concern is haphazard data/protocol maintenance by private entities. The most difficult data outsourcing was about survival statistics. A national breast Cancer Registry is a distant dream in resource-poor nations.

345

Identifying deficits and needs from stakeholders about palliative care needs of breast cancer patients

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Objectives: Our Cancer NGO aims to analyze palliative care issues/needs and their status. MASCC/WHO urgently needs to focus on the development of palliative care for breast cancer patients. NGOs can develop a policy paper for implementation in rural/tribal areas.
Method: Our NGO volunteers/nurses conducted this pilot study in six rural villages of India. Seven nurses, two physicians, and one counselor participated. One hundred forty-six patients, 34 caregivers, and 18 spiritual/community leaders participated. Relief from distressing symptoms was reported in 80 %. Responses on palliative care were analyzed using questionnaires while community/spiritual leaders participated through focus group discussions. Ninety percent of participants expressed need for palliative services.
Results/findings: Poor well-being, appetite, pain, and fatigue are the most prevalent symptoms reported by the patients. Fifty percent of the patients reported severe pain and 9 % reported no pain. Spiritual pain control had the highest correlation with quality of life in comparison to functional/emotional/physical/social well-being. Ninety percent of patients and caregivers reported free communication about illness. We also need to modify the attitudes of caregivers toward the psychosocial needs of breast cancer patients and their families. Breast cancer care hospitals must have separate departments for handling these issues.
Conclusion: This study gives a demographic picture of terminal cancer patients and caregivers in the public healthcare system and some aspects of palliative care. Resource-poor nations need NGOs to develop such programs in the absence of a government-run healthcare setup. We, NGO activists, need a MASCC 2012 conference to discuss our project ideas/concerns/difficulties with senior researchers from the USA/Europe. MASCC/ASCO/WHO must take initiative in propagating such efforts in developing nations. The development of a comprehensive breast cancer service program is a distant dream in resource-poor nations. NGO patient advocates need international funding support for palliative care programs.

347

Analyzing knowledge, perception and attitudes of nurses: in care of lung cancer patients

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Objectives: The objectives were to (1) assess knowledge and perception/attitudes of nurses on nursing care of lung cancer patients and (2) improve lung cancer care. A cancer nurse is key in promoting both patient/family coping and adaptation through interventions of

1. Patient education
2. Symptom management
3. Therapeutic support

Methods: From October 2010, a questionnaire-based study consisting of two sections was done.

1. Information about respondents
2. Methods to elicit nurses' knowledge perception and attitudes in care of cancer patients

All questionnaires were returned and analyzed using a simple statistical method. We also designed a framework for orientation/CME of novices to experts in providing nursing care. This presentation outlines the role of a cancer nurse and the impact on patient outcomes and education.
Result: Nurses (N=23, 18 women and 5 men), aged between 20 and 35 years, were enrolled from the district hospital and rural catholic mission in rural/tribal India. Knowledge, perception, and attitudes of nurses toward cancer care are minimal, with only ten showing special skill, perception, and good attitudes toward caring for cancer patients as opposed to nine with little knowledge and low perception of caring for cancer patients; the remaining four has no specific knowledge and perception toward nursing care of cancer patients.
Conclusion: Oncology nursing is an important specialty. There are limited training centers in India and resources are scarce. Trained nurses can improve the quality of life (QOL) of cancer patients. Oncology training programs and motivation will improve the knowledge perception and attitudes of nurses in the cancer patient's care. This presentation will describe the role of cancer nurses, impact on patients' QOL, and education required for competent clinical care.

348

A phase I study evaluating the potential drug interaction of netupitant with erythromycin, midazolam and dexamethasone

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Objectives: Netupitant (NETU) is a new highly selective neurokinin-1 receptor antagonist (NK_1-RA). NK_1-RAs are commonly administered in patients undergoing emetogenic chemotherapy to prevent nausea

and vomiting. Since NETU is both a substrate and a moderate inhibitor of CYP3A4, two studies were designed to establish the potential risk for drug–drug interaction with three different CYP3A4 substrates: erythromycin (ERY), midazolam (MID), and dexamethasone (DEX).
Methods: Both trials were three-period crossover studies performed in healthy subjects. In the first study, 20 subjects received NETU (300 mg, PO) and ERY (500 mg, PO) or MID (7.5 mg, PO). In the second study, 25 subjects received NETU (100, 300, or 450 mg, PO, day 1) and DEX (20 mg, PO, day 1; 8 mg, BID PO, days 2–4). Serial blood samples were collected over the course of the two studies, and pharmacokinetic parameters were determined for all analytes.
Results: NETU, by inhibiting the CYP3A4, increases the C_{max} and AUC of MID by 40 and 130 %, respectively, and the C_{max} and AUC of ERY by 30 %. DEX mean AUC and C_{max} increased by 1.7- and 1.1-fold, respectively, on day 1 and by 2.4 and 1.7-fold on day 4 when co-administered with NETU. NETU was shown to increase exposure to DEX in a dose-dependent manner.
Conclusions: The results of these studies suggest that the co-administration of NETU with drugs that are substrates of CYP3A4 may require dose adjustments. Treatments were well tolerated in both studies.

349
Improving QOL in breast cancer patients

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Objectives: Social stigma, fatigue, sexual dysfunction, sleeplessness, depression, pain are common in breast cancer sufferers. Palliative care is inaccessible in rural/tribal areas. Statistically, over 90 % express sexual dysfunction, 68 % unbearable pain, 70 % social neglect/humiliation, 54 % sleeplessness, nausea/vomiting, 37 % fatigue, and 64 % depression. The importance of spirituality/religion in coping with terminal illness is increasingly recognized. We involved community leaders to make more women involved in our spiritual healing sessions.
Methods: We surveyed 55 women suffering from breast cancer through quality of life (QOL) questionnaires after 14 weeks with psychosocial support. Counseling and palliative support with anti-depressants/pain killers/nutrition improved QOL to a statistically significant level. Need in cancer palliative care has been evaluated using the methodology suggested by oncologists. Besides, symptom assessment was performed on a weekly basis. Involvement of traditional faith healers has more psychological impact on patients' communities.
Results: Opioids were administered in 35 % and diazepam as an adjuvant drug in 23 % patients. Pethidine is a common analgesic in 56 % women and tramadol in 22 %. Greater than 30 % were in the advanced stage. Our NGO nurses require 20 specialist palliative care beds for our rural/tribal population of 600,000. Fifty-three percent of the women expressed that religious/community support/faith was the most important factor that helped them cope with breast cancer. We observed significant correlations between higher scores of spirituality with the absence of depression. Higher scores of QOL (ANOVA, $p<0.001$) correlated with lack of sexual dysfunction/pain. Our NGO initiative suggests that over 70 % patients will need well-trained specialist for home-based care unit.
Conclusions: NGO personnel should be trained in palliative care services. Spiritual well-being increases end-of-life despair in those terminally ill. The field of spiritual/psychosocial/community support is a fertile ground for further investigations.

350
Supportive care for lung cancer needs in Asian community

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Objectives: This is a phase IV continuation of our NGO which studied the influence of counseling on the reduction of tobacco smoking, eventually reducing lung cancer incidence. Two hundred eighteen deaths per year are due to lung cancer. Crude tobacco smoking is socially accepted in rural/tribal India. From May 2007, our NGO conducts the project "BIDI [Locally made crude-Indian-tobacco] OR HEALTH" which aims to reduce tobacco product consumption and provide de-addiction guidance/counseling.
Methods: Eleven villages from rural India were included ($n=511$; age, 14–24 years). Counseling effect was monitored for 4 months: counseling for cause tobacco use and educational/social factors. Twenty follow-up-sessions were conducted during the course of the study.
Results: Of 511 tobacco users, 493 continued to participate (18 dropouts). Thirty-two percent had obstructive pulmonary disease and respiratory disorders and 12 % tuberculosis. Eight healthcare personnel from rural government clinics were trained in counseling with community leaders. Four hundred thirty-one participants showed positive attitudes toward quitting tobacco use. Of these, 410 smokers quit the habit of tobacco smoking. Twenty-one were able to abstain for a short period, but eventually restarted the habit. Post-project surveillance showed the need for community help and rehabilitation. Of 431 who responded positively, the majority (394) were adolescents who started using tobacco due to peer pressure (84 %) and imitation of tobacco advertising on media/films/TV (11 %).
Conclusions: NGO activists with scientific knowledge/expertise are the only available resource for influencing cancer incidence in India. NGOs should utilize this approach to reduce the cost factor in cancer control strategies and better de-addiction facilities in rural/tribal areas where qualified oncologists are a rarity.
Recommendations: Developing nations have little manpower/resources/technologies in de-addiction. Nicotine replacement therapies are expensive and available in metro cities only. The government must carry out supportive care program with NGO counselors to decrease the mortality/morbidity of lung cancer. Anti-tobacco activists trained in counseling provide better cancer care with reduced cost. We must unite at MASCC 2012 Symposium on this issue.

351
A phase I study evaluating the potential drug interaction of netupitant, palonosetron, ketoconazole, rifampicin and oral contraceptives

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Objectives: Neurokinin-1 receptor antagonist (NK_1-RA) is commonly co-administered with a 5-HT_3RA such as palonosetron (PALO) to prevent nausea and vomiting induced by chemotherapy. Netupitant (NETU), a new NK_1-RA, is both a substrate for and a moderate inhibitor of CYP3A4. Three studies were designed to evaluate the potential drug–drug interaction of NETU with PALO, a substrate (oral contraceptives, OCs), an inhibitor (ketoconazole, KETO) or an inducer (rifampicin, RIF) of CYP3A4.
Methods: Study 1 was a three-way crossover in 18 healthy subjects receiving NETU (450 mg, PO, day 1) and PALO (0.75 mg PO, day 1). Studies 2 and 3 were two-way crossover trials where healthy volunteers received a single fixed-dose combination (FDC) of NETU/PALO (300/0.5 mg, PO). In study 2, 24 women received the FDC and OCs (ethinylestradiol/levonorgestrel, 60/300 μg) on day 1. In study 3, 36 subjects received the FDC on day 1 and KETO (400 mg, QD, from day 2 to day 10) or RIF (60 mg, QD, from day 7 to day 10).
Results: There were no significant pharmacokinetic interactions between NETU and PALO. KETO increases NETU AUC by 140 % and C_{max} by 25 %. RIF decreased NETU AUC by 83 % and C_{max} by 62 %. The FDC did not significantly affect exposure to ethinylestradiol;

systemic exposure to levonorgestrel increased by 40 %, a level that is not considered clinically relevant.
Conclusions: No interaction was clinically relevant between NETU and PALO or between FDC and OCs (CYP3A4 substrates). The co-administration of the FDC with inhibitors or inducers of the CYP3A4 may require dose adjustments. The treatments were well tolerated.

353
Do women with breast cancer wish for healthy sex life?

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Objectives: Cancer surgery/chemotherapy has improved the quality of life and life expectancy of breast cancer sufferers. Married women suffering from breast cancer do think about leading a healthy sex life. In procreational sex, the ideas are not often clear and may lead to depression/suicidal behavior.
Methods: In this quasi-experimental study, 26 breast cancer sufferers (14–45 years of age) wishing to discuss sex life after diagnosis were offered counseling/psychotherapy. Questionnaire responses were evaluated statistically. Our Indian cancer NGO followed these women who returned to small towns after chemo/surgery in cities. Separate evaluation proforma were given to husbands to analyze their attitudes toward their wives after the diagnosis of breast cancer. Due consideration was given to cultural/social/educational background. Participants attended eight counseling sessions. In post-sessions, behaviors toward sex life were noted.
Results: Two patients died during the study. Four failed to complete the study due to post-chemotherapy sickness. After counseling, 18 out of 20 women improved psychologically to approach the issue of sex life. Surprisingly, 11 women suggested support group with NGO community workers to foster relationship among communities and women with breast cancer.
Conclusions: Wishing for a healthy sex life in breast cancer sufferers is looked at as taboo in developing world. Gender discrimination is wide; hence, our cancer NGO decided to break the silence on this burning issue. We found that given proper counseling/psychosocial support, women can overcome trauma of breast cancer diagnosis. We need to give them hope: "It's not the end of road". Disturbed sex life with depression can turn such women to be suicidal.
Recommendations: At MASCC 2012 Symposium, we must discuss such sensitive issues. With the MASCC board permission, we plan to form a work group with European/American researchers to work further on this sensitive issue.

354
A new taxonomy for evaluating patients' out-of-pocket costs

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Objectives: The objectives were to describe a new taxonomy for classifying medical patients' out-of-pocket costs and to better characterize their relationship to medical care and the appropriate or expected ownership for financing based on that relationship.
Methods: Using the classification techniques of Bailey (1994), the author has developed a new taxonomy by examining existing costing categories for medical patients, with a focus on cancer patients as a case study, and grouping them into logical conceptual spheres. The intent is that each of these spheres shares some common characteristics as well as common expected funding sources.
Results: The author presents three overall spheres of costs. The author has labeled these spheres: medical costs, non-medical costs, and societal costs. Each sphere has a different expectation in terms of the involvement of government, charity, or patient and family financial responsibility. Although these lines have not historically been clearly defined, the majority of costs in each of these spheres belong predominately to one funding source in a typical developed country. The author surmises that when we begin to pursue financial support outside of the appropriate sphere, we run into significant challenges, and some tough ethical questions arise.
Conclusions: This new taxonomy may prove helpful in determining where the boundaries are for financial responsibility between governments, charity, and patients. The intent is to provide some guideposts on when and where financing for medically related costs should be sourced.

355
The impact of a specialized oncology nursing intervention on newly diagnosed breast and colorectal cancer patients: a cluster randomized trial

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Objectives: Patient transitions during the early phases of cancer care from the initial diagnosis through oncology consultation are often poorly coordinated, resulting in unmet need, poor continuity, and resultant distress. Better coordination of care during this period has been proposed to improve the care experience of these patients. We designed a randomized trial to test a community-based nursing-led coordination of care intervention in newly diagnosed breast and colorectal cancer patients.
Methods: This is a cluster randomized control trial in 193 newly diagnosed breast and colorectal cancer patients enrolled through surgical practices within 7 days of cancer surgery in Toronto, Canada. Surgical practices were randomized between a control group involving usual care practices and a standardized nursing intervention consisting of an in-person supportive care assessment with ongoing support to meet identified needs (telephone and in-person), including linkage to community services. The primary outcomes measured at 8 weeks were validated patient-reported outcomes (PROs) of (1) unmet need (SCNS) and (2) continuity of care (CCCQI). Secondary outcomes included (1) quality of life (EORTC QLQ-C30), (2) health resource utilization, and (3) level of uncertainty with care trajectory (MUIS) at 8 weeks.
Results: One hundred twenty-one breast and 72 colorectal patients were randomized through 28 surgical practices. The intervention group had a median of six nursing contacts over the study period. There were no differences between groups on PROs. Health service utilization did not differ between groups.
Conclusions: A specialized oncology nursing intervention early in the care trajectory did not result in improved supportive care outcomes for patients.

357
Systematically improving nationwide outcomes in key symptom areas

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Introduction: All health services can benefit from quality cycles that deliberately improve the care that is offered. This is best evidenced by measuring outcomes that are of relevance to the patient population.
Methods: This study draws on the Australian Palliative Care Outcomes Collaborative which collects point-of-care data on clinical outcomes in palliative care for more than 80 % of all people referred to palliative care in Australia routinely. These data have been looked at

over six monthly periods (three consecutive years) and analysed for improvements in symptom control across and within services.
Results: The data demonstrate that symptom control has been systematically improving across Australia in the more than 15,000 clinical encounters for each of these 6×6-month periods—more than 90,000 observations in total. Key factors associated with this include benchmarking meetings where services share the quality improvement initiatives that they are implementing.
Discussion: As with every other part of health care, the outcomes for people at the end of life can be systematically improved. This requires a system-wide approach to improving the care of people under these circumstances.

359
Evaluation of the breast self-examination (BSE) by the first- and second-degree relatives of the patients with breast cancer

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Objective: This study aims to identify health promotions concerning breast self-examination (BSE) by the first- and second-degree relatives of the patients with breast cancer.
Material and method: In this study, the experiment group consists of the first- and second-degree relatives of patients with breast cancer undergoing treatment at the Departments of Surgery and Oncology of a hospital. The research sample is taken from the relatives of 150 patients in the hospital. The research is still in progress, and the data of the preparatory work are out of 54 people. In collecting the data, a questionnaire prepared in accordance with the literature reviewed by the researchers and the Breast Cancer Health Promotion Model Criteria have been used. The research is to be completed by April 2012.
Preliminary results: The experiment group is made up of only women, and the average age is between 36.85±11.60 years. Of these, 83.3 % is the first-degree relatives of the patients and the rest (16.7 %) is the second-degree ones. Sixty-three percent of the group state that they do the BSE; 81.2 % have no idea when they have done it and 51.9 % about how it is done. The health promotion model lower dimension score averages are calculated as follows: sensitivity, 9.01± 2.43; importance, 18.20±5.01; motivation, 19.74±4.53; benefit, 19.74±4.63; hindrance, 16.77±5.37; and effectiveness, 52.00±8.86.
Conclusion: Upon the collection of all data, a statistical analysis is to be conducted and suggestions are to be made, afterwards.

360
Uncertainty and its associated factors in patients with hepatocellular carcinoma receiving one course of non-surgical treatment: a longitudinal study

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Objective: The objectives were to (1) explore changes in physical and psychological distress and uncertainty and (2) identify the significant factors related to changes in uncertainty over a period of 2 months in patients with hepatocellular carcinoma receiving one course of non-surgical treatment.
Methods: A longitudinal prospective design was used, with participants recruited from a teaching hospital in northern Taiwan. Data were collected three times: within 3 days prior to discharge (T0) and at the fourth (T1) and eighth (T2) weeks after discharge. A set of structured questionnaires was used to assess participants' uncertainty, symptom distress, anxiety, and depression. The changes in uncertainty and associated factors were examined using generalized estimating equations.
Results: One hundred and twenty-two patients were included in this study. Fatigue was reported to be the most distressful symptom after treatment. Overall uncertainty decreased monthly after discharge. The change in uncertainty 2 months after the treatment was associated with age, Child–Pugh stage, portal vein thrombosis, the level of alpha-1-feto-protein (AFP), adriamycin, and the level of symptom distress and anxiety.
Conclusions: Healthcare providers should pay special attention to patients of young age, those with Child–Pugh B stage and higher level of AFP, and those who have higher levels of anxiety after discharge. Designing personalized education programs before discharge for patients with young age and those with higher levels of anxiety is suggested to help patients decrease the level of uncertainty after discharge.

362
Appropriate symptom management for terminally ill cancer patients lead to decreasing of prevalence of continuous-deep palliative sedation (CDS)

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Objectives: There is wide variation in the frequency of reported use of continuous-deep palliative sedation (CDS). We conducted a retrospective analysis to assess the prevalence and features of CDS in our palliative care unit (PCU).
Aims: The aims were to clarify the frequency and outcomes of CDS, to explore the efficacy of a multidisciplinary team conference (MDTC) including palliative care experts concerning about decision making surrounding the application of CDS, and to understand the satisfaction of bereaved families.
Methods: We performed a systemic retrospective analysis of the medical and nursing records of cancer patients who died at the PCU in Higashi Sapporo Hospital between April 2005 and August 2011. CDS can only be administered safely and appropriately when a multidisciplinary team is involved in the decision-making process. Main outcome measures were frequency and characteristics of CDS (patients' background, all target symptoms, medications used for sedation, duration, patient distress, family's satisfaction and distress). We mailed anonymous questionnaires to bereaved families in August 2011.
Results: Of all 1,581 deceased patients, 22(1.39 %) had received CDS. Six patients (0.38 %) did not meet the appropriate criteria for CDS according to the MDTC and, therefore, did not receive CDS. Refractory symptoms were: exhaustion in 9 (40.9 %), dyspnea in 7 (31.8 %), pain in 5 (22.7 %), delirium in 1 (4.5 %), and existential suffering in 1 (4.5 %). CDS was used in 20 (90.9 %) of the cases induced by benzodiazepines and had a duration of <1 week in 17 (77.3 %).
Conclusions: Our results indicate that the prevalence of CDS will be decreased when carried out in an appropriate indication. Continuity of teamwork, good coordination, exchange of information, and communication between the various care providers are essential.

363
The survivorship of children with primary metastatic bone and soft tissue sarcomas

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Objectives: The objective was to improve the survivorship of paediatric patients with primary metastatic disease of bone and soft tissue sarcomas (STS).

Methods: Ninety-eight children and adolescents with mean age of 10.8 years (42 males, 56 females; range, 2–16 years old) with osteosarcoma (OS), Ewing's sarcoma and PNET (ESFT), rhabdomyosarcoma and synovial sarcoma were treated between 1997 and 2008. Histologically, 23 patients had osteosarcoma, 33 Ewing's sarcoma, 19 PNET, 15 rhabdomyosarcoma and 8 had synovial sarcoma. The most often affected area was the area of the lower extremity, 40 cases. According to the staging systems adopted, a size >5 cm (TB) was reported in 20 cases of STS. Twelve patients had nodal involvement and 85 had distant metastases—mostly in the lungs, 48 cases—bones were involved in 15 cases and combined lesions were 23 cases. Treatment consisted of neoadjuvant chemotherapy, radiotherapy of the initial tumor (metastasis was gone after the induction, unless in cases of osteosarcoma), oncologic surgery and adjuvant chemotherapy; 37 patients with ESFT underwent high-dose chemotherapy with peripheral blood stem cell transplantation.
Results: In our research, we have analyzed the 3-year disease-free survival (DFS). Thus, 3-year DFS for patients with OS, ESFT and STS were 31.9±9.9, 53.0±7.7 and 22.8±8.9 %.
Conclusion: More aggressive systemic chemotherapy and surgery improves DFS. Long-term survival is possible, even for patients with metastatic disease.

364
The treatment of children with primary metastatic Ewing sarcoma family tumors

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Objectives: The objective was to improve the results of the treatment of primary metastatic Ewing's sarcoma family tumors (ESFT) for children and adolescents.
Methods: Fifty-two children and adolescents with a mean age of 11.0 years (31 males, 31 females; range, 3–16 years old) with Ewing's sarcoma and PNET (ESFT) were treated between 1997 and 2008. Histologically, 33 patients had Ewing's sarcoma and 19 PNET. Multiple metastases at diagnosis were in 25 cases. One patient had nodal involvement and 32 had distant metastases, mostly in the lungs (22 cases); bones were involved in nine cases and combined lesions (bones+other) in 21 cases. Treatment consisted of neoadjuvant chemotherapy, radiotherapy of the initial tumor (metastasis was gone after the induction), oncologic limb-sparing surgery and adjuvant chemotherapy for 11 patients with contraindications to HDT; 41 patients with ESFT underwent high-dose chemotherapy with peripheral blood stem cell transplantation.
Results: In our research, we have analyzed the 3-year disease-free survival (DFS). Thus, 3-year DFS for patients with ESFT was 53.0± 7.7% and for patients with bone metastases (bones only or combined lesions) was 45.1±15.6 %.
Conclusion: More aggressive systemic chemotherapy and surgery improves DFS. Long-term survival is possible, even for patients with metastatic disease with bone involvement.

365
Mapping the cancer-specific EORTC QLQ-C30 to the generic preference-based 15D instrument in breast cancer patients

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Objectives: EORTC QLQ-C30 is frequently used to measure the health-related quality of life (HRQoL) of cancer patients. However, it does not produce a single utility score for quality-adjusted life year calculations. Kontodimopoulos et al. (2009) predicted accurately the 15D utility scores for gastric cancer (GC) patients using an ordinary least-squares regression model with a set of QLQ-C30 scale scores as explanatory variables. We explored whether this model is valid for breast cancer (BC) patients or whether a different set of scales performs better.
Methods: One hundred eighty-one BC patients entering a randomized, controlled exercise intervention study after adjuvant treatment in the Helsinki University Central Hospital filled in the generic 15D and disease-specific EORTC QLQ-C30 questionnaires. For these patients, the Kontodimopoulos model was run first and then a forward stepwise model with all QLQ-C30 scales as potential explanatory variables. The resulting models were compared in terms of explanatory power (adjusted R^2) and root mean square error (RMSE).
Results: The four QLQ-C30 scales that were significant predictors for 15D utilities in GC patients were not the best predictors in BC patients (adjusted R^2=0.909 vs. 0.493). The scales best predicting the 15D utilities in BC patients were cognitive function, pain, emotional function, and fatigue (adjusted R^2=0.527). The RMSEs of the models were 6.2 and 6.0 %, respectively.
Conclusions: The best model for BC patients was different from that for GC patients. The lower adjusted R^2 and higher RMSE among BC patients are probably due to less variance in the 15D scores compared to GC patients.

366
Cognitive function of elderly patients treated for a localized breast cancer: preliminary results of a French multicenter, prospective longitudinal study

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Mild cognitive deficits are often reported by patients receiving chemotherapy for cancer, but could also be observed before treatment, just after the announcement of diagnosis. Our goal was to clarify the incidence and nature of these disorders among elderly patients, a specifically vulnerable group to develop cognitive dysfunctions, in evaluating the impact of chemotherapy and the influence of anxio-depressive factors before and after treatment.
Cognitive functions, cognitive complaint, anxiety–depression, and fatigue were assessed before and after treatment. Eighty-seven patients (71±4 years old) with localized breast cancer were included: 33 treated with chemotherapy and radiotherapy and 54 without chemotherapy. Cognitive impairment was defined as a score <1.5 standard deviation (SD) of normative data on two or more tests or <2 SDs on one or more test. After treatment, the cognitive performance of the two groups was compared with the Reliable Cognitive Index (RCI).
Before any adjuvant treatment, cognitive impairments were observed for 67 % of patients with chemotherapy and 46 % of patients without chemotherapy. Anxiety–depression and fatigue were related to cognitive complaint (p<0.01), but not to objective cognitive scores. After treatment, performances on digit span (RCI=−0.39 vs. 0.03 in the chemotherapy group and group without chemotherapy, respectively), arithmetic (−0.14 vs. 0.7), and delayed free recall (−0.09 vs. 0.17) were lower in the group with chemotherapy.
Almost half of elderly breast cancer patients had objective cognitive impairment before any adjuvant therapy. Consistent with previous studies, anxiety, depression, and fatigue were related to cognitive complaint, but not to objective cognitive scores. Chemotherapy appears to have a deleterious impact on some cognitive function.

367

Living alone, obesity and smoking: important factors for quality of life after radiotherapy for prostate cancer

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Objectives: While treatment of prostate cancer increases survival, adverse effects may reduce quality of life (QoL). The aims of this study were to investigate the frequency and severity of self-assessed late adverse effects and identify the patients most exposed.
Methods: The QoL of cancer survivors with localized or locally advanced prostate cancer treated with conformal radiotherapy (70–78 Gy) and androgen deprivation therapy was analyzed using SF-12 and EPIC-26 questionnaires. Patients were stratified into three groups: filling out the questionnaires 1–2, 2–3, and 3–4 years after radiotherapy. Differences between groups were tested using ANOVA and chi-square test. The influence of marital status, severe obesity, smoking, and applied dose of radiotherapy on QoL was evaluated using multiple linear and logistic regression analyses.
Results: Of 337 patients, 317 (94 %) answered the questionnaire. The percentages of patients with moderate–severe bother in the EPIC domains urinary, bowel, sexual, and hot flushes 1–2 years after treatment were 18, 13, 76, and 49 %; after 2–3 years, 15, 7, 64, and 30 %; and after 3–4 years, 12, 14, 66, and 13 %, respectively. Current smoking had a negative effect on SF-12 physical condition, EPIC bowel (OR=7.8, p=0.003), and sexual domains. Severe obesity had a negative influence on SF-12 physical condition and EPIC incontinence. Living alone was associated with lower SF-12 physical and mental scores and affected urinary bother and hormonal domains.
Conclusions: The results showed significant negative associations between smoking, severe obesity, and living alone on self-assessed late adverse effects after radiotherapy. This information may guide rehabilitation.

368

Insights into the management of bone metastases: a comprehensive European survey

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Objectives: Bone is a common site of metastatic spread for various primary cancers; the resulting pain and skeletal-related events (SREs) have substantial negative effects on the quality of life. Bone-targeted agents (BTAs) can prevent SREs. We investigated how BTAs have been used in Europe to identify whether patients' needs are being met.
Methods: This is a prospective, observational chart audit in France, Germany, Italy, Spain and the UK. Eight hundred eighty-one physicians completed brief questionnaires on 17,193 patients examined during the observation period, and detailed questionnaires for 9,303 patients meeting specific criteria. Patient cases were weighted according to the probability of their prospective inclusion.
Results: Only 53 % of patients with bone metastases were receiving bisphosphonates, the only available BTAs at that time. A further 17 % were expected never to receive such treatment; the most common reasons given were renal issues (bisphosphonates are associated with renal toxicity) and short life expectancy, despite the fact that 61 % of patients considered unlikely to be treated had a life expectancy of ≥1 year and 72 % were judged by the treating physician to have moderate to high risk of a SRE. Ten per cent of patients had bisphosphonate treatment delayed; the main reasons given were that bone metastases were deemed to respond to initial anti-tumour therapies (56 %) or safety concerns (31 %).
Conclusions: Many patients with bone metastases are not receiving bisphosphonate therapy and almost one in five never will, despite the high impact on quality of life and costs associated with SREs. The use of new and superior BTAs, such as denosumab, and better physician education are warranted.

369

Retrospective study to evaluate the patient time burden associated with outpatient red blood cell transfusions in cancer patients receiving chemotherapy

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Objectives: This study estimates the time-related patient burden associated with outpatient RBC transfusion.
Methods: A retrospective chart review of cancer patients receiving a RBC transfusion was conducted at ten US outpatient centers. RBC transfusion time was measured as time elapsed from pre- to post-transfusion vital sign assessment and from transfusion start to stop time. Elapsed time from hemoglobin level testing and blood draw for cross-match to transfusion, estimated travel time and distance, and clinical and demographic data were also collected.
Results: Results from 74 % (n=111) of the target sample (47.7 % male; mean age, 65 years) demonstrated that the mean elapsed time between pre- and post-vital sign assessment was 4.22 h (95%CI=3.64–4.81). Hemoglobin level testing (mean Hg level, 8.32 g/dL) and blood draw for cross-match were completed an average of 31.24 h (95% CI=16.98–45.49) and 18.18 h (95% CI=12.13–24.23) prior to transfusion, respectively. Patient one-way travel time averaged 30.22 min (95% CI=26.12–34.31).

Patient RBC Transfusion Burden

Pre-RBC Transfusion Visit Time	Mean	SE	Range	95% CI
Hemoglobin Level Testing to Transfusion	31.24 Hours	6.30	0.88 to 120.8	16.98 to 45.49
Blood Draw for Cross-Match to Transfusion	18.18 Hours	2.56	0.88 to 67.33	12.13 to 24.23
RBC Transfusion Elapsed Time				
Pre to Post Vital Signs Assessment Time	4.22 Hours	0.24	1.75 to 6.92	3.64 to 4.81
Transfusion Start Time to Stop Time	3.71 Hours	0.25	1.12 to 6.42	3.11 to 4.32
Travel Burden				
Distance	21.67 Miles	2.62	0.79 to 120.0	15.25 to 28.09
Time	30.22 Minutes	2.07	2.00 to 140.0	26.12 to 34.31

Patient RBC transfusion burden

Conclusions: RBC transfusions for chemotherapy-induced anemia patients require blood testing visits and site travel in addition to the timely transfusion procedure. This burden may be considered when deciding on an anemia treatment to prevent the need for transfusions.

370

Analyzing knowledge, perception, and attitudes of nurses: in care of lung cancer patients

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Objectives: The objective was (1) to assess knowledge, perception, and attitudes of nurses in cancer NGO setup on the nursing care of lung cancer patients.
Methods: From October 2010, a questionnaire-based study consisting of two sections was done.

1. Information about respondents
2. Methods to elicit nurses' knowledge perception and attitudes in the care of cancer patients

All questionnaires were returned and analyzed using a simple statistical method. We also designed a framework for orientation/CME of novices to experts in providing nursing care for cancer patients. This presentation outlines the role of cancer nurse, impact on patient outcomes, and education required for competent practice.
Result: Nurses (N=23, 18 women and 5 men) aged between 20 and 35 years were enrolled from the district hospital and rural catholic mission in rural/tribal India. Knowledge, perception, and attitudes of nurses toward cancer care are minimal, with only ten showing special skill, perception, and good attitudes toward caring for cancer patients as opposed to nine with little knowledge and low perception of caring for cancer patients; the remaining four had no specific knowledge and perception toward nursing care of cancer patients.
Conclusion: Oncology nursing is an important specialty, but neglected. Resources are scarce for such initiatives. Trained nurses can improve the quality of life (QOL) of cancer patients. This presentation will describe the role of cancer nurses, impact on patients' QOL, and education required for competent clinical care of cancer patients.

371

Health resource utilisation (HRU) associated with radiation to bone (RB) across eight European countries: results from a retrospective study

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Objective: The objective was to valuate health resource utilisation (HRU) associated with radiation to bone (RB) in patients with bone metastases secondary to breast/lung/prostate cancer or multiple myeloma across eight European countries.
Methods: Eligible patients (≥1 SRE) were enrolled from Austria, Czech Republic, Finland, Greece, Poland, Portugal, Sweden and Switzerland (study 20090146). Data were extracted from patients' charts from baseline (pre-SRE period: 3-month SRE-free period, beginning 3.5 months pre-SRE; post-SRE period: 14-day diagnosis period pre-SRE to 3 months post-SRE); we present the mean (bootstrapped 95 % confidence interval, CI) HRU change from baseline per index RB.
Results: Of 1,022 enrolled patients, 482 had RB. The table shows the increase in the number and duration of inpatient stays. Overall, there were increases of 0.52 (0.41–0.62) inpatient stays (varying according to country-specific treatment practices, generally involving internal medicine, oncology or radiation units/wards), representing a total of 7.81 (6.53–9.09)days/index RB. The number of outpatient visits increased by 4.24 (3.67–4.80); most involved a radiation oncologist/radiotherapist (3.65, 3.13–4.17), while a smaller number involved an oncologist (0.60, 0.37–0.83). Emergency room visits were infrequent, while day care visits increased by 1.52 (1.29–1.74). The number of procedures increased (8.51, 7.84–9.18), predominantly in external beam radiation to bone (8.07, 7.52–8.63).
Conclusions: RB was associated with increased HRU burden, generally to radiation- or oncology-related provider types, with some country-specific differences.

372

Cost of skeletal complications from bone metastases (BM): results from a retrospective European study

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Objectives: The objectives were to estimate the cost of SREs [radiation to bone, surgery to bone (SB), pathologic fracture, spinal cord compression (SCC)] in six European countries.
Methods: Eligible patients [bone metastases (BM) from breast/lung/prostate cancer or multiple myeloma] were included from centres in Austria, Czech Republic, Finland, Greece, Portugal, Sweden, Poland and Switzerland (study 20090146); data were limited to the first six countries listed. Health-resource utilisation (HRU) included inpatient and day care stays, outpatient and emergency room visits, procedures and medications. Index SRE-associated costs were estimated as the increase from HRU during baseline (3-month SRE-free period, beginning 3.5 months prior to the SRE) to the post-SRE period (3-month period post-SRE plus a 14-day diagnosis period pre-SRE). Country-specific unit costs were from 2010; local currencies were converted to Euro (24.096CZK/9.200SEK=1€).
Results: The table shows the mean cost across countries (MCAC), country-specific cost per SRE and mean cost ratios (country-specific cost/MCAC).
Conclusions: SREs were associated with substantial HRU costs; in the majority of countries, SCC and SB had the highest cost per SRE. Large variations in HRU costs were observed between countries; for example, in Austria, the costs for each SRE doubled the MCAC. Country-specific SRE costs are driven by differences in HRU, treatment practice and local unit costs.

Table: mean cost per SRE and mean cost ratio (country-specific cost:MCAC) associated with an index SRE.

	Mean cost per SRE (mean cost ratio), €			
Total index SREs, n=744	RB, n=356	SB, n=71	PF, n=255	SCC, n=62
Mean cost across countries	7,043 (NA)	11,101 (NA)	5,242 (NA)	11,509 (NA)
Austria	14,603 (2.07)	21,496 (1.94)	10,305 (1.97)	22,191 (1.93)
Czech Republic	2,258 (0.32)	6,030 (0.54)	1,858 (0.35)	6,140 (0.53)
Finland	7,251 (1.03)	13,343 (1.20)	5,397 (1.03)	14,447 (1.26)
Greece	9,734 (1.38)	7,943 (0.72)	4,478 (0.85)	7,538 (0.65)
Portugal	5,144 (0.73)	7,130 (0.64)	3,676 (0.70)	5,739 (0.50)
Sweden	3,270 (0.46)	10,666 (0.96)	5,739 (1.09)	13,000 (1.13)

NA: not applicable

Table 1

373

Cancer advocacy is easy and effective—analysing and debunking the myths

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Numerous "myths" of advocacy exist that preclude people from becoming involved in the policymaking process of cancer patients. Many participants have questions, concerns, and preconceived notions about advocacy and health policy in cancer supportive care career. Therefore, we compiled the ten most pervasive advocacy myths and debunked them one by one graphically at the MASCC 2012 Symposium in front of participants with the help of leaflets/pictures and educational material.

1. I am too busy—there is not enough time in a day to work as a cancer patients advocate.
2. I am a rehabilitation nurse, not a lobbyist.
3. This process is intimidating, requiring expertise.
4. Why should I bother? It doesn't seem to make a difference. I have written before and not received a response on this issue of cancer patients advocate. When I have received a response, it addresses the issue I wrote about, or I totally disagreed with the views expressed.
5. My view on the sufferings of cancer patients is a lost cause; there is no vocal open support for this work in developing nations.
6. My concerns or issues of priority are not being discussed in cancer workshops/symposia.
7. I am not an expert in this issue. I know outpatient care, not clinical trials.
8. I cannot make it to cancer conferences/symposia venue to meet with my colleagues and seniors to exchange views.
9. I do not get enough resources/finances for this cancer patient's advocacy work.

Table: mean (95% CI) increase from baseline associated with an index RB for number and duration of inpatient stays.

	Number of inpatient stays				Total duration of inpatient stay			
	Overall	Most common unit/ward type			Overall	Most common unit/ward type		
		Internal medicine unit/ward	Oncology unit/ward	Radiation unit/ward		Internal medicine unit/ward	Oncology unit/ward	Radiation unit/ward
All countries, N=482	0.52 (0.41, 0.62)	0.10 (0.05, 0.15)	0.16 (0.10, 0.22)	0.14 (0.11, 0.18)	7.81 (6.53, 9.09)	1.14 (0.58, 1.70)	1.82 (1.14, 2.49)	1.86 (1.31, 2.40)
Austria, N=57	0.54 (0.06, 1.02)	0.01 (-0.08, 0.11)	0.14 (-0.01, 0.28)	0.45 (0.27, 0.64)	7.33 (3.77, 10.89)	-0.15 (-0.69, 0.39)	0.66 (-0.47, 1.79)	5.23 (3.16, 7.29)
Czech Republic, N=59	0.42 (0.17, 0.68)	-0.02 (-0.09, 0.04)	0.25 (0.07, 0.43)	0.10 (0.01, 0.19)	6.61 (3.36, 9.86)	-0.26 (-0.67, 0.14)	2.93 (1.14, 4.73)	1.25 (0.19, 2.32)
Finland, N=60	0.67 (0.33, 1.01)	0.13 (-0.06, 0.32)	0.25 (0.10, 0.40)	0.05 (-0.02, 0.12)	6.97 (3.00, 10.93)	0.42 (-0.72, 1.55)	1.35 (0.49, 2.21)	0.91 (-0.64, 2.45)
Greece, N=59	0.58 (0.24, 0.92)	0.10 (0.01, 0.19)	0.38 (0.08, 0.67)	0.02 (-0.01, 0.05)	9.90 (5.29, 14.50)	1.24 (0.05, 2.42)	6.67 (2.51, 10.83)	0.37 (-0.35, 1.10)
Poland, N=67	0.45 (0.28, 0.61)	0.01 (-0.01, 0.04)	0.01 (-0.13, 0.14)	0.42 (0.30, 0.54)	6.80 (3.95, 9.66)	0.03 (-0.03, 0.09)	0.28 (-0.21, 0.77)	6.00 (3.61, 8.38)
Portugal, N=59	0.30 (0.16, 0.43)	0.05 (0.00, 0.10)	0.05 (-0.03, 0.12)	0.03 (-0.01, 0.08)	7.38 (3.54, 11.22)	0.46 (-0.17, 1.08)	1.10 (-0.24, 2.43)	0.22 (-0.17, 0.61)
Sweden, N=62	0.58 (0.34, 0.81)	0.04 (-0.07, 0.15)	0.19 (0.04, 0.33)	0.02 (-0.01, 0.05)	8.56 (5.27, 11.85)	0.29 (-0.77, 1.35)	1.15 (0.19, 2.10)	0.08 (-0.08, 0.24)
Switzerland, N=59	0.60 (0.33, 0.87)	0.46 (0.19, 0.73)	0.05 (-0.01, 0.11)	0.02 (-0.02, 0.05)	9.01 (4.85, 13.17)	7.27 (3.52, 11.02)	0.63 (-0.11, 1.37)	0.46 (-0.40, 1.32)

[Table 1]

10. I do not see good academic/financial future for this profession as cancer patients advocate.

374
Psycho-oncology work by non-government organisation in cancer control

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Objectives: Adolescents are highly susceptible to tobacco use. Our Indian cancer NGO team used traditional/faith healers' psychological advantage to motivate using an interventional study protocol. The aim was to reduce the use of crude tobacco products.
Methods: This was a phase III project, a retrospective analysis of the implementation of FCTC–WHO done by three NGO evaluation teams. The Indian district was divided into seven target villages with due representation to demographic pattern and socioeconomic criteria. There were 260 total participants, in the age group 14–24 years. Traditional faith healers were mobilized by community leaders (total of 13). Tobacco addicts were graded clinically. Traditional faith healers conducted 11 follow-up sessions during the course of the study.
Results: Of the total 260 tobacco users, 250 continued to participate (ten dropouts). Two hundred twenty-seven showed positive attitudes toward quitting tobacco use. Two hundred fifteen subjects had quit the habit of tobacco smoking. Twelve subjects were able to abstain for a short period, but eventually restarted the habit. Post-project surveillance showed the need for community help/rehabilitation. Of 227 who responded positively, the majority (220 cases) started using tobacco due to peer pressure (84 %) and imitation of tobacco advertising (11 %).
Conclusions: Scientific knowledge and expertise of traditional faith healers in tribal areas is controversial; they are the only available resource for influencing adolescents. They act as a channel to implement tobacco de-addiction programs through community participation.
Recommendations: Developing nations have few resources and technologies. NGOs have to carry out interventional programs with limited resources. Traditional faith healers can help achieve the MASCC objectives in resource-poor nations. For long-term success strategy, MASCC 2012 Symposium participants need to share experiences/difficulties in cancer control.

376
Analysis intestinal motility of cancer patients hospice program of a charity hospital of Teresina-PI—Brazil

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Aim: The aim of this study was to evaluate palliative care in cancer using several drugs to relieve pain, including opioids that are very effective in acute and chronic pain. Some side effects may occur, like constipation; however, they are required to minimize cancer symptoms, increasing life quality.
Methods: To assess the motility of patients using opioids in a palliative care program of the Charity Hospital in Teresina, patients were analyzed in the period August–September 2011. The evaluated parameters were age, sex, clinical diagnosis, gastrointestinal disorders, intestinal motility, drugs, and food frequency questionnaire.
Results: Eleven patients were evaluated: seven (63.6 %) were men and four (36.4 %) women. The average age was 48.14±17.8 years. Lung cancer was the most prevalent (36.4 %), and the drug most often used was morphine (81.8 %). In relation to gastrointestinal disorders, nausea (27.3 %), vomiting (27.3 %), gastrointestinal irritation (9.1 %), and others (18.2 %) were observed. The main complaint was constipation (100 %)—present in all patients. In relation to food intake, patients had low consumption of fruits and vegetables, in quality as well as in quantity and variety. There was statistical significance in relation to the consistency of stool and sex ($p=0.044$).
Conclusion: The results of this study demonstrated the high occurrence of constipation secondary to the use of morphine, evidencing the necessity of a multidisciplinary treatment with attention to bowel habits, diet advice, and early prescription of laxatives. These guidelines are relevant to minimize the suffering of patients with cancer who must receive morphine.

377
Intercostobrachial syndrome after nerve-sparing axillary lymph node dissection

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Objectives: Intercostobrachial nerve syndrome is the most frequent postoperative complication of axillary lymph node dissection (ALND) due to surgical injury of the intercostobrachial nerve (ICBN) during ALND. Intercostobrachial neuralgia represents neuropapthic pain (deafferentation-type pain) typically accompanied by remarkable sensory abnormalities in the distribution of the ICBN.
Methods: We conducted a prospective study to evaluate the frequency, characteristics, and location of sensory disturbances of the upper extremity in two groups of women who underwent level 2 ALND for operable breast cancer at the National Center of Oncology in the period 2005–2010. In group I (nerve-preserved or experimental group, 110 patients), besides long thoracic and thoracodorsal nerves, the ICBN was preserved (nerve-sparing ALND). In group II (control or nerve-sacrificed group, 110 patients), the ICBN was transected. Tactile sensitivity was assessed after 3 months from the surgery by special questionnaire and using standard neurological methods.
Results: Analyses of the results showed that the prevalence rate of sensory disturbances of the upper extremity was 12.7 % in the experimental group, which was significantly different from that of the control group (88.2 %, $p<0.01$). In the nerve-preserved group, sensory changes had hypesthesia (5/14) or paresthesia (9/14). Meanwhile, in the control group, sensory changes had a more severe character in the form of dysesthesia (37/97) or anesthesia (60/97), and in five patients, the phenomenon of allodynia was observed.
Conclusions: Our study demonstrates that the preservation of the ICBN during ALND (nerve-sparing ALND) produces minimal postoperative alterations in sensitivity, significantly improving the quality of life of the operated patients.

380
Cancer-related financial stress and strain: who is most at risk? A survey of cancer survivors in Ireland

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Objectives: Evidence is mounting concerning the financial impact of cancer on patients and families. We investigated factors

associated with increased risk of cancer-related financial stress and strain.

Methods: One thousand three hundred seventy-three individuals diagnosed with breast, lung or prostate cancer 3–24 months previously were identified from the National Cancer Registry Ireland and invited to complete a questionnaire. Main outcomes were self-reported cancer-related financial stress (impact of cancer diagnosis on household ability to make ends meet) and cancer-related financial strain (concerns about household financial situation since cancer diagnosis). Factors associated with increased cancer-related financial stress and strain were identified by logistic regression.

Results: Seven hundred forty (54 %) subjects participated. Forty-nine per cent reported increased financial stress, and 32 % increased financial strain, due to cancer. Pre-diagnosis employment status was a major predictor of stress and strain; prevalence was highest among those in paid employment (stress, 63 %; strain, 43 %) and lowest among the retired (stress, 22 %; strain, 13 %). Among non-retired people, risk of cancer-related financial stress was significantly increased in those who were younger and had dependents, mortgage/loans, and increased household bills post-diagnosis. Private health insurance and savings were associated with reduced risk. Among retired people, risk of cancer-related financial stress was associated with pre-diagnosis financial stress and medical card status (which provides free access to public health services). The findings were similar for financial strain.

Conclusions: Patients working at diagnosis are more likely to report cancer-related financial stress and strain. These findings could potentially inform the development of tools to identify patients most in need of financial advice and support.

382

Tonsil cancer patients and mandibular dose distributions following intensity-modulated radiation therapy: a pilot study

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Intensity-modulated radiation therapy (IMRT) is a treatment modality that minimizes doses to normal tissues. However, clinicians often lack dosimetric data to specific sites requiring oral surgery. Previously, we reported on the Memorial Sloan-Kettering experience of 133 base-of-tongue cancer patients treated with IMRT and their mandibular dose distributions. Here, we present preliminary data from tonsil cancer patients and corresponding dose distributions to mandibular tooth-borne regions.

Twenty-one patients with T1 (n=6), T2 (n=5), T3 (n=5), and T4 (n=5) disease were selected, each after 6,996 cGy of IMRT. Five mandibular areas (right/left molar, right/left premolar, and anterior) were contoured using CT images on MSKCC planning software. The average mean (avg_mean) and maximum (avg_max) volumetric doses were obtained for each defined mandibular region for both the ipsilateral and contralateral sides vis-à-vis tumor location. Contralateral-to-ipsilateral dose ratios (contra_ipsi_ratio) were subsequently calculated.

For all T, the avg_max of 7,061 and 5,158 cGy were seen in the ipsilateral and contralateral molar regions of the mandible, respectively. For T4 disease, the avg_max exceeded 5,057 cGy regardless of location or laterality. The mean values were lower for the anterior and premolar areas, whereas T3/4 patients received an avg_mean of 5,398 cGy to the ipsilateral molar regions. The molar contra_ipsi_ratio rose from 0.52 to 0.72 as tumor size increased from T1/2 to T3/4, indicating an elevated risk of osteoradionecrosis, regardless of laterality, in advanced-disease patients.

Dental extractions and implant surgery require careful treatment planning both before and after IMRT. In patients with advanced tonsil cancer, even the contralateral mandible is not spared from osteoradionecrosis risk.

383

The impact of an exercise-based palliative rehabilitation program on fatigue and physiotherapy measures

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Objectives: The study explored the impact of an exercise-based palliative rehabilitation program on fatigue and physiotherapy measures in patients with cancer.

Methods: Forty-six patients participated in an 8-week exercise program twice per week. Prior to initial assessment and at program completion, the patients completed the Multidimensional Fatigue Index (MFI-20), the 6-Minute Walk Test (6MWT), Timed Up and Go (TUG), and Functional Reach.

Results: Upon completion of the program, patients reported lower fatigue scores in four of the five subsections of the test (general: t=4.473, p=0.000; physical: t=2.695, p=0.000; decreased activity: t=3.542, p=0.001; and decreased motivation: t=2.942, p=0.001). All three physiotherapy outcome measures improved. The 6MWT distance increased (t=−6.405, p=0.000), the TUG decreased (t=4.725, p=0.000), and the functional reach distance improved (t=−2.729, p=0.009). There is an inverse correlation present between the 6MWT and the general fatigue (r=−0.267, p=0.029), physical fatigue (r=−0.245, p=0.046), and decreased activity (r=−0.307, p=0.012) subsections of the MFI-20. There was a positive correlation between mental fatigue and TUG (r=0.263, p=0.026).

Conclusions: Based on the findings of this study, exercise improves the physical outcomes and decreases the overall fatigue in this population. Palliative rehabilitation has shown a positive impact on cancer patients who may not have had the resource available to them previously.

384

Feasibility, safety and benefits of an exercise and counselling intervention in patients with acute leukaemia undergoing chemotherapy during outpatient management—a pilot study

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Aim: The aim of this study was to investigate the feasibility, adherence, safety and potential benefits of a 6-week supervised exercise and counselling intervention in patients with acute leukaemia undergoing chemotherapy in the outpatient setting.

Design: This is a prospective, multicentre, single-arm pilot intervention study.

Outcome measures: Physical and functional capacity was measured by the 6-min walk distance (6MWD), sit to stand test (SST) and the biceps arm curl (BAC). General well-being was assessed using the Short Form Health Survey (SF-36), health-related quality of life (HRQOL) by the Functional Assessment of Cancer Therapy—Anaemia Scale (FACT-An) and the symptom burden by MDASI.

Results: Seventeen of the 20 patients recruited with acute leukaemia completed all study requirements (85 %). Intervention adherence was

73 % for the supervised intervention, and compliance to wearing the step counter was 85 %. No adverse reactions that could be attributed to the intervention were observed. There were significant improvements in all physical and functional tests: 6MWD (p=0.0006), SST (p=0.0062) and the right and left BAC tests (p=0.0002 and p=0.0002, respectively). The psychometric tests showed significant improvements in HRQOL (p=0.0209, total FACT-An) and in vitality (p=0.0015) and mental health (p=0.047, SF-36). The symptom burden (MDASI) was significantly reduced at post-testing (p=0.0021) with a reduction in symptom interference on daily life activities (p=0.0069).
Conclusions: The intervention proved feasible, safe and well tolerated with significant multidimensional improvements in patients with acute leukaemia undergoing chemotherapy in the outpatient setting. These findings need to be confirmed in a larger sample presently being carried out as a randomized controlled trial (NCT01404520).

385
Patient satisfaction with an 8-week palliative rehabilitation program

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Objectives: The objective of the Palliative Rehabilitation Satisfaction Survey was to receive patient feedback and assess and improve the overall program performance. The aim of this program was to improve quality of life and to maintain or improve present functioning.
Methods: The satisfaction survey is completed at the end of the 8-week program. The questions were divided into five subsections: (1) physical environment, (2) quality of care, (3) information/communications, (4) care from team, and (5) self-care. On a scale of 0–5, the average score of 5 indicates very good and 0–2 means poor. Ninety-six patients were assessed since February 2010. Forty-six patients completed the full 8-week program. Patient assessments also included pre- and post-questionnaires: the Patient-Generated Subjective Global Assessment, Distress Thermometer, the Community Healthy Activities Model Program for Seniors, the Edmonton Symptom Assessment Scale, MD Anderson Symptom Inventory, Multidimensional Fatigue Inventory, and various functional evaluations.
Results: Forty-two patients completed the satisfaction survey. Twenty-two were men (age, 32–81 years). A total of 24 questions were answered. Twenty patients (48 %) scored 4 or higher on the satisfaction survey, five patients scored 3.5 or >50 %, while one patient scored <50 %.
Conclusion: Patient satisfaction is only one criterion for program evaluation. Out of 42 patients, 70–100 % were satisfied. Utilizing this tool in addition to other assessments conducted pre- and post-program has shown that this type of program meets the needs of the patient population, decreases side effects, and increases satisfaction and overall well-being.

387
Supportive oral care for cancer patients in an Austrian hospital

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Objective: Traditionally supportive oral care for cancer patients has been provided by the Clinic of Oral & Maxillofacial Surgery at the Paracelsus University Hospital in Salzburg, Austria. As the data of these patients could not be retrieved from our computer files, we started a specific documentation of these patients.
Material and method: For 3 months, all cancer patients with oral problems in context with their cancer treatment were documented for their malignancy, their intraoral findings, and the oral therapy provided.
Results: Altogether, 147 patients were examined in 188 consultations before, during, or after chemo- and/or radiotherapy: The majority of cancers was located in the gynecologic/urologic or in the head and neck area. Intraoral findings were mostly non-restorable teeth, bisphosphonate-related osteonecrosis of the jaws, osteomyelitis, or mucositis (in descending order). Oral care consisted of conservative treatment (e.g., rinsing, hygiene), extractions, denture adaptation, or counseling. Radiographs were taken in 85 instances. Dental technical work (e.g., trays for fluoride application) was provided for nine patients. Twenty-three outpatients were hospitalized for their dental treatment.
Conclusion: With more efficient cancer therapy, there is an increasing demand for supportive oral care. Many patients may not have had dental treatment over a long time, and due to time restraints only emergency oral care can be offered. Most patients need to be followed during the course of their cancer treatment. Ideally, a specialized dental team within a hospital should provide this important service.

388
The psychological benefits experienced by patients in a palliative rehabilitation program

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Objectives: The Palliative Rehabilitation Program (PRP) offers physical, psychosocial, nutritional and vocational rehabilitation for patients with advanced cancer. As part of the PRP, patients are offered the option to participate in an 8-week counselling program delivered by the social worker. The counselling approach consists of cognitive behavioural therapy and meaning-making exercises. The current research examined the differences in the problems identified by participants who chose to attend counselling versus those who did not. For those completing the counselling, it examined the problems identified before and after, as well as scores for distress, coping, depression, anxiety and well-being.
Methods: The Edmonton Symptom Assessment Scale items for depression, anxiety and well-being; the Distress thermometer; the Coping Thermometer; and the Problem Checklist were completed by 46 participants, 19 of those who also completed the counselling sessions. Descriptive statistics examined differences in the problems identified. Paired-sample t tests were used for pre/post-differences in depression, anxiety, well-being, coping and distress.
Results: The problems identified in the non-counselling group focused on physical symptoms such as pain and fatigue. The counselling group endorsed pain and fatigue, but reported more feelings of depression, anxiety and adjustment to illness. Over the 8-week PRP, the counselling group's scores decreased significantly (anxiety: p=0.005; depression: p=0.005; well-being: p=0.005; coping: p=0.004; distress: p=0.008).
Conclusions: Patients who self-identified more intense feelings of anxiety and depression were likely to choose counselling. These patients showed significant improvements in distress, depression, anxiety, coping and well-being.

389
New thoughts on the pathobiology of regimen-related mucosal injury

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Background and Methods: Considerable progress in our understanding of the biological basis for mucosal barrier injury (mucositis) induced by cancer therapy has been made since the original guidelines for managing mucositis in cancer patients were published in 2004. These advances in the field necessitate an updated review of the literature and guidelines. Panel members reviewed the biomedical literature on mucositis pathobiology published between January 2005 and December 2011.
Results: The biggest advance in our knowledge of mucositis pathobiology comes from the five-phase model of mucositis development with recent research focusing in the contributions of NFkB, the pro-inflammatory cytokines and TLRs to mucositis development. Furthermore, a patient's mucosal response to cancer therapy appears to be controlled by both global (i.e. gender, underlying systemic disease, race) and tissue-specific (i.e. epithelial type, intrinsic endocrine system, local microbial environment, function) factors.
Conclusion: The interactions of these elements, coupled with the underlying genetic influences, most likely govern the risk, course and severity of regimen-related mucosal injury. This presentation will update our understanding of the most recent concepts of mucositis pathogenesis.

390
Adherence to Multinational Association of Supportive Care in Cancer (MASCC) guidelines for prophylaxis of chemotherapy-induced nausea and vomiting

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Background: We assessed adherence to the Multinational Association of Supportive Care in Cancer (MASCC) guidelines for prophylaxis of chemotherapy-induced nausea and vomiting (CINV) at two institutions in Korea.
Patients and Methods: The charts of 520 patients undergoing chemotherapy in medical oncology and other departments between January 2011 and December 2011 were reviewed. Baseline characteristics and prophylaxis of CINV were recorded, and adherence to MASCC recommendations was determined.
Results: In the highly emetogenic risk group (using cisplatin >50 mg/m^2 alone or combination therapy), prophylaxis of acute CINV on day 1 with serotonin and neurokinin antagonists, corticosteroids, was not adherent in 181 (67.5 %) of 268 patients, mainly caused by not using aprepitant. Eighty-seven patients (32.5 %) who were treated triple antiemetics received chemotherapy in a medical oncology department. Fifty-seven patients received AC in a medical oncology department. Prophylaxis of acute CINV on day 1 was adherent in 50 patients (87.7 %). But 43 patients receiving AC in a general surgery department was not treated with a neurokinin antagonist. With adherence to the guidelines in the moderately emetogenic risk group receiving FOLFOX chemotherapy, 139 (96.5 %) of 144 patients used a serotonin antagonist for prophylaxis of acute CINV on day 1 and five patients (3.5 %) used serotonin and neurokinin antagonists. Thirty-five (25.2 %) of 139 patients using serotonin antagonists were treated with palonosetron.
Conclusion: This study demonstrated that neurokinin antagonists were not used for prophylaxis of CINV in the highly emetogenic risk and using the AC group. Adherence to guidelines for prophylaxis of CINV in the medical oncology department was superior to other departments.

391
Effect of aprepitant added to standard antiemetic regimen on acute phase after highly emetogenic chemotherapy: a meta-analysis

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Objectives: We performed a meta-analysis of double-blind, randomized, placebo-controlled trials to investigate the effect of adding aprepitant to a standard antiemetic regimen on the acute phase (within 0–24 h) of chemotherapy.
Methods: A PubMed Medline search using the MeSH terms "aprepitant" filtered by "clinical trial" yielded 73 articles. The outcome measures are defined as follows: total control=no vomiting, no rescue, nausea VAS<5 mm; complete protection=no vomiting, no rescue therapy, nausea VAS<25 mm; complete response=no vomiting, no rescue; no nausea=nausea VAS<5 mm; no significant nausea=nausea VAS<25 mm. The Mantel–Haenszel method with a fixed or random effects model (depending on between-study heterogeneity) was applied to calculate the risk ratio (RR) and risk difference (RD) with 95 % confidence interval (CI).
Results: Seven studies including 2,159 patients (1,081 aprepitant-based and 1,078 standard) were eligible.

Outcome or subgroup	Studies	*n*	Effect estimate (RR with CI)	Effect estimate (RD with CI)	Number needed to treat
Complete protection	4	1,460	1.09 (1.02–1.18)	0.06 (0.01–0.10)	17
Total control	4	1,460	1.07 (0.98–1.18)	0.04 (−0.01 to 0.08)	Not significant
Complete response	6	1,863	1.14 (1.09–1.19)	0.10 (0.07–0.14)	10
No vomiting	6	1,990	1.12 (1.06–1.18)	0.08 (0.04–0.11)	13
No rescue	6	1,990	1.03 (1.00–1.07)	0.03 (−0.00 to 0.05)	Not significant
No nausea	3	939	1.04 (0.95–1.13)	0.03 (−0.03 to 0.08)	Not significant
No significant nausea	4	1,423	1.04 (1.00–1.08)	0.03 (0.00–0.07)	Not significant

Aprepitant-based versus standard regimen (acute)

Conclusions: Adding aprepitant seemed to have no additional benefit on nausea control in the acute phase, but appeared to reduce the incidence of vomiting compared to the standard regimen.

392

Quantifying the benefit of adding aprepitant to standard antiemetic regimen for highly emetogenic chemotherapy: a meta-analysis of randomized controlled trials

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Objectives: Current guidelines recommend that patients who receive highly emetogenic chemotherapy should receive a NK-1 antagonist such as aprepitant in addition to the standard antiemetic regimen (5-HT3 antagonist and dexamethasone). The purpose of this study was to quantify the added benefit of aprepitant to the standard antiemetic regimen.
Methods: A PubMed Medline search using the MeSH terms "aprepitant" filtered by "clinical trial" yielded 73 articles. The primary endpoints were the incidence of nausea and vomiting over 5 days after chemotherapy. We have mentioned the definitions of outcome measures in another study submitted to this symposium. The Mantel–Haenszel method with a fixed or random effects model (depending on between-study heterogeneity) was applied to calculate the risk ratio (RR) and risk difference (RD) with 95 % confidence interval (CI).
Results: Eight studies including 3,197 patients (1,597 aprepitant-based and 1,600 standard) were eligible.

Outcome or subgroup	Studies	*n*	Effect estimate (RR with CI)	Effect estimate (RD with CI)	Number needed to treat
Total control	4	1,462	1.20 (1.03–1.41)	0.05 (0.01–0.10)	20
Complete protection	5	2,500	1.32 (1.22–1.44)	0.12 (0.06–0.18)	8
Complete response	6	1,863	1.32 (1.22–1.42)	0.16 (0.12–0.20)	6
No vomiting	6	1,992	1.34 (1.24–1.45)	0.16 (0.07–0.25)	6
No rescue therapy	6	1,992	1.09 (1.03–1.16)	0.06 (0.02–0.10)	17
No nausea	5	1,506	1.17 (1.01–1.35)	0.05 (0.00–0.09)	Not significant
No significant nausea	5	1,946	1.11 (1.03–1.19)	0.06 (0.02–0.10)	17
Hiccups	4	1,476	1.30 (1.04–1.62)	0.04 (0.01–0.08)	25

Aprepitant-based versus standard regimen (overall)

Conclusions: Aprepitant's beneficial effect mainly stemmed from reducing the vomiting incidence rather than nausea prevention. Hiccups were more likely to occur in the aprepitant group.

393

Randomized controlled trial of standardized education and telemonitoring on pain in outpatients with advanced solid tumors

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Background: Pain is often undertreated in an outpatient clinic. This trial tested the effectiveness of standardized education and telemonitoring in decreasing pain, distress, anxiety, and depression and improving the quality of life (QoL) and performance of outpatients with advanced cancers.
Methods: A total of 108 patients were randomly assigned to receive standardized education (control arm, $n=54$) or standardized education plus telemonitoring (experimental arm, $n=54$). Nursing specialists provided video-assisted educational material in both arm and daily telemonitoring for 1 week in the experimental arm. Assessment was performed at baseline and 1 week for pain (Brief Pain Inventory), distress (Distress Thermometer, DT), anxiety and depression (Hospital Anxiety and Depression Scale, HADS), QoL (QLQ-C30), and Karnofsky score.
Results: Overall ($n=108$), pain was significantly improved in 1 week, including worst pain (7.3–5.7, $P<0.01$), average pain (4.6–3.8, $P<0.01$), and interference (5.7–5.2, $P<0.01$). Other factors including anxiety (HADS score≥11, 75–56 %, $P<0.01$), depression (HADS score≥11, 73–51 %, $P<0.01$), QoL (QLQ-C30 score, 2.77–2.62, $P<0.01$), and Karnofsky score (32–66, $P<0.01$) were also improved in 1 week. However, the level of distress (DT scale≥4, 92–87 %, $P=0.27$) was not recovered. Telemonitoring plus standardized education group showed a more significant pain improvement (portion of average pain≥5, 35 vs. 19 %, $P=0.02$).
Conclusions: Standardized pain education using a nursing specialist is an efficient way to improve not only pain itself but also anxiety, depression, performance, and QoL. The addition of telemonitoring helps improve pain management, and telemonitoring is a simple and cost-effective intervention in outpatients.

394

Managing advanced oro-facial cancer cases: our experience

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Review of our hospital protocol of management of advanced cases of orofacial cancers.
Introduction: The challenge of managing advanced cases is getting more intense. For some reason, the majority of our patients present late, thus limiting their treatment to debulking, some level of palliative care (control of pain, nutritional care with local cheap delicacies), and psychological buildup. Our patients received care from the hospital nutritionists, physiotherapists, and the oncologists.
Method: Twenty-three cases comprising adenocystic carcinoma (ten), nasopharyngeal carcinoma (six), squamous cell carcinoma (five), and adenocarcinoma in their terminal stages occurring in the maxillofacial region seen and managed at MFU, ABUTH, Zaria, Nigeria, between January 2009 and October 2011 are reviewed. All patients had biopsy, preoperative nutritional buildup, laboratory and radiological investigations, surgery, and post-surgery chemotherapy.
Result: Surgery did not eradicate the disease in any of the cases. All the cases benefitted from post-surgery chemotherapy. With dedicated supportive care, one of our patients with adenocystic carcinoma had four surgeries and up to 11/2 years of follow-up.

Conclusion: Our results would be more impressive with early presentation.

395

Comparative cost-efficiency across the European Union (EU) G5 countries (Germany, France, Italy, Spain, UK) of originators and the biosimilar erythropoiesis-stimulating agent (ESA) HX575 to manage chemotherapy-induced anemia (CIA) in cancer patients

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Objectives: The objective of this study we to evaluate the comparative cost efficiency across EU G5 countries of the erythropoiesis-stimulating agents (ESAs) epoetin alpha [originator and biosimilar (HX575); QW], epoetin beta (QW), and darbepoetin (QW or Q3W) for managing chemotherapy-induced anemia (CIA).
Methods: We assessed the direct costs of managing anemia in one cancer patient undergoing a chemotherapy regimen of six cycles at 3-week intervals (18 weeks) with ESA initiation at week 4 and continued for a total of 15 weeks. Five scenarios were developed under both fixed and weight-based dosing: standard dose for 15 weeks; dose escalation to 1.5 times or double the standard dose at week 7, continued for 12 weeks; and discontinued dose escalation to 1.5 times or double the standard dose at week 7 for 3 weeks, then 9 weeks of standard dose. Treatment cost was defined as the population-weighted average unit dose cost of each agent per its public pack price (except the UK, where NHS price applied).
Results: The average cost of HX575 across fixed-dose scenarios was €4,643 (30,000 IU) or €6,178 (40,000 IU). The corresponding estimates were €7,168 for originator epoetin alpha, €7,389 for epoetin beta, €8,299 for darbepoetin QW, and €9,221 for darbepoetin Q3W. Under weight-based dosing, the average cost of HX575 across scenarios was €4,726. The corresponding estimates were €5,484 for originator epoetin alpha, €5,652 for epoetin beta, and €8,465 for both darbepoetin QW and Q3W.
Conclusion: Managing CIA with biosimilar ESA HX575 is consistently cost-efficient over treatment with originator epoetin alpha, epoetin beta, and darbepoetin under both fixed and weight-based dosing and across various scenarios of standard and escalated dose regimens.

397

Noninvasive forward nasojejunal feeding tube placement during Ivor Lewis esophagectomy for esophageal carcinoma: a novel technique improvement for enteral nutrition and initial experiences

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Objectives: Effective nutrition support is essential following esophagectomy for patients with esophageal carcinoma. No report so far has been published on noninvasive forward nasojejunal feeding tube placement during Ivor Lewis esophagectomy. In this study, we have improved the surgical procedures and investigated the feasibility of forward placement of nasojejunal tube during Ivor Lewis esophagectomy.
Methods: Between January 2010 and June 2011, 54 patients with esophageal carcinoma underwent Ivor Lewis esophagectomy in our department. The mean age was 58.8±7.5 years (range, 40–74 years). General surgical procedures included briefly as follows:

1. Stomach mobilizing, enlargement of esophageal hiatus, and pyloroplasty by finger squeezing via laparotomy
2. Tubular stomach reconstruction, esophageal resection, and intrathoracic esophagogatrostomy via right posterolateral thoracotomy
3. Forward placement of a feeding tube through patient's nostrils to the duodenum under the guidance of the surgeon's fingers that palpate the pylorus through the hiatus

Results: There were no death or feeding tube-associated complications. Among all 54 patients undergoing Ivor Lewis esophagectomy, 15 cases failed to place the feeding tube into the duodenum placement during surgery. The success rate of nasojejunal feeding tube placement was 72.2 % (39/54). There were significant differences in nutrition cost, time of gastric tube retaining, and serum albumin on seventh postoperative day between enteral feeding group and parenteral groups.
Conclusions: The novel forward placement of nasojejunal feeding tube during Ivor Lewis operation provides a noninvasive, feasible, simple, and economical method for postoperative nutrition support.

398

Are web-based patient navigation tools fulfilling their promise in supportive cancer care? Mixed evidence from mixed design studies

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Objectives: The advent of the information age means that patients with cancer can have access to various web-based supportive tools. Whereas anecdotally patients report finding these resources useful, evidence is lacking on the potential benefits and drawbacks that these tools may have on psychosocial adjustment to cancer and other system-related outcomes. Hence, our research team has been gathering quantitative and qualitative data on the potential contributions of an innovative tool called the Oncology Interactive Navigator (OIN^{TM})—developed by a Canadian firm in Toronto.
Methods: Quasi-experimental, randomized control trials and qualitative methods were used to document how the OIN^{TM} may affect patients' psychosocial adjustment to cancer and their use of health care services. In addition, we explored perceived OIN^{TM} implementation potential among various health care providers.
Results: The findings support, in part, web-based tool contributions to quality of life, sense of cancer competence, and cancer knowledge. These tools also are found to guide patients' reliance on the most appropriate health care services. Generally speaking, providers report openness in integrating web-based tools into practice.
Conclusions: In addition to measuring the effects of web-based cancer supportive tools, ongoing work seeks to document their cost effectiveness and effects on patient empowerment.

399

The growing burden of cancer

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A retrospective study was done in Moi Teaching and Referral Hospital to determine the burden and pattern of cancer from its outpatient, inpatient, and outreach oncology services. This revealed a sharp rise of cancer patients from 105 in 2005 to 1,242 in 2011.

Objectives: The objectives of this study were to: (1) highlight the burden and pattern of cancer in the region, (b) highlight the challenges encountered, and (c) highlight care provided.

Methods: Past records of cancer patients were reviewed. All ages were affected—majority 924 (74.4 %) 26–60 years. More females (646, 52 %) than males (596, 48 %) had cancer. Many types of cancers were seen: Karposis sarcoma was the highest with 446 (36 %) patients, followed by breast cancer with 96 (7.7 %) and least prostate cancer with 4 (0.3 %) out of 1,242 cases in 2011. Others like lymphoma, cervical cancer, and leukemia were managed. Most of the cancers were treated with chemotherapy. Those for radiotherapy were referred. Palliative care was also provided through pain management psychosocial group therapy, daycares, and bereavement counseling.

Challenges: The challenges determined included: (1) few trained health workers to manage cancer, (2) limited resources for managing cancer, (3) lack of training centre for cancer, (4) Unavailability of radiotherapy services in the region, (5) late presentation of cancer clients seeking care, and (6) poverty.

Conclusion: With clear cancer management policies, cancer control can be achieved. The few trained health workers have had little impact. More health workers need to be trained in cancer management.

402

Validity of the Patient-Reported Outcomes version of the Common Terminology Criteria for Adverse Events (PRO-CTCAE)

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Objectives: This study examined the validity of the Patient-Reported Outcomes version of the Common Terminology Criteria for Adverse Events (PRO-CTCAE), an item bank measuring treatment toxicity and containing 124 items reflecting 78 symptomatic adverse events (AEs). Supported under National Cancer Institute (NCI) contract (HHSN261201000043C), PRO-CTCAE was developed to improve AE detection by integrating real-time reporting by patients of toxicities into cancer trials.

Methods: English-speaking participants [n=869, 44 % male; median age, 59 years; 17 % ECOG Performance Status (ECOG-PS)=2–4] receiving treatment for various cancers at four NCI-designated cancer centers and five NCI Community Cancer Centers Program sites completed PRO-CTCAE items (scoring range, 0–4) and EORTC-QLQ-C30 (scale range, 0–100).

Results: Symptoms with the highest mean severity by PRO-CTCAE were fatigue (mean=1.68, SD=1.08), pain (mean=1.20, SD=1.20), and insomnia (mean=1.10, SD=1.13) and were comparable to EORTC-QLQ-C30 symptoms with the highest severity: fatigue (mean=41.5, SD=27.4), insomnia (mean=31.7, SD=32.3), and pain (mean=26.2, SD=29.5). Correlations in the expected direction were observed for 116 of 124 PRO-CTCAE items with EORTC-QLQ-C30 global health (median r=−0.21; range=0.08 to −0.57). Stronger correlations were observed for PRO-CTCAE items with conceptually related EORTC-QLQ-C30 domains: fatigue with physical role and social functioning (−0.54 to −0.66); anxiety and depression with emotional functioning (−0.54 to −0.70); and concentration and memory problems with cognitive functioning (−0.62 to −0.72, all p<0.001). Ninety-eight 124 PRO-CTCAE item scores were higher in ECOG-PS 2–4 vs. 0–1 participants (median effect size=0.3).

Conclusions: The results in this large, heterogeneous sample of patients undergoing cancer treatment support the validity of PRO-CTCAE. Further study in cancer treatment trials is planned.

403

Surgical palliation for esophageal cancer: an update to modern era

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Objectives: The objective was to demonstrate that surgery still has a role in the palliative treatment of patients with esophageal cancer using a laparoscopic approach.

Case report: The technique involves the creation of a gastric tube close to 3 cm in width and with an average length of 30 cm and preservation of the right gastroepiploic vessels by laparoscopy. The tube is then passed through a retrosternal path and anastomosis performed with the cervical esophagus prepared earlier by left cervicotomy.

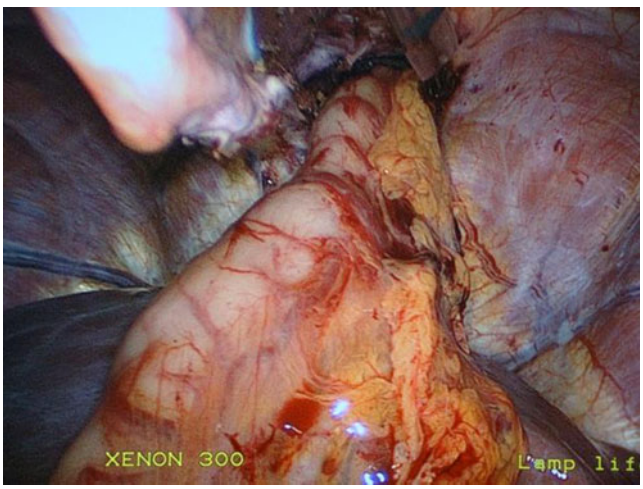

Figure 1

Discussion: Due to the advanced stage at diagnosis, palliative treatment is a more realistic option [1, 2]. Dysphagia is the most distressing symptom causing malnutrition and reducing the quality of life [1, 3]. The goal of palliation is to improve swallowing [3]. The most common methods applied are endoscopic stenting, radiation therapy (external or brachytherapy), chemotherapy, YAG laser rechanneling or endoscopic dilatation [3]. Palliative surgery is rarely proposed due to morbidity and complications [4]. This paper demonstrates an update in the technique proposed by Postlethwait in 1979 for palliation of esophageal cancer [5–7]. The laparoscopic approach delivered less morbidity and hospital stay and improved patient recovery.
Conclusion: This paper demonstrates a bypass palliative procedure through a laparoscopic approach with less morbidity than laparotomy. Further studies need to be conducted to analyse impact on patients' quality of life.

404
Actinomycosis of the mandible associated infected osteoradionecrosis —case report

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Introduction: *Actinomyces* sp. has been related to jaw necrosis originated from oncological treatment.
Objectives: The objective of this study was to show how difficult it is to treat and control infected osteorradionecrosis, high morbidity, impact upon the quality of life, and the increase in treatment cost.
Case report: D.D.O., male, 42 years of age, was submitted to a chemoradiation in 2005 (100 mg/m^2 cisplatin, total dose RT= 7,200 cGy, 6-mV linear accelerator) for nasopharynx CEC (T2N2M0). The patient was diagnosed in 2008 with osteorradionecrosis infected by *Actinomyces* on the right jaw after exodontia and submitted to antibiotic therapy, to a medical surgery, and standard clinical control. In 2010, it was declared that the disease had progressed, and a medical surgery took place. In 2011, necrosis recurrence was declared, and the patient showed pathological fracture advances on the jaw with serious functional and aesthetic consequences. R.S.C., female, 76 years of age, was submitted to surgery and radiotherapy (total dose=6,120 cGy, 6-mV linear accelerator) for tongue CEC (T2N1M0). In 2007, this patient showed infected osteorradionecrosis advances on the right jaw and was submitted to sequestrectomy and antibiotic therapy. In 2008, 2009, and 2011, medical surgeries took place, and biopsies showed actinomiotic infection recurrence. All dental elements of the inferior right hemiarc and alveolar edge were pulled, leaving the patient with an important functional and aesthetic consequence.
Conclusion: The identification of this bacterium in histopathological discoveries is an important factor in determining the worst prognostics and is related to the difficulties in controlling local osseous necrosis and in the chances of the infections recurring.

406
Comparing the management and cost of hospitalized prostate cancer patients with and without bone metastases

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Introduction: Previous studies documenting the clinical and economic burden of prostate cancer (PCa) highlighted that substantial PCa care is completed in the inpatient hospital setting. However, no studies have compared the management and resource utilization associated with PCa patients with bone metastases within this setting. This study evaluated treatments and associated cost of care for PCa patients with and without bone metastases (BM) treated in an inpatient setting.
Methods: Patients in the Premier Hospital Database between January 2006 and December 2010 treated for PCa during the hospitalization were included. Patients were required to be ≥40 years with no additional cancers. Cohorts were created based on the presence of bone metastasis. Differences in PCa-specific treatments (utilizing logistic regression) and costs (utilizing gamma-distributed GLMs with a log-link function) were then compared.
Results: There were 13,716 hospitalizations for men with BM and 74,435 for men without BM. Mean age was 74 vs. 68 years for men with and without BM, respectively (length of stay, 7 and 4 days, respectively, each $P<0.0001$). Men with BM were significantly less likely to have surgical resection (3.6 vs. 66.3 %), significantly more likely to have hormone therapy (59.6 vs. 25.0 %) or radiation services (16.7 vs. 1.9 %), and equally likely to be treated in the nuclear medicine setting (0.5 vs. 0.5 %). The total inpatient costs of men with BM were significantly higher than men without BM (US $14,145 vs. $11,944, respectively).
Conclusions: Men hospitalized/treated for PCa with BM incurred significantly more costs and utilized more radiation services, chemotherapy, hormone therapy, and miscellaneous PCa treatment than men without BM.

407
Anti-emetic profile of netupitant (NETU) and of the combination NETU and palonosetron (PALO) compared with aprepitant (APR) plus ondansetron (OND) in the ferret

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Objectives: The objective of this study was to investigate the anti-emetic profile of netupitant (NETU) and its activity with palonosetron (PALO) compared with ondansetron (OND) plus aprepitant (APR) in the cisplatin-induced acute and delayed emesis ferret model.
Methods: Animals were administered NETU (0.03–3 mg/kg, p.o.) followed 2 h later by apomorphine, morphine, ipecacuahna, copper sulphate or cisplatin and observed for up to 72 h. NETU and/or PALO, alone or in combination with dexamethasone (DEX) and/or OND alone, or in combination with APR and DEX, were investigated in the cisplatin-induced acute and delayed emesis model; the dosing intervals of antagonists ranged from once daily to up to three times daily.

Results: NETU prevented apomorphine, morphine, ipecacuahna and copper sulphate-induced emesis. NETU at 0.3 mg/kg reduced cisplatin 10 mg/kg-induced emesis by <99 % ($P<0.05$). NETU at 3 mg/kg administered before cisplatin 5 mg/kg was highly effective in preventing acute emesis, with minor breakthrough delayed emesis (10 %) being observed ($P<0.01$). OND three times daily inhibited acute emesis by 56 % ($P<0.01$). A combination of APR+OND+DEX (once per day for 3 days), as well as NETU 1 mg/kg combined with PALO (both administered once)+DEX once per day, reduced acute and delayed emesis significantly ($P<0.01$).
Conclusions: NETU has a broad spectrum of antiemetic activity comparing favorably with OND in acute and delayed emesis. The efficacy of the single triple regimen of NETU+PALO+DEX administered once before cisplatin was comparable with the less convenient multiple three times per day regimen of OND+APR+DEX.

408
Supportive nutritional therapy before irradiation of head and neck cancer—results of a pilot project

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Objective: Which impact has a conditioning nutritional therapy on radiotherapy of head neck cancer patients?
Methods: We performed a matched-pair design to investigate the impact of 1,000 kcal additional IV nutrition which was administered 14 days before starting irradiation of head and neck cancer. Time of treatment, toxicity and number of irradiation breaks were analysed. Twenty patients (ten primary RT, ten adjunctive RT) were pretreated as described; control subjects were normal patients with adequate age, gender, tumour stage and tumour localization. All patients were categorised as candidates of malnutrition, e.g. their BIA phase angle was <5.0°.
Results: Gaps of radiotherapy were observed as 0 in the supported group versus 3 in controls ($p<0.05$). The median time of treatment was 51 days in supported individuals versus 55 days in the control group ($p=0.10$). We have also registered a reduction of grade 3 or 4 toxicities (RTOG) from eight patients in the control group to three patients in the supported group ($p<0.05$). Swallowing therapy was performed in all patients in order to obtain oral nutrition as the base.
Conclusion: The results of this pilot trial suggest an early nutritional support for patients with advanced head and neck cancer during radiotherapy. Artificial nutrition should be combined with swallowing therapy by logopedics.

409
Symptom profiles at diagnosis of breast cancer predict quality of life at 2 years after diagnosis

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Objectives: This study aimed to identify latent subgroups of breast cancer patients using five frequently reported symptoms at diagnosis and to examine the predictive effect of group membership on quality of life at 2 years after diagnosis.
Methods: The data were drawn from a large longitudinal study of symptoms after breast cancer surgery. Data of five symptoms (i.e., attentional fatigue, physical fatigue, sleep disturbance, depression, and anxiety) assessed at baseline ($n=198$) were used to explore subgroups of patients using latent class analysis. A total of 100 patients were available for assessment of quality of life at 2 years after surgery.
Results: Four classes of patients were identified. Class I was characterized with low fatigue (both attention and physical), sleep disturbance, and emotional symptoms (both depression and anxiety). Class II also had low fatigue, but moderate sleep disturbance and emotional problems. Class III had moderate fatigue, slightly higher than moderate sleep disturbance, and moderate emotional problems. Class IV had moderate fatigue, but severe sleep disturbance and emotional problems. The overall scores of quality of life at 2 years after diagnosis were significantly different among four classes ($P=0.001$). Post hoc test indicated that classes I and II had significantly higher quality of life scores than class IV.
Conclusions: Breast cancer patients' symptom profiles at diagnosis have a long-term predictive effect on the quality of life. Patients with moderate fatigue but severe sleep disturbance and emotional problems should be flagged as a high-risk group for further intervention.

411
About sexuality of 194 non-metastatic cancer patients on cure or follow-up

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Background: Sexuality is an integral part of normal life for most individuals and is an important aspect of quality of life, also in oncological patients. It is evident from the research literature that health care professionals still avoid discussing sexual issues with patients.
Methods: We used the item on satisfaction for sexual activity of FACIT-Sp to study the correlation between sexual satisfaction and clinical characteristics in 108 patients with solid and 86 with haematologic malignancies and no metastases on active oncological treatments (156 patients) or during follow-up.
Results: Thirty-five per cent of the patients did not respond to the item. Among responders, 35 % reported no sexual satisfaction (score=0). Thirty-one per cent of the <66-year-old vs. 47 % of the >65-year-old patients and 38 vs. 25 % of the patients on treatment and follow-up, respectively, reported absence of sexual satisfaction. Fifty-three per cent of the patients who requested psychological support, 44 % of patients with high level of anxiety and depression (HADS scores>10) and 43 % of patients with KPS<90 reported absence of sexual satisfaction, too. Of the non-believers, 61 % were not sexually satisfied vs. 34 % among churchgoers and 29 % among believer non-church goers.
Conclusion: These data confirm that the sexual dimension in oncological patients is an important aspect to be assessed. As individuals with cancer live longer, sexual issues become increasingly more important, and health care providers must be prepared to assess problems in this area and provide anticipatory guidance related to treatment and the resumption of sexual activity.

413

Program for cognitive assessment of pediatric brain tumor patients in Sweden

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Introduction: Approximately 70 Swedish children aged 0–18 years are affected by brain tumor each year. Their increasing survival rate has drawn attention to the difficulties they face when returning to school.
Objectives: The aims of the program were: to provide systematic follow-up assessments of children treated for brain tumor; to develop evidence-based interventions for their rehabilitation; to optimize the communication of these interventions to parents, health professionals and teachers; and to evaluate their implementation in facilitating children's reentry at school, their social development and quality of life.
Methods: The program is a collaboration of the Department of Pediatric Oncology and the Regional Rehabilitation Centre at Queen Silvia Children's Hospital, Gothenburg, Sweden. It includes a first assessment +6 months after the completion of treatment in order to relatively early pick up problems that need to be dealt with and a second assessment at +2 years. Both include neuropsychological, educational and occupational assessment as well as counseling. The second assessment also includes physiotherapy and speech therapy. Evidence-based interventions are communicated to parents, health professionals and teachers. A follow-up of the implementation and effects of these interventions is carried out 6 months after assessment.
Results: The preliminary results indicate that neither the family nor the teachers understand the needs of children who received treatment, and there is a demand for rehabilitation services to meet these needs.
Conclusion: The implementation of this program will allow an early detection of deficits and offer compensatory strategies and interventions to improve the academic and social abilities of childhood survivors.

417

Tailored information and its benefits in head and neck cancer patients

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Background: Anxiety and depression are the most common psychological symptoms experienced by cancer patients. Studies show that 30–50 % of the head and neck (H&N) cancer patients are affected by these.
Objectives: The objective of this study was to investigate whether tailored information provision decreases anxiety and depression in H&N cancer patients.
Methods: A prospective, non-randomized, controlled trial was conducted at two participating academic hospitals. One hospital delivered the test intervention, the Multimode Comprehensive Tailored Information Package, while the second hospital delivered normal care (control intervention). Subjects were patients with stage III or IV cancers in the H&N region and were recruited between their diagnosis and treatment. Informed consent was obtained from all participants prior to their participation. Participants were evaluated using the Hospital Anxiety and Depression Scale and Distress Thermometer at baseline (prior to cancer treatment) and then 3 and 6 months later. Data were analyzed using descriptive statistics to describe the general characteristics of the sample and repeated measures ANOVA for outcome variables.
Results: A total of 103 patients were recruited; of them, 96 (47 tests and 49 controls) participants completed 3- and 6-month evaluations. The test group experienced lower levels of anxiety (p=0.041), depression (p=0.089) and distress (p=0.281) than the control group.
Conclusion: The results of this study show that subjects who received the tailored information benefited significantly with lower levels of anxiety than their counterparts. Even though depression and distress were not significantly different between the groups, the change is in the expected direction.

418

Zoledronic acid (ZA) use in patients affected by bone metastasis (MTS) of non-haematologic tumors

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Objectives: In patients with bone metastasis, zoledronic acid (ZA) reduces the incidence of skeletal-related events. Renal safety, electrolyte abnormalities and osteonecrosis of jaws (ONJ) are the major toxicities; we analysed the incidence of these and how ZA improves bone pain.
Methods: Forty-two patients (average age, 66 years) received 4 mg ZA every 4 weeks. Serum creatinine, calcium levels (SCL; $SCa^{2+}L$) and oral examination were collected before and during somministration of ZA. Bone pain was evaluated by the Numerical Rate Scale (NRS).
Results: Patients received median seven doses of ZA. The median baseline and final values of SCL were 0.99 and 1.2 mg/dl, respectively. During treatment, the median highest SCL was 1.25 mg/dl, and seven patients (16.6 %) had an increase of SCL ≥0.5 mg/dl. The median baseline and final values of $SCa^{2+}L$ were 8.9 and 8.7 mg/dl, respectively. The median lower $SCa^{2+}L$ during therapy was 8.4 mg/dl. Nineteen patients (45 %) stopped treatment because of hypocalcaemia (median $SCa^{2+}L$, 7.9 mg/dl); after daily supplementation of 880 UI cholecalciferol plus 1,000 mg calcium carbonate, they restarted when $SCa^{2+}L$ was ≥8.4 mg/dl without interruptions. No patient was tested for ONJ; five patients, who received 1 year of ZA, had depletion of the cortical bone of the jaw. Twenty-five pts at the beginning of therapy complained of bone pain (NRS 1–3=8 %; NRS 4–7=40 %; NRS 8–10=52 %); four patients continued to complain of bone pain (NRS 8-10) during ZA treatment.
Conclusions: ZA was shown to be safe with a low rate of renal toxicity, electrolyte abnormalities and ONJ, probably because of the few number of doses and careful selection of patients; also, it improved bone pain.

419

Influence of ciprofloxacin on rates of febrile neutropenia in patients receiving docetaxel and cyclophosphamide (TC) chemotherapy for breast cancer

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Introduction: Published reports on the rates of febrile neutropenia with docetaxel and cyclophosphamide (TC) chemotherapy in early-stage breast cancer patients range from 4 to 8 % with the widespread use of prophylactic antibiotics and without growth factor support during periods of hematologic nadirs. We report on the rates of febrile neutropenia with TC chemotherapy with and without ciprofloxacin antibiotic prophylaxis in a similar group of patients.

Patients and Methods: A cohort of patients with early-stage breast cancer receiving standard dose TC chemotherapy (docetaxel, 75 mg/m^2; cyclophosphamide, 600 mg/m^2) who did not receive growth factor primary prophylaxis or ciprofloxacin antibiotic prophylaxis (n=99) was compared with a similar cohort of patients that universally received ciprofloxacin antibiotic prophylaxis (n=84) following implementation of standardized guidelines and preprinted physician orders. The rates of febrile neutropenia were analyzed for each patient cohort.
Results: In patients who received ciprofloxacin prophylaxis, the rate of febrile neutropenia was 10.7 % as compared to 25.3 % in patients who did not receive ciprofloxacin prophylaxis, a decrease of 14.6 % (RR=0.42, 95% CI=0.21–0.86, p=0.017).
Conclusions: Ciprofloxacin antibiotic prophylaxis during periods of hematologic nadirs significantly decreased the rate of febrile neutropenia associated with TC chemotherapy. The observed rates of febrile neutropenia during TC chemotherapy with universal antibiotic prophylaxis in our patient population were higher than in previously published reports.

420

Lenograstim versus pegfilgrastim in management of haematologic toxicities by chemotherapy (CT) in non-metastatic breast cancer (NMBC) patients

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Objectives: This retrospective study analyzed the efficacy, safety and cost of a single injection of pegfilgrastim (P, 6 mg) compared with daily lenograstim (L, 263 μg) in primary neutropenia's (N) prophylaxis in non-metastatic breast cancer patients during chemotherapy (CT).
Methods: Fifty women (median age, 54 years) underwent a median six (range, 4–8) CT doses with antracyclines±taxanes. At every cycle, 28 patients received daily L (median five injections from days 5 to 9) while 22 patients single P on day 2. Absolute neutrophil count, incidence of G3/G4-N, bone pain (BP; Numerical Rate Scale>7), and cost effectiveness (CE) were evaluated.
Results: In the overall population, the incidence rates of G3-N and G4-N were 25 and 68 %, respectively in L vs. 22.7 and 41 %, respectively, in P; two and three febrile neutropenia occurred with L and P, respectively. In FEC100 (19 patients, ten L vs. nine P), we observed 0 % of G3-N and 30 % of G4-N in L and 33 % of G3-N and 44 % of G4-N in P. In TAC/AC+T (31 patients, 18 L vs. 13 P), G3-N and G4-N were 38.8 and 66.6 %, respectively, in L vs. 15.3 and 30.7 %, respectively, in P. Of pts in P, 18.2 % had BP vs. 35.7 % in L. CT reduction was observed in 35.7 % in L vs. 41 % in P. In Italy, the cost of one P and five L was about 1489,00€ and 655,00€, respectively.
Conclusions: P was more effective and expensive than L, particularly in TAC/AC+T. In FEC100, L was satisfactory with a good CE profile. No difference was found about NF incidence and safety.

422

Reluctance to use morphine among patients at the Institute for Oncology and Radiology of Serbia

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Objectives: Morphine is the mainstay of treatment for cancer pain. Some patients are reluctant to take morphine due to exaggerated concerns about the risks associated with its use. Reluctance to use prescribed morphine is a barrier to optimal pain management.
Methods: We collected and analyzed spontaneously expressed statements reflecting reluctance to use morphine among 87 opioid naive patients for whom we had recommended morphine for the first time.
Results: Only 7 of 87 (8.04 %) patients did not express any concern about using morphine. The majority of patients (80/87, 91.95 %) were unwilling to use morphine. Among patients who expressed unwillingness to use morphine, 25 different statements explaining the reasons for their reluctance were collected. The five most frequent categories of statements included those that reflect concerns about tolerance (38/87, 43.68 %), addiction (31/87, 35.63 %), and adverse effects of opioids (24/87, 27.59 %). In addition, two categories represent the fear that morphine is offered only to patients in the terminal phase of the disease (30/87, 34.48 %), and the position that the willingness to use morphine would indicate that the patient is weak and unable to endure pain (31/87, 35.63 %).
Conclusion: The majority of our patients were reluctant to use prescribed morphine. The five most frequent categories of statements explaining reasons for unwillingness to use morphine were identified and will be used for counseling patients and to improve education about opioids.

424

Palliative care education for oncology professionals using the EPEC™-O Canada program-results of the first 2 years

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Objectives: EPEC™-O (Education in Palliative and End-of-Life Care—Oncology) is an American-based program originally developed for oncologists to enhance their knowledge and skills in delivering palliative care for cancer patients. With support from the Canadian Partnership Against Cancer, our group adopted this program to target inter-professional oncology teams in Canadian cancer agencies.
Methods: The content was updated and adapted for the Canadian environment and reviewed by 25 Canadian expert peer reviewers. The full two and a half-day program provides the educational tools and materials for teaching the core competencies of palliative care, as well as information and strategies for the practising clinician to provide palliative interventions to patients. The materials are useful as part of an ongoing inter-professional educational program and/or as a reference source. Two pilot train-the-trainers sessions were held, and these trainers subsequently delivered EPEC™-O Canada workshops in three Canadian regions. All sessions were evaluated, and this feedback was used to improve the program.
Results: Two hundred forty oncology professionals participated to date (69 % nurses, 12 % oncologists and GPOs, 19 % supportive care practitioners). Pre/post-testing showed a modest increase in knowledge, 89 % subjectively felt they improved their knowledge base, and 93 % will be using the materials in some form to further teach oncology colleagues.
Conclusion: The EPEC™-O Canada curriculum and teaching approaches will be described and a sample module will be available

for review. Future directions for the EPEC™-O Canada program, including translation for use in French settings and the development of a Community of Practice, will be outlined.

425
The role of symptom report in detecting and diagnosing lymphedema

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Objectives: The study aimed to examine the validity of symptom report in detecting and diagnosing lymphedema in comparison to objective lymphedema measures.
Methods: The Breast Cancer and Lymphedema Symptom Experience Index was used for data collection. Sequential circumferential arm measurements and bioelectrical impedance spectroscopy were used as objective measures for fluid and limb volume. Data from 238 women were included: 60 healthy controls, 34 patients with lymphedema, and 144 at-risk patients.
Results: The mean number of lymphedema symptoms reported by healthy, at-risk, and lymphedema participants were 0.5, 4.8, and 9.3, respectively. All three methods of measurement were able to significantly discriminate the three study groups. The symptom report was as equal as bioimpedance and better than the circumferential tape measurement in discriminating patients with lymphedema from healthy participants. A cutoff of two symptoms was found to be clinically useful in discriminating healthy and lymphedema patients and a cutoff of nine symptoms in discriminating at-risk and patients with lymphedema. A high correlation was observed between bioimpedance and circumferential tape measurement, while bioimpedance demonstrated greater sensitivity and reliability.
Conclusion: Symptom report assesses the subjective dimension of lymphedema which objective limb measures (such as bioimpedance and circumferential tape measurement) are incapable of evaluating. Symptom report is as accurate as bioimpedance and better than circumferential tape measurement in detecting the presence of lymphedema. To ensure cost-effective and definitive diagnosis, the subjective and objective dimensions of lymphedema should be assessed. We recommend the use of symptom report in conjunction with the use of bioimpedance in clinical practice.

426
Chinese American breast cancer survivors' experiences of managing lymphedema

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Objective: To describe Chinese American breast cancer survivors' experience of managing lymphedema with special attention to cultural factors that may promote or impede daily lymphedema management.
Methods: A qualitative research design with a descriptive phenomenological method was used as a guide for developing a bracket, gathering data, and analyzing data. A sample of 13 Chinese American survivors with chronic lymphedema were recruited in eastern USA. Three in-depth interviews were conducted with each participant; a total of 39 interviews were completed, audiotaped, and transcribed. Data were the women's perceptions, actions, and intentions pertaining to their experience of managing lymphedema. Data were analyzed to identify the essential structures of the experience using a descriptive data analysis.
Results: Facing life-long commitment to lymphedema, Chinese women initiated and continued their efforts to manage lymphedema even when health disparity limited their access to information and standard lymphedema treatment. Six essential structures that constitute the experience were identified, discussed with participants, and compared to the relevant literature: (a) facing lymphedema reality; (b) seeking for mainstream treatment; (c) experimenting Chinese medicine (acupuncture, acupressure, wax massage, elevation, or herbs); (d) Eating food that help fluid flow; (e) focusing on daily exercises (walking, Chinese folk dancing, tai chi, Chinese martial arts); and (f) sustaining myself emotionally.
Conclusions: Chinese American women needed interventions to provide linguistically appropriate information regarding lymphedema treatment and management and geographically and financially accessible treatment facilities. Future research should target on testing some unconventional approaches used by the women that may promote effective lymphedema management.

427
Efficacy and safety of rolapitant for the prevention of chemotherapy-induced nausea and vomiting in subjects receiving highly emetogenic chemotherapy

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Objective: Management of chemotherapy-induced nausea and vomiting (CINV) improves quality of life and increases the likelihood that patients will continue to receive appropriate treatment. The objective of this dose finding study was to evaluate rolapitant for the prevention of CINV in subjects receiving highly emetogenic chemotherapy (HEC).
Methods: This is a phase II, double-blind study in which 454 subjects receiving HEC ($\geq$70 mg/m^2 cisplatin-based chemotherapy) were randomized prior to chemotherapy to receive ondansetron+dexamethasone+either placebo or 10, 25, 100, or 200 mg of rolapitant. Subjects recorded episodes of emesis, severity of nausea, and use of rescue medication(s) daily within a subject diary from days 1 through 6 of cycle 1.
Results: The rolapitant 200-mg group demonstrated significantly greater complete response rates (no emesis and no use of rescue medication) in the overall (0–120 h), acute (0 to $\leq$24 h), and delayed (>24–120 h) phases compared to the placebo group (62.5 vs. 46.7 %, p=0.032; 87.6 vs. 66.7 %, p=0.001; and 63.6 vs. 48.9 %, p=0.045, respectively). Moreover, the 200-mg group had significantly greater rates of no emesis and no significant nausea in the overall, acute, and delayed phases and achieved statistically significant better QoL scores (FLIE questionnaire) compared to the placebo group. The rates for no emesis and no significant nausea for the 200-mg dose group in cycles 2–6 continued to demonstrate superiority vs. placebo. Treatment-related adverse events were mild and included constipation, headache, fatigue, and dizziness.
Conclusions: Administration of rolapitant 200 mg with ondansetron and dexamethasone is safe and effective in preventing CINV in subjects receiving HEC.

428
Prophylaxis of acute radiation dermatitis with topical R1 and R2: interim results of a multicenter, randomized, controlled trial (CREAM-1)

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Objectives: Acute radiation-induced dermatitis (ARD) is a common complication in patients with squamous cell cancer of the head and neck (SCCHN) treated by chemoradiotherapy. Currently, there is only little evidence concerning prophylaxis and treatment of ARD. Since we had convincing first clinical experiences with the new lactokine-containing two-step topical treatment "R1 and R2" in the management of ARD, we launched a multicenter, randomized, controlled clinical trial with a recruitment goal of 120 patients in 20 centers to assess the safety and efficacy of the two compounds for prophylaxis of ARD.
Methods: Patients with SCCHN were 1:1 randomized to either receive prophylactic topical "R1 and R2" or the standard skin care of the institution. All patients were treated by fractionated radiotherapy and concomitant platin-based chemotherapy in curative intention. The primary objective was the number of patients that experience an ARD grade 3 or 4 (NCI CTCAE v. 4.03). According to the study protocol, all patients were regularly evaluated and the irradiated skin photographed and graded according to NCI CTCAE. In addition, patients completed quality of life (QoL) questionnaires.
Results: As of January 2012, 43 patients were evaluable for safety. The application of R1 and R2 was well tolerated. No grade 3 or 4 toxicities were seen. QoL was maintained in patients applying R1 and R2. The results of the pending interim analysis will be presented.
Conclusions: The application of "R1 and R2" is feasible, safe, and effective in prophylaxis of ARD. Due to promising initial results, active accrual will continue.

430
Geriatric cancer survivors: functional limitations and participation in physical activity

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Objectives: Functional limitations (FL) and cancer incidence increase with age. FL may reduce PA in geriatric cancer survivors (≥65 years), which could increase the risk of recurrence and reduce survival. We describe and compare PA and FL in geriatric cancer survivors versus those without a cancer history.
Methods: Using a national sample of community-dwelling elders from the 2003 Medicare Current Beneficiary Survey (N=14,887), we characterized the differences between cancer survivors and those without a cancer history in FL, PA, and current PA compared to PA 1 year prior. Respondents rated FL: stooping, crouching, kneeling (stoop), carrying objects ≤10 lbs (lift), extending arms above shoulders (reach), grasping objects (grasp), and walking 0.25 mile (walk). The frequency of walking for ≥10 min and weekly participation in PA/exercise/sports were reported. Multivariate logistic regression was used to determine associations.
Results: Of the 14,887 participants, 2,603 reported a cancer history. More cancer survivors reported difficulty or being unable to stoop, lift, reach, grasp or walk (all p<0.01). Cancer survivors with more FL were less likely to engage in PA (all p<0.01), to walk ≥10 min at a time (p<0.01), to decrease PA from the previous year (p<0.01), and spent less time doing moderate or vigorous activity (p=0.01).
Conclusions: Older cancer survivors engage in less PA and are at greater risk of FL than those without a cancer history. This may lead to reduced independence, a greater risk of cancer recurrence, and reduced survival. PA interventions are important in this population.

431
Cervicofacial necrotizing fasciitis of odontogenic origin following chemotherapy

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Introduction: Cervicofacial necrotizing fasciitis (CNF) is a rapidly spreading infection of the soft tissues of head and neck characterized by tissue necrosis and profuse purulent discharge. Its outcome is often fatal. CNF occur frequently in patients who are immunocompromised, as in diabetes, cancer, vascular insufficiencies, organ transplant, HIV, and neutropenia.
Case report: We report a case of a 68-year-old retired gardener who developed CNF from an infected permanent mandibular second molar. He had undergone surgery and had three courses of cisplatin, 5-FU, and adriamycin on account of carcinoma of the head of pancreas. No oral assessment was carried prior to commencement of chemotherapy. Management included the removal of the causative tooth, incision and drainage, repeated debridement, daily dressing of wound with iodine solution, and intravenous antibiotic tailored with pus microscopy and sensitivity reports.
Conclusion: CNF of odontogenic origin is an extremely fatal condition; early detection and prompt aggressive treatment are keys to success. Clinicians involved with the management of cancer patients should at all times seek the expertise of a dentist for a pre-chemotherapy oral assessment. All potential sources of infections are removed before chemotherapy begins. There is a great need to further evaluate the knowledge oral complications of cancer therapy among physicians.

432
Providing cancer information to older adults

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Cancer patients indicate that timely access to relevant information has a significant impact on their ability to cope. The provision of understandable information to cancer patients is a hallmark of quality cancer care. Older adults face a variety of challenges in addition to cancer itself, including other health problems, attitudes toward ageism, lower literacy levels, changes in cognition, and increasing frailty. These challenges may influence their capacity to access, understand, and use cancer-related information. This project was conducted to increase our understanding of the perspectives of older adults (65–79 years; 80+ years) regarding information.
A standardized instrument was used to capture ratings from 1,055 older cancer patients about the importance of specific types of information and satisfaction with the information provided. An interview was conducted with 39 older adults to explore their experiences in accessing information.
Respondents in both age groups rated information related to disease, treatment, and side effects as the most important information to obtain. Satisfaction mean scores concerning information provided ranged across items from 3.5 to 2.4 in the 65- to 79-year group and from 3.4 to 2.1 in the 80+-year group. The 80+ group sought out fewer information resources and described more difficulties understanding and recalling information, in contrast to the 65- to 79-year group.
Providing information to older adults needs to be individualized, taking into account hearing, eyesight, and cognitive function. Using more

than one modality is recommended (speaking and giving written material). Speaking slowly and decreased use of medical language needs to be taken into account.

433
Perspectives from younger and older adults with cancer about information

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Providing relevant, understandable information about cancer information is considered a hallmark of quality cancer care. Patients have reported that information plays an important role in their capacity to cope and adjust throughout the cancer journey. Perspectives on the importance of information and satisfaction with the information provided may differ based on age. Younger adults may be better able to access the information they need in contrast to older adults. This study was undertaken to explore the perspectives of young adults with cancer (45 years and younger) and older adults (65 years and older).
A standardized instrument was used to capture ratings from cancer patients concerning the importance of specific types of cancer-related information and satisfaction with the information actually provided.
Two hundred thirteen patients 45 years and younger and 1,055 cancer patients 65 years and older completed the survey. In both groups, items concerning medical condition, treatment options, and side effects were rated as the most important. Satisfaction mean scores across items ranged from 3.46 to 2.29 for the younger group and from 3.49 to 2.41for the older group. The correlation coefficients between information and satisfaction ratings were significant ($P<0.01$) for all items in the older age group, but varied in the younger group.
All cancer patients rate information as important, but satisfaction with what they receive varied. The provision of information needs to be tailored to the individual. Assessment to identify the topics a patient sees as important and wants to learn more about should be the starting point for interactions with patients.

434
Using indicator data to improve the provision of patient information

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Objectives: Providing relevant, up-to-date, and understandable patient information has been identified as a standard of care and professional practice. As a result, the provision of cancer information is cited as a critical dimension of quality in person-centered care and an aspect of cancer services accreditation expectations. Cancer programs need to be able to determine and monitor their performance in relation to these expectations.
Methods: In our cancer center, we implemented routine data collection regarding the provision of patient information. The Cancer Patient Information Importance/Satisfaction Scale is administered at regular intervals to patients attending the outpatient clinic during a 2-week period. Data from this convenience sample are entered into an administration database and the descriptive statistics calculated.
Results: The descriptive statistics reported to the cancer center include the importance and satisfaction ratings for specific cancer-related information topics and total Importance and Satisfaction Subscale scores. Data can be reported for disease site groupings and organized by age, gender, and time since diagnosis. Comparisons can be made with previous results as new data are gathered and produce an indication of trends. The clinical team can review these trend data and gain insight regarding where improvements are needed in the provision of patient information.
Conclusions: This presentation will report on the type of data described above for our cancer center over a period of 4 years. This presentation will illustrate how indicator data can be used by cancer programs to monitor their performance or improve upon their provision of patient information.

435
Extracellular fluid preoperatively and postoperatively following surgery for early breast cancer: what factors affect the interlimb ratio

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Objective: The aim was to identify what factors influenced extracellular fluid (ECF) ratio pre- and postoperatively for women diagnosed with early breast cancer.
Methods: This longitudinal cohort study recruited women ($n=519$) preoperatively and assessed them prior to and 1–4 weeks following surgery. The dependent variables were the preoperative ECF ratio using bioimpedance analysis. Postoperatively, women were dichotomised between those whose postoperative values were less than or greater than 0.10 from their preoperative ratio. The factors considered as possible contributors to the preoperative and postoperative ECF ratios included age, BMI, smoking history, menopausal status, the side on which women were affected, number of nodes involved and the level of preoperative physical activity. In addition, the type of breast and axillary surgery, number of nodes removed and the extent to which women protected their 'at-risk' arm were assessed postoperatively. The relationship of each variable to the dependent variables was determined, and significant variables ($p\leq0.25$) were further examined with multivariate models.
Results: The side on which the cancer was present influenced the ECF ratio preoperatively. Those with the tumour on the dominant side had higher BIS ratios compared to those in whom it was on the non-dominant side. Factors which contributed postoperatively to changes >0.10 included elevated BMI and axillary node dissection.
Conclusion: Axillary nodes affected by cancer do not, in themselves, predispose women to lymphoedema. Being obese and undergoing more invasive surgery increases the odds of developing increased ECF in the arm on the side of surgery postoperatively.

437
Effect of taxane-based chemotherapy for early-stage breast cancer on extracellular fluid and subjective symptoms in the at-risk arm

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Objective: The objective was to investigate the effect of taxane-based adjuvant chemotherapy on extracellular fluid (ECF) and associated symptoms in the arm on the side of breast surgery.
Methods: Forty-eight women treated for early breast cancer who received FEC followed by docetaxel were assessed prior to and following FEC, following docetaxel and then 6 months later. On each occasion, ECF was quantified in each arm with bio-impedance spectroscopy (BIS) and expressed as a ratio between the arms. Women were categorized as having a significant increase in ECF if their ratio exceeded the previously established thresholds for the detection of lymphedema. Arm symptoms were assessed using a lymphedema symptom checklist (Ridner 2005).
Results: The BIS ratio at the initial assessment, prior to commencement of chemotherapy, was below the threshold for all but two women. The number of women in whom there was a significant increase in ECF was 3 (6 %) following FEC and 16 (33 %) following docetaxel, ten of whom were still above the threshold 6 months later. Following FEC, 35 % reported pain-related symptoms and 39 % reported sensations of swelling compared to 44 and 50 %, respectively, following docetaxel. Six months later, 36 % reported symptoms related to pain, whereas 52 % reported sensations of swelling.
Conclusion: Docetaxel for early breast cancer increase ECF preferentially in the arm on the side of surgery. In addition, women experience sensations related to pain and swelling during this period. Increased ECF may increase the risk of developing lymphedema for these 'at-risk' women.

438

The dietary risk factors for colorectal neoplasms focus in meat consumption

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Background: In 2012, 30,140 new colorectal cancer cases were estimated in Brazil, 14,180 in men and 15,960 in women.
Objectives and Methods: An integrative review, which consists of a methodological strategy to perform the evidence-based practice, was used in this study to search and synthesize the available evidence in the scientific literature about the dietary risk factors of colorectal cancer related to the consumption of meat. The databases LILACS, Medline, CINAHL, and Cochrane Library were consulted and six relevant studies about meat consumption were selected.
Results: The meta-analysis showed that the intake of red meat is associated with a 28–35 % increased risk for colorectal cancer, while the processed meat is associated to a 20–49 % increased risk. The evidence points to red meat, processed meat, and total consumed meat as risk factors for developing colorectal polyps and cancer. In some biochemical mechanisms and genetic models, a high consumption of red and processed meats can enhance the risk of colorectal cancer, including the formation of carcinogenic agents, such as nitric components, heterocyclic amines, and aromatic polycyclic hydrocarbons. This same effect was not found in white meats like poultry and fish.
Conclusions: Nursing stands out as a colorectal cancer primary prevention agent as nurses are capable of stimulating patients' actions to adopt healthy dietary habits and promote nutritional orientations together with other health team professionals, respecting each population's dietary beliefs and health education. Exercise this responsibility is up to nursing seeking a greater support to endorse its interventions.

441

Effects of exercise on cardiometabolic profile of prostate cancer survivors from radar: a multicentre randomized trial

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Objectives: Adverse effects of androgen deprivation therapy (ADT) for prostate cancer include increased number of risk factors for cardiovascular/metabolic complications. We compared the effects of a clinic-supervised exercise program (EX) to printed material (PM) incorporating general physical activity recommendations on cardiovascular capacity, body fat, and metabolic biomarkers in a cohort of the RADAR Study.
Methods: One hundred survivors aged 58–85 years undertook baseline assessments and were randomly assigned to EX (n=50) or PM (n=50) for 6 months. Eighty-one subjects completed the 6-month measurement reported here. EX included progressive moderate- to high-intensity resistance and aerobic exercises. PM included a booklet with the recommendation to accumulate 150 min of physical activity per week and a pedometer. The primary study endpoint was cardiovascular capacity assessed by the 400-m walk. Secondary endpoints were total body fat by DXA and metabolic biomarkers.
Results: Only EX improved cardiorespiratory fitness (−18.8 s, p=0.019), reduced total body fat (−0.8 kg, p=0.006), and increased HDL cholesterol levels (+0.08 mmol/L, p=0.029), with differences between groups approaching significance for cardiorespiratory fitness (p=0.079) and diastolic blood pressure (p=0.072). Over the course of 6 months, PM maintained the total number of steps per week from 50,670 to 48,028 (p=0.489). There were no within- or between-group differences for HbA1c or glucose. There were no adverse events during the exercise program.
Conclusions: The results from our cohort of prostate cancer survivors from the RADAR trial suggest supervised exercise to be well tolerated and more beneficial than printed material to reduce adverse effects from previous ADT.

442

Frozen gloves for the prevention of docetaxel-associated nail toxicity—are they practical in a busy oncology day unit?

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Background: There is evidence to suggest that using a frozen glove (FG) whilst receiving docetaxel treatment helps prevent nail toxicities such as onycholysis. The study aimed to confirm this as well as to assess the nursing ease of use and patient tolerability.
Patients and Methods: In total, 20 participants wore a FG on the right hand during their infusional docetaxel treatment using the left hand as a control. All patients were educated in how to care for their hands and nails. Questionnaires were completed by patients to assess tolerability during their first and every third visit. Nursing staff completed assessments regarding ease of use of the FG.
Results: FG was generally well tolerated, with all patients continuing use of the FG for each treatment. Not all patients wore the FG for the full 1.5 h on every visit, but all were willing to rechallenge at their next treatment. All except one patient were

assessed to have grade 0 or 1 nail toxicity. In the single patient with grade 2 nail toxicity, this was only shown in the control hand and became evident after the first treatment. In general, the nursing staff were satisfied that they were able to apply and change the FG within their standard work practices.
Conclusions: The FG was generally well tolerated and can be used in a busy oncology day unit. However, their use would seem best suited to patients who are beginning to show nail toxicity rather than all patients.

443
Screening of methylated gene in cervical cancer using CPG microarrays

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Objective: The objectives were to screen novel candidate methylation markers for cervical cancer detection and then validate the significantly hypermethylated genes in cervical scrapings.
Methods: An MIRA-based array was carried out using a dye swap in cervical tissues to screen significantly hypermethylated genes in cervical cancer. COBRA assay in independent cancer (n=15) and non-cancer (n=17) cervical scrapings was conducted to detect the methylation level of SOX9.
Results: Five hundred four CpG islands, corresponding to 378 genes, were identified to be differentially methylated between cervical cancer and non-cancer tissues; 30 genes were found to be significantly hypermethylated. Among them, SOX9 has a higher methylation level. Methylated SOX9 was detected in 0 of 17 controls and in 9 of 15 cervical cancers, resulting in a sensitivity and specificity 60 % (9/15) and 100 % (17/17), respectively. Fisher test showed that SOX9 methylation level in cervical cancer scrapings was significantly higher than that in normal cervical scrapings (p=0.0002).
Conclusion: Methylated SOX9 may be a promising marker of cervical cancer detection.

445
Effectiveness of fluoride varnish application as cariostatic and desensitizing agent in irradiated head and neck cancer patients

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Objective: The present study aims to evaluate the effectiveness of three to four monthly fluoride varnish application (FVA) on radiation caries and sensitivity and to assess compliance of three to four monthly FVA.
Materials and Methods: One hundred ninety irradiated head and neck cancers patients who were treated for dental caries, oral prophylaxis, and FVA prior to radiation therapy and at consecutive 3–4 months of follow-up were evaluated. Patients' demographics, diagnosis, radiation dosage, and surgical methods were reviewed. DMFT(number of decayed, missing, and filled teeth) indices, dental sensitivity and compliance to FVA for each patient were noted for 15 months and analyzed statistically using repeated measures ANOVA (with Bonferroni Correction).
Results: Statistically significant increase in DMFT index was seen at 9 *(p=.028)*, 12 *(p=.003)* and 15 *(p=.002)* months follow-up. However, the rate of increase in the DMFT index was 1.7/month, which is less than the rate mentioned in the literature (2.5/month). There was no significant effect of sex (p=0.952) and surgery (p=0.672), but the site of the disease was statistically significant (p=0.038). Though the increase in sensitivity was statistically significant for all follow-up visits, the sensitivity decreased from 39 % at 3 months to 25 % at 15 months of follow-up. A 99 % compliance to FVA was seen until 6 months of follow-up after radiation therapy. This decreased to 88, 66, and 46 % at 9, 12, and 15 months, respectively.
Conclusion: Three to four monthly FVA is effective in decreasing the incidence of radiation caries and sensitivity and has good patient compliance.

446
The prophylactic use of K1 cream for reduction of skin toxicity during the cetuximab treatment

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Objectives: Cetuximab is registered as the first-line treatment of metastatic colorectal cancer (mCRC) patients with KRAS wild type. Approximately 80 % of patients have skin toxicity. Preclinical studies have shown that vitamin K1 reactivated EGFR-mediated signal transduction after inhibition via EGFR receptor antagonists.
Methods: From April 2008 to December 2011, 143 (87 men/56 women) patients with mCRC were treated with weekly cetuximab in combination with chemotherapy. Prophylactic use of cream with K1 vitamin was used twice daily on the face and chest. Patients were followed once a week, for 8 weeks. Skin toxicity was evaluated according to NCI CTCAE, version 3.
Results: The acne-like rash started developing in the first week of treatment, but it was observed only in 38.7 % of patients, mainly G1 (36.5 %). The peak of rash was observed in third week in 97 patients (71.8 %), G1 in 53.3 %, G2 in 17.8 %, and G3 in 0.7 %. No G4 skin toxicities were observed. Compared to the results of previous studies, we observed all grades in 71.8 vs. 80–85 % (G1, 36.5 vs. 15–26 %; G2, 17.8 vs. 45-60 %; G3/G4, 0.7 vs. 17 %). Topical antibiotic was prescribed in 23 patients (17.6 %) and systemic antibiotic in four patients (3.1 %). One patient had itching after topical use of K1 cream.
Conclusions: Prophylactic use of K1 vitamin cream is very effective in reducing the intensity and frequency of cetuximab-induced cutaneous toxicity. We observed a delay in the development of rash, reduction in skin toxicity grade, and reduction in the use of topical and systemic antibiotics. Dose reduction of cetuximab or treatment delay was not needed.

448
Effect of the ghrelin receptor agonist Anamorelin/ONO-7643 on tumor growth in a lung cancer xenograft model

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Objectives: Anamorelin/ONO-7643 is an orally active ghrelin receptor agonist in the development of non-small cell lung cancer (NSCLC)-related cachexia/anorexia. Through its ghrelin and growth hormone (GH) secretagogue activity, it displays both anabolic and orexigenic properties. However, increasing GH and insulin-like growth factor-1 (IGF-1) in cancer patients raises concerns of potentially stimulating tumor growth. In this study, we investigated the effect of ghrelin and Anamorelin/ONO-7643 on tumor growth in a NSCLC xenograft model.
Methods: Female nude mice with consistently established human A549 tumors were administered ghrelin (2 mg/kg, i.p.), Anamorelin/ONO-7643 (3, 10, or 30 mg/kg, p.o.), or vehicle for 28 days. Tumor growth, body weight, and food consumption were monitored. Satellite mice were treated with ghrelin, the high dose of Anamorelin/ONO-

7643, or vehicle to assess the plasma levels of murine GH (mGH) and IGF-1 (mIGF-1).
Results: Anamorelin/ONO-7643 at 10 and 30 mg kg^{-1} day^{-1} showed a statistically significant ($p<0.01$) increase in body weight compared to control animals, though there was no change in food consumption. Ghrelin treatment had no effect on food consumption or body weight. Both ghrelin and Anamorelin/ONO-7643 treatment increased mGH compared to the controls, whereas peak mIGF-1 levels were only slightly higher. Neither compound had any effect on tumor growth.
Conclusions: This study demonstrated that neither Anamorelin/ONO-7643 nor ghrelin promoted tumor growth in A549 tumor-bearing nude mice despite increased levels of mGH and a trend of increased mIGF-1. Together with Anamorelin/ONO-7643's ability to increase body weight, these results support using ghrelin receptor agonist-based treatments in managing NSCLC-related cachexia/anorexia.

449
The effect of brain tumor treatment on children's cognitive and emotional intelligence

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Introduction: It is a well-supported fact that childhood survivors of brain tumors experience academic difficulties several years after the completion of medical treatment. Many studies have demonstrated a cognitive delay most often in terms of decreased intellectual quotient. However, there are few studies of how emotional intelligence develops after brain tumor treatment
Objectives: This study is concerned with the assessment of emotional intelligence in a sample of children treated for brain tumor.
Methods: Twenty children and adolescents (7 males and 13 females), aged 8–17 years, who had been treated for brain tumor were selected from the records of patients assessed cognitively with the Wechsler Intelligence Test for Children version 3 or 4 and emotionally with the BarOn Emotional Quotient Inventory for children. Their mean age at diagnosis was about 7 years, and the assessment took place approximately 5 years after diagnosis.
Results: The children and adolescents showed moderate to severe impaired cognitive abilities in terms of intelligence quotient 5 years after diagnosis. Contrary to our preliminary hypothesis, they did not report impairment in intrapersonal ability, capacity to manage stress, or decreased general mood. They did report significant difficulties with interpersonal ability and adaptability. We discuss the consequences of these findings to promote the social and academic reintegration of pediatric cancer survivors.
Conclusions: These findings indicate the complex relationship between cognitive and emotional intelligence and the need to consider both aspects in the rehabilitation of children.

451
Women's help-seeking behaviour and the associated influencing factors following self-discovery of a breast symptom

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Introduction: Early diagnosis of breast cancer is linked to more favourable outcomes.
Aim: The aim of this study was to describe women's help-seeking behaviour (HSB) and the associated influencing factors on self-discovery of a breast symptom.
Method: A descriptive correlational design was used. Following ethical approval, data were collected from women ($n=449$) attending a breast clinic within the Republic of Ireland. The literature review informed the development of a multi-scale questionnaire package focusing on the key issues impacting on HSB for cancer symptoms. Data were analysed using descriptive and inferential statistics.
Results: The majority of women (69.9 %, $n=314$) sought help within 1 month; however, 30.1 % ($n=135$) delayed help seeking for more than 1 month following symptom discovery. The factors most significantly associated with delayed HSB were knowledge around symptom identity ($p=0.005$), 'ignoring the symptom' ($p<0.001$) and the belief in longer symptom duration ($p=0.023$). Fear on symptom discovery ($p=0.005$) was associated with prompt HSB.
Conclusion: This study provides insight into the HSB of women who self-discover breast symptoms. It highlights the complexity of the help-seeking process, indicating that it is not a linear event but is influenced by multiple factors which determine whether women delay or seek help promptly. Despite emphasis on the early presentation of breast symptoms, delayed HSB persists amongst women with self-discovered breast symptoms. Oncologists and oncology nurses have a role in promoting breast awareness, prompt help seeking, and early detection and treatment of breast cancer, amongst women of all ages.

452
Measuring the impact of menopause on quality of life following cancer treatment

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Treatment for breast or gynecologic cancer may induce menopause. This study explored the association between treatment-induced menopause and its impact on quality of life.
Women with breast or gynecologic cancer who experienced menopause as a result of their treatment participated in this study. Women taking hormone replacement therapy were excluded. Those who consented completed the MENQOL, EORTC-30, SVQ-Extended Version, and a visual analog scale for hot flashes.
Seventy-eight women participated in this study. They ranged in age from 29 to 58 (mean=47)years. Eighty-one percent of the women had breast cancer, 78 % were married, and 72 % reported completing college or university. The most frequently endorsed items were those related to vasomotor symptoms (hot flashes, 85 %; sweating, 79 %; and night sweats, 75 %); fatigue (feeling worn out or tired, 83 %); and sleep disturbances (trouble sleeping, 83 %). Women rated vasomotor symptoms as highly bothersome (hot flashes: mean=4.07; night sweats: mean=3.88; sweating: mean=4.0), although weight gain received the highest bothersome rating (mean=4.62). Sexual and intimacy changes were also ranked as highly bothersome (change in sexual desire, 4.24; vaginal dryness during intercourse, 4.20; avoiding intimacy, 4.12), as was fatigue (mean=4.02).
The consequences of cancer treatment may have a profound impact on the quality of life of survivors. In particular, women who experience treatment-induced menopause can feel an impact on their quality of life. High incidence and interrelationship of night sweats, feeling tired, lack of energy, and difficulty sleeping may be a focus for directing interventions for this group of survivors.

453
Quality of life assessment of children and adolescents undergoing cancer treatment

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Aim: The aim was to assess the quality of life (QoL) and treatment impact in children and adolescents undergoing cancer treatments.
Method: This is a cross-sectional study involving 215 Brazilian children and adolescents and their caregivers, between 2 and 18 years of age, and treatment time between 1 and 12 months. For general QoL assessment, the PedsQL 4.0 Generic Core inventory was used and, to analyze the treatment impact, the PedsQL 3.0 Cancer Module, both translated for Brazil.
Results: On the general QoL assessment, on a scale from 0 to 100, the children and adolescents' score was 48.1, against 50.0 for the caregivers. On the assessment of treatment impact, the children and adolescents scored 47.9 and the caregivers 48.1. The most compromised domains for the children and adolescents and for their caregivers were, respectively, concerns and anxiety toward the treatment. For both, the least committed was the social domain.
Conclusions: These study results demonstrated a better quality of life and lesser treatment impact according to the caregivers when compared with the children and adolescents' assessments. Due to this divergence, more profound studies are due to analyze these differences. By observing the aspects of the disease and the domains most affected by treatments, the health team can plan more efficient interventions, with a view of enhancing the quality of life of children and adolescents with cancer and their families.

454
Survival prediction models for patients with bone metastases: a literature review

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Objectives: Accurate prediction of survival for patients with bone metastases (BM) would guide management decisions regarding palliative care (PC) and end-of-life planning. A literature review was undertaken to identify existing survival prediction models.
Methods: English publications describing survival prediction models relevant to patients with BM were identified from Embase, Science Citation Index, Medline, and Web of Science without restrictions on year of publication. Eligible papers contained sufficient information on the construction of a quantitative score and its correlation with overall survival that the model could be applied to an external population.
Results: Twenty-one prognostic models have been constructed based on training sets ranging from 67 to 1,852 patients. Fourteen are based on prospective data, the remainder on data reviewed retrospectively (1980–2009). The characteristics of included patients and their care settings varied (hospice, PC unit inpatients, consulting hospital PC teams, oncology or orthopedic wards, ambulatory clinics, patients receiving radiotherapy). Seven models focused on preoperative evaluation. The predictive factors utilized include 8 clinician-dependent factors (e.g., presence of delirium), 7 disease descriptors (e.g., pathologic fracture), 8 patient-reported factors (e.g., anorexia), and 11 lab values (e.g. albumin). The most commonly included factors included performance status, histology, and disease extent. Models predicted for 26 endpoints included: survival at a specific future time (N=13), median (N=10), and mean survival (N=3).
Conclusions: Many survival prediction models applicable to BM exist, with various component factors and ease of application at the bedside. Future work will include their comparative utilization in a dedicated multidisciplinary bone metastases clinic.

455
Spectrum of patients on oral morphine solution therapy—an Indian experience

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Aims: Patients with malignancy who develop progressive or recurrent disease following primary treatment have the option of active palliative treatments like palliative radiotherapy/chemotherapy. Usually, patients referred to the Department of Palliative Medicine, KIDWAI, for symptom palliation were not suitable for any active palliative treatments because of aggressive disease, old age, comorbidities, non-affordability, etc. Such patients were started on step I and II analgesia for symptom control; when failed, they would be escalated to step III analgesia, i.e., oral morphine solution (OMS) therapy.
Methods: Three hundred thirty-four patients who received OMS therapy, from January 2010 to October 2011, were retrospectively analyzed for:

- *Primary objective*: overall survival
- *Secondary objective*: clinicopathological profile

Results: The most common cancer among men is pharyngeal cancer and among women is cervical cancer. The most common age presentation is the fifth decade. The most common stage is IV, with 44 %, and the most common histological subtype is squamous cell carcinoma. Patients received OMS dose from 30 to 2,400 mg/day, and majority of them were stable for 3 months. The common pain syndrome was somatic pain (45.4 %). The minimum follow-up was 3 months. The median survival of all patients was 3.5 months, for those who received primary treatment was 4 months, and for those who did not receive any primary treatment was 2 months.
Conclusions: The subgroup analysis revealed that those who received some form of primary treatment for cancer, either curative or palliative, along with OMS therapy had a better survival than those who had not received any treatment at all (p=0.003, significant). A wholesome "palliative care" is an alternative in patients who are unfit for other treatments.

456
Variability of baseline pain intensity scores during breakthrough pain in cancer

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Objective: Breakthrough pain in cancer (BTPc) and rapid onset of severe pain with limited duration affect a substantial proportion of patients. This analysis examined the variation of pain intensity (PI) between episodes and between patients participating in BTPc clinical trials.
Methods: Data were pooled from two randomized, double-blind, crossover studies using fentanyl pectin nasal spray (Lazanda®, PecFent®) compared with placebo or morphine sulfate immediate release to relieve BTPc. Patients were adults with background pain adequately controlled with ≥60 mg morphine (or equivalent) and ECOG score ≤2. Dose was titrated prior to double-blind treatment phase of ten episodes of BTPc. PI was reported on a 0=no pain to 10=worst possible pain

scale. Inter- and intrapatient variability of baseline pain scores per episode was analyzed by ANCOVA using a mixed-effect model. The influence of demographics and ECOG score at study entry was assessed.
Results: There were 1,399 BTPc episodes assessed among 152 patients. Mean (SD) episode baseline PI score was 7.3 (1.76, range=2–10). Interpatient variability of baseline PI scores was 75.9 %; intrapatient variability was 20.6 %. Fixed terms for demographics and ECOG score were not significant factors influencing baseline PI scores at or below the 5 % level (sex: p=0.7583; age: p=0.0668; ECOG: p=0.1032).
Conclusions: BTPc episodes have large interpatient variations in baseline PI scores. However, individual patients show comparatively low variability in baseline PI scores between BTPc episodes. This supports the use of a consistent maintenance dose of an analgesic once it has been titrated to an effective dose.
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457
Age as a risk factor for dental disease and treatment in childhood cancer survivors

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Objectives: The purpose of this study was to assess the difference in dental problems and access to dental care in childhood cancer survivors <18 and ≥18 years old.
Methods: A local cohort of childhood brain tumor survivors participated in a cross-sectional, mailed survey of recent dental problems and ability to access dental care. Survivors were diagnosed before age 21. One hundred sixty-four survivors were mailed surveys; 99 returned the survey. The questionnaire was adapted from the 2008 US National Health Interview Survey Oral Health Supplement.
Results: Compared to the respective child and adult national averages, both groups of survivors reported greater rates of dental disease for 3 of 12 dental problems (p<0.05). Rates of other dental problems trended toward significance. Fewer ≥18-year-old survivors reported seeking treatment in the past 6 months for reported dental problems than survivors <18 years old (RR=2.1, 95% CI=1.3–3.4, p=0.01). Fewer ≥18-years-old survivors reported having dental insurance (78.8 %) than <18-year-old survivors (92.0 %, p=0.22). Cost was the primary barrier to care reported in survivors ≥18 years old (22.8 %).
Conclusions: Survivors over the age of 18 have a greater burden of untreated dental disease than younger survivors. As survivors transition to adulthood, they become more vulnerable to dental disease. Reasons for this susceptibility in the USA may be due to loss of insurance coverage or direct responsibility for the "out-of-pocket" cost of dental care.

458
Neurokinin NK_1 receptor mRNA and protein over-expression and increased downstream p-ERK1/2 and p-PKA signaling during chemotherapy-induced immediate- and delayed-phase vomiting

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Objectives: The objective of this study was to determine the effects of cisplatin on the expression profile of substance P (SP), serotonin 5-HT_3 (5-HT_3R), and NK_1 receptors (NK_1R) and post-receptor p-ERK1/2 and p-PKA signals during chemotherapy-induced emesis.
Methods: Cisplatin (10 mg/kg, i.p.) induces early and delayed phases of emesis in least shrews at 1–3 and 30–40 h post-injection. We have examined cisplatin-induced changes during emetic phases in the expression levels of: (1) SP and NK_1R mRNAs, (2) NK_1R and 5-HT_3R proteins, and (3) p-ERK1/2 and p-PKA proteins associated with NK_1R signaling.
Results: Significant increases in the levels of NK_1R mRNA in the shrew brainstem occurred at 2 and 28 h post-cisplatin injection, whereas intestinal NK_1R mRNA was increased at 28 h only. Brainstem and intestinal mean SP mRNA levels also showed a similar pattern of increase during the emetic phases, but failed to attain significance. The levels of NK_1R protein were significantly increased in the brainstem at 2, 8, and 33 h post-injection. The elevated expression of NK_1R protein corresponded with significant increases in the phosphorylation status of the brainstem ERK1/2 at 2, 8, and 33 h post-treatment. Phosphorylation of PKA increased at 33 and 40 h post-injection. No change in brainstem 5-HT_3R protein expression was observed.
Conclusions: The attained results indicate a correspondence between the mean frequencies of emesis during cisplatin-induced immediate- and delayed-phase vomiting with increased (1) expression levels of NK_1R mRNA and its protein density and (2) downstream phosphorylation of ERK1/2 and PKA signaling. Future antiemetic development should also target post-receptor signaling mechanisms.

459
Relationship between ECOG score and satisfaction with fentanyl pectin nasal spray for breakthrough pain in cancer

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Objective: Breakthrough pain in cancer (BTPc) impacts activities and quality of life. The purpose of this analysis was to assess how satisfaction with treatments for BTPc may be affected by a patient's level of function.
Methods: Data were analyzed from an open-label, long-term safety study using fentanyl pectin nasal spray (FPNS, Lazanda®, PecFent®) for BTPc. Patients had an ECOG score ≤2 and experienced BTPc in spite of background pain adequately controlled with ≥60 mg/day morphine (or equivalent). FPNS (100- to 800-mcg dose) was titrated prior to open-label phase. The acceptability of FPNS was assessed through a three-question, four-point scale (not satisfied–very satisfied) for ease of use, convenience, and reliability. This post hoc analysis assessed acceptability scores grouped by ECOG score after 4 weeks of open-label use.
Results: Among patients (n=195) after 4 weeks, 97.4 % reported being satisfied or very satisfied with ease of use, 96.9 % with convenience, and 92.3 % with reliability. Among those with ECOG 0 (n=20), 1 (n=130), and 2 (n=45), the results were: ease of use, 100, 97.7, and 95.6 %; convenience, 100, 96.9, and 95.6 %; reliability, 100, 92.3, and 88.9 %, respectively. The high percentage of patients who were satisfied or very satisfied with treatment increased with level of function.
Conclusions: Overall, >90 % of patients reported being satisfied or very satisfied with ease of use, convenience, and reliability of treatment. FPNS was well accepted irrespective of ECOG score (0–2), although patients with lower ECOG scores had slightly higher acceptability scores. Future BTPc studies examining subjective scores should consider differences in ECOG status.
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460

Rolapitant, a novel NK-1 receptor antagonist, for the prevention of nausea in subjects receiving highly emetogenic chemotherapy (HEC)

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Objective: Management of chemotherapy-induced nausea and vomiting (CINV) improves quality of life and increases the likelihood that patients continue to receive appropriate treatment. In addition to a complete response rate (no emesis and no use of rescue medication), the other key objectives of this study used to assess efficacy included the effect of rolapitant on the prevention of nausea and time to first emesis and its impact on the quality of life in subjects receiving highly emetogenic chemotherapy (HEC).
Methods: Phase II, double-blind study in which 454 subjects receiving HEC (≥70 mg/m^2 cisplatin-based chemotherapy) were randomized prior to chemotherapy to receive ondansetron+dexamethasone+either placebo or 10, 25, 100, or 200 mg of rolapitant. Subjects recorded severity of nausea, time to first emesis, use of rescue medication(s), and impact on daily life (FLIE questionnaire) during cycle 1, days 1–6.
Results: The rolapitant 200-mg group demonstrated greater rates of no significant nausea (VAS<25 mm) overall (0–120 h) and in the acute (0 to ≤24 h) and delayed (>24–120 h) phases compared to placebo (63.2 vs. 42.2 %, p=0.005; 86.5 vs. 73.3 %, p=0.029; 64.4 vs. 47.8 %, p=0.026, respectively). Time to first emesis or use of rescue medication(s) was significantly longer in the rolapitant 200-mg group compared to the placebo group. Furthermore, nausea- and vomiting-related quality of life scores in the rolapitant 200 mg group were statistically significantly better than those in the placebo group.
Conclusions: Administration of rolapitant 200 mg with ondansetron and dexamethasone is effective at preventing nausea and improving quality of life in subjects receiving HEC.

461

Use of subcutaneous catheters (SC) in the domiciliary palliative healthcare programme at Fundación Santa Fe de Bogotá

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Introduction: Subcutaneous catheters (SC) represent a useful tool for facilitating the domiciliary management of patients with oncological or chronic terminal disease.
Materials and methods: The present study evaluated the use of SCs in palliative care program patients from July 2009 to December 2010, considering demographic characteristics, indications, and usage profile of SCs and their related complications. Each SC placement was independently recorded, even if it occurred in the same patient.
Results: A total of 140 interventions were made in 66 patients having an average age of 64 years (±16 tears). The population was equally distributed according to gender; 71 % of the subjects had a <50 % Karnofsky index and only 16 % were receiving active antineoplastic treatment, this being more frequent in men (p<0.05) and those having less functional compromise (p<0.05). The main indication for SC placement was the administration of opioid and non-opioid analgesics (87 %), followed by the management of nausea/vomiting (32 %). The average time for using a SC was 15.8 days (±11 years); the most used site was the infraclavicular region (64 %), and the main indication for SC placement was for drug administration (95 %). The therapeutic objective was achieved in 92 % of the cases. The overall complication rate was 35 % among 128 evaluable cases. Adverse events were associated with concomitant administration of antineoplastic treatment (p=0.03), with ongoing infusion of potent opioids (p=0.03), when the main indication was analgesia (p=0.006) and when SC lasted <15 days (p=0.003).
Conclusion: SC is an integral management strategy for patients receiving domiciliary PC having a high benefit-to-risk ratio.

462

Mucosal inflammatory changes are related to GI nociception: a model for painful mucositis

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Objectives: 5-Fluorouracil (5FU) is a chemotherapeutic drug associated with painful mucositis in patients undergoing cancer treatment. In animal models, 5FU demonstrates morphologic and histologic changes indicative of gastrointestinal (GI) injury. However, whether these changes are related to the symptom of pain has not been shown. The objective of this work was to evaluate whether 5FU toxicity is mediated by inflammation and associated with nociception.
Methods: We examined mucosal inflammation and pain behaviors in male adult Sprague–Dawley rats by administering 5FU or matching vehicle via IP injection. Nocifensive behavior was evaluated with a battery of sensory testing methods. Differential gene expression in the GI mucosa was examined using microarrays followed by validation via qPCR.
Results: There were no differences in the responses to thermal stimuli between groups. Tactile responses to flank and hindpaw mechanical testing were significantly elevated in 5FU-treated animals (P<0.05), but not for forepaw and orofacial stimuli. The visceromotor response was significantly increased in the drug group (P<0.01). Genes significantly upregulated in the colon and ileum of the 5FU-treated group were related to inflammation, wound healing, and drug toxicity.
Conclusions: Mucosal gene expression in 5FU-treated tissues related to inflammatory and tissue degradative mediators, in concert with chemotherapy-associated cell regulatory functions, suggests that 5FU toxicity involves an inflammatory process. This inflammatory process is associated with nociceptive responses in lower spinal cord regions, but not somatic pain, indicating localized hyperalgesia and referred pain. This work establishes for the first time a translational model for mucositis that includes nocifensive indicators of pain.

465

Experience in prevention and treatment for recurrence of hepatocellular carcinoma after liver transplantation

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Objectives: The aim of our study was to explore the prevention and treatment method for tumor recurrence of hepatocellular carcinoma after liver transplantation.

Methods: We retrospectively analyzed the clinical data of 215 cases of hepatocellular carcinoma after liver transplantation between June 2006 and December 2011. The recurrence patients were treated with surgical resection, interventional therapy, radiotherapy, chemotherapy, or re-transplantation. The clinical data, survival rate, recurrent rate, and therapeutic outcome of patients were analyzed during the follow-up period.
Results: The survival rates of perioperative and 1, 2, and 3 years were 89.7, 75.5, 70.3, and 66.7 %, respectively. During the follow-up period, hepatocellular carcinoma recurrence occurred in 74 cases, and the median time to recurrence was 11.3 months. Thirty-nine patients (57.4 %) died because of the progression of the recurrent hepatocellular carcinoma during the follow-up period. The most common sites of initial recurrence were the lung, the graft liver, bone, and lymph node. The recurrences in the graft liver were initially treated with surgical resection, interventional therapy, radiofrequency, or re-transplantation, and the best treatment method was surgical resection. The patients underwent chemotherapy or radiotherapy for recurrent tumor in the lung, bone, or lymph node, and there was no statistical significance between chemotherapy and radiotherapy in the prognosis.
Conclusions: Long-term survival of patients with hepatocellular carcinoma after liver transplantation is affected mainly by recurrence of hepatocellular carcinoma. Once the patients had recurrence of hepatocellular carcinoma, appropriate therapy should been given dependent on the situation of recurrence. Among the different treatment methods, surgical resection is the best one.

466
Care coordination in the older adult with cancer (CCOAC)—a pilot study of supportive care screening and intervention in an Australian regional oncology practice

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Aims: Appropriate treatment of older cancer patients requires adequate assessment and supportive care (SC). Screening for SC needs is recommended, but not routine practice. The aim was to assess the feasibility of routine screening for SC needs using a dedicated cancer care coordinator (CCC) and map subsequent referral pathways.
Methods: The self-filled, multidimensional geriatric assessment (GA) questionnaire developed by the Royal Adelaide Hospital was adapted to suit local needs. Domains included are comorbidities, activities of daily living (ADLs), instrumental ADLs, memory, geriatric syndromes, a distress thermometer, pain score, and level of social supports. This GA was sent to all patients over 70 years old before initial presentation to the oncology clinic. The GA was scored by a CCC who then contacted the patient (and carer) by telephone and referred them to support services as required. The tool was readministered at 6 weeks and 6 months.
Results: From 28 March 2011 to 7 February 2012, 155 baseline screens occurred. All patients were outpatients. Median age was 78 years (range, 70–95 years; male/female=93:62). Patients with comorbidities (self-reported) comprised 50 %, including memory issues (17 %) and falls (20 %). Pain was reported by 42 % and distress by 45 % of patients. Up to 45 patients reported at least one problem with IADLs (29 %). The total number of SC referrals was 73. Key referral destinations were community aged care assessment (n=12), carer support organisations (n=13), palliative care (n=14) and cancer care coordinators (n=27). This unique model of SC screening using a GA questionnaire and guided intervention is feasible and resulted in a significant number of SC agency referrals.

467
Correlations between weight loss during chemotherapy and survival of metastatic non-small cell lung cancer (NSCLC) patients

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Objectives: Cancer-associated cachexia (CAC), a multifactorial syndrome, is usually seen in metastatic non-small cell lung cancer (NSCLC). This study evaluates the correlations between weight loss during chemotherapy and survival of patients with metastatic NSCLC.
Methods: We reviewed the clinical records of NSCLC patients who were admitted to Shizuoka Cancer Center between January 2010 and August 2011 and had received first-line chemotherapy. We estimated the body weight change rate (%BWC) and the body mass index (BMI) at the time of starting chemotherapy (T0), and 3 months (T3) and 6 months (T6) after first-line chemotherapy. We defined CAC as patients with weight loss >5 % or patients with weight loss >2 % and BMI lower than 20 kg/m^2.
Results: A total of 134 patients were included in this study. The median age was 66 years (range, 35–86 years); the 1-year survival rate (1YS) was 71 %. Twenty-six patients were CAC and 51 patients were non-CAC at T0; 1YSs were 63 and 100 % (p=0.0002), respectively. Forty-five patients were CAC and 59 patients were non-CAC at T3; 1YSs after T3 were 52 and 71 % (p=0.0015). The mean %BWC at T3 and T6 were +0.3 and +3.5 % in 29 patients treated by epidermal growth factor receptor tyrosine kinase inhibitor (EGFR-TKI) as first-line chemotherapy while −3.2 and −3.3 % in 105 patients administered cytotoxic drugs (p=0.0004).
Conclusions: Weight loss during chemotherapy was correlated with poor survival. The EGFR-TKI was less detrimental to body weight as compared with cytotoxic treatment.

469
Cancer patients' illness perception and its relation with their beliefs about cancer treatments

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Introduction: Perception of illness is composed of symptoms, probable causes perceived by patients, effects of illness on life and emotions, personal control of patient over illness, and beliefs about treatments. Perceived social support of cancer patient is an important factor that affects the course of illness.
Aim: The aim was to evaluate the illness perception of cancer patients and to investigate the relationship between cancer perception and their beliefs about cancer treatments.
Methods: Data were collected from 40 patients (25 women and 15 men, mean age=59.3 years) with cancer followed at a medical oncology clinic in an outpatient setting. The three most frequent diagnosis were breast cancer (n=11), lung cancer (n=10), and colon cancer (n=6). Two standardized tools, namely, Illness Perception Questionnaire-Revised (IPQ-R) and Multidimensional Scale of Perceived Social Support, were given. Data collection is still in progress.
Results: The interim analysis showed that there are significant correlations among factors of IPQ-R. Perception of personal control of cancer patient was correlated with beliefs about treatments (r=0.546, p<0.01), and perceived results of illness were correlated with emotional representations of patient (r=0.433, p<0.01).
Conclusion: Patients' perception of cancer could affect the perceived benefits of treatment planned by the medical team.

470

Clinicians' estimates of expected survival time (EST) in patients starting first-line chemotherapy for advanced non-small cell lung cancer (NSCLC)

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Objectives: Clinicians' estimates of expected survival time (EST) are important for discussing prognosis, deciding treatment, and helping patients plan for the future. We previously showed that clinicians' estimates of EST are well calibrated, but imprecise, and that little is known about their determinants. This study assessed clinicians' estimates of EST and baseline factors that influence them.
Methods: Participants randomized to first-line standard platinum-based chemotherapy regimens for advanced NSCLC had clinicians' "expected survival time in months" recorded at baseline. Associations with potential prognostic factors (age, gender, WCC, LDH, histology, disease stage, metastatic sites, ECOG performance status (PS), and Spitzer's Quality of Life Index (QLI)) were assessed with Spearman's rank correlation coefficient (r); Cox regression was used to calculate univariable hazard ratios (HR).
Results: One hundred forty-nine patients had a median age of 63 years (interquartile range, 42–79 years); PS of 0 in 34 %, 1 in 58 %; and stage 4 disease in 90 %. The median EST was 10 months, and the most frequent EST was 12 months (35 %). EST was 6–12 months in 85 % of patients, >12 months in 10 %, and <6 months in 6 %. The only characteristics associated with EST were clinicians' ratings of QLI ($r=-0.20$, $p=0.02$; HR=0.58, $p=0.04$) and of PS ($r=0.30$, $p=0.001$; HR=1.39, $p=0.06$); PS strongly correlated with QLI ($r=-.51$, $p<0.001$).
Conclusion: Clinicians' estimates of EST were largely independent of conventional prognostic factors, suggesting that they reflect other characteristics and might improve estimates of EST based on conventional prognostic factors.

471

Studies in pediatric febrile neutropenia: 20-year experience in a single center

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Objectives: Febrile neutropenia (FN) is a major side effect of treatment in children with cancer. This study aims to evaluate the studies in a single center and changes within years.
Methods: From 1990 to 1993, duo therapy (mezlocillin+amikacin) was used; from 1994 on, monotherapy was used as empirical treatment as follows.: ceftazidime (1994–1995, group A), ceftazidime vs. cefoperazone–sulbactam (randomized, R; 1996–1997, group B); ceftazidime vs. cefepime (R; 1998, group C); cefepime vs. ticarsillin–clavulanic acid (R pilot; 2000); and cefepime vs. piperacillin–tazobactam (2001, group D). From 2002 on, cefepime was used. The results of 84 consecutive episodes in 2002 (group E) and 70 episodes in 2011 (group F) were evaluated in comparison to the results of groups A–D.
Results: The median duration of neutropenia was 6 (2–46) days in 375 episodes. Severe neutropenia was detected (% ANC<100/mm^3) in 25, 56, 75, 66, and 83 % of episodes in groups B–F, respectively. There were no deaths due to febrile neutropenia after 1997. The rate of modification in groups A–F was 24–38 %. The range of clinically documented infection was 34–80 %. Twenty-five percent of episodes were documented microbiologically (MDI) in studies prior to 2002; this was 31 % in 2011. *Pseudomonas* infections comprised 7 % of MDI prior to 1994, which decreased to 1 % in 2002 and increased to 7.5 % in 2011. Gram-negative bacteria were dominant prior to 1998, which decreased after then increased dramatically in 2011. Aminoglycosides were added in 25 %, glycopeptides in 12 %, and antifungals in 7 % of all episodes.
Conclusions: Monotherapy is efficient in children with febrile neutropenia, albeit a high percentage was admitted with ANC< 100/mm^3. The rates of Gram-negative bacteria and *Pseudomonas* infection that had decreased significantly through the years have increased again.

472

Fentanyl patch (Durotep Patch®) administration effectively maintains long term QOL of urothelial carcinoma patients with bone metastasis

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Purpose: The purpose was to examine the benefit of fentanyl patch (Durotep Patch®) administration for urothelial carcinoma patients with bone metastasis.
Patients and method: Ten metastatic urothelial carcinoma (eight men, two women) using the fentanyl patch in our department were retrospectively examined (age, 56–80 years, average, 68.5 years; median, 70 years; three renal pelvis, one ureter, six bladders). Anticancer chemotherapy (M-VAC, GC) had been performed in all cases, and desensitization radiotherapy (external irradiation and/or Strontium-89, Metastron®) was given in eight patients. The maximal dose of fentanyl citrate in each patient was 25–200 μg/h (average, 83 μg/h; median, 75 μg/h). MS Contin® or Oxy Contin® was given to eight patients before the fentanyl patch administration.
Results: The fentanyl patch dosing periods in all patients were 0.5–43 months (average, 8.7 months; median, 5 months); those for the six patients whose metastatic site was the bone were 4–43 months (average, 13 months; median, 7.5 months); and for four patients whose metastatic site were the lung and/or lymph nodes were 0.5–5 months (average, 2.3 months; median, 1.8 months). Patients with bone metastasis had significantly longer dosing periods and survival than others ($P=0.004$). Five patients with bone metastases were able to be treated in an outpatient clinic and stayed at home enjoying their lives. The ratio of duration of fentanyl patch administration for after bone metastases revelation was 50–100 % (average, 82 %; median, 84 %).
Conclusions: The patients mainly suffering from bone metastases had relatively long-term dosing periods of fentanyl patch. Fentanyl patch seems to improve the quality of life of patients and should be administrated to bone metastasis patients actively.

473

Why cancer-related fatigue matter? Lessons from breast and gastrointestinal tract cancer patients in Taiwan

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Objectives: We used fatigue as an indicator to study patients with breast cancer and gastrointestinal (GI) tract cancer in order to examine various factors causing fatigue.
Methods: The Chinese translation of the ICD-10 fatigue diagnosis questionnaire was authorized by Dr. David Cella. It showed good internal consistency, and Kuber–Richardson reliability was 0.818. Patients were recruited from those who visited their oncology clinics and oncology wards. In addition to the questionnaire, demographic information and clinical data were also documented.
Results: Cancer-related fatigue (CRF) prevalence rates were 18.4, 39.5, and 42.1 % in breast cancer patients with curative treatment, palliative treatment, and off-treatment assessment, respectively. Of 15 patients receiving routine follow-up after treatment, 14 did not have any active disease symptoms. This represents the inconsistency between physical condition and fatigue appearance. In contrast to breast cancer patients, patients with tumors of the GI tract in this study had a higher rate of occurrence of CRF (66 %). Of the GI tract cancer patients with CRF, all were under treatment and most of them receiving palliative treatment (62 %).

	Breast (n=38)	GI tract(n=29)
Current treatment		
Palliative treatment	15/38	18/29
Curative treatment	7/38	11/29
F/U	16/38	0/29
Disease status		
Disease-free	15/38	1/29
Stable disease	5/38	3/29
Progressive disease	13/38	20/29
Terminal status	4/38	5/29

Variations between two groups with CRF

Conclusions: Patients experienced fatigue not only during the treatment stage but also in the follow-up stage. In addition to delayed onset and persistence, the fatigue they experienced could be caused by factors other than physiological and therapeutic ones. The type of cancer determined the fatigue they experienced. Assessment and treatment of fatigue should be based on knowledge about the progression and features of different types of cancer to help ascertain the possible causes of fatigue in each case.

474
The impact of oral health on quality of life in patients with oral cancer in Nepal

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Objectives: Oral cancer is one of the leading cancers among men in Nepal. The objective of the study was to assess the impact of oral health-related quality of life (OHRQoL) in patients with oral cancer and its association with tobacco habits.
Methods: A cross-sectional OHRQoL study was conducted using Oral Health Impact Profile-14 (OHIP-14) among 150 oral cancer patients visiting the Department of Oral Medicine from January 2009 to December 2011. A detailed history of the patients with deleterious habits was taken. The correlation of OHIP-14 with age, sex, habit duration, and frequency was assessed using Spearman's rho.
Results: One hundred fifty patients in the male/female ratio of 3:1 and median age of 50 years had cancer in different parts of the oral cavity. The most frequent sites were alveolus, buccal mucosa, and vestibule. All were tobacco users with average use of seven times daily for 20 years. Quid with tobacco and combination of smoking and chewing tobacco were the most prevalent habits. OHRQoL was affected in all individuals, with median OHIP-14 score of 24. The most affective factors were painful aching in the mouth and tension because of the oral condition. The least affective factors were sense of taste being worsened and feeling embarrassed because of the oral condition. The OHIP-14 had a significant positive correlation with age (r_s=0.51, p<0.001), frequency of tobacco use (r_s=0.68, p<0.001), and its duration (r_s=0.44, p<0.001).
Conclusion: OHRQoL is significantly affected in patients with oral cancer and has a positive correlation with tobacco habits.

475
Suicide incidence in cancer patients in West Austria from 1991 to 2006: a population-based study

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Background: The purpose of this study was to investigate the suicide rates of cancer patients compared to the general population in the west of Austria. Studies from around the world have shown an increased risk of suicide in cancer patients, but no previous analysis has been carried out in Austria.
Patients and methods: A total of 77,333 cancer cases (375,259 person-years) were registered in the database of the Austrian Cancer Registry for the years 1991–2006 in West Austria. Suicide was defined according to death certificates based on the International Classification of Diseases. We calculated standardised mortality ratios (SMRs) for suicide in 41,017 men and 36,316 women diagnosed with cancer relative to suicide rates in general population.
Results: During the period, 179 cancer patients (145 men and 34 women) committed suicide. We found a significantly increased risk of suicide in men (SMR=1.6, 95% confidence interval (CI)=1.3–1.9) and a moderately increased risk in women (SMR=1.3, 95% CI=0.9–1.8). The relative risk of suicide was greatest in the first year after cancer diagnosis (SMR for men=3.1, 95% CI=2.3–4.1; SMR for women=2.9, 95% CI=1.5–4.9). Old age of cancer patients was negatively associated with suicide.
Conclusions: Patients with cancer have an increased risk of suicide compared to the general population. There is a critical period immediately after the diagnosis. Oncologists who diagnose and manage cancer cases need to include psychological evaluation in their routine to prevent suicide.

476
Preferred absorption of saturated fatty acids during methotrexate-induced gastrointestinal mucositis in the rat

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Objectives: Patients with chemotherapy-induced gastrointestinal mucositis often suffer from weight loss and, possibly, malabsorption. It is unknown whether intestinal absorption of long-chain fatty acids (LCFA), serving several important functions in the body, is intact during mucositis. We aimed to determine the intestinal capacity and physiology of LCFA absorption in rats with and without methotrexate (MTX)-induced mucositis.
Methods: Rats received a dietary amount of fat (oil mixture containing labeled saturated and unsaturated LCFA, [U-^{13}C]palmitic acid and [U-^{13}C] linoleic acid) either as a single bolus by oral gavage (400 μl/rat) or by continuous intraduodenal infusion (228 μl/rat per hour for 9 h). We determined the plasma concentrations (until 6 h after the bolus or 9 h during continuous infusion) and liver concentrations of [U-^{13}C]palmitic acid and [U-^{13}C]linoleic acid, jejunal histology, and plasma citrulline concentrations.
Results: MTX-induced mucositis was confirmed by villus atrophy and reduced plasma citrulline concentrations (−82 %, $P<0.01$). Plasma appearance of [U-^{13}C]palmitic acid and [U-^{13}C]linoleic acid was severely reduced in MTX-treated rats, either when administered as a bolus or continuously (AUC=−83 %, $P<0.01$), suggesting LCFA malabsorption. The liver appearance of both LCFA was reduced in MTX-treated rats, either when administered as a bolus or continuously (−63 %, $P<0.05$), confirming LCFA malabsorption. However, in MTX-treated rats, liver appearance of [U-^{13}C]palmitic acid and [U-^{13}C]linoleic acid improved upon continuous administration as compared to bolus administration (3.9-fold and 1.9-fold, respectively).
Conclusions: The intestinal capacity to absorb LCFA is reduced in rats with MTX-induced mucositis, but improves upon continuous enteral administration. During mucositis, there is a preferred absorption of saturated fatty acids.

477
Cancer pain control with epidural morphine infusion in hospice patients

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Purpose: Epidural morphine infusion (EMI) has been used to control pain in cancer patients whose cancer pain cannot be controlled with high-dose intravenous morphine. To study the morphine equivalent daily dose (MEDD), the effectiveness and complications of EMI for the treatment of cancer pain in terminal cancer patients were evaluated.
Methods: From March to December, 2011, the medical records of 18 terminal cancer patients treated with continuous EMI who were previously treated with more than 100 mg intravenous morphine were analyzed retrospectively in Cheong Ju St. Mary's Hospital.
Results: Eleven patients were men and seven were women. Median age was 68 years. Three patients had lung cancer, five colorectal cancer, four hepatobiliary cancer, two genitourinary cancers, and four had other cancers. For the tips of the epidural catheter, 11 were placed in the thoracic spine, 6 in the lumbar spine, and 1 in cervical spine. The initial mean MEDD was 485 mg, whereas the mean dose of initial epidural morphine was 15 mg. The mean of MEDD dropped from 485 to 123 mg in 1 week after EMI therapy. The median numeric rating scales (NRS) in cancer pain was changed from 8 to 3, and the median survival time after epidural catheter insertion was 42 days. A total four complications occurred: two catheter dislocations, one catheter fracture, and one insertion site infection.
Conclusion: EMI significantly improved cancer pain in NRS, reduced opioid consumption, and the complications were not severe and manageable. Interventional pain management such as EMI should be considered at earlier stages to improve the terminal patients with cancer pain.

479
μ-EDX study of deciduous teeth submitted to radiotherapy

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Radiation caries has a rapid development, resulting to destruction and tooth loss in head and neck cancer patients undergoing radiotherapy. The region of the tooth most affected is the cervical (lingual and vestibular aspects); those areas are considered refractory to caries process. Hyposalivation, change in oral flora, and dietary habits are considered the main etiologic factors.
Objective: In order to evaluate possible changes in the mineral and organic structure of the primary teeth irradiated, a fluorescence X-ray (μ-EDX) energy-dispersive analysis was performed in this pilot study.
Method: Caries-free molars were used, cut toward the coronary root direction and divided into two groups of ten enamel samples each: G1 (submitted to radiotherapy with 54 and 2 Gy per fraction, 5 days a week) and G2 (control). A semi-quantitative method (μ-EDX) was used for the analysis.
Result: Statistical analysis was performed using Student's *t* test. The mean values of calcium elemental weight were 28.75 (G1) and 26.80 (G2, $p=0.4204$); the mean values of elemental phosphorus weight were 16.16 (G1) and 15.54 (G2, $p=0.5018$). The organic part was evaluated based on elemental oxygen weight of 55.09 for G1 and 57.68 for G2 ($p=0.4386$).
Conclusion: Although not statistically significant, the irradiated group had a greater loss of organic part represented by the element O_2. In this study, there were no changes in the mineral structure of the irradiated primary teeth, showing that the mineral structure cannot interfere directly as a determinant risk factor for the development of radiation caries, which warrants further studies.

480
Impact of cancer-related fatigue on chemotherapy-induced nausea and vomiting among cancer patients

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Introduction: Cancer-related fatigue (CRF) has been suggested to be associated with the occurrence of chemotherapy-induced nausea and vomiting (CINV), which can lead to interference in activities of daily living and quality of life. This study aims to evaluate the potential of CRF in predicting the occurrence of CINV.

Method: This is a prospective, observational study conducted between August 2009 and December 2010. Recruited patients received moderately to highly emetogenic single-day chemotherapy for the treatment of cancer. On the day of chemotherapy, patients were instructed to provide a score (Likert scale of 0–10) to describe how CRF interfered with his/her ability to engage in daily activities and a score for how severe it was. Patients were then given a standardized 5-day diary to document their CINV events.
Results: A total of 473 eligible patients (median age, 55 years; IQR=48–61) were recruited, with most of the patients diagnosed with gastrointestinal (45 %), breast (37 %), and head and neck cancers (18 %). The median score of fatigue interference was 3 (IQR=0–5) and fatigue severity was 0 (IQR=0–3). After adjusting for confounders, patients with low fatigue interference score (≤3) were more likely to achieve complete protection (no nausea, no vomiting, and no breakthrough of antiemetic usage) of CINV (adjusted OR=1.57, 95% CI=1.05–2.35, p=0.027).
Conclusion: This is the largest study to date to evaluate the association of CRF and CINV. Patients experiencing CRF possessed a higher risk for poor control of CINV.

481
E-health use and perceptions of "silver surfers" in the Asian cancer population

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Objectives: "Silver surfers," describing aging patients competent in surfing the Internet, are becoming a worldwide phenomenon. We identified the extent of this phenomenon in Asian cancer patients and quantified their usage patterns and perceptions regarding information technology (IT) in cancer supportive care.
Methods: A cross-sectional study was conducted at the National Cancer Centre Singapore (NCCS) from May to August 2011. Patients (≥50 years) participated in an interviewer-administered questionnaire documenting their demographics, usage patterns, and perceptions of IT resources for health-related purposes (e-health).
Results: Four hundred sixty patients (67.5±17.5 years) were recruited. Nearly half (47.8 %) were comfortable using IT daily, with higher incidence among younger (≤65 years) patients (81.4 versus 63.6 %, p<0.001). A total of 186 patients used the Internet for health-related purposes. The most common resources were search engines (39.8 %) and commercial web sites (6.5 %). Most used the Internet to understand their cancer treatments (89.8 %) and diagnosis (83.3 %). Majority (356 patients, 77.4 %) agreed that a computerized system at NCCS could improve their experiences through simpler and faster administrative procedures. One third (147 patients) were willing to pay out-of-pocket (≤10 % of healthcare costs) for technologies to reduce their waiting time. Females were less willing to pay for such technologies (71.7 versus 54.2 %, p<0.001).
Conclusion: A new generation of "silver surfers" is emerging among Asian cancer patients. Their perceptions and use of e-health resources signal potential implications in the patient–practitioner relationship. Clinicians should leverage on these resources to enhance their communications with patients so as to improve their quality of care.

483
Increase occurrence of drug-induced nephrotoxicities among lymphoma patients receiving chemotherapy and tenofovir: a prevalence and severity evaluation

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Background: HIV lymphoma patients undergoing chemotherapy are susceptible to toxicities due to pharmacodynamic drug–drug interactions between antiretroviral therapy and chemotherapy. In this study, we evaluate the prevalence and severity of drug-induced nephrotoxicities among HIV lymphoma patients concurrently on chemotherapy and tenofovir (TDF), a nucleotide analogue reverse transcriptase inhibitor.
Methods: We conducted a retrospective cohort study on HIV lymphoma patients who have received concurrent antiretroviral therapy (ART) and chemotherapy. Adverse events were collected and classified according to the Division of Aids table for grading the severity of adult and pediatric adverse events (DAIDS) criteria. Laboratory abnormalities signifying Fanconi's syndrome (FS) were presented as a composite endpoint, consisting of serum creatinine increase (1.4 times above ULN) and electrolyte abnormalities (grade 2 and above hypokalemia and hypohosphotemia).
Results: Among 31 patients, the median age was 50 years (range, 32–74 years), with the majority being male (90.3 %) and Chinese (80.6 %). The majority received EPOCH-based chemotherapy (74.6 %), followed by HyperCVAD (6.5 %) and CHOP (16.1 %). Eleven (35.5 %) patients received TDF as part of their ART regimen. A statistically significant change of serum creatinine was detected among patients receiving TDF with chemotherapy compared with those who did not receive TDF (+54 vs. +2 mmol/L, p=0.028). Laboratory abnormalities signifying FS occurred more frequently among patients receiving TDF compared with those who did not receive TDF (72.7 vs. 40.0 %, p=0.081).
Conclusion: We observed an increased occurrence of nephrotoxicities with concurrent use of TDF and chemotherapy among HIV lymphoma patients.

484
The role of fever in clarifying the symptom cluster of pain, fatigue, and sleep problems

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Objectives: Sickness behavior theory posits fever as the initial symptom of illness that triggers and aggravates pain and other symptoms. This study assesses whether pain-based symptom clusters co-moderated by fever can explain reported symptom clusters of pain/fatigue/sleep problems in the literature.
Methods: Secondary data were used from 268 outpatients initiating palliative radiation to relieve bone pain. Frequencies were calculated for physical symptoms and depressed affect, an indicator of sickness malaise. Three descriptive quadratic and moderated multiple regressions (QMMRs) tested whether the pain–depressed affect relationship was moderated by each symptom (i.e., fatigue–weakness, fever, sleep) and co-moderated by each symptom pair. An explanatory QMMR was executed with the 3 three-way, pain-related interactions; a fourth three-way interaction (fever/fatigue–weakness/sleep); and all derivative interactions and predictors.
Results: In a descriptive QMMR, pain/fatigue–weakness/sleep was tentatively significant (p=0.102, increasing slightly in an explanatory run). Pain/fever/sleep was significant (p<0.05) only as a descriptive QMMR. Pain/fever (p<0.05) and pain/fever/fatigue–weakness (p<0.01) were robust in descriptive and explanatory runs, and sleep-related interactions became newly significant in the explanatory run. Sleep problems (no control) magnified the pain–depressive affect relationship *only* when there was no control of fever. Fever (no control) magnified the pain–depressive affect relationship when there was no

control of fatigue/weakness—the magnifier effect of this pathway was more than six times the magnitude of the buffering effect when fever was completely controlled.
Conclusions: Fever is supported as a sentinel symptom that aggravates pain and malaise in sickness behavior and helps explain the symptom cluster of pain/fatigue/sleep problems.

485
Percutaneus vertebroplasty in spinal metastasis

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Introduction: Patients with vertebral fractures secondary to metastatic tumors of different origins have intense pain and mechanical involvement. Radiation therapy in most cases produces late symptomatic relief, 4–6 weeks post-treatment. Vertebroplasty can achieve a rapid analgesic effect, in 1–3 days, and the stabilization of the spine at the fractured level.
Patients: We conducted a retrospective analysis of six patients treated with percutaneous vertebroplasty guided by computerized tomography between 2009 and 2010 in our center. The average age was 70 years. Vertebroplasty was performed on thoracolumbar spine fractures (from D10 to L4) confirmed by magnetic resonance imaging of tumors of the prostate, gastric, lung, myeloma, and lymphoma. The procedure was performed by the Interventional Radiology Department at our hospital, and patients were hospitalized for 24 h and were kept in complete rest for 6 h after the procedure.
Results: There were no secondary complications, except leakage of contrast in a patient who was scheduled for vertebroplasty at two levels but only one could be completed. In 83 % of patients, we managed to control chronic pain in the following days. Fifty percent of the patients could not walk after the intervention, achieving almost total recovery of mobility.
Discussion: Percutaneous vertebroplasty is presented in the literature as a safe and effective technique for the treatment of pathological fractures. Our work shows that it is possible to obtain a significant and immediate relief of pain with minimal complications.

486
Reducing symptoms for pediatric oncology patients through psychological interventions: a nurse-centered approach

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Objectives: This research examines the psychological interventions that nurses reported using to reduce symptoms when treating pediatric oncology patients.
Methods: A sample of 88 pediatric oncologic nurses from 12 leading pediatric oncology departments in the USA participated in the survey. The questions focused on the most common patient symptoms, the most painful and anxiety-inducing procedures, the most anxious time for children, the best coping strategies, and on nurses' willingness to be trained and to implement these strategies.
Results: The main physical symptoms nurses reported that children experience are nausea, pain, and fatigue, and the main emotional symptoms are anxiety, fear of needles, and sadness. Pediatric oncology nurses identified three psychological interventions to reduce suffering: educating children by explaining the procedure; providing emotional support to children by listening, answering children's worries, or holding their hands; and distracting children through passive and active forms. The survey further showed that nurses spend on average 3 h per day providing emotional support, are willing to be trained in additional interventions (93 %), and can devote at least 10 min per treatment to provide support (77 %).
Conclusion: This work demonstrates the central role nurses play as emotional support caregivers. Since nurses would be willing to provide emotional support during treatments, training may be an approach to incorporate the use of psychological interventions. These strategies should be applied before and during lumbar punctures and bone marrow aspirates as nurses consider these moments to be the most painful and anxiety inducing.

487
The teddy in radiotherapy: impact of a patient information brochure

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Purpose: Modern radiation oncology is getting more and more complex in terms of the technical planning and treatment device. Particularly in childhood patients and their relatives, but also in adults, the course of radiotherapy is unclear, hard to understand, and threatening. This can markedly contribute to anxiety, uncertainty, and stress of the tumor treatment.
Methods: A special information brochure was developed to help explain pediatric and adult cancer patients undergoing radiation treatment—how the course of radiotherapy works. It is a picture brochure with photos showing a teddy bear going through the different points of radiation oncology. With a special questionnaire and interview, the impact of this information brochure was evaluated in 10 young radiotherapy patients (5–13 years) and 20 adult patients (21–86 years). Improvement of patient knowledge and understanding and the reduction of anxiety and uncertainty were the primary end points.
Result: A total of 90 % of patients judged the teddy bear information brochure to be valuable or very valuable; only 10 % judged it as average and none judged it as not useful. There was no difference between childhood and adult patients. Overall, knowledge and understanding of all topics of radiation treatment was improved. Anxiety and uncertainties were alleviated. Patients were better engaged in their treatment.
Conclusion: The teddy bear radiotherapy brochure is a valuable information tool for both childhood and adult radiotherapy patients. The feedback was very positive, and knowledge, skills, and confidence were increased. Therefore, there are benefits both to consumers and health professionals.

488
Spirituality in oncology: from belief to bedside

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Purpose: The return to spirituality and religiosity after tumor diagnosis has been more frequently observed in the last few years and is growing in importance for cancer patients.
Methods: A total of 200 patients from two different patient collectives were evaluated by standardized interviews before the commencement of radiation treatment: 100 consecutive patients with breast cancer patients and 100 patients with prostate cancer. Tumor and disease parameters as well as religious affiliation were documented. The interviews were carried out using the FACIT-Sp questionnaire for spiritual well-being. According to the recommendations of the American College of Physicians, additional questions in terms of "spiritual history" were asked. Quality of life (QoL) was assessed using the SF-12 questionnaire.
Results: Overall, 28 % of patients were Catholics and 72 % Protestants. General spiritual practices included prayer in 62 % of cases, meditation in

31 %, reading of religious texts in 27 %, and contemplation in 22 %. The majority of patients (74 %) characterize themselves as more or less religious, and 70 % would integrate their religiosity in cancer coping. The FACIT-Sp showed a mean value of 32.74. Gender, tumor type, and tumor stage had no influence, but a significant influence of age was shown. There was a strong correlation between higher religiosity/spirituality and QoL.
Conclusions: Spirituality and religiosity play a major role for cancer patients. Spirituality cannot extend life or heal cancer, but it can improve QoL and patients' personal conditions. Overall, spirituality should be a new focus for research in oncology.

490
Physical activity (PA) and physical function (PF) in adult cancer survivors (CS)

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Background: The longevity of cancer survivors (CS) is increasing, underscoring the importance of lifestyle modifications and preventive care. Our aim was to compare physical activity (PA) and physical function (PF) among short-term CS, long-term CS, and non-cancer controls (NCC).
Methods: We identified CS and NCC from the US National Health and Nutrition Examination Survey. CS were categorized into ≤5 years (short term) and >5 years (long term). Multivariate regression was used to examine for differences in 28 and 26 measures of PA and PF, respectively. We explored various PA domains such as aerobic activity and decline from past activity level as well as PF areas including activities of daily living (ADLs) and instrumental ADLs.
Results: We identified 26,185 subjects: 968 short-term CS, 1,367 long-term CS, and 23,832 NCC. The mean age was 50, 52 % were men, and 50 % were white. Comparing across the three groups, CS were older than NCC (60 vs. 45 years, $p<0.01$). In terms of PA, short-term CS reported less general activity compared to 1 year ago (OR=0.58, 95% CI=0.46–0.73, $p<0.01$) than long-term CS and NCC. In comparison to NCC, both groups of CS also described less current activity than their baseline from 10 years ago (OR=0.63, 95% CI=0.48–0.82, $p=0.001$, and OR=0.67, 95% CI=0.55–0.83, $p<0.01$). There were significant differences among patient groups in several PF areas.
Conclusions: PA between CS and NCC were similar, although current activity as compared to that of the preceding year or past decade appears lower in CS. Impairments in several PF measures were observed among CS.

491
Treatment patterns and outcomes of acneiform skin eruptions from anti-epidermal growth factor receptor (EGFR) therapies for metastatic colorectal cancer (MCRC)

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Background: Anti-EGFR therapies, such as cetuximab (Cmab) and panitumumab (Pmab), are associated with acneiform eruptions. We aimed to characterize treatment patterns for rash due to Cmab and Pmab and to evaluate whether a prophylactic vs. reactive approach to rash management modifies the outcomes.
Methods: Patients diagnosed with metastatic colorectal cancer (MCRC) from July 2009 to June 2011 and prescribed Cmab or Pmab were reviewed to describe patterns of prophylactic (before rash) and reactive (after rash) use of antibiotics and steroid creams. Using Cox regression, the relationship between rash management and survival was characterized.
Results: We analyzed 119 patients: median age was 63, 61 % were men, 34 % received Cmab and 66 % Pmab, and the median number of anti-EGFR treatment was nine cycles. Rash occurred in over 90 % of patients. Reactive was favored over prophylactic treatment (66 vs. 34 %). Older patients (60+years) and those with ECOG 0/1 were more likely to receive prophylactic creams (44 vs. 20 %, $p=0.01$) and antibiotics (62 vs. 12 %, $p=0.01$), respectively. Median survival was 7.0 months. The number of treatment cycles and survival were similar in the prophylactic and reactive groups (both $p>0.05$). In Cox regression, ECOG 2+ correlated with worse survival than ECOG 0/1 (HR=5.25, 95% CI=2.01–9.23, $p<0.01$). However, survival was similar between patients prescribed antibiotics prophylactically vs. reactively (HR=1.10, 95% CI=0.43–2.80, $p=0.85$) and between patients given steroid creams prophylactically vs. reactively (HR=2.00, 95% CI=0.58–6.92, $p=0.27$).
Conclusions: Prophylactic treatment of anti-EGFR rash is associated with similar outcomes as compared to reactive rash treatment in MCRC.

492
Effect of aprepitant on adherence to high-dose cisplatin-based chemotherapy

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Background: Treatment of head and neck cancers (HNC) and gastro-esophageal cancers (GEC) frequently consists of high-dose cisplatin. We aimed to explore the impact of aprepitant for improving adherence to cisplatin chemotherapy in HNC and GEC and to examine its effect on reducing chemotherapy-induced nausea and vomiting (CINV) in a non-clinical trial setting.
Methods: Patients diagnosed with HNC or GEC from 2008 to 2011 and prescribed high-dose cisplatin were reviewed. Using regression, we evaluated the relationship among aprepitant, treatment and outcome characteristics.
Results: We identified 333 patients: 162 HNC and 171 GEC, of whom 80 % were men and 44 % were aged ≥60 years. Aprepitant was prescribed in 49 %, nausea and vomiting occurred in 64 and 24 %, respectively, and completion of cisplatin was 52 %. Younger patients (55 vs. 41 %, $p=0.01$) and those with less tumor burden (64 vs. 38 %, $p<0.01$) were more likely to receive aprepitant. Individuals who received aprepitant were less likely to experience CINV ($p<0.01$). Use of aprepitant differed between HNC and GEC patients ($p<0.01$). In multivariate analyses, aprepitant use was associated with adherence to all cisplatin treatments (OR=2.33, 95%CI=1.27–4.25, $p<0.01$). In Cox regression, completion of all cisplatin was correlated with a lower risk of recurrence (HR=0.56, 95%CI=0.32–0.97, $p=0.04$) and a trend toward decreased death (HR=0.56, 95%CI=0.31–1.10, $p=0.10$).
Conclusions: Aprepitant was associated with a reduction in CINV and correlated with better adherence to high-dose cisplatin chemotherapy. Individuals who completed all planned cisplatin had improved outcomes, specifically a lower risk of recurrence.

493
Rapid infusion rituximab in maintenance therapy: is it feasible?

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Objectives: The primary objective of this retrospective analysis was to evaluate the incidence of grade 3 and 4 toxicities with maintenance of rapid infusion rituximab according to the Common Terminology Criteria for Adverse Events, version 4 (CTC v. 4). Secondary objectives

included evaluating all grade infusion-related adverse events and correlation of adverse events with varying schedules of rituximab maintenance therapy.
Methods: All patients who received rapid infusion rituximab as the maintenance therapy for low-grade lymphoma between December 2007 and November 2011 were included. Rapid rituximab infusions were administered over 90 min. Demographic, laboratory, and clinical data were collected. Adverse events were graded according to the CTC v.4.
Results: A total of 109 patients received 647 rapid rituximab infusions. Three patients experienced an adverse reaction which resulted in two grade 2 infusion reactions and two grade 3 infusion reactions. No patients required hospitalization. All three patients received pharmacological and/or supportive care to relieve symptoms associated with the reaction. The sample size was too small to determine whether a correlation existed between infusion-related reactions and the schedule of maintenance of rituximab.
Conclusion: The rapid infusion of rituximab in patients receiving maintenance therapy is well tolerated with minimal incidence of infusion-related reactions. Although the sample size was insufficient to assess differences in adverse effects according to the maintenance schedule, the low overall incidence of adverse effects suggests that rapid rituximab infusions are well tolerated regardless of maintenance schedule.

494
A novel approach to manage skin toxicity caused by therapeutic agents targeting epidermal growth factor receptor (EGFR)

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Introduction: Skin rash is a common adverse reaction to epidermal growth factor receptor inhibitors (EGFRI). Nicotinamide inhibits IL-8 production through the NF-kB and MAPK pathways in an in vitro model. Green tea polyphenols could be useful in reducing solar UVB light-induced oxidative stress-mediated and MAPK-caused skin disorders. In this study, we evaluated the effect of nicotinamide and green tea polyphenols on EGFRI-related skin toxicity.
Patients and methods: Twenty-four cancer patients with skin toxicity induced by EGFRI were enrolled. Patients had a skin biopsy at first presentation of toxicity, the severity of which was assessed with NCI-CTACE, EGFR index, and Dermatology Life Quality Index (DLQI). The therapy protocol consisted of topical application of a moisturizing cream containing green tea polyphenols plus oral administration of nicotinamide 200 mg/day for 12 weeks.
Results: All the patients experienced a significant reduction of skin toxicity according to the NCI-CTACE and the EGFR index ($p<0.05$). Papulo-pustular eruption and itching significantly improved after 6 weeks of treatment ($p<0.05$) and erythema decreased after 12 weeks. A significant improvement of DLQI was evident after 6 weeks.
Conclusion: Treatment with nicotinamide and green tea polyphenols represent a novel effective and safe approach to manage skin toxicity caused by EGFRI.

495
Oral transmucosal fentanyl citrate (OTFC) vs. fentanyl buccal tablet (FBT) for breakthrough cancer pain (BTcP)

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Introduction: Breakthrough cancer pain (BTcP) is a transitory exacerbation of pain that occurs in a patient who has a background of otherwise controlled persistent pain, characterized by a rapid onset and a similar quick resolution. Several drugs, consisting of fentanyl, have been used to treat this type of pain; among the others, oral transmucosal fentanyl citrate (OTFC) and fentanyl buccal tablet (FBT) were evaluated in the present study.
Methods: FBT and OTFC were administered to treat BTcP in patients with advanced cancer who suffered of chronic pain. The pain intensity was recorded before and after the use of these drugs as the main parameter of response to treatment.
Results: Out of 62 patients enrolled in the present study, 15 were treated with FBT and 47 with OTFC. Our study shows that there is a linear relationship between the intensity of pain and the response to treatment, and another linear correlation exists among the increasing doses of the analgesic administrated and the response to treatment. A difference between FBT and OTFC was also noticed. The first seems to require lower doses to reach the analgesic effect, and it was associated with a higher response rate, in terms of "optimal" response, if compared with OTFC.
Conclusion: Overall, it is important to treat in the best way BTcP because it is also an important prognostic poor factor for response to therapy. Our experience showed that it is possible to achieve pain relief quickly and adequately without the incidence of serious side effects, but with a better pain control with FBT when compared with OTFC.

496
Caregivers' needs in oncology: information, information, information!

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Background: Cancer is not only an individual problem but also affects the entire family, in particular the patients' caregivers. Involvement of caregivers is essential for optimal treatment of patients in ensuring treatment compliance and continuity of care. This study aimed at providing an understanding of caregivers' unmet needs in order to plan interventions for providing support.
Patients and methods: A survey focusing on the main needs was designed. Among others, the explored needs were: medical and nursing information, psychological support, and social welfare. The surveys were given to the caregivers of all the consecutive patients coming in one specified week to the day hospital of all the four departments of oncology (Ancona, Fabriano, Jesi, and Senigallia) in our province. Medical oncologists also completed a questionnaire reporting information of the patients.
Results: One hundred thirty-seven relatives of the patients completed the survey. The most reported medical need was having a medical and nursing assistance during the nights and the weekends. Among all the explored needs, the most reported was having a doctor who provides humane, correct, and simple information regarding the disease, the therapeutic options (in particular in the place of residence) and prognosis, and the correlation between information provided by doctors and by other healthcare staff.
Conclusions: The present study showed that the need of an exhaustive and simple information is still an unmet need in the Internet age. Therefore, we decided to improve the information given in our practice with periodical meetings with the patients and their caregivers, printing booklets, and making a web site dedicated to the patients living in our region.

498

Higher self efficacy is associated with better quality of life (QOL) in breast cancer patients on endocrine therapy

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Objectives: A woman's belief in her ability to cope with symptoms, or self efficacy, may influence the quality of life (QOL) among breast cancer patients taking endocrine therapy. We examined the contributions of symptoms and self-efficacy for managing symptoms to variations in QOL.
Methods: Eligible women were postmenopausal; had hormone receptor-positive stage I–IIIA breast cancer; completed surgery, chemotherapy, and radiation; and were taking endocrine therapy. At routine follow-up visit, the following self-administered standardized survey measures were completed: Brief Fatigue Inventory, Brief Pain Inventory, Menopause Specific Quality of Life Questionnaire, Functional Assessment of Cancer Therapy General and Neurotoxicity scales, and Self-Efficacy for Managing Symptoms.
Results: Participants were 114 women: mean age, 64 (SD=9)years; 81 % white; mean time from surgery, 40 (SD=28)months; 49 % received chemotherapy (39 % including taxane); mean time on endocrine therapy, 25 (SD=26)months; 85 % taking an aromatase inhibitor. Multiple linear regression analyses showed that symptoms (pain R^2= 3–6 %; fatigue R^2=12–36 %; menopausal symptoms R^2=13–36 %; neurotoxicity R^2=5–19 %) and self-efficacy for managing symptoms (R^2=15–27 %) accounted for a significant ($p<.05$) variance in QOL. The symptoms were not associated with QOL in women with high levels of self-efficacy, but were associated in women with low levels of self-efficacy (self-efficacy×fatigue: $p=0.01$; self-efficacy×menopausal symptoms: $p=0.003$; self-efficacy×neurotoxicity: $p=0.002$).
Conclusions: Self-efficacy for managing symptoms plays a significant role in breast cancer patients' QOL. For women with high levels of self-efficacy, symptoms did not have a negative impact on QOL. Further study will explore interventions to improve self efficacy for managing symptoms.

499

Perceived life changes in Chinese breast cancer survivors: a qualitative inquiry

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Background and objectives: Despite improved survival rate in breast cancer, many women are experiencing a multitude of life changes resulting from the diagnosis and treatment. Although the coexistence of both negative and positive aspects of cancer survivorship experience is increasingly acknowledged, there is little information on mainland Chinese women who may be expected to represent one of the largest survivor groups worldwide. This study therefore aimed to explore perceived life changes after surviving breast cancer in mainland Chinese women.
Methods: Qualitative approach with in-depth semi-structured interviews was conducted with 29 breast cancer survivors who were purposively selected from a local cancer self-help organization in mainland China. Interviews were audio-taped and transcribed verbatim, as well as analyzed using content analysis.
Results: Six categories emerged describing life changes after surviving breast cancer. These included experiencing distressful symptoms, struggling with uncertainty, alterations in femininity and sexuality, living with social stress, being cared for and supported, as well as reflections and personal growth.
Conclusions: This study adds to the evidence concerning the duality of breast cancer survivorship experience. Understanding the specific negative and positive life changes could be important for health professionals to capture the multidimensionality of cancer survivorship. Future research could be considered to design appropriate interventions not only to minimize negative consequences but also to enhance positive growth experienced by breast cancer survivors.

500

Low bone density in breast cancer survivors in Korea: prevalence, risk factors, and associations with health-related quality of life

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Objectives: Breast cancer survivors are at risk for bone loss because of the disease itself and/or cancer treatments. The purpose of this study was to examine the prevalence and risk factors of low bone density and identify associations with health-related quality of life (HRQOL) in breast cancer survivors in Korea.
Methods: This is a cross-sectional descriptive study design. A total of 136 women with breast cancer having completed their cancer therapy were recruited from a university-based cancer center in Korea. Bone mineral density (BMD); health behaviors (i.e., physical activity, diet–nutritional behaviors, smoking, alcohol consumption, sunlight exposure); and HRQOL were measured.
Results: Forty-nine women (36.0 %) had osteopenia and six women (4.4 %) had osteoporosis. Univariate analyses revealed that older age, low educational level, low monthly income, tamoxifen therapy, aromatase inhibitor therapy, calcium supplement intake, and past or current smoking were associated with low bone density (BMD T-score<−1.0). In multivariate analyses, low economic status (OR=2.22, $p=.050$) and past and current smoking (OR=3.77, $p=.039$) were final risk factors of low bone density. In addition, women who had low bone density reported worse role function (p=0.022) than women who did not.
Conclusions: Women of low economic status or who are past or current smokers warrant monitoring and treatment strategies to reduce bone loss risk.

501

Fatalism or fatalistic voluntarism? A qualitative exploration of the coping experiences among Chinese breast cancer survivors

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Background: Fatalism, which is a doctrine that everything is determined by an external force and people are therefore powerless to change, is identified as an important topic in the cancer prevention literature. Recent research indicates that fatalism is a barrier to influence the coping and adjustment process of individuals diagnosed with cancer in Western culture. However, little is known about how fatalism influences the coping experiences in breast cancer survivors in mainland China context.
Objectives: This study explored the beliefs system influencing the coping experiences of breast cancer survivors in mainland China.
Methods: A qualitative method was employed. Using purposive sampling, 29 participants were selected from those who attended local cancer self-help organization. In-depth semi-structured interviews were conducted in Mandarin. Transcripts of interviews were analyzed using content analysis.
Results: Four categories emerged from the data, including fatalism, maintaining hope, positive attitudes toward having cancer, and

performing self-care. Fatalistic belief was found to have a positive influence on cancer survivors' health maintenance attitude and practice.
Conclusions: Fatalism identified in this study combined two elements, including belief in and acceptance of fate as well as the exertion of personal efforts over the situation, and it is more related to the emerging concept "fatalistic voluntarism." Findings may help inform the development of nursing intervention to better support cancer survivors to adapting to cancer survivorship.

502
Unbearable suffering in end-of-life cancer patients in primary care in the Netherlands: a prospective patient directed study

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Objectives: Unbearable suffering in end-of-life cancer patients cared for in primary care has hardly been studied. The objective of this study was to quantitatively (five-point scale) assess the unbearable aspects and overall unbearable suffering in end-of-life cancer patients in primary care.
Methods: Forty-four general practitioners recruited cancer patients with an estimated life expectancy of half a year or shorter. Systematic monitoring identified eligible patients. The inclusion period was 3 years, and follow-up lasted one additional year; 76 out of 148 patients (51 %) requested to participate consented. The attrition rate was 8 %, while 8 % was alive at the end of follow-up. Sixty-four patients were followed up until death. Unbearable suffering was assessed with a comprehensive instrument every 2 months; scores of 4 (serious) or 5 (hardly can be worse) were considered unbearable.
Results: Overall unbearable suffering occurred in 28 %. Half of the unbearable aspects involved the domain of medical signs and symptoms, with the most prevalent unbearable aspects as follows: weakness, general discomfort, tiredness, and pain (25–57 %). The other half of the unbearable aspects involved the domains of function, personhood, environment, and nature and prognosis of the disease, with the most prevalent unbearable aspects as follows: impaired activities, feeling dependent, not being able to do important things, and trouble accepting the situation (33–55 %).
Conclusions: Around a quarter of patients suffered unbearably overall. Half of the unbearable aspects involved medical signs and symptoms; the other half concerned psychological, social, and existential dimensions of suffering. Physicians need to comprehensively assess suffering and provide psychosocial interventions alongside medical treatment.

503
Challenging the gold standard of daily fluoride tray use for the prevention of caries in H&N radiotherapy patients

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The current standard of care for patients undergoing head and neck radiotherapy who are at risk of xerostomia is the daily use of fluoride delivered in custom tray carriers. However, research has shown that compliance with this practice is low. The purpose of this pilot study was to compare patient compliance and oral comfort between patients using custom fluoride trays and those using an alternative regimen of daily brushing with stannous fluoride and consumption of xylitol mints. If compliance is better with the latter protocol, this research would launch a follow-up study that would assess the effectiveness of this protocol in reducing caries. The study design was a randomized crossover trial in which each patient served as his own control. Twenty-five patients undergoing a minimum of 6 weeks of radiotherapy of >4,000 cGy bilaterally to the submandibular glands were enrolled in the study. Patients were randomly assigned to begin one of the two treatments at week 1; crossover to the other treatment occurred at the end of the third week of radiotherapy. A structured questionnaire was completed at the end of each week of radiotherapy. The questionnaire assessed the acceptability and compliance with the study product being used as well as the patients' subjective sense of oral comfort over the past week. The study is currently in progress. The results and conclusions of the study will be presented.

505
Factors associated with quality of life following stem cell transplantation: nutritional status, body composition, and physical activity level

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Quality of life (QoL), nutritional status, body composition, and physical activity level (PAL) are believed to be adversely affected following high-dose conditioning and stem cell transplantation (SCT), but have not been studied concurrently.
Objective: The objective of this study was to examine the relationship between QoL and nutrition and PAL parameters.
Methods: Outcomes were assessed using the EORTC QLQ-C30 (QoL); patient-generated subjective global assessment (PG-SGA, nutritional status); air displacement plethysmography (BOD POD; COSMED, Concord, CA, USA) for fat mass (FM) and fat-free mass; and the International Physical Activity Questionnaire (PAL) at 2 weeks pre-admission (T_0), discharge (T1), and 100 days post-transplantation (T2). Associations between percentage changes were tested with Pearson's correlation coefficient and linear regression or the Kruskal–Wallis test.
Results: Twenty-eight patients undergoing SCT were consecutively recruited (64 % men; mean age, 56±12.3 years; 24 autologous SCT). Higher global QoL between T0 and T2 was associated with well-nourished status (i.e., low PG-SGA score, r=0.56, p=0.007), weight (r=0.5, p=0.018), and FM (r=0.71, p<0.001). The distribution of global QoL was not the same for all levels of PAL (T0: p=0.034; T1: p=0.031; T2: p=0.012). The average global QoL was consistently higher for patients with high PAL when compared to those with low PAL.
Conclusions: The findings suggest that changes in global QoL following SCT may be affected by changes in nutritional status, body composition, and PAL. Further research is required to determine whether exercise and nutrition interventions improve QoL.

506
The influence of chemotherapy on taste function in a breast cancer population

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Introduction: 'Taste changes' are commonly reported by people receiving chemotherapy. It is unclear to what extent this refers to taste function (the stimulation of taste receptor cells to perceive sweetness, saltiness, sourness, bitterness or umami) or to other determinants of flavour and the eating and drinking experience. To date, there has been insufficient published evidence to confirm problems with taste function.
Objectives: The objective of this study was to describe the influence of chemotherapy on sensitivity and perceived intensity of the five primary tastes.
Methods: Women (n=38) scheduled to receive anthracycline- or taxane-containing chemotherapy were recruited. Prototypical taste solutions mimicking sweet, salt, sour, bitter and umami were used to measure taste sensitivity and intensity before and after commencement of chemotherapy treatment (baseline and time 1). Taste sensitivity was measured by correct or incorrect identification of tastants. Taste intensity was measured on a 10-cm VAS scale for each tastant. Paired sample t tests compared baseline and time 1 scores.
Results: With the exception of sweet (sucrose), participants were less able to correctly identify all taste qualities at time 1. Bitter (caffeine) was the least identifiable quality at time 1 and was most often incorrectly identified as metallic. After bitter, participants were least able to correctly identify sour (citric acid), umami (MSG) and salt (sodium chloride), respectively, at time 1. There was no significant change in perceived intensity of tastants from baseline to time 1.
Conclusions: A reduced ability to discern specific tastes after the commencement of chemotherapy may have implications for dietary choice and supportive care interventions.

508
The influence of chemotherapy on food hedonics in a breast cancer population

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Introduction: Food hedonics includes food liking and food wanting (appetite). It is well established that people receiving cancer treatment experience hedonic problems in relation to the eating and drinking experience. Anecdotally, patients commonly report a change in preference for sweet or savoury foods, but this has not been systematically assessed.
Objectives: The objectives were to:

1. To describe the influence of chemotherapy on liking of sweet and savoury foods
2. To describe the influence of chemotherapy on appetite

Methods: Women (n=38) scheduled to receive anthracycline- or taxane-containing chemotherapy were recruited. Liking of a standard savoury food (soup) and a standard sweet food (chocolate) were measured on a nine-point hedonic scale before and after commencement of chemotherapy treatment (baseline and time 1). Appetite was measured on a ten-point scale. Paired sample t tests compared baseline and time 1 scores.
Results: Liking of savoury food did not change after the commencement of chemotherapy, whereas liking of sweet food decreased significantly (baseline to time 1 mean difference=1.1, 95%CI=−1.8 to −0.4, p=0.004). Appetite decreased significantly after the commencement of chemotherapy (p<0.001). There was a weak positive correlation between liking of savoury food and appetite at time 1 (r=0.411, p=0.01).
Conclusions: These results have further elucidated specific patterns of food liking during cancer treatment. An understanding of the dietary manifestation of hedonic changes may further clarify how food liking drives dietary intake and nutritional status. This has implications for the way clinicians prepare patients for chemotherapy treatment.

509
The impact of multiple symptom experiences on quality of life in Korean patients with solid cancers

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Background: Stomach, lung, and colorectal cancer are the most commonly diagnosed cancers and leading causes of death in Korea. The identification of the impact of multiple symptoms on patients' quality of life (QOL) during disease and treatment trajectory is essential to the successful completion of cancer treatment and ongoing recovery.
Purpose: The purpose of this study was to evaluate the impact of multiple symptom experience on QOL and identify the predictors of QOL in patients with stomach, lung, and colorectal cancers.
Methods: A sample of 199 male and female patients who were receiving active treatment for lung (n=60), stomach cancer (n=41), and colorectal cancer (n=98) completed the study. Data were collected using a Demographic and Medical Information, Symptoms Experience Index—Korean Version, the Eastern Cooperative Oncology Group performance status, and the Functional Assessment of Cancer Therapy—General Questionnaire. Data analysis included descriptive statistics, t test, and stepwise multiple regression. Model fit was evaluated through the R^2 for the overall model and incremental change in R^2.
Results: Symptom experience is significantly associated with QOL (r=−0.752, p<0.001). Patients who scored higher in the symptom experience reported poorer QOL. Patients with stomach cancer reported higher symptoms and poorer QOL than patients with lung and colorectal cancer. Higher symptom distress and poorer functional performance status were significant predictors of poor QOL.
Conclusion: It is essential to assess multiple symptom experience in clinical practice. When patients report higher multiple symptom occurrence and poor functional status, nurses or other healthcare providers should implement interventions to alleviate symptoms and improve patients' functional status.

510
Symptom burden and psychosocial distress among Asian breast cancer survivors

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Objectives: This study aims to evaluate the relationship between symptom burden and psychosocial distress among Asian breast cancer survivors.
Methods: This is a cross-sectional, prospective study performed at the National Cancer Centre, Singapore. Breast cancer survivors who completed anticancer treatment 6 months to 2 years ago were administered a 32-item Memorial Symptom Assessment Scale (MSAS) and a Beck's Anxiety Index (BAI) to evaluate symptom burden and anxiety, respectively. Mann–Whitney U and Kruskal–Wallis tests were performed to compare the level of distress between demographic categories. Spearman correlation was utilized to assess the relationship between distress variables.
Results: Eighty-one cancer survivors were recruited (86.4 % Chinese; mean age, 52.37±8.99 years). The majority were diagnosed with early-stage breast cancer (74.0 %). Time of last anticancer treatment was 14.98 (SD±5.74)months. The top 5 most prevalent reported symptoms were numbness (61.7 %), lack of energy (52.5 %), pain (49.4 %), worrying (48.1 %), and dry mouth (43.8 %). The median MSAS Global Distress Index, Physical Index Subscale Score, Psychological Subscale Score, and Total MSAS (TMSAS) were 0.3 (IQR=0–0.9),

0.303 (IQR=0.06–0.5), 0.39 (IQR=0–0.94), and 0.27 (IQR=0.089–0.6), respectively. The median BAI total was 7 (IQR=3–11). A higher fatigue level was associated with a higher TMSAS score (r=0.51, p< 0.001) and higher BAI total (r=0.48, p<0.001). A higher TMSAS score also correlated strongly with anxiety (r=0.76, p<0.001).
Conclusion: Physical factors such as fatigue and numbness, and psychosocial distress such as anxiety and worrying, are prevalent in breast cancer survivors. Survivors experiencing a high level of psychosocial distress may be associated with greater symptom burden.

511
Breast cancer-related lymphedema: symptoms experience in Korean breast cancer survivors

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Background: Breast cancer-related lymphedema (BCRL) is a chronic debilitating disorder that is frequently misdiagnosed and treated too late or not treated at all.
Objectives: The objective of this study was to identify symptom experience in breast cancer survivors with lymphedema and to examine differences in symptom and functional status among breast cancer survivors with lymphedema of the upper limb.
Methods: A cross-sectional design was used to obtain data from 88 breast cancer survivors with lymphedema using the Breast Cancer and Symptom Experience Index (BC-LE SEI) and the Eastern Cooperative Oncology Group (ECOG PSR) performance status in Seoul, Korea, in 2011. Data analysis included descriptive statistics and ANOVA.
Results: The Cronbach's alpha for the BC-LE SEI was 0.955. Patients had an average of three lymphedema-related symptoms. The most frequent symptoms were arm swelling, limb fatigue, heaviness, firmness, limb weakness, and tightness. There were no statistically significant differences in the symptom experience among demographic variables. Compared with survivors with left arm lymphedema, survivors with right arm lymphedema experienced more frequent and more severe symptoms (t=2.544, p=0.015). Breast cancer survivors with lymphedema having a poor functional status (ECOG PSR score) had significantly higher BC-LE SEI scores than those having a good functional status (F=3.531, p<0.023).
Conclusions: The findings suggest that current lymphedema treatments, although beneficial, may not provide complete relief of symptoms associated with lymphedema. In clinical practice, we recommend that healthcare professionals take the initiative to provide adequate and accurate data about BCRL to breast cancer survivors.

512
The mediating role of health professionals' recommendations in the uptake of colorectal cancer testing among older Chinese adults

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Objectives: This study examines the mediating effect of health professionals' recommendations on the relationship between the characteristics of older Chinese adults and the use of colorectal cancer testing.
Methods: A cross-sectional population-based telephone survey was carried out in Hong Kong during the period 2–28 May 2007. The survey covered demographics, perceived health status and susceptibility to cancer, utilisation of complementary medicine, family history of cancer and cancer screening behaviour.
Results: The survey was completed by 2,004 eligible participants, with a response rate of 66.6 %. The uptake of flexible sigmoidoscopy/colonoscopy was 12 %. Only 3.4 % had been recommended by health professionals. The effects of male participants, a history of serious disease and other health behaviour on the flexible sigmoidoscopy/colonoscopy uptake were mediated by a health professional's recommendation.
Conclusions: The findings of the study demonstrate the significant effect of health professionals' recommendations on the older Chinese adults' decision on whether or not to undergo colorectal cancer testing. Professionals taking an active role in health promotion are further emphasised. The results also provide insights into designing more specific strategies for public education on promoting the use of colorectal cancer tests.

513
Nutritional status and overall survival in patients undergoing allogeneic haematopoietic cell transplantation (alloHCT)

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Objectives: There are few data on nutritional status as a prognostic parameter for patients receiving allogeneic haematopoietic cell transplantation (alloHCT). The aims of this study were to describe changes in nutritional status after alloHCT and to investigate any major nutritional factors potentially valuable as independent predictors for 2-year overall survival (OS).
Methods: Nutritional status at admission and on days +30 and +100 after alloHCT was assessed in 105 patients by means of body weight, bioelectrical impedance analysis, and Subjective Global Assessment (SGA). Possible prognostic factors on OS were investigated with univariate and multivariate Cox regression models. A backward selection strategy was applied, leaving variables with P<0.1 in the final multivariate model.
Results: At admission, 78 % of the patients were well-nourished (SGA-A) and 10 % were considered as severely malnourished (SGA-C). At day +30, 65 % demonstrated a considerable deterioration in nutritional status. Weight decreased significantly (P<0.001) in both periods after alloHCT. At admission, standardised phase angle (SPA) was very low compared to the reference values. Multivariate analysis for OS considered Karnofsky Index, remission at alloHCT, donor status, HLA-C status, age and SPA. Age, remission status, HLA-C and SPA were independent predictive factors of OS.
Conclusions: Most patients showed good nutritional status before alloHCT, but malnutrition became very frequent 30 and 100 days after alloHCT. The SPA value, when in the ≤25th percentile at admission, was an independent predictor of OS. It remains unknown whether SPA can be improved before alloHCT by nutritional support and physical activity, leading to better OS.

514
Computer-based program to predict malnutrition and side effects of therapy related to nutrition in cancer patients

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Objectives: Depending on the entity of cancer, patients are more or less malnourished when they enter the hospital for the first time. The individual nutrition status, the type of cancer and at least the therapy will determine the development of the nutrition status. Several questionnaires exist (SGA, MNA, etc.) which assess the nutrition status of the patient either at the time point of hospitalisation or during therapy. However, a tool to predict the risk of malnutrition based on available data does not exist.
Methods: We developed a computer-based program which calculates the risk of malnutrition on the basis of known clinical and epidemiological data and treatment libraries, including risk levels for side effects (mucositis, emesis). The specific algorithm (support vector regression) allows a risk assessment with high precision. The program was tested with the data of 527 cancer patients with different tumour entities and validated with further 263 data sets.
Results: To control predictive sensitivity, risk calculation was compared with the SGA at different time points. Sensitivity was 94 %, specificity 92 % and the overall predictive value 94 %.
Conclusions: The program helps the oncologist to estimate the risk for malnutrition and to start an early nutritional intervention. In addition, the patient can be supplied with specific printouts containing nutritional recommendations on how to compensate weight loss or a specific dietary advice in cases of mucositis, nausea, taste disorders and further nutrition-related problems.

515
Effect of adequate nutrition therapy in rectal carcinoma post-surgery patients

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Objective: The objective of this study was to investigate the effect of a 7-day adequate nutrition therapy on C-reactive protein (CRP) and blood glucose (BG) level alterations in rectal carcinoma (RC) post-surgery subjects on the first and seventh days of treatment.
Methods: The conducted study was as experimental, parallel, randomized, and non-blinded. Based on the study criteria, 24 subjects were eligible and randomized to the treatment (T) and control (C) groups. Intervention was adequate nutrition therapy for 7 days.
Results: The mean of the T group energy intake was 82.86 % of the total energy expenditure, greater than the C group. The mean protein intake was not adequate for all subjects, although that of the T group was better. The decline of CRP level in the T group differs significantly. The increase of T group's BG level tends to be greater than the C group, consistent with the rise of energy intake which was higher.

Variable	Treatment (n=12)	Control (n=12)
Serum CRP level (mg/L)		
Day 1	10.93±0.77	11.27±0.91
Day 7	3.80±1.20	6.07±2.03
Change	7.13±1.43	5.20±1.58
Plasma BG level (mg/dL)		
Day 1	103.15±17.26	99.36±19.62
Day 7	129.23±20.60	113.00±25.11
Change	26.00±29.67	10.00±24.40

Characteristics of serum CRP and plasma BG levels

Conclusions: Provision of 7 days of adequate nutrition therapy could accelerate the CRP level decline in RC post-surgery patients.

516
Significance of age and comorbidity on treatment regimen, treatment adherence, and prognosis in ovarian cancer patients

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Objectives: The objective of this study was to evaluate the significance of age and comorbidity on chemotherapy with carboplatin plus a taxane (TC) as first-line therapy in ovarian cancer patients.
Methods: All women registered in the Danish Gynecologic Cancer Database in 2005–2006 with epithelial ovarian cancer were included. Clinical data were collected by a review of medical records. Outcomes were independent effects of age (≥70 years) and comorbidity (Charlson's comorbidity score≥1) on treatment regimen and full adherence (±6 cycles of TC without cycle delays or dose reductions) and on survival.
Results: Of 961 patients, 348 were aged ≥70 years. Elderly patients had more advanced disease (stages III–IV) at diagnosis (OR=1.65, 95% CI=1.23–2.20) and were at a higher risk of not undergoing surgery (OR=3.62, 95% CI=1.66–7.91) or receiving chemotherapy (OR=6.50, 95% CI=4.12–10.3). Elderly patients more often received single-agent carboplatin instead of TC (OR=13.2, 95% CI=7.30–24.0). Only 50 % of elderly patients were treated with TC compared with 88 % of younger patients. Age ≥70 years (OR=0.13, 95% CI=0.08–0.19) and comorbidity (OR=0.41, 95% CI=0.27–0.61) were independently predictive of not receiving TC. Age≥70 years (OR=0.64, 95% CI=0.42–0.99) and performance status>1 (OR=0.41, 95% CI=0.21–0.81) were independently predictive of not receiving full treatment. Neither age ≥70 years nor comorbidity was independently associated with prognosis in multivariable Cox regression analyses.
Conclusion: Old age and comorbidity in ovarian cancer patients are predictive of not receiving standard first-line chemotherapy (TC). A negative impact on survival was not observed.

517
Corticotropin-releasing hormone enhanced invasiveness and migration by increasing MMP-2 and MMP-9 in Ishikawa cells

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Corticotropin-releasing hormone (CRH), synthesized in the hypothalamus, is also produced at several extrahypothalamic sites and in normal endometrial cells. CRH exerts antiproliferative activity on estrogen-dependent tumor cell lines (Ishikawa cells and breast cancer cells) and some other cell lines via CRH receptor-1.
CRH inhibited cell proliferation with respect to untreated controls in a time- and dose-dependent manner. The invasion assay showed that the invasion values at each concentration were significantly higher than the control group. Although the migration potential at each concentration tended to be higher than the control group, there was no statistical significance in the increased migration potential with CRH. Treatment of Ishikawa cells with

CRH at all concentrations significantly increased the expression of MMP-2 and MMP-9, but had no affect on TIMP-1 expression.
CRH inhibits the growth of Ishikawa cells, but can enhance the invasiveness of Ishikawa cells by increasing the expression of MMP-2 and MMP-9. We suggest that CRH induced invasion and migration by the expression of MMP-2 and MMP-9 in endometrial cancer and that CRH and its receptors can serve as tumor therapeutic targets.

518
Bacteremia due to Klebsiella species in patients with hematological malignancies: risk factors for severe sepsis/septic shock

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Background and aims: *Klebsiella* species are major nosocomial pathogens causing serious infection in a neutropenic setting. The aim of this study was to evaluate the risk factors of severe sepsis/septic shock by bacteremia due to *Klebsiella* defined according to the criteria of the American College of Chest Physicians/Society of Critical Care Medicine Consensus Conference.
Results: Between 2005 and 2009, a total of 76 bacteremia due to *Klebsiella* isolates (47 *Klebsiella pneumonia*, 24 *Klebsiella oxytoca*, 4 *Klebsiella terrigena*, and 1 *Klebsiella ornithinolytica*) were collected in 71 patients: 30 (42.3 %) acute myeloid leukemia, 27 (38 %) acute lymphoid leukemia, 10 (14 %) lymphoma, and 4 (5.7 %) aplastic anemia. The median age was 27 years (range, 2–57 years). The median duration of neutropenia before isolates was 8 days (range, 0–71 days). The major clinical symptoms were isolated fever (27.6 %) and symptoms from the digestive (26.3 %) and respiratory tracts (26.3 %). The susceptibility profile to antimicrobial therapy revealed that 44.7 % of isolates were extended-spectrum β-lactamase-producing *Klebsiella*. Severe sepsis and septic shock occurred respectively in 32.9 and 19.7 % of the episodes. The attributed mortality was 15 %. In the multivariate analysis, serum lactate >2.4 mmol/L (P=0.048), protidemia <55 g/L (P=0.035), symptoms from the digestive tract (P=0.049), neutropenia >8 days (P=0.013), and resistant fever to antimicrobial therapy (P=0.010) were found to be independent predictors of severe sepsis/septic shock.
Conclusion: Resistant fever to antimicrobial therapy (>3 days), elevated serum lactate, severe protidemia, prolonged neutropenia, and the presence of clinical symptoms from the digestive tract are the most common factors associated with increased risk of severe sepsis/septic shock in patients with hematological malignancies and *Klebsiella* bacteremia.

519
Animals that apparently recover from mucositis induced by high-dose irradiation develop delayed pathologies consistent with a failure to thrive

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Objective: The objective of this study was to determine whether animals surviving intestinal mucositis develop delayed pathologies. Acute intestinal mucositis following irradiation or chemotherapy is well documented, but later clinical symptoms are poorly understood and generally documented anecdotally.
Methods: Adult mice were exposed to abdominal irradiation with bone marrow sparing. Animals surviving acute diarrhoea/dehydration were then allowed to age for up to 200 days. Tissues were taken from moribund mice and from scheduled euthanasias, where age-matched control tissues were also collected. Tissues were stained with H&E and Masson's trichrome and BrdU-labelled.
Results: Prolonged pathologies were observed at exposures >12 Gy, increasing with dose and time. Small adenomatous-like structures were present from 20 days post-irradiation. Over the next 6 months, there was a shortening of the crypt and villi, with fewer cells in an expanded lamina propria. There was thickening of the muscle wall and increased submucosal collagen. Consistent with the blunted epithelium, a significantly reduced BrdU incorporation was noted, indicative of impaired cell production. Paradoxically, in addition to the adenomas, increased levels of crypt fission and high levels of apoptosis and mitosis in some crypts were observed. The diameter of the intestine was also reduced. Effects on barrier function are under investigation.
Conclusions: There are severe late-stage pathologies associated with deregulated cell turnover following high-dose intestinal therapy. Blunted, wider crypts and villi and an expanded fibrotic submucosa may reduce both the absorptive surface area and intestinal motility. These are similar to observations in geriatric animals, suggesting a premature aging of the GI.

520
Relation between elderly cancer patients and their doctors

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Aim: The current study aimed to extend our understanding of the associations between patients diagnosed with cancer and appraisal of communication competence of physicians.
Methods: Semi-structured interviews were conducted with 41 elderly persons who reported a cancer diagnosis while participating in a prior survey of health communication (mean age=79.36 years, SD=7.57). Participants in this representative sample of community residents reported diverse cancer diagnoses and ranged from the recently diagnosed to long-term survivors. Physician communication competence was measured by Marshall's five-item reliable scale (Cronbach's α=0.87). Psychosocial outcomes included appraising the cancer experience as less stressful, feeling hopeful about the future, feeling less concerned about treatments, and viewing cancer as a growth opportunity.
Results: Patients reported their physicians to exhibit a relatively high communication competence (mean=3.17, possible range=0–4, SD=0.57). Older patients reported that their physicians had less communication competence than did younger patients. Patients who reported more positive psychosocial outcomes on each of five variables rated their physician as portraying a significantly greater communication competence (p<0.01). Thus, patients who appraised their illness as less stressful, those who were more hopeful about their future, those who worried less about treatment, those who felt that cancer did not change their identity, and those who considered the cancer experience as an opportunity for personal growth all reported a significantly greater communication competence of their physicians.
Conclusions: Patients' reports of physician communication competence should be considered at different stages of the cancer experience, ranging from diagnosis to treatment and post-treatment evaluations.

521
National Italian Guidelines for prevention and management of cancer therapy-induced mucositis

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Methods: While early diagnosis and advances in cancer therapy for children continue to improve, resulting in a higher survival rate, oral complications remain a significant cause of morbidity and potential mortality. Long-term oral side effects are more in children and adolescents than in adults, with incidence of about 30–100 %. Mucositis is recognised as common acute sequelae with risks of severe pain, malnutrition and potential source of systemic infections, resulting in increased hospitalization and higher costs of care. This report describes the National Italian Guidelines for the prevention and management of cancer therapy-induced mucositis.
Methods: A panel of experts coordinated by the Italian Minister of Welfare planned to elaborate the Italian guidelines. The structure of the guidelines has been planned to follow the principles of science-based dentistry. The main procedure was based on a hierarchic evaluation of literature.
Results: Preventive oral protocols are based on a multidisciplinary collaborative team approach. Oral healthcare providers play an important role in the assessment and management of paediatric patients undergoing cancer therapy. Stabilization of oral and dental infections prior to treatment and conditioning can reduce the incidence and severity of oral and/or systemic complications. Cancer therapy-induced immunosuppression represents a high risk of opportunistic infections coming from the oral cavity. A pre-cancer therapy evaluation is essential to decrease oral problems during and after treatment.
Conclusions: The guidelines are planned for paediatric dentists, dental hygienists and all of the oncology team. The guidelines are also designed to be of interest also for parents and/or guardians of the children.

522
Evaluation of the quality of life in elderly and young colorectal cancer patients: a comparison study

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Aim: The aim of this study was to evaluate the quality of life in colorectal cancer patients and how this is affected by their age.
Methods: Thirty patients with colorectal cancer were evaluated. Fourteen were <65 years old and 16 were more than 65 years old. For the evaluation of quality of life, we used the FACT-G2 questionnaire. The questionnaire consisted of a declaration of patient's confidentiality and five different aspects of the psychosocial activity of the individual.

(a) Physical activity
(b) Social–familial activity
(c) Relationship between patient and doctor
(d) Emotional state
(e) Level of activity of the individual

In each question, five different answers were given, and at the end of each of the five sections of the questionnaire was a free text evaluation from the patient. We used the test reliability analysis and five parameters for the multivariate analysis.
Results: There is a significant correlation between the stage of the disease and the level of physical activity. Gender is not correlated with differences in the psychosocial activity. Elderly female patients show greater reduction in their physical and social activity and also consider good relation with their doctors as more valuable than younger female patients ($p<0.002$). Elderly patients show greater reduction in their physical activity ($p<0.001$).
Conclusion: Physicians should encourage more the elderly patients not to neglect their physical and social activities. Also, physicians should maintain good communication especially with elderly cancer patients.

523
Changes in nutritional status and body composition in childhood cancer patients during the first year after diagnosis

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Objective: Little is known about the course of nutritional status and body composition in childhood cancer patients during treatment. Therefore, the objective of this study was to determine changes in nutritional status and body composition during the first year after diagnosis in patients with hematological, solid, and brain tumors.
Methods: Measurements of weight, height, mid-upper arm circumference (MUAC), triceps skinfold, and bioelectrical impedance analysis were performed regularly until 1 year after diagnosis.
Results: During the first 3 months after diagnosis, significant weight loss (>5 %) was found in 28.5 % of patients, particularly in patients with hematological (41.2 %) and solid tumors (29.3 %). One year after diagnosis, zBMI, zMUAC, ztriceps, and fat mass index (FMI) were increased in all patient groups (see table). The increase in FMI was most pronounced in patients with hematological and brain tumors. In contrast, no increase in fat-free mass index (FFMI) was found. The prevalence rates of malnutrition (zBMI, less than −2 SDS) decreased while the prevalence of obesity (zBMI>2 SDS) doubled. Differences between the three patients groups were not significant.

N (%)	ΔzBMI	ΔzMUAC	Δztric	%ΔFFMI	%ΔFMI	%zBMI less than −2		%zBMI>2	
						Dx	1 year	Dx	1 year
All patients, *n*=133	0.55**	1.02**	1.68**	3.6	28.3**	7.6	1.8	4.5	10.0
Hematological, *n*=53 (39.8 %)	0.48**	1.05**	2.38**	1.6	32.4**	5.7	0	6.4	8.5
Solid, *n*=44 (33.1 %)	0.52**	0.91**	0.97**	4.6	12.3	11.6	5.3	5.3	7.9
Brain, *n*=36 (27.1 %)	0.72**	1.13**	1.03**	6.6	44.3**	6.1	0	4.0	20.0

Paired *t* test: **$p<0.01$

Changes in nutritional status and body composition

Conclusions: During the first 3 months after diagnosis, childhood cancer patients are susceptible to weight loss and malnutrition, while after this period they are at risk of increases in fat mass and obesity.

524
Impairment, activity and participation after breast cancer: the lived experience

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Background: The International Classification of Functioning, Disability and Health (ICF) was adopted by the WHO (2001). The Core Set for Breast Cancer is a subset of 80 aspects of health pertinent to this population.
Objectives: The objective of this study was to document the impact of breast cancer on the levels of impairment, activity and participation from the perspective of women with the condition using the ICF Core Set.
Methods: Focus group methodology was used. Women were recruited from a centre of excellence. ICF chapter headings guided the discussion. Sessions were transcribed verbatim. Two researchers independently identified (1) meaning units and (2) linked these to the ICF categories.
Results: Seven focus groups were conducted (n=34), with mean age of 51.5 years (range, 34–76 years). Social interactions and roles were altered: support was received from both expected and unexpected sources. Treatment sequelae adversely affected the ability to fulfil previous roles for up to 3 years post-treatment. Recovery took longer than expected. Changes in sensory function altered the ability to exercise. Encounters with other women who were not progressing well prevented some participants from using support groups. Participants reported a lot of pressure to remain optimistic. Hidden economic costs emerged as an issue. Return to work was reported as difficult; some employers had unrealistic expectations in relation to recovery time. Diagnosis of cancer created difficulties with banking services and insurances. Scar appearance and the presence of lymphedema were reported as sources of distress.
Conclusion: Empirical information on the recovery pathway may help allay anxiety, guide management decisions and inform improvements in intervention strategies.

525
Thrombotic superior vena cava syndrome in cancer patients: data from a single center cohort of 340 consecutive patients

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Introduction: Venous thromboembolism (VTE) is a leading cause of dead and morbidity in cancer patients. Thrombotic superior vena cava syndrome (TSVCS) must be taken into account as a form of presentation of the hypercoagulable state associated with cancer.
Aim: The aim of his study was to evaluate the clinical characteristics and outcome of cancer patients with TSVCS.
Patients and methods: This is a prospective observational study enrolling consecutive cancer patients newly diagnosed with VTE.
Results: In 8 (2 %) out of 340 cancer patients newly diagnosed with VTE, the thrombotic event presented as TSVCS. The most frequent tumor was non-small cell lung cancer in three patients (37 %), followed by bladder cancer in two (25 %) and ovarian cancer, breast cancer, and mediastinal sarcoma in one. Six patients (75 %) were actively receiving platinum-based chemotherapy for metastatic cancer. TSVCS was related to the presence of a central venous catheter (CVC) in four patients, whereas in the remaining four it was related to venous compression by mediastinal malignant disease. The CVC was removed in all patients with CVC-related TSVCS. The clinical picture of TSVCS was progressively established during days in seven patients, but hyperacute in a few hours in one patient. Six patients (75 %) were treated with interventional radiology, and two patients (25 %) received systemic thrombolytic therapy. All patients had a favorable outcome after these invasive interventions and subsequent anticoagulant therapy with LMWH. There were no deaths related to the development and treatment of TSVCS.
Conclusions: The management of TSVCS with systemic thrombolysis and invasive angioradiological procedures were valid options in our experience.

526
Validation of the PEDSQL Multidimensional Fatigue Scale in Brazilian children and adolescents with cancer: initial psychometric properties

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Introduction: Fatigue has been widely appointed as a highly prevalent symptom in cancer patients in different phases of the therapeutic process. In clinical practice, pediatric nurses hardly develop measurements, assessments, and interventions involving fatigue.
Aim: The aim of this study was to perform the initial psychometric validation of the PedsQL™ Multidimensional Fatigue Scale for Brazilian Portuguese, in children and adolescents with cancer, self-report and parent proxy report versions.
Method: This is a methodological, quantitative cross-sectional research involving 17 children between 5 and 7 years old, 30 between 8 and 12 years old, and 31 between 13 and 18 years, as well as their respective caregivers (79), totaling 157.
Results: The children and adolescents were mostly male (51.9 %) with unfinished primary education (87.3 %) and different diagnoses, but 40.5 % leukemia, with 11.4 % facing recurring neoplasms. Out of 78 patients, 71 were undergoing chemotherapy alone or in combination with radiotherapy. The caregivers were mostly mothers, married, with a mean age of 49 years, and unfinished primary education. The children, adolescents, and caregivers mentioned that the instrument was easy or very easy to answer (84.8 and 82.3 %), with a median completion time of 5 min for both versions. The mean total fatigue score for patients and caregivers was 66.8, with 73.3 and 66.2 for general fatigue, 60.4 and 63.3 for sleep-related fatigue, and 66.4 and 71.5 for mental fatigue, respectively. The Cronbach's alpha for all domains, for the children, adolescents, and the caregivers, ranged between 0.77 and 0.90, except for the children's sleep-related fatigue domain which was 0.52.
Conclusion: The results demonstrate good reliability of the instrument for the preliminary psychometric property analysis.

528
Non-programmed visit control program by the Supportive Care department of the Oscar Lambret Cancer Center in Lille

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A non-programmed visit (NPV) is defined as an unexpected hospitalization or consultation visit for a cancer patient followed by the center. As an indicator of poor quality of care and dysfunctioning in the organization of patient discharge, a NPV can have significant organizational, medical, and psychological impacts. Within the framework of the 2005–2009 Establishment Project, our Supportive Care department (CISSPO) conducted the implementation of a NPV control program including all CISSPO members, care management personnel, hospitalization department heads, and our Quality Assurance office. A prior quantitative and qualitative NPV evaluation allowed an accurate impact assessment.

This CISSPO control program was initiated in 2006 and consisted in registering NPV and applying protocols and procedures for medical care corresponding to the difficulties and the specific needs encountered by the patients. The implementation of this program resulted in an overall better accompaniment of patients and led to a decrease in the number of NPV.

In 2005, NPV represented 20 % of hospital stays (1,300/6,509), whereas in 2010, NPV represented only 1.8 % (130/7,105). The application of this program resulted in a better control of NPV and thus allowed an immediate and durable tenfold reduction in the number of NPV.

The organizational and medical functioning of the institution improved, and the recognition by the oncologists of the positive role played by the CISSPO was definitively acquired. Practitioners in charge of supportive care in the hospitalization department were thus able to anticipate potential medical problems outside the center in order to decrease the number of NPV.

529

Green tea extract and its role on the prevention of breast and prostate cancer

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The American Cancer Society estimates that in the 1980s, more than 4.5 million Americans died of cancer. In addition, there were nearly 9 million new cases and about 12 million people were under medical care for cancer. With cancer being the second most common cause of death in the US population, the possibility that readily available natural substances may be beneficial in the prevention of cancer warrants closer examination. A growing body of research has demonstrated green tea polyphones to be powerful antioxidants with anticarcinogenic properties. These polyphenol compounds, which account for 30–40% of the extractable solids of green tea leaves, are believed to mediate many of the cancer chemopreventive effects. Green tea may inhibit biochemical markers of tumor initiation and promotion, including the rate of cell replication and, thus, inhibition of the growth and development of neoplasm.

531

Do Barcelona clinic liver cancer stage B hepatocellular carcinoma patients only fit for transarterial chemoembolization?

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Background: The Barcelona Clinic Liver Cancer (BCLC) classification selection criteria for hepatic resection (HR) seemed too restricted. It is necessary to assess the therapeutic value of HR and to reevaluate the treatment algorithms with transarterial chemoembolization (TACE) for BCLC-B hepatocellular carcinoma (HCC).

Methods: A total of 257 and 135 HCC patients with BCLC-B, Child–Pugh A HCC undergoing HR, and TACE, respectively, were retrospectively evaluated. The overall survival rate was compared using the Kaplan–Meier method. The independent prognostic risk factors were analyzed by the Cox proportional hazards model.

Results: The 1-, 3-, and 5-year overall survival rates for the two groups after HR and TACE were 72, 51, and 32 % and 53, 19, and 11 %, respectively ($P<0.05$); median survival times were 38.7 and 16.3 months, respectively ($P<0.05$). The Cox proportional hazards model analysis showed that higher AFP levels (>400 μg/ml) and the treatment method (TACE) were independent predictors of poor survival rate. No significant differences about the therapy-related mortality between the two groups were observed.

Conclusions: HR for BCLC-B, Child–Pugh A HCC patients had better overall survival rates than TACE. Different subgroups of BCLC-B HCC patients should receive different treatment strategies.

532

Ramosetron versus ondansetron for chemoradiotherapy-induced nausea and vomiting: a preliminary analysis of phase III prospective randomized trial for gastrointestinal malignancies

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Purpose: The purpose of this study was to compare the prophylactic effect of ondansetron versus ramosetron on chemoradiotherapy-induced nausea and vomiting in the treatment of gastrointestinal cancer.

Materials and methods: Eligibility criteria include AJCC stage 1–3 gastrointestinal cancer, 5-fluorouracil-based chemoradiotherapy as a component of treatment, age 20 years or older, and ECOG 0–2. Patients were stratified for tumor location and operative sequence. Patients were to take ondansetron 8 mg bid SL or ramosetron 0.1 mg qd SL on D1-5 of chemoradiotherapy per respective arm. Patients were monitored weekly and surveyed daily for 4 weeks.

Results: one hundred fifty-four patients were included in the trial for analysis. Patient and tumor characteristics including age, gender, tumor location, and operative sequence were well balanced for the two arms. Patients without any emesis were 34.7 and 35.4 % for the ondansetron arm (arm 1) and ramosetron arm (arm 2), respectively ($p=0.9497$). However, patients with greater than grade 2 anorexia were 12.5 % for arm 1 and 9.7 % for arm 2 ($p=0.047$). Incidence rates of vomiting during the first week were 20.3 % in arm 1 and 14.3 % in arm 2 ($p=0.0469$). Further incidence rates of vomiting during the first 3 days for each arm were 16.7 and 15.0 % ($p=0.6859$), whereas that during later 4 days for each arm were 23.1 and 13.9 % ($p=0.0251$).

Conclusion: There was no difference in the incidence of emesis, combined nausea, and vomiting for the two arms. However, the incidence of vomiting was fewer in favor of ramosetron use. On timing analysis, this difference was due to the decrease in delayed vomiting after combined chemotherapy.

533

Are women disadvantaged with respect to the choice of place of care? An audit of gender differences in the utilization of charitable and paid palliative care facilities in South India

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Objective: In an effort to see whether male and female patients in hospital and hospice utilize resources equally, a study was conducted at the general oncology ward, palliative care ward, and hospice (free of cost) where patients get admitted either due to lack of caregiver support or difficult symptom control at home mostly during the terminal phase of the illness.
Methods: Random sampling was used wherein we studied the pattern of admissions at the general oncology ward, palliative care inpatient ward, and hospice.
Results: There was a significant difference in the utilization of resources among male and female patients in the hospital and hospice. While the median male/female ratio at the hospice was 0.4 with an interquartile range of (IQR) 0.61, it was 1 with IQR=0.62 and 3.75 with IQR=4.75 at the general oncology ward and inpatient palliative care ward, respectively.
Conclusion: While women may be the main caregiver in both hospital and hospice setting, more so in the Indian setting, she may perhaps not receive the same amount of medical care or attention when it comes to paid inpatient care, which could be due to unwillingness of the family to spend on a female member with an incurable condition. The median length of stay of females in the hospice was twice that of males, further indicating that a larger proportion of male patients mostly stayed at home/hospital during the terminal phase of the illness. Female patients again had no choice but to stay at a place convenient to the family members due to various reasons.

534
Decision to continue, limitation or termination of palliative chemotherapy in adults

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Introduction: The questioning of the doctor on the continuation of a palliative chemotherapy considered unreasonable is an ethical imperative that should bring as much as possible communication with the patient and family. The depletion of the effectiveness of chemotherapy is the key argument to allow supporting the proposition of termination. The modalities of the decision making of a termination are not clearly identified, and the stakes are multiple and complex. The doctor, only responsible for medical decisions, is often disarmed in front of such situations.
Objective: The objective was to elaborate guidelines to the decision making of continuation, limitation, or termination of a palliative chemotherapy.
Method: In accordance with the procedure of the AFSOS [1], the study involves constitution of an interregional working group including oncologists, radiation oncologists, palliative care specialists, nurses, and other professionals.

- Analysis of the literature published on this question
- A first meeting allowed circumscribing the question, defining the methodology, and elaborating a work plan.
- Presentation of the work during the national days of pooling of supportive care guidelines, organized by AFSOS on 2 and 3 December 2011
- Validation in plenary session after some modifications

Result: Guidelines to the decision making on the termination of palliative chemotherapy in adult patients emphasize the importance of communication and take into account French laws which govern this question.
Conclusion: The guidelines, welcomed by professionals present during the days, are considered useful tools in making the decision to stop/not resume palliative chemotherapy and its implementation in practice.
[1] French Association of Supportive Care in Oncology

536
Development of an educational intervention focused on sexuality in women with gynaecological cancer

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Objectives: The purpose of this research was to develop an educational intervention focused on providing women with gynaecological cancer information on sexuality.
Methods: Intervention development was guided by the Medical Research Council framework for complex intervention development (Campbell et al. 2007). A phased approach was taken to the design and evaluation of this complex intervention which included:

1. An in-depth literature review
2. Selection of a theoretical framework
3. A qualitative study
4. Development of intervention content and process
5. Pilot testing of the intervention

Results: The educational intervention consisted of an evidence-based information booklet combined with a verbal education session. The content of the intervention was guided by a conceptual framework of sexuality (Cleary and Hegarty 2011), whilst the intervention process was guided by andragogical principles (Knowles 1980) and the PLISSIT model (Annon 1976). Content validity was established by both patient and expert review.
Conclusions: This research resulted in the development of a methodologically sound educational intervention which has the potential to positively influence women's experiences of sexuality following diagnosis and treatment for gynaecological cancer. Pilot testing of the developed intervention is currently underway in a sample of women with gynaecological cancer.

537
Using mitochondria PCR in determining correlates of fatigue in men with prostate cancer receiving radiation therapy

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Purpose: This study explores the relationships between changes in the expression of genes associated with mitochondria biogenesis and bioenergetics with self-reported fatigue in prostate cancer patients receiving external beam radiation therapy (EBRT).
Methods: This is a prospective, exploratory, and longitudinal study measuring fatigue and gene expression changes before, at midpoint, and at completion of EBRT. Fatigue was measured using the revised Piper Fatigue Scale, and whole blood was collected using a PAXgene tube. Baseline data from participants were compared with race and age-matched prostate cancer patients on active surveillance. The Human Mitochondria RT2 Profiler™ PCR Array system was used to identify differential expression of genes.
Results: Twenty-three subjects were enrolled in the study, where their mean fatigue score was 1.24 (SD=1.52) at baseline, 2.84 (SD=2.12) at midpoint, and 2.92 (SD=2.31) at completion of EBRT. Fifteen genes related to mitochondrial integrity, apoptosis, molecular transport, and respiratory chain were differentially expressed overtime. *BCL2L1* (β=0.27, P=0.04) and *SLC25A37* (β=0.27, P=0.04) were significantly associated with changes in fatigue scores overtime during EBRT.
Conclusions: Genes related to mitochondrial membrane integrity and energy production are differentially expressed in patients receiving EBRT and these changes are associated with patient reported fatigue, suggesting that mitochondrial energy production is impaired by EBRT to result in

increased fatigue. Proteins encoded by BCL2L1 and SLD25A37 should be further investigated as possible mechanisms that can be targeted by novel interventions to reduce fatigue in this population.

539
Nutrition assessment: who and how?

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Objectives: Malnutrition is common but underdiagnosed. We aimed to retrospectively evaluate the nutritional status of cancer inpatients in an acute care palliative medicine unit.
Methods: The data included consecutive nutrition therapy assessments (NTA) in 2009 made by a registered dietitian (RD). RD used a standard assessment tool with six criteria to assess nutritional status. Two or more criteria had to be present for malnutrition. Weight loss (WL) was moderate if WL is 1–2 % in 1 week, 5 % in 1 month, 7.5 % in 3 months, or 10 % in 6 months and severe if WL if >2 % in 1 week, >5 % in 1 month, >7.5 % in 3 months, or >10 % in 6 months. Physician notes were reviewed as to whether malnutrition was reported and/or graded.
Results: Two hundred thirteen NTA were reviewed for 116 patients. The median age was 65 years (range, 19–94 years), 57 % male, 84 % with cancer diagnosis. The most common cancers were gastrointestinal (26 %), genitourinary (26 %), and respiratory (16 %). Seventy-eight percent had metastatic disease. One hundred forty-seven (69 %) NTA were eligible for RD assessment. This was most often requested by physician/physician assistant (51 %), dietetic technician (21 %), or nurse (18 %). Of the 147 NTA, 99 (67 %) identified malnutrition per RD; 55 % of them had moderate/severe malnutrition. Malnutrition was usually noted by unintentional WL (59 %), low nutrient intake (58 %), and low serum albumin (54 %). WL was severe in 68 %. Sixty percent of physician notes did not document nutritional status; 28 % reported moderate/severe malnutrition.
Conclusions: Moderate/severe malnutrition was highly prevalent. WL, nutrient intake, and albumin level were equally important to RD. Nutritional assessment by physicians was inadequate

540
Cancer prevention through employ of appropriate diet in daily schedule

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The aim of the study was to evaluate the relationship between diet and cancer prevention. Cancer is one of the leading causes of death throughout the world. This study provides a summary of nutritional factors and their relation to risk of major cancers based on current data. We realize that supplemental nutrients may have different health effects than nutrients in food and that lifestyle behaviors such as smoking can modify risks. This research will provide new and better understanding of the complex physiological action of isolated supplements in health and disease. The effort against cancer is one of the greatest challenges of mankind. In industrialized countries, obesity, nutrient-sparse foods such as concentrated sugars and refined flour products that contribute to impaired glucose metabolism (which leads to diabetes), low fiber intake, consumption of red meat, and imbalance of omega 3 and omega 6 fats all contribute to excess cancer risk. Intake of flax seed, especially its lignin fraction, and abundant portions of fruits and vegetables will lower cancer risk. Ascorbic acid has partial benefits orally, but could be very beneficial intravenously. Supplementary use of oral digestive enzymes and probiotics also has merit as anticancer dietary measures.

542
Late effects in survivors of infant leukemia in a single center

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Background: Acute lymphoblastic leukemia (ALL) is the most common childhood malignancy, accounting for 30 % of all cancers occurring in childhood. Long-term sequelae of treatment are now being reported. Children who survive acute lymphoblastic leukemia are at risk of leukemia-related or treatment-related complications.
Methods: In this study, we evaluated 66 patients with ALL who have survived for more than 5 years after diagnosis. Long-term sequelae of treatment, such as impaired intellectual and psychomotor functioning, neuroendocrine abnormalities, impaired reproductive capacity, cardiotoxicity, and second malignant neoplasm, are being reported.
Results: Of the 66 patients, 43 cases were males and 23 females. Mean age was 14.59±4.36 years (range, 10–25 years). Forty-two patients received chemotherapy alone and 24 patients received chemotherapy and CNS radiation therapy. Short height (33/3 %), overweight (50 %), low bone density (53 %), learning disabilities (6/1 %), hyperthyroidism (1/5 %), sexual development (pubertal delay, 7/6 %), and overweight are more common in children who undergo chemotherapy without radiotherapy. Thirty-one (8 %) patients did not have late effects. Thirty (3%) had at least one late complication.
Conclusion: These results indicate that late sequelae are common in long-term survivors of infant leukemia and are often related to CRT. The most common problems are short stature and overweight.

543
Perceptions of stage IV NSCLC patients and caregivers regarding severity of cancer treatment symptoms and interest and willingness to participate in supportive care trials

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Objective: The objective of this survey was to prospectively assess both patient and caregiver perception of symptoms of advanced lung cancer treatment as well as interest and willingness to participate in supportive care clinical trials that may have an impact on the quality of life and the cancer outcomes.
Methods: A sample of consecutively identified patients diagnosed with stage IV non-small cell lung cancer (NSCLC) and caregivers were surveyed via e-mail by Inspire (USA). Using a five-point Likert scale (5 being most severe), responders rated the severity of common symptoms such as fatigue, weakness, nausea and vomiting, loss of strength, poor sleep, pain, difficulty breathing, and moodiness as well as their willingness to participate in supportive care trials.
Results: Of the 144 patients with stage IV NSCLC who responded to the survey, 48 % were still receiving chemotherapy. Although the

average scores of the severity of symptoms were lower than that reported in the literature, patients rated fatigue as their worst symptom, followed by weakness, nausea and vomiting, loss of strength, poor sleep, and moodiness. A total of 157 caregivers of these patients also rated fatigue as the most significant symptom, followed by weakness, loss of strength, poor sleep, pain, moodiness, and difficulty breathing. Although 60 % of patients reported willingness to participate in supportive care trials, only 17 % of patients were willing to participate.
Conclusions: Overall, caregivers noted symptoms to be at higher rates than patients, while patients were much more willing to participate in supportive care trials to evaluate novel methods to manage symptoms.

544
The intermediary role of cytokines in chemotherapy-associated cognitive impairment: a systematic review

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Objectives: While various clinical and pharmacological determinants for chemotherapy-associated cognitive impairment had been identified, conflicting evidence suggested that cytokines might play an intermediary role. The objective of this systematic review was to evaluate the current evidence pertaining to the associations among chemotherapy, cytokine induction, and cognitive impairment in cancer patients.
Methods: A literature search with PubMed and SciVerse Scopus was conducted in November 2011 to gather relevant articles and abstracts. This review included studies that had performed objective and/or subjective cognitive assessments and cytokine measurements on defined populations of cancer patients who received chemotherapy.
Results: A total of nine studies fulfilled the inclusion criteria. High methodological heterogeneity existed among selected studies, including cancer populations, subject characteristics, cognitive endpoints, types of cytokines tested, and their measurement methods. Evidence showed that IL-1β, IL-6, and TNF-α levels were weakly to moderately correlated with different degrees of cognitive impairment. Notably, the time concordance between the onset of cytokine induction and occurrence of cognitive impairment was not well elucidated in these studies. A number of confounding factors were identified to interfere with the expression levels of cytokines; these confounders included subjects' cancer types, ages, gender, genetics, and psychosocial characteristics such as anxiety, depression, and fatigue.
Conclusion: Our results suggest that chemotherapy-induced cytokines may play an intermediary role in cognitive impairment. Different types of chemotherapy treatments might lead to varying presentations and severities of cytokine-induced cognitive impairment. A list of methodological recommendations is proposed to harmonize future studies of this subject matter.

546
Anxiety: unmet psychosocial needs in Asian breast cancer patients

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Objectives: The prevalence and the clinical determinants of anxiety in Asian breast cancer patients are poorly described in the literature. This study aimed to evaluate the severity of anxiety symptoms among Asian breast cancer patients and to identify patient characteristics associated with anxiety.
Methods: A single-centered, prospective, cross-sectional study was conducted between August 2009 and September 2011. Early-stage breast cancer patients (stages I to III) completed the Beck Anxiety Inventory (BAI) to assess the severities of their anxiety symptoms. Significant anxiety was defined as a BAI score of above 15 (out of 63). Patients' fatigue interference score (Likert score of 0–10) and concomitant medications were also captured. A multiple regression was conducted to delineate the association between patient characteristics and anxiety.
Results: A total of 319 patients were recruited (age, 51±9 years; 80.6 % Chinese; 62.8 % stage I/II). Significant anxiety was experienced by 71 patients (22.2 %). Anxiety severities varied greatly across different chemotherapy treatment status ($p=0.021$): More patients experienced significant anxiety while receiving chemotherapy compared to pre-chemotherapy patients (29.7 vs. 9.0 %). Notably, 20 % of the cancer survivors still experienced significant anxiety after completion of chemotherapy. Fatigue ($p<0.0001$) and concurrent receipt of chemotherapy ($p<0.0001$) were strongly associated with anxiety, followed by poor performance status ($p=0.047$) and concomitant usage of neuropsychiatric medications, such as antidepressants, anti-epileptics, anxiolytics, and hypnotics ($p=0.056$).
Conclusions: This is the largest study to date to evaluate anxiety symptoms in Asian breast cancer patients. Significant anxiety is highly prevalent, and psychosocial support is prudent in this population.

547
Using reading therapy by picture books as supportive nursing intervention in hospice care

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It is important to help patients and their family to cope with loss and grief in hospice care. Reading therapy is an effective way of achieving the goals and does not require intensive training or immense financial resources.
There are eight stages in the implementation of reading therapy:

1. Develop rapport, trust, and confidence with the reader
2. Solicit support from the reader's family
3. Identify the specific problem, situation, behavior, or skill to be acquired
4. Set goals
5. Select picture books appropriate for the situation
6. Present the picture book and incorporate reading activities
7. Implement post-reading activities
8. Evaluate the effects of reading therapy on the reader

There are several potential benefits of reading therapy:

1. To provide readers with metaphors for life experiences that make it easier to learn new skills to cope with problems
2. To provide information
3. To provide insight into a specific experience or situation
4. To increase readers' understanding of human behavior or motivations
5. To provide alternative or more realistic solutions to the problem
6. To stimulate a discussion of what the actual problem is

7. To provide new values and attitudes with regard to the problem
8. To create awareness that other people have similar problem
9. To relieve emotional or mental distress
10. To foster readers' honest self-awareness

Using picture books as reading therapy is easy for hospice nurses to get started. This article provided practical experiences and findings as references for hospice care professionals.

552

Periodontal status and bacteraemia due to oral viridans streptococci and coagulase-negative staphylococci in allogeneic haematopoietic stem cell recipients

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Objectives: This study was aimed at investigating whether there was an association between the periodontal condition before haematopoietic stem cell transplantation (HSCT) and bacteraemia during neutropenia following HSCT.
Methods: Eighteen patients underwent a periodontal examination prior to HSCT. Patients were classified as periodontally healthy (all periodontal pocket depths (PPD)≤4 mm and bleeding on probing (BOP)≤ 10 %) or as having gingivitis/periodontitis (PPD≥4 mm, BOP>10 %). Oral mucositis (OM) was scored using the Daily Mucositis Score. Patients received ciprofloxacin prophylaxis. Blood cultures were taken twice weekly at the onset of fever or infection.
Results: Five patients were periodontally healthy, while 13 patients had gingivitis/periodontitis. Twelve patients (67 %) developed bacteraemia, of which 11 patients (61 %) had one or more episodes of bacteraemia with oral viridans streptococci (OVS) and/or coagulase-negative staphylococci (CONS, most often *Staphylococcus epidermidis*). Patients with gingivitis/periodontitis more often had bacteraemia than periodontally healthy patients (Fisher´s exact test: $p=0.047$), and those experiencing bacteraemia had a higher BOP score (Mann–Whitney U test: $p=0.049$). All patients developed OM, but there was no association between its severity and duration and bacteraemia. OM duration and length of hospital stay were strongly correlated ($R=0.835$, $p=0.000$).
Conclusions: Our results indicate that periodontal inflammation and infection may contribute to the risk of developing OVS and CONS bacteraemia during neutropenia. Our results point to the importance of a periodontal evaluation and management prior to HSCT and that further studies on the contribution of an inflamed periodontium to systemic infectious complications are warranted.

554

Characterization of skin reactions and pain reported by patients with different cancer diagnoses receiving radiation therapy

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Objectives: This exploratory analysis assessed differences in patient-reported severity and characteristics of skin reactions and pain at radiation treatment (RT) sites in patients with different cancer diagnoses.
Methods: A self-report survey, adapted from the MD Anderson Symptom Inventory and the McGill Pain Questionnaire, assessed skin problems and pain at the RT site (0–5 scale). The survey was completed before and after RT. Differences in mean pre- and post-RT pain, general skin problems, and individual skin symptoms were assessed using paired t tests within each diagnosis.
Results: The survey was completed by 111 subjects (59 % female, 96 % white, mean age=64 years). Cancer diagnoses included: lung (21.6 %), breast (18.9 %), alimentary/GI (16.2 %), hematological (10.8 %), and genitourinary (9.0 %). Only breast cancer patients reported significant increases in pain (mean change=1.3, $p=0.002$) or general skin problems (mean change=1.75, $p<0.0001$) at the treatment site. Alimentary/GI, hematological, and lung groups reported trending increases in skin redness and/or flaking ($0.26\leq$mean change≤ 1.27, $p\leq 0.048$), whereas breast cancer patients displayed significant increases in redness, itching, hotness, tenderness, and tightness ($0.74\leq$mean change≤ 1.85, $p\leq 0.0045$) in the skin.
Conclusions: Only breast cancer patients reported significant increases in pain or hotness, tenderness, and tightness of the skin at the treatment site. These findings suggest that specific skin symptoms may be related to pain at the RT site in breast cancer patients and should be targeted for effective pain relief. These findings should be confirmed in a larger sampling of more cancer types.

557

Effect of enobosarm on physical function in cancer patients with <5 % or ≥5 % weight loss in a phase IIB trial

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Objectives: Although cachexia has been defined as >5 % weight loss, limited data exist on the prevention and treatment of muscle wasting prior to becoming cachectic. Cancer-induced muscle wasting begins early, resulting in a decline in physical function and other detrimental consequences.
Methods: We conducted a randomized, double-blind placebo-controlled study to evaluate enobosarm's effect on physical function and muscle wasting. Subjects ($n=159$) received enobosarm or placebo for 16 weeks. Subjects were males >45 years old and postmenopausal females with ≥2 % weight loss in the past 6 months and NSCLC, CRC, CLL, non-Hodgkin's lymphoma or breast cancer. We report on the changes in physical function based on a weight loss of <5 or ≥5 % in the 6 months prior to randomization.
Results: One hundred three subjects (MITT) had physical function (stair climb) assessed at baseline and week 16, with 24 % losing <5 % weight in the previous 6 months. Distribution of weight loss was similar across genders; however, subjects with <5 % weight loss were more likely ECOG=0 (<5 %: 46.2 %; ≥5 %: 35.8 %). Subjects with ≥5 % weight loss had worse physical function at baseline compared to those with <5 % loss ($P=0.048$). Significant improvement in physical function was observed in enobosarm subjects regardless of baseline weight loss (<5 %: $P=0.041$; ≥5 %: $P<0.001$), while placebo subjects failed to improve.
Conclusions: Enobosarm was well tolerated and showed a statistically significant improvement in physical function regardless of baseline weight loss. This provides evidence that enobosarm may play an important role in the management of cancer patients by

treating and preventing the decline in physical function and muscle wasting before a patient becomes cachectic.

558
Assessment of pain in the upper limb after treatment of breast cancer

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Introduction: Pain in the upper limb after treatment of breast cancer is a common complaint, being characterized as a syndrome of post-mastectomy pain.
Objective: The objective of this study was to describe the number of women who had pain in the ipsilateral upper limb surgery and quantify pain intensity.
Methods: This is a cross-sectional study developed in Pio XII Foundation–Hospital do Câncer de Barretos, São Paulo, Brazil. The study population consisted of 95 women who underwent mastectomy. The presence of pain was noted by the report of the patients and the visual analogue scale numerical.
Results: Pain was found in 47 (49.4 %) patients evaluated, with 11 (23.40 %) showing weak pain, 15 (31.91 %) having moderate pain, 17 (36.17 %) having strong pain, and 4 (8.51 %) with unbearable pain.
Conclusion: Pain in the ipsilateral upper limb surgery for breast cancer occurred in a significant number of women in the population studied. It is important to note that this complaint interferes with the quality of life of these patients, so the observation and prevention of this symptom becomes relevant in clinical practice.

559
Prevalence and impact of hypogonadism in cancer patients with muscle wasting in a phase IIB enobosarm trial

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Objectives: Hypogonadism is associated with weight loss and poor outcomes in cancer patients. Up to 50 % of males with advanced cancer are hypogonadal at presentation or during treatment. Wasting in cancer patients is also associated with a decline in physical function and performance status. We conducted a randomized, double-blind placebo-controlled study to evaluate enobosarm's effect on muscle wasting and physical function.
Methods: Patients (n=159) were randomized to enobosarm or placebo for 16 weeks. Patients were males >45 years old and postmenopausal females with ≥2 % weight loss in the previous 6 months and NSCLC, CRC, CLL, non-Hodgkin's lymphoma, or breast cancer. We report on the incidence and impact of hypogonadism (T<300 ng/dL).
Results: Baseline testosterone levels were available for 93 of 103 men. Sixty percent of males were hypogonadal at randomization. The distribution of hypogonadism was similar across cancers; however, hypogonadal men were less likely to complete the study. Baseline T was correlated with weight loss (r=0.32, P=0.002), with hypogonadal men demonstrating greater loss in the previous 6 months (median, −9.5 %). Baseline physical function (stair climb power) was higher among eugonadal vs. hypogonadal males (84.5 vs. 70.6 W, P=0.016). Enobosarm significantly improved physical function regardless of the baseline gonadal status (hypogonadal, 18.7 %, P=0.0061; eugonadal, 13.2 %, P=0.0032).
Conclusions: Hypogonadism is common in male cancer patients and is correlated with weight loss and diminished physical function. In this trial, enobosarm improved physical function in hypogonadal and eugonadal men despite poorer baseline physical function in hypogonadal patients. This provides evidence that enobosarm may play an important role in the management of cancer-related muscle wasting.

562
Effect of radiotherapy on the occurrence of lymphedema in breast cancer patients

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Introduction: Radiotherapy predicts lymphedema in the upper limbs, therefore causing subcutaneous fibrosis that can compress blood vessels and lymphatic capillaries.
Objective: The objective of this study was to investigate the influence of radiotherapy on the occurrence of lymphedema in the upper limbs.
Methods: This is a cross-sectional study developed in Pio XII Foundation–Hospital do Câncer de Barretos, São Paulo, Brazil. The sample consisted of 95 patients who underwent surgery and radiotherapy. Lymphedema was determined by perimetry, with a cutoff point difference between the upper limbs of ≥2 cm, and radiotherapy was observed in the medical records.
Results: Twenty-four (25.2 %) patients had lymphedema. Nineteen (79.2 %) of these patients underwent adjuvant radiotherapy, and five (20.8 %) patients had lymphedema without having undergone radiotherapy.
Conclusion: In this sample, we observed a high frequency of lymphedema in the upper limbs among breast cancer patients undergoing radiotherapy; however, it is noteworthy that this finding may be associated with other factors such as the surgical technique (due to the removal of axillary lymph nodes), the disease itself and the stage of diagnosis, pathological lymph node status, number of positive lymph nodes, patient age, body mass index, hypertension, excessive use of the upper limbs, and inflammation.

563
Nutrition and quality of life in cancer patients with advanced disease

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Objective: The objective of the study was to examine nutritional changes and their effect on the quality of life of cancer patients with advanced disease.
Method: Participants were 61 patients of both genders with a variety of cancer diagnoses in disease stages 3 or 4. The majority (82 %) were on palliative care only, whereas 18 % were still receiving chemotherapy. Most patients were home-bound when the study was conducted. The participants were interviewed in individual sessions using two questionnaires.

1. The Questionnaire of Nutrition (by Barak and Kreitler) which provided detailed information about foods, eating habits, and eating difficulties
2. The Quality of Life Questionnaire (Kreitler and Kreitler 2004) which consisted of 51 specific items referring to sense of health and health worries, pain, functioning in the family, sex, body image, sense of control, cognitive functioning, self-confidence, positive emotions, negative emotions, and overall quality of life

Results: The results showed that difficulties in eating were related with high significance to more health worries, more pain, lower cognitive functioning, lower sense of control, lower self-confidence, lower positive emotions, and higher negative emotions, as well as lower overall quality of life. Specific effects on the quality of life were found with difficulties in swallowing or in drinking and sense of disgust for food. Changes in nutritional habits were not found to have negative effects on the quality of life.
Conclusions: Highlighting the importance of integrating nutritional care in the palliative treatment of advanced cancer is needed.

564
Investigation of the optimal duration of the glucose hydrogen methane breath test

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Introduction: The glucose hydrogen methane breath test (GHMBT) has become popular for diagnosing small intestinal bacterial overgrowth (SIBO). There are limited published data on the optimal test duration; 3 h is the longest reported.
Aim: The aim of this study was to determine whether there is a significant difference in the number of patients considered positive for SIBO depending on test duration.
Methods: Patients suspected of having a possible diagnosis of SIBO had a GHMBT performed. Hydrogen (H_2) and methane (CH_4) concentrations were measured in parts per million. Gas levels were noted at baseline. Subjects took 75 g of glucose dissolved in 100 ml of water. Thereafter, breath gas values were recorded every 20 min for up to 3 h. Positive test: fasting $H_2 \geq 20$ or $CH_4 \geq 10$ ppm or a rise in $H_2 \geq 12$ or $CH_4 \geq 6$ ppm.
Results: Ninety-eight men and 95 women (median age, 63 years; range, 28–86 years) had a GHMBT. Of these, 67 (35 %) had a positive result for one or both gases: 18 (32 %) at baseline, 39 (60 %) by 40 min, 56 (84 %) by 100 min, 60 (90 %) by 140 min and 67 (100 %) by 160 min. One hundred twenty-six patients had negative GHMBTs; $n=75$ had the test performed for 3 h, 26 (20 %) for 100 min only. In patients where the test was performed for 3 h, the 95% CI for a false negative result at 100 min is 0.003–0.10.
Conclusions: Most patients with SIBO will have a positive result by 100 min. A reduction in the duration of the test may be achieved without compromising the number of true positives being diagnosed.

565
Influence of surgical intervention used on the occurrence of lymphedema in breast cancer patients

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Introduction: The partial or total dissection of axillary lymph nodes predisposes to a higher incidence of lymphedema of the sentinel lymph node biopsy.
Objective: The objective of this study was to determine which surgical technique in the axillary region leads to a greater occurrence of lymphedema in the upper limbs.
Methods: This is a cross-sectional study developed in Pio XII Foundation–Hospital do Câncer de Barretos, São Paulo, Brazil. The sample consisted of 95 women undergoing some form of mastectomy. Lymphedema was determined by perimetry, with a cutoff point difference between the upper limbs of ≥2 cm, and surgery of the axilla was found by reviewing medical records.
Results: Twenty-four (25.2 %) patients had lymphedema. Of these, 16 (66.7 %) patients underwent total dissection of axillary lymph nodes, 5 (20.8 %) underwent partial dissection of axillary lymph nodes, and 3 (12.5 %) underwent sentinel lymph node biopsy.
Conclusion: Our findings suggest a positive correlation between the types of surgical intervention on the occurrence of lymphedema. It is important to stress the importance of public campaigns aiming at the early detection of breast cancer because the smaller the tumor size, the less aggressive is the surgical intervention in the armpit.

567
C-reactive protein: a prognostic solid tumor biomarker

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Objectives: C-reactive protein (CRP), a nonspecific marker of inflammation, may help cancer prognostication. We retrospectively examined the association between CRP level and survival in patients with solid tumors.
Methods: Electronic Medical Record (EPIC) data included multiple CRP measurements from 2006 to 2008. Hematological cancers were excluded. Survival was defined as days from the highest CRP measurement to date of death. CRP levels are reported as the median and range (25th and 75th quartiles).
Results: $N=6{,}809$ patients. The most common cancers were genitourinary (GU, 29 %), breast (14 %), gastrointestinal (GI, 14 %), and lung (7 %). One or more CRP measurements and survival data were available for 462 patients: 56 % were male, 83 % Caucasian, 15 % African American. CRP measurement was done 2.0 (1–3) times/patient. The first CRP level was 3.5 (1.0–9.3)mg/dL; the highest was 5.1 (1.3–12.1). First CRP levels for GI, GU, lung, and breast cancers were 6.1 (1.9–11.4), 4.25 (1.2–10.4), 2.1 (0.5–7.8), and 2.0 (0.7–4.7), respectively. The highest CRP levels for GI, GU, lung, and breast, were 7.7 (2.4–15.2), 5.7 (1.8–14.8), 3.2 (0.6–8.1), and 2.1 (0.7–4.8), respectively. The median length of survival for patients with the aforementioned cancers were 13.1 (7.9–30.1), 18.4 (10.7–33.2), 15.9 (8.0–27.2), and 25.3 (14.9–40.9)months, respectively.
Conclusions: Both baseline and the highest CRP levels were greater in GI cancers and associated with shorter survival. This trend was also seen in GU and lung cancers. High CRP may be of prognostic value in certain cancers.

568
Head and neck cancer patients' and carers' information needs regarding cancer therapy side effects

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Objectives: An increase in multimodality care, particularly intensive chemoradiotherapy, has greatly exacerbated therapeutic morbidity for head and neck cancer (HNC) patients. This study examines Irish HNC

patient/carers' views on the adequacy of information received regarding cancer therapy side effects, their informational needs and preferences.
Methods: A mixed-methods approach was adopted, employing the Satisfaction with Cancer Information Profile questionnaire (n=58) for the initial quantitative element. A subset of patients and carers (n=10) participated in semi-structured, in-depth one-to-one qualitative interviews. Purposive sampling was employed to ensure a wide range of characteristics. All patients had undergone therapy for head and neck cancer and were 1–20 years post-diagnosis. Quantitative data were analysed using SPSS-15; qualitative data underwent thematic analysis.
Results: The study revealed significant informational deficits on therapeutic burden. Patients and carers felt totally unprepared for acute and chronic side effects and functional impact. Patients and carers spoke passionately about the burden of oral mucositis and xerostomia. The results suggest that carers desire maximum information, delivered early to prepare them for the challenges ahead. Some patients expressed similar views; others preferred the traditional less participatory patient role. Patients and carers sought information from many sources, with other patients/carers being considered a particularly helpful source of information.
Conclusions: Irish HNC patients and carers feel unprepared for the immense therapeutic morbidity, which some suggest exceeds that of other cancers. Patients/carers report significant unmet informational support needs and highlight areas for improvement which should enable provision of more appropriate, tailored information to future HNC patients to enhance their coping skills and quality of life.

569
Reliability and validity of the PED-MTNS for measuring chemotherapy-induced peripheral neuropathy in school-aged children

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Objectives: The study objective was to test the reliability and validity of the pediatric modified Total Neuropathy Scale (ped-mTNS) to measure chemotherapy-induced peripheral neuropathy (CIPN) in school-aged children.
Methods: Forty-one children aged 5–18 years undergoing chemotherapy with vincristine or cisplatin and 41 age- and gender-matched controls completed all study measures. Subjects were tested with the ped-mTNS during month 3 of chemotherapy (for lymphomas and solid tumors) or at the end of delayed intensification for patients with acute lymphoblastic leukemia (ALL). Standardized measures of balance and hand function were completed concurrently. Inter-rater and test–retest reliability was assessed in a subset of ten subjects.
Results: Twenty-three children with ALL, 6 with lymphoma, and 12 with solid tumors completed the measures, along with 41 age- and gender-matched controls. No significant differences in age, height, or weight were found. Children undergoing treatment for cancer had significantly worse scores on the ped-mTNS compared to controls (cases, 8.68±4.16; controls, 1.44±0.90, $p<0.001$; scale range, 0–32). The scale demonstrated internal consistency, with Chronbach's α= 0.76. Inter-rater and test–retest reliability was acceptable (ICC= 0.98 and 0.99, respectively). As hypothesized, the scores of CIPN (measured by ped-mTNS) correlated with the standardized measures of balance and manual dexterity ($r_S=-0.626$, $p<0.001$; $r_S=-0.461$, $p<0.001$, respectively).
Conclusions: The ped-mTNS is a reliable and valid measure in school-aged children that is able to differentiate between children undergoing neurotoxic chemotherapy and controls. It also correlates well with the functional measures of balance and manual dexterity.

570
EXCAP©® exercise improves fatigue, cardiopulmonary function and strength: a phase II RCT with prostate cancer patients receiving radiation and androgen deprivation therapy

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Objectives: Radiation therapy (RT) and androgen deprivation therapy (ADT) result in cancer-related fatigue (CRF), decreased cardiopulmonary function (CPF), and decreased strength. We explored the influence of an individually tailored, home-based exercise intervention (EXCAP©®), including progressive resistance and aerobic training, on CRF, CPF, and strength.
Methods: Prostate cancer patients (N=58, mean age=67) receiving RT (47 %) or ADT (53 %) were randomized to 6 weeks of EXCAP©® (7 days/week) or standard care (RT or ADT with no exercise). CRF (valid self-report questionnaires: BFI, POMS-FI, MFSI), CPF (VO_2 max), and strength (multiple repetition maximal testing) were assessed pre- and post-intervention.
Results: ANCOVAs, controlling for baseline, revealed significant differences between groups in mean CRF on the BFI and POMS-FI (all $p\leq0.05$) and a trend toward differences on the MFSI ($p\leq0.10$) with significant baseline interactions (all $p\leq0.05$) post-intervention: exercisers decreased CRF while controls increased. ANCOVAs revealed a trend toward differences between groups in the mean levels of CPF (VO_2 max) and strength (all $p\leq0.10$): exercisers improved while controls declined in performance. Pearson correlations revealed significant inverse associations between changes in CRF (BFI) and CPF ($p<0.05$, $r=-0.36$), and CRF and strength ($p<0.05$, $r=-0.31$). MANOVA revealed that changes in CPF and strength significantly predicted changes in CRF ($p\leq0.05$, r= 0.67) and accounted for 45 % of the variance.
Conclusions: Exercise improves CRF, and these improvements may be mediated, in part, by improvements in CPF and strength. Phase III randomized controlled trials need to confirm these relationships.
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573
Is the glucose hydrogen methane breath test an accurate diagnostic tool for small intestinal bacterial overgrowth?

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Introduction: Small intestinal bacterial overgrowth (SIBO) is common following cancer treatments.
Aim: The aim of this study was to determine whether the glucose hydrogen methane breath test (GHMBT) has greater value than the hydrogen (H_2) breath test alone and whether duodenal aspirate (D2asp) collection improves diagnostic yield.
Methods: This is a retrospective study in cancer survivors with potential SIBO. Breath H_2 and methane (CH_4) were measured in parts/million at baseline and after 75 g glucose for 3 h. Positive test: fasting $H_2\geq20$ or $CH_4\geq10$ ppm or rise in H_2 of ≥12 or $CH_4\geq6$ ppm. Some had D2asp collected. Positive result: $>10^4$ colony forming units per millilitre. Treatment was with antibiotics.
Results: One hundred twenty-six patients, 66 men and 60 women (median group age, 61 years; range, 35–86 years) were included. Sixty

(48 %) had a positive GHMBT: 5 % H_2, 10 % CH_4 and 33 % both gases. Twenty-one (17 %) of 86 patients with D2asp tested positive; 17 (33 %) had negative GHMBT, of which six had positive D2asp (three responsive to antibiotics). Eleven had negative aspirates, but a 73 % antibiotic response rate. Twenty-four (46 %) tested positive for both gases—33 % of these had positive D2asp (75 % response rate) and 67 % had negative aspirates (81 % response rate). Six patients (12 %) were positive only for H_2—one responded. Five (10 %) tested positive for CH_4 only; one had a positive D2 aspirate with positive response and four (80 %) had a negative aspirate (two responded).
Conclusion: GHMBT identifies 10 % more patients with SIBO compared to the H_2 test alone. D2asp increases the detection rate by 12 %. A trial of antibiotics, with other tests negative, benefits 15 % of patients.

574
A qualitative comparison of the impact of lymphedema on sexual experience among breast cancer survivors

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Breast cancer-related lymphedema (LE) is a chronic condition that can occur in up to 40 % of breast cancer survivors. LE is a syndrome of abnormal swelling and distressing symptoms. LE symptoms include pain, heaviness, firmness, tightness, numbness, and impaired physical functions. It has been well established that LE has tremendous impact on breast cancer survivors' health-related quality of life. Less well documented is whether LE and its time-consuming management have posed extra challenges to the sexual experience of breast cancer survivors with lymphedema. We compare the impact of LE on the sexual experience between breast cancer survivors with and without LE using a qualitative approach. A qualitative research design with a descriptive phenomenological method was used. Among the 352 participants who were enrolled in a web-based study on the symptom experience of breast cancer related to LE, 243 were survivors with LE and 109 without LE. Participants provided narrative responses concerning the impact of LE on their sexual experience (i.e., how LE affected their sex activity and sexual/intimate relationships with their spouses or partners). The results of the thematic analysis suggest that compared to patients without LE, those with LE report far more challenges with their sexual relationships. Of these, patients with LE reported struggles with garments used to maintain fluid pressure on the affected arm with regard to sexual intimacy, negative feelings involving the breast and arm, and feelings of decreased sexual desire. These findings highlight the ways in which LE can have an impact on breast cancer patients' sexual relationships.

575
The intestine prefers basolateral rather than apical uptake of amino acids to meet its increased amino acid utilization during methotrexate-induced mucositis in the rat

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Objectives: It is unknown how to optimally feed patients with chemotherapy-induced gastrointestinal mucositis, often suffering from weight loss and possibly malabsorption. We aimed to determine the intestinal capacity to absorb enteral amino acids (AA), their utilization for protein synthesis, and the preferential side of AA uptake by the intestine in rats with and without methotrexate (MTX)-induced mucositis.
Methods: Rats received a primed, continuous dual-isotope infusion (intraduodenal and intravenous) of leucine, lysine, phenylalanine, threonine, and methionine. We took blood samples, assessed jejunal histology, and determined labeled AA incorporation in the intestinal mucosa.
Results: MTX-treated rats showed villus atrophy and reduced plasma albumin concentrations (−24 %, $P<0.01$). Although the median systemic availability of almost all enteral AA was similar in MTX-treated rats and controls, the availability differed substantially between individual MTX-treated rats (range, <10 to >90 % of the administered AA). Fractional protein synthesis of mucosa with enteral AA was higher in MTX-treated rats than in controls (≥1.2-fold, $P<0.05$), while absolute protein synthesis was lower because of a reduced amount of mucosa (−49 %, $P<0.01$). In MTX-treated rats, intestinal protein synthesis with enteral AA was higher when taken up basolaterally than apically (≥5.2-fold, $P<0.05$).
Conclusions: The systemic availability of enteral AA can be severely reduced in rats with MTX-induced mucositis, indicating malabsorption. The intestine prefers basolateral AA uptake to meet its increased utilization during mucositis. Parenteral AA administration might be a rational alternative for enteral AA administration during mucositis in order to maximize the nutritional status and intestinal recovery of mucositis patients.

576
Prevalence of hypogonadism in patients with testicular cancer

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Background: Testicular cancer is the most common malignancy in young men aged 15–35 years. Cisplatin-based combination chemotherapy or subsequent salvage chemotherapy has an 80 % cure rate. Decreased testosterone can cause fatigue and erectile dysfunction as well as night sweats, depression, insomnia, and irritability. Chronic low testosterone can lead to metabolic syndrome and cardiovascular disease.
Objective: The objective of this study was to document the incidence of hypogonadism and relationship to symptoms.
Methods: One hundred consecutive patients will be asked to enroll. Eligibility consists of prior platinum-based chemotherapy and no supplemental testosterone. Patients must be >6 weeks out from treatment. The control group comprised 100 chemo-naive testicular cancer patients treated with surgery alone, orchiectomy±retroperitoneal lymph node dissection. A symptom questionnaire will be administered at enrollment. Patients will quantitate their symptoms on a scale of 0–3, with 0 being no symptoms and 3 being the worst symptoms. The query will include questions regarding erectile dysfunction, morning erections, fatigue, insomnia, depression, irritability, night sweats, and increased sweating. A fasting serum total testosterone and lipid profile will be drawn.
Conclusion: The significance of this study is that this will be the first prospective study assessing the incidence of decreased subclinical and clinical hypogonadism in testicular cancer patients receiving chemotherapy. We will correlate low serum testosterone levels with symptoms related to hypogonadism. We will subsequently collect data on the benefit of intervention with replacement testosterone.

577
The influence of comorbidity on long-term quality of life after oesophagectomy for cancer

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Background: Comorbidities are common among operated oesophageal cancer patients, and health-related quality of life (HRQL) is affected for a long period of time after surgery. It is unclear whether comorbidities play a role in long-term recovery.
Hypothesis: Oesophageal cancer patients undergoing surgery with comorbidities have a higher risk of poor long-term HRQL than patients without comorbidities.
Methods: A Swedish nationwide cohort of oesophageal cancer patients treated surgically between 2001 and 2005 was followed up until the end of 2010. Comorbidities were assessed prospectively via medical records based on a study protocol. Nine HRQL aspects from the EORTC QLQ-C30 and QLQ-OES18 questionnaires answered 3 years postoperatively were selected for analyses. Responses were categorised into two groups: "good function" versus "poor function" and "no or minor symptoms" versus "symptomatic". Associations between comorbidities and HRQL were analysed using logistic regression to calculate the odds ratios (OR) with 95 % confidence intervals (CI), adjusted for potential confounding factors.
Results: Out of 178 (84 % of eligible) patients, 54 (30 %) have at least two comorbidities. Multi-morbid patients have a fourfold higher risk of poor long-term global quality of life (OR=4.48 95%CI=1.95–10.27) and a twofold increased risk of poor physical function (OR=2.65, 95%CI= 1.18–5.94) after oesophagectomy compared to patients without comorbidities. No increased risk was found for patients with certain comorbidity.
Conclusion: Comorbidities are risk factors for poor long-term HRQL after oesophagectomy for cancer; more research is needed regarding this issue.

578
Daily clinical assessment of common cancer symptoms: can it be done?

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Objectives: The objectives of this study were to:

1. Examine the completion rate of daily systematic symptom assessments
2. Sssess the prevalence and severity of seven symptoms in advanced cancer

Methods: All cancer patients admitted to an acute palliative care unit were screened for eligibility. A seven-symptom categorical survey was conducted consecutively throughout their stay. Data from those who completed/partially completed this were analyzed. All values are reported as median and range (25th and 75th quartiles).
Results: Forty-seven cancer patients were screened: 31 were eligible and 16 ineligible. The reasons for ineligibility are as follows: declined (n=7), too ill (n=5), language barrier (n=2), readmission (n=1), and dying (n=1). Among the study participants, 16 (52 %) were women, with median age 57 years (52–64 years), 24 (77 %) Caucasian and 7 (23 %) African American. The most common cancers were respiratory 9 (29 %), gastrointestinal 7 (23 %), and genitourinary 4 (13 %). Two hundred fifty-one assessments were conducted in 26 days: 203 complete (81 %), 34 partially complete (14 %), and 14 (5 %) were not conducted for various reasons, i.e., symptom crises, scheduled palliative interventions or procedures, and patient choice. Overall symptom prevalence: pain (79 %), loss of appetite (40 %), trouble sleeping (32 %), shortness of breath (29 %), confusion (23 %), nausea or vomiting (19 %), and constipation (16 %). Intensity was predominantly severe for nausea/vomiting; moderate for pain, trouble sleeping, loss of appetite, and constipation; and mild for confusion and shortness of breath.
Conclusions: Thirty-four percent of the cancer patients were not eligible for the study. The total/partial completion rate for a daily seven-item categorical systematic symptom assessment was 95 %. Pain was the most frequent symptom and nausea/vomiting the most severe.

579
Prevention of chemotherapy-related errors in cancer patients

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Objectives: The primary objective was to determine the number of medication discrepancies in new ambulatory chemotherapy patients. The secondary aims were to determine the types of medication discrepancies and the numbers and types of drug-related problems in new ambulatory chemotherapy patients and to determine the costs and resources associated with maintaining the program.
Methods: This is a prospective, non-randomized, open-label multicenter study. Data from new ambulatory chemotherapy patients are collected prospectively by pharmacists conducting medication histories and performing chart reviews. The numbers and types of medication discrepancies and drug-related problems are determined using each center's current processes for chart checking and/or verification of medication orders and histories. Data sources include the patient's pharmacy treatment record; health assessment form; PharmaNet profile; computerized information systems; physician's dictation; and the paper chart to check for allergies, correct doses of chemotherapy drugs, required lab work, and all other relevant medication-related information, as applicable to both intravenous and oral chemotherapy drugs.
Results: One hundred fifty medication discrepancies were identified among 861 new ambulatory chemotherapy patients, of which 147 (98 %) were resolved. One hundred twenty-nine (86 %) of the discrepancies were unintentional, while 21 (14 %) were undocumented intentional discrepancies. Four hundred ninety-four drug-related problems, excluding discrepancies, were also identified, of which 477 (97 %) were resolved. The most common drug-related problems included patient counseling requirements, missing laboratory measures, drug interactions, medication allergies, and incorrect medication doses. On average, 26 min was spent per patient assessment, resulting in US $18,334 pharmacy expenditures.
Conclusion: Clinically important medication discrepancies and drug-related problems were identified and resolved in new ambulatory chemotherapy patients.

580
Surprising results regarding MASCC members' beliefs about spiritual care

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Background: Multinational Association of Supportive Care in Cancer (MASCC) membership was surveyed regarding psychosocial/spiritual care prior to developing MASCC spiritual care guidelines.

Methods: A 16-question survey monkey questionnaire was sent to 635 MASCC members.
Results: Of 42.7 % responders from 41 countries, 50 % were ≤50 years old, 60 % were women, 45.5 % had practiced ≥20 years, 47 % were physicians (27 % palliative care), 26 % nurses, 17 % allied health, and 10 % were dentists. The importance of spiritual care in total cancer care was rated ≥7 (on a scale of 1–10) by 67 % and was associated with respondents considering themselves spiritual ($p \leq 0.001$). Forty percent (36 % MDs, 53 % nurses, 30 % others, $p=0.16$) said it was their role to explore spiritual concerns with patients, 49 % stated "sometimes," and 12 % stated "no." All palliative care physicians and nurses, but only 15 % of medical oncologists and 9 % of oncology nurses accepted this role. Younger respondents (≤40 years) considered spiritual care as more important than older respondents (40–60, ≥60 years, $p=0.006$). Of 64.5 % who indicated they "seldom" or "could not" provide spiritual care, 55.3 % were female, 75 % in practice >10 years, 40 % in Europe, and 39 % in North America. The most common "spiritual therapies" were music (42.4 %), art (29.5 %), dignity (27.7 %), yoga (26.9 %), and healing touch (24.4 %). Most claiming a religion considered themselves spiritual (84 %), as did 55 % not claiming a religion ($p<0.001$). Of those who claimed no religion, 28 % reported "seldom/cannot" provide spiritual care.
Conclusions: More research needs to be invested in addressing barriers to spiritual care before developing guidelines on how to meet the spiritual needs of patients.

582
Risk of developing bisphosphonate-associated osteonecrosis of the jaws after dental extraction

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Introduction: Dental extractions have been associated with high risk of osteonecrosis of the jaw in patients exposed to bisphosphonates, orally or intravenously.
Aim: The aim was to evaluate the risk of osteonecrosis development and healing time (time to epithelial coverage) following dental extractions and the association with C-telopeptide (CTX) value as a potential marker of the development of osteonecrosis.
Patients and methods: Patients with osteoporosis and cancer metastatic to bone were enrolled from three centres in a prospective controlled study. A control group included healthy patients. All patients needed dental extractions as part of their routine treatment plan.
Results: One hundred ten patients were enrolled. The study group included 69 individuals with either osteoporosis (51) or metastatic bone disease (18), and 41 were healthy controls. The median age was 65 years, and most participants were female ($n=70$). The overall median pre-extraction CTX value was 244 pg/ml, which was significantly lower in study patients (male and female) when compared to the controls. The overall median time to healing was 4 weeks; only one person in the study group developed osteonecrosis, which did not heal after 30 weeks. Post-extraction healing time was significantly longer in the study group when compared to the controls. In a Cox proportional hazards model that controlled for study group and CTX values, only the study group was significant.
Conclusion: This study suggests that post-dental extraction healing is impaired in patients receiving bisphosphonates, but does not support a role for the use of CTX values as a marker of osteonecrosis development.

583
Reported scope of practice variations

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Increasing changes in nutrition knowledge, healthcare environment, and technology require nutrition professionals to remain updated and knowledgeable of their scope of practice to enhance decision-making skills and maintain quality care in all settings. The American Dietetic Association implemented the Scope of Dietetics Practice Framework to guide dietitians in achieving optimal care within performance standards. To assess opinions about conforming to the Scope of Dietetic Practice Framework, 163 consenting dietitians were electronically surveyed to quantify their anonymous opinions about performing clinical practice that was of variable appropriateness in scope of practice. Some of the study findings are listed below:

- Have you ever been asked to write diet orders? Sixty-seven percent ($n=107$) of participants answered Yes.
- Have you ever been asked to make the final tube feeding decision? Eighty-five percent ($n=136$) answered Yes.
- Have you ever been asked to write parenteral nutrition orders? Sixty-one percent ($n=97$) answered Yes.
- Have you ever been asked to advance diet orders? Fifty-six percent ($n=89$) answered Yes.
- Have you ever been asked to feed a patient? Nineteen percent ($n=29$) answered Yes.
- Have you ever been asked to write a prescription? Forty percent ($n=64$) answered Yes.
- Have you ever been asked to care for a gastric tube insertion site? Twelve percent ($n=19$) answered Yes.

In conclusion, dietitians who worked in medical centers answered ($p=0.01$, using a one-tailed t test) that they perform more clinical practice that are considered variable in accordance with the scope of practice guidelines. More discussion is needed in what constitutes appropriateness in scope of practice.

584
Why do palliative care patients present to the emergency department? Avoidable or unavoidable?

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Introduction: Presentations by patients with advanced illness to the emergency department (ED) towards the end-of-life can be very distressing for both patients and caregivers. With an understanding of why patients present to EDs, interventions to avoid these presentations close to the end of life may be possible.
Aims: The study aimed to identify patients under the specialist palliative care service (SPCS) who attended the ED over 6 months and to determine whether these presentations were potentially avoidable. Presentations were deemed avoidable if the problem could have been dealt with in another manner, i.e. by the home care team or by the family physician, or in another setting, such as by admission to the hospice.
Results: Thirty-five ED presentations by 30 patients were included (18 (60 %) men; mean age, 68.7 years; range, 47–89 years). Twenty-two (63 %) ED presentations were outside normal working hours. The main reasons for attending were: dyspnoea (9, 26 %), nausea/constipation (6, 17 %) and uncontrolled pain (5, 14.5 %). Hospitalisation resulted from

33 (94 %) of the 35 presentations. The average length of time spent in the ED was 9.2 h (range, 3–24 h). Referral to the hospital SPCS was made in 20 (60 %) cases. Fifteen (50 %) patients died within 1 month of presentation. Eighteen (51.5 %) ED presentations were deemed potentially avoidable.
Conclusion: Many ED presentations by palliative care patients may be avoidable. Appropriate sharing of information to on-call doctors, creating confidence in carers and providing extra practical supports are necessary. A comprehensive, coordinated specialist palliative care approach across community and acute services may help ensure patients are not sent to the ED inappropriately.

585
Fatigue, depression, and quality of life in patients with chronic myelogenous leukemia (CML) treated with tyrosine kinase inhibitors

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Objectives: Tyrosine kinase inhibitors (TKIs) improve survival and have less toxicity than previously established treatments for chronic myelogenous leukemia (CML). However, the effects of TKIs on quality of life (QOL) outcomes are not well known. This study evaluated fatigue, depressive symptoms, and QOL in CML patients receiving TKIs compared to people with no history of cancer.
Methods: Participants (N=124, 52 % male, M=55 years, range=18–81 years) were patients receiving a TKI (CML, n=62) for at least 6 months (M=3 years, SD=2) and people without cancer (NC, n=62) matched on age and gender. Participants completed the Fatigue Symptom Inventory, Center for Epidemiological Studies Depression Scale, and Medical Outcomes Study SF-36.
Results: Significant differences were evident for fatigue (t=4.84, p<0.001), depressive symptoms (t=2.77, p=0.007), SF-36 mental component (t=−2.23, p=0.028), and SF-36 physical component (t=−4.46, p<0.001). There were no group differences on the SF-36 mental health subscale (p=0.124); however, there were differences on all other subscales: physical functioning (t=−3.86, p<0.001), role physical (t=−4.27, p<0.001), bodily pain (t=−2.15, p=0.033), general health (t=−4.80, p<0.001), vitality (t=−4.73, p<0.001), social functioning (t=−3.41, p<0.001), and role emotional (t=−2.66, p=0.009). In each instance, the CML group reported worse functioning than the NC group.
Conclusions: CML patients receiving TKIs should be assessed for fatigue, depression, and QOL since their status on these outcomes is markedly different from that of people of similar background with no history of cancer. Longitudinal studies are needed to identify changes over time in these outcomes as patients undergo treatment with TKIs.

586
Intraepithelial lesions of the uterine cervix: avoiding cares for primary prevention

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Purpose: The purpose of this study was to prevent cervical cancer in primary prevention.
Material and methods: A review of bibliographies in a worldwide basis and our experience was conducted.
Results: Genital human papillomavirus (HPV) is the most common sexually transmitted disease (STD) in the world. Adults and adolescents are infected. HPV is the single most significant risk factor for the development of cervical cancer. About 30 types in the HPV family are spread through unprotected sexual intercourse. Other HPV types can cause cervical cancer and other less common cancers of the vulva, vagina, anus, and penis. Women who have had a large number of sexual partners are more likely to develop cervical cancer. Even if they have not had many sexual partners, if their male sex partner has had many previous partners, their risk for cervical cancer could be higher due to the increased risk of having contracted HPV. Still, cervical cancer is the second most common cause of death from cancer in women across the world. Widespread use of HPV vaccines is expected to have a huge impact in resource-poor countries. In those areas, cervical cancer is often the most common cause of death from cancer in women.
Conclusions: Therefore, we are before certain big public health, social, and resource problems, and it is necessary to give a social and educational turn in the base of a schedule to make these publicly known by means of informal speech devoted to the welfare of the community and addressing people in schools, universities, and other facilities, avoiding cares for primary prevention in crisis time.

587
Personality correlates of colorectal cancer

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Objectives: The purpose was to identify personality correlates of colorectal cancer patients. The study is part of a bigger project focused on identifying relevant personality characteristics of cancer patients. It improves on former attempts by considering medical variables and by applying the new psychological methodology grounded in the cognitive orientation (CO) theory.
Methods: The participants were 230 colorectal cancer patients of both genders, 35–75 years old, and two control groups: 99 healthy individuals and 90 Crohn's patients. They were administered a CO questionnaire which referred to four belief types concerning themes identified in pretests.
Results: The scores discriminated significantly among the groups. Crohn's patients scored higher than healthy controls, but lower than cancer patients. The main psychological features of the patients include controlling themselves and others, pent-up anger, perfectionism, and conflicts regarding self-effacement and closeness to others.
Conclusions: There exist specific personality correlates of colorectal cancer. The CO questionnaire identifies correctly colorectal cancer patients and differentiates them from Crohn's patients and healthy controls. The findings provide support for the CO theory as a theoretical framework for studying psychological risk factors for cancer, for identifying individuals at risk, and for implementing interventions with cancer patients.

588
Ka-mi-kae-kyuk-tang Oriental herbal cocktail attenuates cyclophosphamide-induced leukopenia side effects in mice

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Ka-mi-kae-kyuk-tang (KMKKT) is an Oriental herbal medicinal cocktail and has been shown to have potent antiangiogenic, anticancer, and antimetastatic activities in preclinical animal models without observable side effects. We previously found that in prostate cancer xenograft experiments, treating tumor-bearing mice with KMKKT alleviated body weight loss toward the end of the study, suggesting a general health-promoting activity. We investigated whether KMKKT alleviated cancer

chemotherapy drug-induced leukopenia and other hematotoxicity in vivo using a mouse model. KMKKT was given once daily orally for 10 days to the mice before they were given cyclophosphamide (CPA) daily injection for 4 days. KMKKT blunted the CPA-induced decrease in red blood cells, hemoglobin content, and the total white blood cell/leukocyte counts. Examination of the multiple organ sites involved in hematopoiesis and lymphocyte differentiation and maturation showed the attenuated changes induced by CPA in each and every type of cell examined. Particularly, some of the cell types are fully restored in the bone marrow and even overstimulated in the Sca-1$^+$, CD117$^+$, or Sca1$^+$/CD117$^+$ and CD34$^+$/CD117$^+$ stem cells, supporting a role of KMKKT to stimulate hematopoietic stem cell signaling to compensate for the CPA-induced destruction of leukocytes and other cell types. Taken together, KMKKT might be a safe and effective herbal complementary and alternative medicine modality to alleviate cancer drug-induced hematological side effects in addition to its anticancer activities. Preclinical investigations with other chemo- and radiation modalities are warranted to support planning translation consideration for human patients.

589

Addition of methadone to another opioid in the management of moderate to severe cancer pain: a case series

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Introduction: The addition of methadone to another opioid for moderate to severe pain is reported anecdotally to be effective, but the clinical benefit of this approach has not been formally evaluated.
Aim: Our aim was to assess the effectiveness of adding methadone to another opioid for moderate to severe cancer-related pain.
Methods: All outpatients attending the Oncology Palliative Care Clinic from September 2010 to September 2011, who had received methadone, were identified from pharmacy records. The inclusion criteria included: histological diagnosis of malignancy, age >18 years and taking regular opioids, and Edmonton Symptom Assessment Score (ESAS) pain score of 4–10. The primary outcome measure was a decrease in pain score of ≥2 points from methadone initiation to 1-month follow-up.
Results: Fourteen patients were available for analysis. The main indication for commencing methadone was neuropathic pain (n=11, 79 %). The median ESAS pre-initiation of methadone was 8 (range, 4–10) and the mean morphine equivalent dose was 372 mg. The mean methadone dose at initiation was 4.3 mg/day (2–7.5 mg). Seven (50 %) patients had a decrease in pain score of ≥2 points at 1 month. The mean final methadone dose at the time of evaluation was 16 mg/day (range, 3–60 mg) and the median pain score was 5 (range, 2–10). The mean morphine equivalent dose at the time of evaluation was 352 mg. Methadone was well tolerated in 11 patients (78.5 %).
Conclusions: The addition of methadone had a positive impact on uncontrolled pain and appears to offer an alternative, safe, well-tolerated, and practical approach to controlling moderate to severe pain in patients on another opioid.

590

The effect of YOCAS©® yoga on aromatase inhibitor-induced musculoskeletal symptoms in breast cancer patients: a URCC CCOP randomized, controlled clinical trial

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Objective: Up to 50 % of breast cancer patients on aromatase inhibitors (AI) report musculoskeletal symptoms such as joint and muscle pain, decreasing treatment adherence. We conducted a secondary data analysis of a phase III randomized, controlled clinical trial examining the efficacy of yoga for improving AI-induced musculoskeletal symptoms among breast cancer patients.
Methods: Non-metastatic cancer patients without previous yoga participation were randomized into two arms:

1. Four-week yoga intervention (two times per week, 75 min/session)
2. Standard care monitoring (controls)

The YOCAS©® yoga intervention utilized a program consisting of breathing exercises, 18 gentle Hatha and restorative yoga postures, and meditation. Only breast cancer patients currently receiving AIs (N=95) or tamoxifen (TAM, N=72) were included in this analysis. Changes in musculoskeletal symptoms were assessed using ANCOVA with baseline values as covariates between the yoga and control groups.
Results: Compared to TAM users at baseline, AI users reported higher levels of general pain (1–5 score: AI=2.65 vs. TAM=2.17, p=0.01), muscle aches (0–4 score: AI=2.14 vs. TAM=1.65, p=0.01), and total physical discomfort (0–24: AI=8.03 vs. TAM=5.92, p=0.01). Among AI users only, yoga participants reported greater reductions in general pain (yoga change score (CS)=−0.37 vs. control CS=+0.02, p=0.02), muscle aches (yoga CS=−0.58 vs. control CS=−0.15, p=0.03), and total physical discomfort (yoga CS=−2.07 vs. control CS=−0.58, p=0.04) from pre- to post-intervention than the control group.
Conclusions: The severity of musculoskeletal symptoms was higher for AI users than for TAM users. The YOCAS©® yoga intervention significantly reduced AI-induced general pain, muscle aches, and physical discomfort.
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592

Survey on participative management (PM) among caregivers during an Oncologic Supporting Care Congress (AFSOS)

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Objectives: The objectives of the study were to assess the current situation of the participative management (PM) concept and evaluate the needs of training and support among the departments of oncology. Methods: An anonymous questionnaire has been proposed during a work session to the participants. There were 5 socio-demographic questions and 11 questions about PM.
Results: Twenty doctors, 4 health managers, 39 nurses, 4 healthcare assistants and 1 secretary answered, for a total of 68 respondents. They come from 5 private institutions, 14 cancer centers and 42 public institutions. Forty respondents work in hematology-oncology, 16 in palliative care and 10 in other departments. Sixty-three per cent of the respondents know the PM concept, 86 % have multi-professional meetings in their departments and 39 % have no internal multi-professional training. No support is available for 50 % of the respondents. Forty-seven per cent of the caregivers are unsatisfied with the functioning of their department, and 77 % of the respondents are interested in a PM training.
Conclusion: Although the majority of the respondents are aware of the PM concept, PM seems not to be concretely applied in the

departments. The four pillars of PM—caregiver support, common project approach, trainings, multi-professional meetings—are not clearly installed. Multidisciplinary decision making exists, but is still insufficient. Furthermore, almost 50 % of the respondents are unsatisfied with the functioning of their department. Finally, a strong demand in PM training is noticed (higher than the number of persons aware of the concept). This incited AFSOS to organise such an evaluation in every department of oncology in order to install an adapted approach of training and support.

593
Prevention of deep vein thrombosis and pulmonary embolism in patients with cancer

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Background: Venous thromboembolism (VTE) is a common complication and a frequent cause of morbidity and mortality in patients with cancer. Compared to non-cancer patients, patients with malignancies are at a four to sevenfold increased risk of developing clinically important VTE events and are threefold more likely to die from them within a 6-month period. Consequently, thromboprophylaxis is an important strategy to reduce VTE and is unequivocally recommended by consensus guidelines.
Objectives: The primary objective was to determine the proportion of patients who have received appropriate thromboprophylaxis according to recognized evidence-based consensus guidelines. Secondary aim was to identify the proportions of patients with any of the following events: one or more objectively documented episodes of VTE during hospitalization, clinically important bleeding events during hospitalization, contraindications to pharmacological prophylaxis, and death during hospitalization.
Methods: This is a retrospective chart review study. Data are collected by reviewing the medical records of hospitalized adult cancer patients from January 2008 to June 2008 and from January 2010 to June 2010. The rates of VTE thromboprophylaxis, VTE events, bleeding events, contraindications to pharmacological prophylaxis, and death are captured.
Results: Of the 480 patients studied to date, 15 % have received appropriate VTE prophylaxis, 7.5 % have developed VTE, 2.9 % have had bleeding complications, 11 % have had contraindications to pharmacological prophylaxis, and 4.6 % have died during hospitalization.
Conclusions: VTE prophylaxis was not routinely provided to hospitalized patients with cancer. As a result, new admission preprinted orders which include VTE prophylaxis have been implemented, thus increasing VTE prophylaxis rates to 100 %.

594
Cognitive functioning-related quality of life in breast cancer patients: validation of the Functional Assessment of Cancer Therapy—Cognitive (FACT-Cog)

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Objectives: This observational study aims to examine the measurement properties and comparability between the English and Chinese versions of the Functional Assessment of Cancer Therapy—Cognitive (FACT-Cog, version 3) among 166 Asian breast cancer patients.
Methods: The concurrent validity of FACT-Cog was assessed by its strength of correlation with the validated EORTC QLQ-C30 Cognitive Functioning (EORTC-CF) Scale. The convergent validity of FACT-Cog was determined by its association with psychosocial determinants: fatigue, global health status, and anxiety. Internal consistencies within the FACT-Cog subscales were evaluated by Cronbach's α. Known group validity was assessed based on the receipt of anti-hormonal therapy. Multiple regression analyses were performed to compare the total scores between the two language versions, adjusting for covariates.
Results: FACT-Cog subscales displayed high internal consistencies (Cronbach's α=0.76–0.94). FACT-Cog total score was moderately associated with anxiety, fatigue, and global health status (r=−0.58, −0.36, 0.47, respectively, all p<0.0001). Strong correlation existed between EORTC-CF and FACT-Cog total score (r=0.77, p<0.0001). Breast cancer patients receiving anti-hormonal therapy reported poorer cognitive functioning than patients who were not (113 vs. 122, p=0.011). After adjusting for covariates, there was no significant difference between English and Chinese FACT-Cog mean total scores (−2.82, 95% CI=−9.31 to 2.13).
Conclusions: Both English and Chinese versions of FACT-Cog are valid instruments to assess cognitive functioning-related quality of life and perceived cognitive status among breast cancer patients. Further studies are needed to determine the reliability, responsiveness, and minimal clinically important difference for FACT-Cog in longitudinal studies.

597
Continuous enteral administration overcomes the limited capacity to absorb glucose in rats with methotrexate-induced gastrointestinal mucositis

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Objectives: Patients with chemotherapy-induced gastrointestinal mucositis often suffer from weight loss. It is not well known how to enterally feed mucositis patients possibly experiencing malabsorption. Recently, we showed in a rat model of methotrexate-induced mucositis that intestinal absorption of glucose in trace amounts is still intact. We now determined the quantitative capacity to absorb glucose in rats with methotrexate-induced mucositis relative to that in controls.
Methods: Rats received a dietary amount of ([1-^{13}C]glucose enriched) glucose as a bolus by oral gavage (2 g/kg once) or continuously by intraduodenal infusion (2 g/kg for 7 h). We then determined blood [1-^{13}C]glucose concentrations (until 4 h after the bolus or 7 h during continuous infusion). To calculate the quantitative absorption capacity, we used Steele's one-compartment model including simultaneous intravenous infusion of [6,6-$^{2}H_2$]glucose. Finally, jejunal histology and plasma citrulline concentrations were assessed.
Results: Mucositis was confirmed by villus atrophy and reduced plasma citrulline concentrations (−80 %, p<0.01). When glucose was administered as a bolus, rats with mucositis only absorbed 15 % of the administered glucose compared with 85 % in the controls (p<0.01). The median absorptive capacity for glucose in rats with mucositis approached that in controls upon continuous intraduodenal glucose infusion (80 and 93 % of administered glucose, respectively, p=0.06). Individual glucose absorption differed substantially within the group of rats with mucositis (range, 21–95 %) and did not correlate with the histological severity of mucositis.
Conclusions: We conclude that continuous enteral administration can almost completely overcome the reduced absorptive capacity for glucose in at least a part of rats with mucositis.

599

Use of intravenous thiamine in medical oncology patients for the management of ifosfamide-induced neurotoxicity

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Background: Ifosfamide-induced neurotoxicity occurs in 10–40 % of patients and may lead to the discontinuation of chemotherapy. The identified risk factors include female gender, hepatic or renal dysfunction, brain metastases, pelvic disease, low serum albumin, low performance status, previous cisplatin use, electrolyte imbalances, and drug–drug interactions. Methylene Blue and thiamine have been successfully used for treatment of and for secondary prophylaxis.
Methods: This is a retrospective, single-institution study of those receiving intravenous thiamine for either treatment or secondary prophylaxis of ifosfamide-induced neurotoxicity over 13 months in 2007–2008. The primary objective was to assess the efficacy of intravenous thiamine for the treatment of neurotoxicity; secondary objectives included the identification of patient-specific factors predisposing for toxicity and determination of efficacy as secondary prophylaxis, as measured by subsequent rechallenge.
Results: Thirty-three cycles of chemotherapy administered to 16 patients using intravenous thiamine for the treatment or secondary prophylaxis of ifosfamide neurotoxicity were identified. Thirteen of 14 (93 %) patients were successfully treated for neurotoxicity with thiamine; 11 (79 %) received subsequent cycles of ifosfamide-containing chemotherapy with intravenous thiamine secondary prophylaxis. Of the six patients that broke through prophylactic thiamine, all had successful symptom resolution with the addition of Methylene Blue. The characteristics of these patients experiencing neurotoxicity appear similar to those reported in the literature.
Conclusions: Based on these data, we developed an algorithm for the management of ifosfamide-induced neurotoxicity incorporating treatment interruptions, use of mesna, intravenous thiamine, and Methylene Blue, with pathways for mild (tremors) or moderate/severe (agitation, incontinence, hallucinations, psychosis aphasia) symptoms. Intravenous thiamine is an effective option in the treatment and secondary prophylaxis of ifosfamide-induced neurotoxicity.

600

Patterns of physical symptom occurrence in patients receiving radiation therapy

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Objectives: The purpose of this exploratory analysis was to determine the pattern of occurrence of physical symptoms in patients undergoing radiation therapy (RT).
Methods: Patients (N=482) receiving RT completed a Symptom Inventory (SI) weekly, beginning with the week prior to the start of treatment. Cancer diagnoses included cancers of the breast (46.7 %), genitourinary tract (30.1 %), lung (14.3 %), and head and neck (8.9 %). The SI assesses the presence and severity of 12 symptoms: pain, fatigue, nausea, disturbed sleep, feeling distressed, shortness of breath, memory, lack of appetite, drowsiness, vomiting, skin problems, and urination difficulty. The change scores in symptom severity between baseline and week 3 were calculated, and a variable cluster analysis using the DIANA algorithm with the dissimilarity being 1 minus the Pearson correlation was used to determine clusters of physical symptoms.
Results: Five clusters with a similarity level of 0.25 or greater were identified. Changes in fatigue, drowsiness, and sleep disturbances clustered together. Cluster 2 included changes in nausea, vomiting, and appetite. Changes in pain and skin problems grouped together into cluster 3. Changes in shortness of breath and memory made up cluster 4, and changes in psychological distress made up cluster 5.
Conclusions: These results indicate the pattern of physical symptoms that occur in patients receiving RT. Treating these symptoms collectively may be important in maximizing the effects of symptom management in patients undergoing RT. Further research is needed to determine whether these symptom clusters occur in patients undergoing other treatments, such as chemotherapy.

601

Supportive care organization in France: where are we?

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Objectives: To define the supportive care organization in France, and the information given to the patients, the AFSOS (French Speaking Association for Supportive Care in Cancer) conducted an observational study.
Methods: An ad hoc questionnaire was sent to 1,621 French medical doctors (MD) caring cancer patients.
Results: Three hundred thirty MD including 44 % medical oncologists answered. Three different organizations were described: single MD, transversal team, and specific structure specialized in global care (specifically developed in comprehensive cancer centers, CCC). Psycho-oncology, palliative care, nutrition, and pain care were the four main items considered as supportive care. Of the patients, 68 % are receiving supportive cancer care (SCC), presented by their MD (88 %) or a nurse devoted to announcement (57 %). Supportive care is more dispensed during the palliative period (90 %) than at diagnosis (44 %). Seventy-one percent of the cancer department have a cross team to provide supportive care, specifically in CCC (62 %, p=0.01). Only 40 % have a specific home care network organization, more in CCC than in public or private centers (respectively 69, 45, and 20 %, p=0.01). Seventy-three percent use specific financial valorization of CSC activity. Adverse event information is dispensed to 54 % of the patients for erythropoiesis-stimulating agents (ASE), 74 % for biphosphonates, and 94 % for opioid treatments rather by medical oncologist than other specialists (p=0.01).
Conclusions: Specific organization developed especially in comprehensive cancer centers seems to facilitate SCC organization and information to patients. In the mean time, recommendations to include this information, involvement in supportive care team, and methods have to be enhanced. Further results compared with patient views are expected.

602

The paradox of symptom burden in older patients with cancer-related fatigue (CRF)

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Objectives: Older patients with cancer-related fatigue (CRF) are likely to have high levels of comorbidity and other age-associated problems and thus may be more likely to report symptom burden associated with CRF. We investigated the self-reported symptom burden in older vs. younger patients with CRF.
Methods: We performed a retrospective study of CRF patients assessed between 1 September 2006 and 31 May 2009. We reviewed their demographic, clinical, and symptom data and compared the symptom burden (fatigue, sleep disorder, pain, depression, anxiety) of older (65+years) vs. younger (<65 years) CRF patients using ANOVA (significance level, $p<0.10$).
Results: Two hundred twenty CRF patients were evaluated. Median age was 59 years, with 66 % ($n=145$) female, 77 % ($n=169$) white, and 69 % ($n=151$) married. Breast cancer was the most frequent diagnosis (36 %, $n=79$). Median BMI was 28.0. Older patients (28 %, $n=60$) had more comorbidities (2.0 vs. 1.3) and took more medications (5.5 vs. 4.4) than younger patients (72 %, $n=157$), yet reported significantly less pain (4.0 vs. 4.9), sleep disturbance (20.7 vs. 24.4), and depression (13.1 vs. 16.6); they also reported less fatigue and anxiety, though the observed differences did not reach statistical significance.
Conclusions: Despite a higher level of comorbidity and medication use, older CRF patients were less likely to report symptom burden compared to younger patients with CRF. Further investigations should be aimed at understanding whether this difference is due to a real difference in symptom burden, perceptions that symptoms are due to causes other that CRF, or differences in coping strategies.

603

Development of a fractionated radiotherapy model to investigate acute and chronic radiation-induced gastrointestinal injury in a Dark Agouti rat model

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Objectives: The study aims were to develop an optimal dose schedule of fractionated radiotherapy that induces acute and chronic intestinal toxicity in rats similar to that seen clinically.
Methods: Dark Agouti rats were randomised to different fractionation schedules (45, 54, 68.25 and 67.2 Gy, $n=12$), plus controls. Animals were placed within custom-built apparatus before radiation was applied to the abdomen using a Varian Clinac linear accelerator, with appropriate shielding to the head, thorax, lower pelvis and extremities. Animals were irradiated triweekly for up to 6 weeks. Rats were killed at 6 weeks ($n=6$) to assess acute damage in the gastrointestinal tract and 20 weeks ($n=6$) to assess chronic damage.
Results: All radiation-treated animals had lower body weights than controls during the 6-week treatment period. In the ensuing 16 weeks, the group receiving 45 Gy recovered body weight comparable to the controls. Animals in the 54-, 68.25- and 67.2-Gy groups increased in weight from their treatment period weight; however, body weights remained significantly lower than those in the lowest dose and control groups. No diarrhoea was observed in any animals. Necroscopy revealed significantly increased small and large intestinal weights during the treatment period, and whilst these weights significantly decreased during the chronic phase, they remained significantly higher than the controls ($P<0.0001$).
Conclusions: We describe here an animal model of fractionated radiotherapy using dose schedules based on those used clinically. This model allows for the visualisation of acute and chronic radiation toxicity. Further histochemical, morphometric and immunohistochemical studies to fully characterise changes are underway.

604

Sleep architecture in patients with cancer-related fatigue (CRF)

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Objectives: Cancer-related fatigue (CRF) patients commonly report sleep complaints, yet sleep architecture and the potential contribution of primary sleep disorders in CRF have been little examined. We investigated the sleep architecture and primary sleep disorders of CRF patients.
Methods: We performed a retrospective study of CRF patients evaluated between 1 September 2006 and 31 May 2009, identifying patients referred for a sleep consult and reviewing their demographic, clinical, symptom, and polysomnographic data.
Results: Of 220 evaluated CRF patients, 24 % ($n=53$) were referred for sleep consults; 74 % ($n=39$) had polysomnographic studies. Median age was 59 years, 69 % were female, and median BMI was 32.4. Zubrod performance scores were good (0–1) in 82 % ($n=32$); 90 % ($n=35$) exhibited no evidence of disease. Median fatigue (BFI) was 6.5, while median sleep disorder (BSDS) was 24.5. CRF patient sleep architecture varied from published norms. The mean total sleep time was 390 min, mean WASO was 60.9 min, mean sleep latency was 12.0 min, and mean sleep efficiency was 85.9 %. The mean percentages of sleep stages were: W=13.8 %, N1=11.1 %, N2=59.0 %, N3=4.5 %, R=12.7 %. Obstructive sleep apnea was the primary sleep disorder in 85 % ($n=33$). The mean apnea hypopnea and periodic limb movement arousal indices were 13.8 and 4.1 events per hour, respectively; the mean arousal index was 36 arousals per hour.
Conclusions: CRF patients have fragmented sleep architecture, an increased arousal index, and decreased proportions of N3 and R sleep. Sleep apnea is common, under-recognized, and should be considered in CRF.

605

Age effects on sleep architecture in patients with cancer-related fatigue (CRF)

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Objectives: Older patients with cancer-related fatigue (CRF) are likely to have more sleep disturbance, but their sleep architecture profile and the potential added impact of age have been little studied. We investigated the sleep architecture parameters and their relationship with age in CRF patients.
Methods: We performed a retrospective study of CRF patients assessed between 1 September 2006 and 31 May 2009, identifying patients referred for sleep consults who subsequently had sleep studies. We reviewed their demographic, clinical, symptom status, and polysomnographic data and correlated potential factors impacting sleep architecture parameters.
Results: From 220 CRF patients, 24 % ($n=53$) were referred for sleep evaluation; 74 % ($n=39$) had sleep studies performed. Median age was 59 years, with 69 % ($n=27$) female, 69 % ($n=27$) white, and 62 % ($n=24$) married. Breast cancer was the most frequent diagnosis (41 %, $n=16$). Median BMI was 32.4, median fatigue score (BFI) was 6.5, and median sleep disorder score (BSDS) was 24.5. The sleep architecture of CRF

patients deviated from norms, with increased proportions of wakefulness and decreased proportions of N3 and R sleep. Increasing age was significantly correlated with seven polysomnographic parameters.

(a) >WASO, >% stage W sleep, >apnea hypopnea index, and >periodic limb movement arousal index

(b) <Total sleep time, <sleep efficiency, and <% stage N2 sleep.

Age did not correlate with the number of comorbidities or medications. Conclusions: Increasing age fragments sleep architecture in CRF by increasing arousal and wakefulness during sleep. Whether this effect on sleep is due to age or the interplay between age and CRF is unknown; further research is needed.

606

Using photographic language to overcome the overwhelming emotions felt by nurses confronted with a patient's distress

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Objectives: The Maslach Burn-Out Inventory underlines the exhaustion of nurses confronted with patients' distress. We consider that frequent face-to-face contact with distressed patients can give negative feelings. So how can we allow the staff to master the consequences this can have?
Method: We suggest a workshop based on the Photolangage® method for 10–15 persons. Thirty different photographs are displayed. They illustrate different situations nurses can encounter. A working session begins by presenting a theme in 15 min (palliative care, relationship, difficulties, etc.). Each participant picks up a photograph illustrating what he wishes to share with the group about his own experience. The first participant explains his choice. Each participant is then invited to give his perception. There is no wrong answer; sincere exchanges can take place.
Evaluation: We evaluated two workshops (30 persons). The evaluation is done anonymously by the participants according to six different items (understand my difficulties, express my difficulties, express my difficulties, benefit from the other, take part in a group reflection, modify my practice) with four appreciations. For 28 persons, the meeting was interesting to very interesting for all items.

Items/scale	Very interesting (%)	Interesting (%)	Not very interesting (%)	Not interesting
To understand my difficulties	80	13.3	6.6	0
To express my difficulties	90	10	0	0
To share my experience	90	10	0	0
To benefit from the other	80	13.3	6.6	0
To take part in a group reflection	93.3	6.6	0	0
To modify my practice	73.3	16.6	10	0

Evaluation (30 persons, two groups)

Discussion: The picture suggests a situation we encounter in care units, but does not represent it in all its aspects. It helps to think about personal experiences. The different perceptions reflect what happens in similar real-life situations; each case can give different reactions.

607

Remind—a novel telehealth-mediated nurse led intervention phase I trial to increase oral drug therapy adherence amongst people with CML

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Objectives: The objectives of this study were:

1. To understand the facilitators and barriers to imatinib adherence amongst people with chronic myelogenous leukemia (CML)
2. To develop a novel telehealth-mediated nurse-led intervention to increase adherence
3. To conduct a phase I trial to assess the clinical feasibility and acceptability of the intervention

Methods: The patient problem was defined by conducting interviews with 16 patients and 10 health professionals, which focused on experiences relating to adherence and dealing with side effects. These qualitative results informed the development of an intervention which comprises a 10-week program of two synergistically operating elements:

1. Phone-based, structured nurse counselling sessions
2. A mobile phone-based application to remotely prompt medication adherence, monitor patient side effects and deliver self-care advice

This intervention is currently being tested in a phase I trial of ten patients.
Results: Most health professionals believed that adherence was not a major issue, yet 12 out of 16 patients reported non-adherence. Reasons for *unplanned* non-adherence were forgetfulness, disruption of routine and poor communication, whereas the reasons for *planned* non-adherence included reducing impact on life and lack of timely access to medical advice. A sophisticated online adherence reminder and symptom management platform ("Remind") which includes smart phone and web access capabilities for patients, the ability to provide real-time symptom management advice, and adherence and symptom tracking by health professionals has been developed and is currently being tested with patients.
Conclusions: Adherence to imatinib amongst people with CML is a major issue. Sustainable, clinically feasible and remotely delivered interventions are required.

608

The effect of education to patients receiving oral agents for cancer treatment on medication adherence and self-efficacy

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Objectives: This study was conducted to examine the effect of structured education on medication adherence and self-efficacy through the use of the MASCC Teaching Tool (MOATT©) for patients receiving oral agents for cancer treatment.

Methods: This quasi-experimental study has been conducted at two hospitals; 41 patients were included. Data were obtained using a questionnaire, Medication Adherence Self-efficacy Scale (MASES), Memorial Symptom Assessment Scale, and a follow-up form (diary). Patients were educated through the use of the MOATT at a scheduled time; drug-specific information was provided along with a treatment scheme and follow-up diary. Phone interviews were completed 1 and 2 weeks after the educational session. At the next treatment cycle, the patients completed the same questionnaires on medication adherence.
Results: Patients were receiving treatment mostly for breast and stomach cancer, mostly capecitabine as an oral agent. It was found that before and after the education, more than half and almost all patients, respectively, were keeping their drugs in their package, a cool and dark place away from heat, sunlight, and moisture. Majority of patients (90.2 %) stated that they did not forget to take their medication and experienced medication-related side effects (78 %). In general, the mean scores of symptom severity and perceived symptom distress were slightly decreased after the education. The item mean of MASES on "how confident the patient can take oral chemotherapy drugs" was increased after the education.
Conclusions: It was shown that individual education with the MOATT and follow-up for patients receiving oral agents for cancer treatment increased patient medication adherence self-efficacy.

609
Nausea and vomiting: why are our patients still suffering? By Macmillan Acute Oncology Service (AOS)

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Eight months ago we were given the opportunity to create an Acute Oncology Service at Southampton University Hospital Foundation Trust. Macmillan funded a 2-year project to establish a service driving change for cancer patients. As part of this service, we have a 24-h emergency telephone, triaging calls from patients with cancer suffering with the side effects of chemotherapy. Since establishing the service, it has become evident that a large proportion of calls we receive are about nausea and vomiting. With the advances in antiemetic therapy, this is a statistic that we, as cancer care emergency practitioners, find shocking and a crucial area for change within the cancer patient journey. "Nausea and vomiting are generally two of the most feared and distressing adverse effects of cancer therapy" (Sun et al., 2005). These symptoms can cause further complications. We have collected data from 58 patients with symptoms of nausea and vomiting, who have been admitted to our service during its first 6 months of establishment. The data include cancer site, regimen and the antiemetics they are on. By analysing these data, we are hoping to gain an understanding of the dominant regimens responsible. We will compare the antiemetic regimens which are proving inadequate and explore the alternative antiemetic therapies available. Our service is one of the first of its kind, therefore highlighting the relevance of these data we have collected. We hope that the results will benefit all chemotherapy patients and explore how we can improve patients' journey, their health and experience.

610
Fentanyl pectin nasal spray in oral mucositis pain induced by chemoradiotherapy for head and neck cancer

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Background: Painful mucositis is one of the most distressing toxicities of chemoradiotherapy (CRT) for head and neck cancer (HNC), with the characteristics of breakthrough pain (BTP) during oral food intake. Different topical and systemic drugs have been employed to alleviate this symptom.
Methods: We prospectively considered patients with HNC treated by CRT developing BTP during food or liquid intake, with a stable background pain on major opioids. If the patient developed mucositis pain grade≥4 on a numeric scale (NRS from 0 to 10) during oral intake, he was offered fentanyl pectin nasal spray (FPNS) 100 mcg. After the titration phase, the patient was requested to evaluate for three consecutive days, according to NRS, pain intensity at baseline, during food ingestion before FPNS use, and after 10, 20, 30, and 40 min.
Results: From May 2011 to January 2012, 17 HNC patients were offered FPNS before eating; two of them did not complete the titration phase due to onset of confusion (both patients had nasopharyngeal cancer with irradiated nasal mucosa). Baseline mean pain of the 15 evaluable patients was 3.2 (range, 0.7–7); incidental BTP due to food intake without FPNS use was 6.7 (4–10), while after administering FPNS there was a mean reduction of 3.1 points (1.2–5.8). Mean time elapsed since FPNS use and highest pain reduction was 26 min.
Conclusions: FPNS demonstrated activity against incidental BTP due to oral mucositis in HNC patients during CRT. Further data are awaited, including the pharmacokinetics of patients with irradiated nasal mucosa.

611
Paulinia cupana (guaraná) purified dry extract (PC-18) for chemotherapy-related fatigue in patients with solid tumors

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Objectives: The objective was to evaluate the effect of PC-18, a purified dry extract of *Paulinia cupana* (guaraná), on the treatment of chemotherapy-related fatigue.
Methods: We included adult patients with solid tumors who were scheduled to receive systemic chemotherapy. We evaluated basal fatigue with the BFI questionnaire before chemotherapy and included only patients who had an increase in their BFI score after 1 week. PC-18 was given at 50 mg, PO bid, starting after 1 week of chemotherapy. We employed the FACIT-F, BFI, Chalder, HADS, and PSQI questionnaires to evaluate fatigue, anxiety, depression, and sleep quality at 1 week and after 4 weeks of chemotherapy.
Results: Thirty-six patients with a mean age of 54 years, 61 % female, 28 % with breast, 22 % colorectal, 8.3 % lung, 8.3 % head/neck, 5.6 % ovarian, and 27 % other carcinomas were included. Fatigue scores improved significantly when we compared the scores of the BFI (mean difference=19.39, 95%CI=12.4–26.37, $p<0.0001$), FACIT-F (mean difference=−11.51, 95%CI=−19.25 to −3.76, $p=0.0049$), and Chalder (mean difference=4.571, 95%CI=1.86–7.28, $p=0.0018$) questionnaires. HADS subscale scores of anxiety ($p=0.025$) and depression ($p=0.0095$) also improved significantly after 3 weeks of PC-18 therapy. PSQI scores did not change significantly ($p=0.26$) after 3 weeks of treatment.
Conclusions: PC-18 is active for the treatment of chemotherapy-related fatigue in patients with a variety of solid tumors and also improves their anxiety and depression scores.

612
Exploration of Canadian and European nurses' perspectives on the management of breakthrough pain in people with cancer

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Aims: Management of breakthrough pain in cancer (BTPc) reflects the cultural, socioeconomic, and regulatory environments of different regions of the world. This study examines the similarities and differences in the characterization and treatment of BTPc from the perspective of oncology nurses in Europe and Canada.
Methods: Online questionnaires were distributed to 1,618 oncology nurses in 12 European countries and 688 oncology nurses in Canada; more than 1,300 participated.
Results: Challenges in identifying and characterizing BTPc were apparent: 10 % of the European oncology nurses participating in the survey reported they were uncertain whether they had seen patients with BTPc, and a sizable minority of participating Canadian nurses were unsure of the frequency (33 %) or duration (40 %) of the pain. Almost half (46 %) of the respondents in the EU and 35 % in Canada indicated that their patients experienced BTPc two to three times a day. While 46 % of European oncology nurses and 33 % of those in Canada reported that they do not use pain assessment tools/guidelines to help diagnose BTPc, many of the Canadian nurses endorsed their use. As many as 36 % of the EU nurses reported they did not feel confident advising a patient on BTPc management, while 22 % of Canadian respondents indicated they were only somewhat, slightly, or not at all confident giving such advice. More than half of responding oncology nurses in the EU and Canada reported using oral opioids to treat BTPc.
Conclusions: Important similarities and differences exist in the identification and management of BTPc by oncology nurses in European and Canadian centers.

613
A nurse-led group consultation intervention to reduce psychological morbidity and unmet needs in men with prostate cancer during radiotherapy: a randomised controlled trial

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Objectives: The objective was to evaluate a nurse-led group-based intervention to reduce psychological morbidity, unmet needs, and improve quality of life in these men using a randomised controlled trial.
Methods: Three hundred fifteen men (response rate, 72 %; attrition, 4 %) were randomised to the intervention or current best practice. The intervention comprised four nurse-led group consultations (beginning, middle, end of RT and 6 weeks post-RT). Group consultations focused on anatomy, treatment expectations, physical and emotional impact, side effects and self-management strategies, survivorship issues and facilitating peer-based discussions. Reliable and valid measures were completed at treatment commencement, treatment completion and 6 months post-treatment to assess unmet needs (Supportive Care Needs Survey, SCNS), psychological morbidity (Hospital Anxiety Depression Scale, HADS) and quality of life (Expanded Prostate Index Composite, EPIC).
Results: Linear mixed models analysis revealed significant time and group×time interactions for HADS-D ($p<0.05$). Compared with control participants, the rate of decline in HADS-D was greater among intervention participants. Notably, the rate of decline in HADS-D was modified by pre-baseline androgen deprivation therapy (ADT, $p<0.05$). Group×time interactions were not significant for HADS-A, SCNS or EPIC domains ($p>0.05$).
Conclusions: The intervention package was effective in significantly reducing depression, but not in reducing anxiety, unmet needs or improving quality of life issues. Current best practice adequately met men's informational and support needs, but group interaction improved depressive feelings, especially for men with prior ADT. The delivery of information and support by group consultations rather than individual consultations was a clinically feasible and acceptable model of service delivery and likely to be more cost-efficient.

615
Risk factors for thromboembolic events in patients with lung cancer

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The purpose of this study was to determine the prevalence of clinical thromboembolic events in patients with lung cancer and to identify the possible predisposing risk factors. We performed a retrospective analysis of patients with lung cancer presenting to our hospital between 1 January 2008 and 31 December 2011. The following data were collected: sex, histology (small vs. non-small), stage, presence of liver metastases, presence of indwelling central venous catheters (ICVC), chemotherapy administration, and the occurrence of venous or arterial thromboembolism. Two hundred thirty-four patients were identified; of these, 64 % were males, 83 % had non-small cell lung cancer, 49 % had stage 4, 15 % had liver metastases, 36 % received chemotherapy, and 15 % had ICVC. Twenty-four patients (10.26 %) developed a total of 39 major thromboembolic events. Of these events, 27 (69 %) were venous, 6 (15 %) were arterial, and 6 patients had pulmonary embolism. The presence of ICVC was strongly associated with the occurrence of thromboembolic events (32.5 % in the presence of catheter vs. 8.3 % in the absence of catheter, $p=0.001$). All these events occurred at distant sites from the catheter. All other variables were not associated with a statistically significant risk of thromboembolic events, sex ($p=0.6$), histology ($p=0.3$), stage ($p=0.7$), chemotherapy ($p=0.7$), and liver metastases ($p=0.3$). The odds ratio for development of thrombosis if an ICVC is present is 6.23 (95% CI=1.9–15.75). We conclude that the presence of ICVC is strongly associated with the occurrence of systemic thromboembolic events in lung cancer patients. We recommend considering prophylactic anticoagulation in this group of patients with lung cancer.

616
The role of matrix metalloproteinases and their inhibitors in the pathogenesis of chemotherapy induced oral mucositis: an animal model

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Introduction: Oral mucositis (OM) is a serious debilitating and dose-limiting complication of cytotoxic therapy. Recent research has postulated a potential role of matrix metalloproteinases (MMPs) and their natural inhibitors (tissue inhibitors of metalloproteinases, TIMPs) in

the pathogenesis of OM. MMPs and TIMPs play a role in maintaining the structural integrity of the oral mucosa. In this study, we investigated the pattern of expression of selected MMPs and TIMPs in an irinotecan-induced OM model.
Methods: Eighty-one female Dark Agouti rats were administered with either a single intraperitoneal dose of irinotecan (200 mg/kg) or vehicle control. Rats were killed at 30, 60, and 90 min and 2, 6, 12, 24, 48, and 72 h after chemotherapy. Sections of buccal mucosa and tongue were fixed in formalin and examined histologically. MMP-1, MMP-2, MMP-3, MMP-9, MMP-12, TIMP-1 and TIMP-2 expressions in the mucosa were characterized by standard qualitative immunohistochemistry.
Preliminary results: In the buccal and tongue epithelia of rats receiving irinotecan, there was an initial reduction in thickness after 60 min with restoration of thickness between 12 and 24 h; however, it was lower than the controls. This was associated with an initial increase in MMP-9 levels in the epithelium and overall higher levels when compared to the controls.
Conclusion: Our preliminary findings confirm previous work on the potential role of MMP-9 in oral mucositis. Further research will be required on affected human oral mucosa and on interventional therapies with specific MMP inhibitors.

617
Level of scientific evidence underlying palliative care recommendations arising from the National Comprehensive Cancer Network clinical practice (NCCN) guidelines

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Objective: The objective of this study was to analyse the distribution of categories of evidence cited in the supportive care National Comprehensive Cancer Network (NCCN) guidelines.
Methods: We described the distribution of recommendation of the supportive care NCCN guidelines, version 2.2011, in four groups: category I, high level of evidence with uniform consensus; category IIA, lower level of evidence with uniform consensus; category IIB, lower level of evidence without a uniform consensus but with no major disagreement; and category III, any level of evidence but with major disagreement.
Results: Of the 2,537 recommendations found in the ten guidelines, the proportion of category I, IIA and IIB recommendations were 2.9, 95.7 and 1.4 %, respectively. There was not any category III recommendation. The fields with a higher rate of category I recommendations were fatigue (14.3 %) and chemotherapy-induced nausea and vomiting (12.7 %). No category I recommendations were found on senior adult oncology, cancer and chemotherapy-induced anemia and adult cancer pain.
Conclusion: Palliative care NCCN recommendations are largely based on a lower level of evidence, but with uniform expert opinion. These data show the urgent need to expand palliative care research in oncology.

618
A comparison of denosumab and zoledronic acid on pain interference with daily functioning in patients with castration-resistant prostate cancer

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Objectives: Pain interference with daily functioning was studied in patients from a randomized phase 3 trial of men with castration-resistant prostate cancer (CRPC) that demonstrated superiority of denosumab over zoledronic acid (ZA) in the prevention of skeletal complications of bone metastases.
Methods: Men with metastatic CRPC received either subcutaneous (SC) denosumab 120 mg and intravenous (IV) placebo (n=950) or IV ZA 4 mg and SC placebo (n=951) every 4 weeks. We measured pain interference with daily functioning using the 11-point Brief Pain Inventory–Short Form monthly through the end of the study. Data from all randomized patients through month 18, when ≥50 % of patients had dropped out due to death, disease progression, or consent withdrawal, were included. Analgesic use was quantified using the Analgesic Quantification Algorithm.
Results: A relative mean 17 % of patients had improvements in pain interference (≥2 points) with activity, and 19 % had improved pain interference with affect in the denosumab group compared with ZA. Among patients with no or mild pain at baseline (worst pain ≤4), the mean denosumab–ZA differences were greater (42 and 38 % for activity and affect, respectively) and the median time to increased pain interference was longer for denosumab (P=0.08 and P=0.02 for activity and affect, respectively). On average, 8 % fewer denosumab patients than ZA shifted from no/low analgesic use to strong opioid use.
Conclusions: Denosumab demonstrated improvement in pain interference with activity and affect in men with CPRC and was associated with consistently better outcomes in overall pain interference with daily activities compared with ZA.

619
The MASCC Oral Agent Teaching Tool© (MOATT): the next step—a user guide

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Following an international survey of 115 oncology nurses from 15 countries, the Education Study Group of the Multinational Association of Supportive Care in Cancer (MASCC) realized that a consistent and comprehensive approach for nurses to teach people receiving oral cancer agents was necessary. Six nurse experts wrote the MASCC Oral Agent Teaching Tool© (MOATT); it was refined and tested by nurses worldwide and is now available on the MASCC web site in 12 languages. The tool, available as a free download from www.mascc.org, provides a structured format to help ensure that, when teaching about oral cancer agents, all key areas of patient assessment and teaching are addressed. In order to promote the use of the MOATT, a *User Guide* was developed by the nurse experts to assist healthcare professionals in learning about the history and application of the MOATT as well as to highlight its use in the clinical setting in Spain, Greece, Kenya, and the USA. Also, the guide gives two examples of reported research regarding patient understanding and adherence. The importance of patient education and the nurses' role in this education regarding safe and effective administration of oral cancer agents are well known; the MOATT provides an easy and efficient help to those instructing patients receiving these drugs. The *User Guide* further advances the background and benefits of the MOATT. The content of the *User Guide* will be discussed in detail in this presentation.

620
One year of biosimilar filgrastim in routine clinical practice

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Objectives: The use of biosimilar filgrastim has been debated for the limited experience at the time of approval. We performed a retrospective data analysis of 52 patients who underwent and completed a chemotherapy line for advanced solid tumour and received primary (n=46) or secondary (n=6) prophylaxis with biosimilar filgrastim (Zarzio®).
Methods: All hospital day patients with an expected risk of febrile neutropenia (FN)>20 % (n=21) or FN risk<20 % at high risk of infection (n=25) received 3 days (days 2–4) primary prophylaxis with subcutaneous bolus injections of Zarzio® 300 μg/day. Uneligible patients who developed severe neutropenia after the first cycle received secondary prophylaxis. Blood tests were performed at the nadir and the day before chemotherapy. The primary end point was to evaluate the efficacy and tolerability of Zarzio® in terms of severe neutropenia or overall FN incidence and duration.
Results: Our retrospective data analysis involved 52 patients (median age, 59.2 years), with 15 aged ≥65 years and with median body weight of 70 kg, who received a total of 243 chemotherapy cycles (median, 4.6 cycles/patient) and 651 Zarzio® administrations (median, 12.5 administrations/patient). Severe neutropenia was recorded in 29 of 452 blood tests. None of the patients developed FN. Two patients received prophylactic antibiotics for severe neutropenia. None of the patients delayed treatment for bone marrow toxicity.
Conclusion: Our data confirmed the efficacy and safety of Zarzio® in routine clinical practice. The use of a 3-day schedule is actually under debate; a longer schedule (5–10 days) could improve the outcome.

621
Association between spiritual/religious coping and health-related quality of life in head and neck cancer patients

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Objectives: The objective was to assess the association between spiritual/religious coping (SRC) and health-related quality of life (HRQoL) in patients with head and neck cancer (HNC).
Methods: In a cross-sectional study, 55 patients were interviewed in the preoperative phase of HNC surgery of a public hospital in Sao Paulo state, Brazil. The instruments used were: Functional Assessment Cancer Therapy—Head and Neck (FACT-H&N) and SRC Scale validated for Brazilian culture. Principles of descriptive and inferential statistics were used.
Results: The mean age of participants was 57.1 years, 81.9 % were male, 52.7 % married, 50.9 % had low income, 67.3 % had low education, 100 % believe in God, and 87.3 % are Catholics. Concerning SRC Scale, the mean score for the variables was satisfactory, with a value of 3.61. As for HRQoL, the functional well-being subscale presented a significant correlation with the physical well-being, social/family, and emotional subscales. No statistically significant differences were found between the mean scores of total SRC compared with age groups, gender, and median scores for the FACT-H&N domains. A statistically significant difference (p<0.001) was found between groups with high and medium total SRC on the SRC Scale and high and low scores in the FACT-H&N domains, indicating that patients with high usage rates of SRC present better scores in the HRQoL domains.
Conclusion: Participants with high use of SRC showed higher rates in the FACT-H&N domains. This correlation does not imply causes and effects. Relations among spirituality, religiosity, and their benefits for health remain complex, but this topic has received attention in the scientific context.

622
Pediatric Oncology Group of Ontario (POGO) guidelines for prevention of antineoplastic-induced nausea and vomiting in children

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Objectives: The objective of this study was to describe the development of two POGO supportive care guidelines: Classification of the Acute Emetic Potential of Antineoplastic Medication in Pediatric Patients and Prevention of Acute Nausea and Vomiting Due to Antineoplastic Medication (AINV) in Pediatric Patients.
Methods: An inter-professional and international panel of experts was consulted for each guideline. Using established methods (ADAPTE, CAN-IMPLEMENT), the scope of each guideline was determined and existing guidelines on each topic were identified as source guidelines for adaptation to the pediatric context in Ontario. A library-scientist-guided literature search was undertaken; the source guidelines were updated and reframed based on pediatric evidence. The quality of evidence was assessed and the strength of each recommendation was determined using the GRADE methodology. The draft guidelines underwent an extensive, two-stage external review: first by international experts in adult and pediatric AINV and then by stakeholders from the Canadian pediatric oncology community (physicians, nurses, and pharmacists). Feedback was considered and the guidelines revised accordingly.
Results: The POGO emetic potential classification guideline released in June 2011 classifies single and combination antineoplastic agents having high, moderate, low, or minimal emetic potentials. The POGO acute AINV prevention guideline will be available in June 2012. Research gaps were identified regarding the emetogenic potential of many commonly used medications, the optimal dose of many antiemetic agents both old and new, and the role of neurokinin-1 antagonists.
Conclusions: These pediatric-specific guidelines will provide clinicians who care for children receiving antineoplastic medication with an evidence-based approach to the prevention of AINV.

623
Assessing the impact of aprepitant with dexamethasone in preventing nausea and vomiting induced by moderately emetogenic chemotherapies—PADENAUVO pilot study

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Objectives: This double-blind randomized pilot study evaluated the efficacy of aprepitant and dexamethasone in preventing nausea and vomiting following moderately emetogenic chemotherapy (carboplatin or cyclophosphamide and anthracycline) in women.
Methods: Chemotherapy-naive women receiving moderately emetic chemotherapy were randomised to two groups (APR or CTL):

	Aprepitant group (APR)	Control group (CTL)
Day 1	Aprepitant 125 mg PO Dexamethasone 12 mg PO+placebo Granisetron 1 mg IV Lorazepam 1 mg PO	Aprepitant placebo Dexamethasone 20 mg PO Granistron 1 mg IV Lorazepam 1 mg PO
Days 2 and 3	Aprepitant 80 mg PO Dexamethasone 4 mg PO+placebo	Aprepitant placebo Dexamethasone 8 mg PO

Treatment assignment

The main objective of the study was to assess the proportion of patients with complete response (CR: no vomiting and no use of salvage therapy) for 120 h after one cycle of chemotherapy. Secondary objectives included the absence of nausea or vomiting, tolerability and quality of life (QOL), which were measured with validated tools.
Results: Between January and May 2011, 19 chemotherapy-naive women with breast cancer were randomised (ten in APR and nine in CTL). There was no statistical difference for CR, nausea or the use of salvage therapy in both groups (p=0.65). Absence of vomiting occurred in 100 % of APR patients and 66.7 % of CTL patients (p= 0.087). There were no differences in adverse events or QOL.
Conclusions: Although the study was underpowered, the combination of aprepitant and dexamethasone did not improve CR, reduce nausea nor had any impact on salvage therapy use. There was a non-significant reduction of vomiting. Treatment was well tolerated.

625
The therapeutic effect of shoulder exercise program for breast cancer survivors during the radiotherapy

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Objective: The objective was to evaluate the therapeutic effect of shoulder exercise program for breast cancer survivors during radiotherapy.
Methods: Subjects were randomly allocated to the intervention group or the control group. At baseline, the presence of shoulder pain and range of motion were assessed and physical disability and quality of life were evaluated by a questionnaire with DASH (disability of the arm, shoulder and hand) and EORTC-BR23 (European Organization for Research and Treatment of Cancer), respectively. Those outcome measurements were repeated at 6, 12, and 18 weeks after the intervention. The intervention group received a shoulder exercise program during the radiotherapy twice a week for 6 weeks. The exercise program consisted of range of motion and strengthening exercises using a Biodex dynamometer. The intensity of exercise was adjusted according to the patient's condition. The control group was only informed about the beneficial effect of exercise on the affected shoulder.
Results: One hundred fifty-four subjects were enrolled (82 in the intervention group and 72 in the control group). The prevalence of pain decreased in the intervention group at 6 weeks, but increased in the control group. However, no difference was seen at 12 and 18 weeks. While range of motion was decreased in the control group, it was increased in the intervention group at 18 weeks after the intervention.
Conclusion: Shoulder exercise program for breast cancer survivors during radiotherapy may have a therapeutic effect on reducing shoulder pain and maintaining range of motion.

626
Feasibility and uptake challenges of couple-based interventions: perspectives from the literature and interviews with couples

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Objectives: Recognition that patients and partners react to a cancer diagnosis as an interdependent system has led to increased interest in couple-based interventions. Although couple-based interventions show promise for enhancing both patients' and partners' illness adjustment, issues regarding uptake and attrition are not well documented. This presentation highlights these issues and proposes strategies to overcome them.
Methods: A systematic review of 19 intervention studies for couples facing cancer was completed. When available, uptake and attrition rates were extracted. Separately, qualitative interviews were undertaken to assess the feasibility of implementing a new self-directed, couple-based intervention, including couples' interest in the intervention. The transcripts of these interviews were coded using a grounded theory framework.
Results: The uptake and attrition rates were reported across 14 manuscripts reviewed and ranged from 13.6 to 88 % and from 0 to 33.3 %, respectively. The uptakes rates were lower among men than women, although attrition did not typically differ between genders. Financial incentives, mode of delivery, or length of intervention did not seem to influence attrition. Interviews with participants suggested that intervention dosage and relevance might impact initial uptake. Additional factors associated with low uptake reflected in both the review and interviews included low priority given to psychosocial needs in comparison to medical needs, lack of time, and illness severity.
Conclusions: Although attrition within couple-based interventions is generally low, challenges remain with regard to uptake, particularly among men. Improving uptake may require a shift in how couple-based interventions are marketed to couples.

627
Orally administered emu oil maintains intestinal goblet cell numbers in a rat model of chemotherapy-induced mucositis

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Objectives: Mucositis is characterized by inflammation and ulceration of the intestinal mucosa, compromising intestinal function. In a previous study (Br J Nutr 2010), orally administered emu oil (EO) gave indications of improved intestinal repair in rats with chemotherapy-

induced mucositis. A mechanism was sought by determining the number of protective neutral mucin-secreting goblet cells (GC) in the mucosa, indicative of intestinal barrier function.
Methods: Female Dark Agouti rats (n=8/group) were gavaged with water, olive oil (OO), or EO once daily and injected with 5-fluorouracil (5-FU) or saline on day 5. Rats were euthanized on days 8, 9, 10, and 11 for tissue collection. Jejunal and ileal GC were stained with periodic acid–Schiff reagent for neutral mucins. A value of $p<0.05$ was considered significant.
Results: 5-FU decreased GC numbers by 35 % (jejunum) and 53 % (ileum) on day 8 and by 45 % (jejunum) on day 9 compared with healthy controls ($p<0.05$). However, no such differences were observed on days 9 (ileum only), 10, or 11. Amongst 5-FU-injected groups, both OO and EO resulted in a greater number of ileal GC on day 10, by 75 and 53 %, respectively, compared with 5-FU controls ($p<0.05$). However, on day 11, only EO increased ileal GC numbers compared to 5-FU controls (53 %, $p<0.05$). EO did not significantly affect jejunal GC numbers in normal or 5-FU-treated rats.
Conclusions: Emu oil maintained neutral mucin-secreting goblet cell numbers in the ileal intestinal mucosa, providing a mechanism to improve intestinal barrier function and aid in the repair of chemotherapy-damaged intestine.

628

Feasibility of a programmed short messaging service (SMS) system to monitor home-care-based cancer patients for chemotherapy-induced nausea and vomiting

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Purpose: The purpose was to explore the feasibility of a programmed short messaging service (SMS) for monitoring chemotherapy-induced nausea and vomiting (CINV) in home-care-based cancer patients.
Methods: This was a single-centered, prospective cohort study. Patients who received at least moderately emetogenic chemotherapy and possessed mobile phones were included. Using a pre-developed clinical algorithm, vomiting frequencies and nausea severities were monitored once daily for 5 days post-chemotherapy via SMSs. Pharmacists were alerted via SMSs should patients develop moderate to severe CINV. Patient satisfaction survey was conducted over the phone on day 6. Data analysis included descriptive and chi-squared statistics.
Results: A total of 68 patients were recruited. Eight patients withdrew, resulting in the analysis of 60 patients. Median age was 49.5 years (interquartile range=42.3–55.0). Two thirds were women (65.0 %), Chinese (68.3 %), and possessed smart phones (65.0 %). Over 5 days of monitoring, 44 (73.3 %) patients were compliant to the SMS system. Majority were comfortable with the duration for daily tele-monitoring (90.0 %), particularly patients who were smart phone users (97.4 vs. 76.2 %, $p=0.017$) and compliant (95.5 vs. 75.0 %, $p=0.038$). Most patients were comfortable with the timing of SMSs (93.3 %) and agreed that their privacy was not threatened (78.3 %). A total of 13 (21.7 %) patients benefited from pharmacists' intervention for their uncontrolled CINV.
Conclusion: This study demonstrates the feasibility of monitoring home-care-based patients through a programmed SMS system. Future incorporation of other chemotherapy-induced toxicities into the SMS monitoring system can enhance patient safety through prompt pharmacist intervention whenever warranted.

629

Risk of rash with nilotinib: a systematic review of the literature and meta-analysis

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Objectives: Nilotinib is indicated for the treatment of chronic myelogenous leukemia. The reported incidence and risk of rash from this medication vary widely and have been inconsistently reported in published trials. Therefore, we conducted a systematic review of the literature and meta-analysis to determine the incidence and risk of developing a rash.
Methods: Relevant studies were identified from the PubMed database (1998–2012), abstracts presented at ASCO and ASH Conferences (2004–2011), and Web of Science database (1998–2012). Eligible studies were limited to prospective phase II–III clinical trials in which patients received nilotinib at doses of either 300 or 400 mg twice daily. Incidence, relative risk (RR), and 95% confidence intervals (CI) were calculated using random-effects or fixed-effects models based on the heterogeneity of included studies.
Results: Data from 3,186 patients receiving nilotinib in 16 clinical trials were available for analysis. The overall incidence of all-grade and high-grade (grade ≥3) rash were 33.1 % (95% CI=27.7–39.1) and 2.6 % (95% CI=2.1–3.4), respectively. Nilotinib was associated with increased risk of all-grade rash when compared to patients treated with imatinib (RR=2.891, 95% CI=2.079–4.020, $P<0.001$). Risk of high-grade rash was increased compared to imatinib (RR=1.823, 95% CI=0.670–4.957), but this was not statistically significant ($P=0.24$).
Conclusions: Patients treated with nilotinib are at significant risk of developing a rash. Studies to characterize, prevent, and treat this untoward toxicity are needed in order to maintain patients' quality of life and minimize the need for dose modification, which may impact clinical outcome.

630

Correlation among bioimpedance analysis, sonographic and circumferential measurements in assessment of breast cancer-related arm lymphedema

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Objective: New approaches for the assessment of lymphedema using bioimpedance analysis and ultrasonography have been introduced recently, and both are considered to be reliable and simple. Bioimpedance analysis gives information about extracellular fluid, and ultrasonography provides detailed information about the physical properties of the tissue in addition to volume and size. The aim of the present study was to determine the relationship among bioimpedance analysis, ultrasonography, and circumferential measurement.
Methods: Twenty-eight patients with lymphedema after breast cancer surgery underwent bioimpedance analysis, ultrasonography, and circumferential measurements. Impedance was measured with a 1-Hz frequency in affected and unaffected arms. The ultrasonographic measurements of skin and subcutis thickness at the upper arm and forearm were performed with control of precise pressure and without pressure. The circumferences were measured at 10 cm proximal and distal to the elbow. We compared the impedance ratios with sonographic and circumferential measurements.
Results: Impedance ratios measured at the upper arm and forearm were highly correlated with circumferential differences (0.789 ($p<0.001$)

and 0.872 ($p<0.001$), respectively) and interlimb volume differences calculated as a truncated cone (0.836 ($p<0.001$) and 0.851 ($p<0.001$), respectively). Furthermore, impedance ratios measured at the upper arm and forearm were correlated with subcutis thickness measured with pressure (0.688 ($p<0.001$) and 0.691 ($p<0.001$), respectively) and without pressure (0.639 ($p<0.001$) and 0.648 ($p<0.001$), respectively). Subcutis thickness differences were also correlated with impedance ratios at the upper arm and forearm (0.524 ($p=0.004$) and 0.479 ($p=0.010$), respectively).

Conclusion: There was a high degree of concordance among the impedance ratios as determined by the bioimpedance analysis, subcutis thickness measured by ultrasonography, and circumferential measurements.

631

Prevalence of carnitine deficiency and fatigue in a small prospective cohort of patients commencing chemotherapy

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Background: Deficiency of the micronutrient, carnitine, may play a role in the development of fatigue, especially during cisplatin therapy. Carnitine status is not routinely assessed.

Objectives: The objective was to determine the level of carnitine deficiency in patients receiving chemotherapy and whether low carnitine levels are associated with fatigue.

Methods: This is a prospective cohort study in cancer patients undergoing chemotherapy measuring free carnitine levels at commencement of chemotherapy (baseline) and at 6 and 12 weeks after commencing chemotherapy. Carnitine deficiency was defined as free carnitine<35 μmol/L for males and <25 μmol/L for females. Fatigue was assessed using the Functional Assessment of Cancer Therapy—Fatigue Subscale (FACT-F).

Results: Of 35 patients, 17 (48 %) undergo haematological, 4 (11 %) breast, 4 (11 %) colorectal, 4 (11 %) lung and 6 (17 %) other chemotherapies. The majority were male (63 %), aged 52.4±16.2 years, weight of 78.5 kg (50–151 kg), BMI of 27.7±6.1 kg/m^2; eight (24 %) were malnourished. Seven (20 %) patients were undergoing cisplatin treatment. All patients had adequate free carnitine levels (males=63.3±14.8 μmol/L, females=53.4±15.7 μmol/L). There were no significant changes in carnitine levels during chemotherapy (59.8±15.6, 56.4±16, 54.64±10.4 μmol/L, $p=0.37$). Fatigue score at baseline was 117 (44–153), which did not change significantly over time. There was no significant difference in carnitine, quality of life, or fatigue between those who were and were not treated with cisplatin at any time point.

Conclusions: No patients in our sample were deficient in carnitine, and hence no associations between carnitine and fatigue were observed. Further research is required to confirm our findings in a larger cohort of patients receiving chemotherapy.

633

The application of cone-beam CT in dental oncology: before, during and after cancer therapy

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The oral cavity can be a major source of local and systemic complications during and after cancer treatment; indeed, oral complications may develop some years after patients have been cleared of their original malignancy. It is therefore essential that the oral cavity is thoroughly evaluated and any potential sources of infection identified and, where possible, eliminated prior to cancer treatment.

The development of cone-beam CT (CBCT) has provided the dental oncologist with an invaluable tool to aid in the diagnosis and treatment planning of patients about to undergo cancer therapy. Conventional 2D tomographic images can be difficult to interpret due to the complex anatomy of the maxillofacial region, leading to overlapping of structures, distortion of images and ghosting, whereas CBCT allows clear visualisation of image slices in axial, coronal and sagittal planes. Consequently, intrabony pathology can be more readily differentiated from anatomical structures, it can be more accurately localised and measured, and critical diagnostic information can be gleaned from the stored data set if required. CBCT images can also be used to diagnose and monitor the progress of intrabony lesions, which may develop subsequent to cancer treatment, or to identify dental sources of infection which may be implicated in complications during cancer therapy.

Several cases from the Peter MacCallum Cancer Centre Dental Oncology Unit are presented to illustrate the application of CBCT in dental oncology.

636

The effect of different preoperative bowel preparation on postoperative protein synthesis for hepatocellular carcinoma patients

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Objective: The level of postoperative serum albumin of patients with hepatocellular carcinoma (HCC) is related to wound healing, coagulation function, and immunologic function. This study aims to explore the best drug of preoperative bowel preparation for postoperative protein synthesis for HCC patients.

Methods: A total of 150 HCC patients were randomized divided into five groups. Patients in group A were treated with oral sodium phosphate (NaP), in group B with oral 25 % magnesium sulfate, in group C with oral lactulose, in group D with oral polyethylene glycol–electrolyte lavage solution (PEG-ELS), and those in group E were without any preoperative bowel preparation. Venous blood was extracted preoperatively and on 1, 3, 5, and 7 days after surgery. Serum pre-albumin was tested and the differences between pre- and post-operation as well as among the groups were compared.

Results: Each group consisted of 30 HCC patients. The level of serum pre-albumin was significantly lower in group E than that in the other four groups 3 and 5 days after surgery ($P<0.05$). The serum pre-albumin of patients treated with oral lactulose was significantly higher than that in the other three treated groups since the third postoperative day ($P<0.05$).

Conclusion: Preoperative oral bowel preparation would mitigate the downtrend of the level of serum pre-albumin for patients with postoperative HCC. For improving postoperative serum pre-albumin, lactulose is superior to NaP, magnesium sulfate, and PEG-ELS.

637

Intestinal microbes increase in cancer patients following irinotecan, capecitabine and 5-fluorouracil therapy

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Goals of work: Diarrhoea is a major clinical manifestation of alimentary mucositis, particularly with fluorouracil and irinotecan regimens. The mechanisms contributing to chemotherapy-induced diarrhoea (CID) are poorly understood. The primary aims of this study were to obtain preliminary data to determine whether the faecal microbes of patients with CID changed over time.
Patients and methods: Eighteen patients provided informed consent to participate in this study. This was a noninvasive study, with patients receiving either irinotecan, 5-fluorouracil or capecitabine requested to provide stool samples at time points 0 (pre-chemotherapy), 2, 5 and 10 days. Stool samples were analysed using quantitative real-time PCR, specifically for *Lactobacillus* spp., *Bifidobacterium* spp., *Bacteroides* spp. (commensals), *Escherichia coli*, *Salmonella* spp. and *Enterococcus* spp. (commensals, with the potential to become pathogenic).
Main results: PCR analysis revealed that *Lactobacillus* spp., *E. coli*, *Salmonella* spp. and *Enterococcus* spp. levels increased at 5 days following the start of the chemotherapy cycle. *Bifidobacterium* spp. and *Bacteroides* spp. remained unchanged over the time course studied. Linear regression analysis showed no statistical significance due to low subject number.
Conclusions: In conclusion, irinotecan, 5-fluorouracil and capecitabine are associated with increases in *Lactobacillus* spp., *E. coli*, *Salmonella* spp. and *Enterococcus* spp. 5 days following the start of the chemotherapy cycle. This is likely to be the result of an altered luminal environment. These results provide important information related to the use and timing of interventions such as probiotics. Future studies with an extended time course are required to fully elucidate the changes that occur.

638

Determinants of pain changes in outpatient cancer patients by baseline pain severity: an analysis from SOAPP (ECOG E2Z02: Symptom Outcomes and Practice Patterns)

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Objectives: The objective was to understand the determinants of pain changes in ambulatory cancer patients.
Methods: Three thousand one hundred six outpatients with cancer of the breast, prostate, colon/rectum, or lung were enrolled from multiple sites. At baseline and 4–5 weeks later, patients rated pain on a 0–10 numerical rating scale. A two-point change was considered clinically significant. Logistic and ordinal logistic modeling was used to examine the effects of demographic and clinical factors on pain changes for patients with mild, moderate, or severe baseline pain.
Results: Of the patients, 2,761 were analyzable for pain changes. At baseline, 53 % had no pain, 24 % mild, 10 % moderate, and 13 % severe pain. Improvement varied by baseline pain score with response in 56 % with severe, 40 % with moderate, and 16 % with mild pain. Overall, 16 different variables were significant in these three models of pain changes, and only analgesic prescribing was common to all three categories. Pain mechanism and baseline pain were significant in models of moderate and severe baseline pain; the number of metastatic sites was significant in models of mild and severe baseline pain. In colorectal and lung cancer patients, male gender was associated with pain improvement in patients with severe baseline pain (OR=5.2, 95% CI=1.2–22.0, P=0.025).
Conclusions: Pain improvement varies between 16 and 56 %. Predictors of pain changes vary with categories of baseline pain severity. Inadequate analgesic prescribing is associated with lack of pain improvement in all groups.

639

Determinants of driving in cancer patients: an analysis from SOAPP (ECOG E2Z02: Symptom Outcomes and Practice Patterns)

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Objectives: In the USA, driving a car is often essential. We determined what factors affect driving status among ambulatory cancer patients.
Methods: Three thousand one hundred six patients with cancer of the breast, prostate, colon/rectum, or lung were enrolled from multiple sites in a longitudinal study of symptoms. Patients were assessed at baseline and at 4–5 weeks of follow-up. Both assessments asked whether patients had driven a car within the past 4 weeks. Logistic regression models were used to identify determinants for driving at baseline, follow-up, and changes in driving status.
Results: At baseline, 78.0 % (2,414/3,093) patients reported driving, as did 76.5 % (2,143/2,800) at follow-up. Among drivers at baseline, 6.2 % (135/2,187) stopped driving during the study period. For baseline non-drivers, 14.1 % (85/603) started driving at follow-up. In logistic multivariable analyses, white race (p<0.0001), male gender (p<0.0001), non-Hispanic ethnicity (p<0.0001), good performance status (p<0.0001), less pain (p=0.03), less weight loss (p=0.002), better quality of life (p=0.001), having a full-time job (p<0.0001), and prior treatment (p=0.03) were associated with driving at baseline. Analgesic strength was a significant univariate, but not multivariate, predictor of driving at baseline. At follow-up, starting cancer treatment, progressive disease, and more weight loss were significant predictors (p<.05) for stopping driving among baseline drivers, and having full-time job and longer duration of cancer were significant predictors (p<0.001) for starting driving among baseline non-drivers.
Conclusions: Demographic and treatment factors, and QOL affect driving status. Starting cancer treatments and employment status affect change in driving status.

640

Effects of psychoeducational interventions on sexual functioning, quality of life, and psychosocial well-being in gynecological cancer patients: a systematic review

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Background: Sexual functioning is significantly disrupted by the diagnosis and treatment of gynecological cancer. Psychoeducational interventions are designed for problems associated with sexuality. However, the evidence for its effectiveness seems to be inconclusive.
Objective: This systematic review aims to identify the best available research evidence related to the effectiveness of psychoeducational interventions on sexual functioning, quality of life, and psychosocial well-being in gynecological cancer patients.
Methods: This systematic review was performed according to the Joanna Briggs Institute (JBI) systematic review approach. Details of the steps will be presented in the poster.
Results: A total of 18,102 studies were identified from the search strategy; 11 studies were included in the review. Of these, only four comparable studies were appropriate for meta-analysis. Psychoeducational interventions significantly improved the mental aspect of quality of life (standardized mean difference (SMD)=−0.41, 95% confidence interval (CI)=−0.74 to −0.08) and effectively treated depressive symptoms (SMD=−0.44, 95% CI=−0.68 to −0.21). However, there was no significant difference in the physical aspect of quality of life (SMD=−0.23, 95% CI=−0.56 to 0.10). Concerning sexual functioning, two studies reported that the intervention improved sexual health, but one study found no evidence of improvement.
Conclusions: Mental aspect of quality of life, depression, and sexual functioning appeared to be improved by the provision of psychoeducational interventions among gynecological cancer patients. The inconclusive evidence related to the interventions might be due to variations in the format, types, duration, and optimal time to deliver the interventions.

641
A phase 2 study to evaluate the efficacy of ramosetron, aprepitant, and dexamethasone in preventing cisplatin-induced nausea and vomiting in chemotherapy-naive cancer patients

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Background and aims: Combinations of aprepitant (NK_1 receptor antagonist), 5-HT_3 receptor antagonist, and steroid improve the complete response rate not only of chemotherapy-induced acute emesis but also delayed emesis. But until now, there was no information whether ramosetron (5-HT_3 receptor antagonists) could be one of the best partners for aprepitant. Therefore, we initiated a prospective, open-label, phase II study to assess the efficacy and tolerability of a combination of ramosetron, aprepitant, and dexamethasone (RAD) in the prevention of cisplatin-based chemotherapy-induced nausea and vomiting (CINV) in chemotherapy-naive patients with solid cancer.
Methods: Thirty-seven patients (27 men/10 women), median age of 59 years (range, 43–74 years), affected with various solid cancers and treated with highly emetogenic chemotherapy (median cisplatin dose, 70 mg/m^2; range, 50–75) were enrolled. Oral aprepitant (125 mg, day 1; 80 mg, days 2 and 3), intravenous ramosetron (0.6 mg, day 1), and oral dexamethasone (12 mg, day 1; 8 mg, days 2–4) were administered prevention of CINV.
Results: Complete response (no emesis, no rescue) was 95 % for the acute period (24 h post-chemotherapy), 92 % for the delayed period (days 2–5 post-chemotherapy), and 92 % for the overall period (0–120 h). Absolute complete response (no emesis, no nausea, no rescue) was 76 % for the acute period, 49 % for the delayed period, and 46 % for the overall period (0–120 h). There was no grade 3 or 4 toxicities.
Conclusions: RAD regimen is a safe and effective antiemetic treatment for the prevention of CINV in patients receiving highly emetogenic chemotherapy.

642
The effect of cancer pain education on pain control at a hospice and palliative care unit

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Objectives: Pain is a common, severe symptom of cancer patients and negatively impacts on quality of life. The effect of cancer pain education on pain control is controversial. This study aimed to investigate the effect of cancer pain education on pain control at a hospice and palliative care unit.
Methods: This is a retrospective study based on a review of medical records. Forty-eight patients were enrolled documenting the Korean version of the M.D. Anderson Symptom Inventory (MDASI-K) at admission and 1 week later among inpatients at a hospice and palliative care unit at Chungnam National University Hospital in Korea. Cancer pain education was given once weekly. The pain education group (N=27) received education within 1 week after admission; the control group (N=21) did not receive any education. Worst and average pain intensity was recorded using the numerical rating scale (0–10) of MDASI-K at admission and 1 week later.
Results: Baseline socio-demographic, cancer, and pain characteristics were not different between the groups. Worst and average pain intensity significantly improved 1 week after admission in both groups. Pain intensity changes (worst pain intensity, 3.78±2.52 vs. 2.43±2.52; average pain intensity, 2.52±2.53 vs. 1.38±1.36) were greater in the pain education group without statistical significance.
Conclusions: Worst and average pain intensity was more improved in the cancer pain education group, but it was not statistically significant. Further studies on whether and what cancer pain education methods will improve pain intensity at the hospice and palliative care unit will be needed.

643
Neuropathic pain characteristics and nerve conduction study findings in lymphedema patients

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Objectives: Neuropathic symptoms are frequently expressed by cancer patients with lymphedema either during the active treatments or survival period afterwards. The etiology includes therapy-related neurotoxicity, paraneoplastic syndrome, and direct compression or injury to nerves. Lymphedema itself may contribute to nerve irritation; this study investigates the demographic characteristics and EMG results to understand this association.
Methods: Cancer-related lymphedema patients, confirmed by lymphoscintigraphy, who complain of neuropathic symptoms in any limb were gathered and sent for EMG test. Patients with diabetes and with known premorbid neuropathy or any other neuromuscular disease were excluded.

Results: Twenty-four out of 68 cancer-related lymphedema patients (35 %) had neuropathic symptoms. Seventeen (70 %) had lymphedema ISL grade 2. The mean age was 52 years (SD=11.0) and all are women, except one. Sixteen patients had breast cancer, six gynecological, and one each for bladder and rectal cancers. All had an operation followed by chemotherapy. Radiotherapy was done, except in three. Symptoms were on the same side arm in breast cancer and in bilateral legs in the others. The median interval from surgeries to EMG was 10.5 months (IQR=5.5–56.3). Twelve had normal EMG and peripheral polyneuropathy was found in nine cases, four with breast and the others with gynecological cancer. The patient (n=1) with bladder cancer had lumbosacral plexopathy.
Conclusion: Lymphedema patients with neuropathic symptoms worse in the limb of lymphedema had EMG findings of peripheral polyneuropathy involving all four limbs. No significant peripheral nerve damage occurred necessarily due to lymphedema itself, but more due to other neurotoxicities.

644
Sexual disorders in patients with breast cancer

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Aim: The purpose of the present study was to examine the prevalence of sexual dysfunction in newly diagnosed sexually active breast cancer patients prior to treatment and identify the characteristics and correlates of dysfunction.
Methods: Participants (n=49) completed the Female Sexual Function Inventory (FSFI), Menopause Symptom Scale, Medical Outcomes Study-Cohort Form, abbreviated Dyadic Adjustment Scale, and Dyadic Sexual Communication Scale.
Results: The mean age of participants was 55 years (SD=12.9). Thirty-six percent reported that they had been sexually active in the last month. Sexually active women were younger, had higher incomes, and were more likely to be in a committed relationship (p<0.05). Among those who were sexually active, the mean FSFI score was 22.71 (SD=7.3); 63 % met the criteria (total FSFI score <26) for sexual dysfunction. Dysfunction was more likely to occur in the domains of arousal, orgasm, pain, and satisfaction, but not desire of lubrication. Vasomotor symptoms and worse physical well-being were associated (p<0.05) with dysfunction. Finally, poorer relationship quality and worse sexual communication were also associated (p values<0.05) with dysfunction; emotional distress was not (p>0.05). These variables accounted for 36 % of the variability in pretreatment sexual dysfunction.
Conclusion: Nearly two thirds of newly diagnosed sexually active breast cancer patients experience significant dysfunction at diagnosis. Factors that may precipitate dysfunction include select demographic factors, physical symptoms, and relationship factors.

645
Diagnostic value of C-reactive protein as marker of infection in acute myeloid leukemia patients with neutropenia

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Objective: The objective was the estimation of C-reactive protein utility (CRP) for the diagnostics of infection in patients with acute myeloid leukemia (AML) and neutropenia.
Methods: Sixty-three patients with AML were observed (aged 20–77 years; median, 50 years). FAB classification variants of AML were M0-3, M1-9, M2-35, M4-10, and M5-6. All patients had neutropenia associated with chemotherapy (granulocytes count below 0.5×10^9/l). All patients at different stages of treatment had infectious complications (86 episodes have been included in the study).
Results: CRP levels in groups of patients with localized infections (mucositis, abscess, pneumonia, etc.) or fever of undetermined origin (FUO) had no statistical differences (p>0.05), but were significant above those in patients without infectious complications (p<0.05). CRP concentrations in patients with systemic inflammatory response syndrome (SIRS) and sepsis did not differ (p>0.05). At the same time, CRP levels at system infections (SIRS, sepsis) was significant above than at localized infections (p<0.001).
Medians of CRP levels in neutropenia patients were: without infectious, 7 mg/l (range, 0–37 mg/l); with localized infections or FUO, 56 mg/l (range, 13–104 mg/l); and with system infections (SIRS, sepsis), 168 mg/l (range, 103–399 mg/l). CRP concentrations correlated with the severity of infectious complications (Spearman R=0.880, p<0.001) and body temperature (Spearman R=0.445, p<0.05).
Conclusions: Thus, CRP is the marker of infectious process severity in AML patients with neutropenia. An increase of its level more than 104 mg/l might be a useful diagnostic tool for the early detection of a systemic infection in such patients.

646
Sleep difficulties, pain, and stress in breast cancer patients

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Aim: This study examined sleep, difficulties, pain, and stress among women undergoing surgery for breast cancer (BC).
Methods: Perceived distress was assessed with the Perceived Stress Scale. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI). Pain severity and interference were assessed using the Brief Pain Inventory, while the frequency of cancer-associated pain was assessed with a single item from the Functional Assessment of Cancer Therapy—Breast Cancer Scale. Participants were assessed immediately prior to surgery and then at 4–6 weeks following surgery.
Results: Participants were 68 women who completed at least the PSQI at presurgery, 36–85 years old (M=61.12, SD=9.18). Clinically significant sleep disturbance was evident in 48 % of participants prior to surgery; 57 % showed that clinically significant sleep disturbance was associated with greater stress (p<0.01), cancer pain frequency (p<0.01), and pain interference (p<0.01). Frequency of cancer pain decreased significantly following surgery (p<0.05); however, there were no changes in sleep disturbance, pain severity/interference, or stress scores from pre- to post-surgery. Following surgery, greater total sleep disturbance remained associated with greater stress (p<0.01) and cancer pain frequency (p< 0.01), but was no longer associated with pain interference.
Conclusions: Sleep disturbance is prevalent among women both prior to and following surgical resection for BC. In addition, associations among sleep disturbance, stress, and pain are present shortly following BC diagnosis and persist throughout the perioperative period.

648
Nutritional parameters and especially body composition and muscle tissue predict for toxicity

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Objectives: Toxicities are the primary endpoint in phase I trials. That is why it is crucial to differentiate toxicity directly related to the tested compound or to host-related characteristics such as body composition

(BC). The aim of our study was to analyze the consequences of BC parameters on the incidence of toxicities in phase I studies.
Methods: Consecutive patients from February to August 2011, without consideration of tumor type or nature of the drug, enrolled in phase I studies were analyzed. Clinical and biological parameters were prospectively recorded. Analysis of CT images was used to evaluate cross-sectional areas (in square centimeters) of muscle tissue (MT). The third lumbar vertebra was chosen as a landmark since it is linearly related to whole-body measurements. Images were analyzed using Slice-O-Matic software, V4.3. Analysis was stratified on sex.
Results: One hundred thirteen patients were evaluated. The following parameters were not found to be associated with withdrawal of the drug for toxicity (WDT): weight change, >5 %; weigh change, >10 %; albumin, <35 g/L; lacticodeshydrogenase, >250 U/L; transthyretin, <21 mg/dL; and C-reactive protein, >6 mg/L. The only predictive factor for WDT was a low MT cross-sectional area: 117 cm^2 in the group with WDT compared to 138 cm^2 in the group without WDT ($p=0.039$). The proportion of patients with MT>median was higher in the group without WDT (56 %) than in the group with WDT (15 %, $p=0.007$).
Conclusions: In a heterogeneous population of patients enrolled in various phase I studies, we have shown that drug withdrawal due to toxicity was linked to low muscle tissue.

650
Agranulocytosis and infectious complications in patients with acute leukemia manifestation

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Background: It is considered that severe neutropenia or agranulocytosis is the most important factor predisposing to infection development in patients with acute leukemia (AL).
Objective: Out objective was the estimation of agranulocytosis and infectious complication frequency in patients with AL manifestation.
Methods: Eighty patients with de novo AL were observed: 55 of them had acute myeloid leukemia (AML; aged 20–79 years, median=54 years) and 25 had acute lymphoblastic leukemia (ALL; aged 16–71 years, median=42 years).
Results: Sixteen (29 %) patients with AML had a granulocyte count below 0.5×10^{9}/l. Nine (56 %) of them had an infection. Among patients who did not have neutropenia, 23 had infectious complications (59 %). In the group of ALL patients, agranulocytosis was detected in seven (28 %). Only one of them had the infection. Among the ALL patients without neutropenia, two had infectious complications. There were no significant differences between the distribution of infection in patients with and without agranulocytosis in both myeloid and lymphoblastic types of leukemia ($p>0.05$, chi-square and Fisher's exact two-tailed criteria).
Conclusions: Agranulocytosis in AML and ALL manifestation patients developed with identical frequency. Infections in AML patients were observed almost five times more often than in ALL. Hence, the development of infectious complications in the debut of AL is not interfaced with severe neutropenia. Possibly, their development depends not so much on the deficit of immune cells but on deeper infringements of their protective functions caused by a neoplastic process.

651
Adapted physical activity in the cancer context

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Introduction: Apart from transfusion or recombinant erythropoietin (in anemia-related fatigue), no medical treatment has shown benefit in reducing fatigue, particularly common and disabling in patients with cancer. In contrast, many studies support a finding of a reduction in fatigue level by the practice of Adapted Physical Activity (APA). Moreover, the APA performed after treatment improves survival and significantly reduces the risk of relapse (up to 50 %).
Object: The objective was to elaborate guidelines to decision making for the management of fatigue and survival improvement in patients with cancer by the practice of APA.
Method: This study is a part of the "interregional guidelines" of supportive care, led by AFSOS, constitution of groups to develop guidelines based on the literature and/or expert consensus. The works of groups are presented during the national days of pooling of supportive care guidelines, this year held on December 2 and 3.
The "APA and cancer" group, composed of health professionals and APA specialists, has worked according to the methodology provided:

- Analysis of the literature
- Several meetings
- Presentation in plenary session and validation after a few modifications

Result: Guidelines to decision making for the management of fatigue and survival improvement by practice of APA were developed.
Conclusion: The benefit of exercising APA is demonstrated by several studies. It is important to educate cancer patients on the benefits of the AP at the start of their care, by AP professionals, and awareness of the cancer. These guidelines are considered by professionals, present during these days, as relevant and useful for the generalization of the APA.

652
Onco with no pain: monitoring patients with cancer pain through a tablet device

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Cancer pain prevention is one of the crucial aspects of cancer therapy which needs the implementation of suitable strategies relying on the most recent technologies. In particular, in cases of end-stage disease, it may happen that while cancer-specific therapy fails, pain therapy may still get positive outcomes.
In order to improve the pain treatment strategy, information about the type and the amount of pain perceived by cancer patients should be the monitored and measured. However, this information is often missing in patients' medical records or is collected on irregular and subjective basis, often leading to different therapeutic choices between operators and exposing patients to non-standard therapeutic pathways. The IRCCS Fondazione Salvatore Maugeri (FSM) of Pavia, Italy, recently starts a pilot project regarding patients of the Oncology 1 Medical Division suffering from cancer pain in any stage of disease with the aim of gathering information related to cancer pain, thanks to an IT architecture based on tablet computers wirelessly connected to the hospital information system. The principal aim of the project was to provide physicians with a system to improve the treatment of cancer pain and measure the deviation of the prescribed therapies with respect to cancer guidelines. Using this IT system, clinicians have the opportunity to observe the direct relationship between therapeutic treatment and values of pain and modify the

analgesic therapy according to the response of the patients following cancer guideline schemas.

654
Risk-adapted approach for fever and neutropenia in pediatric cancer patients

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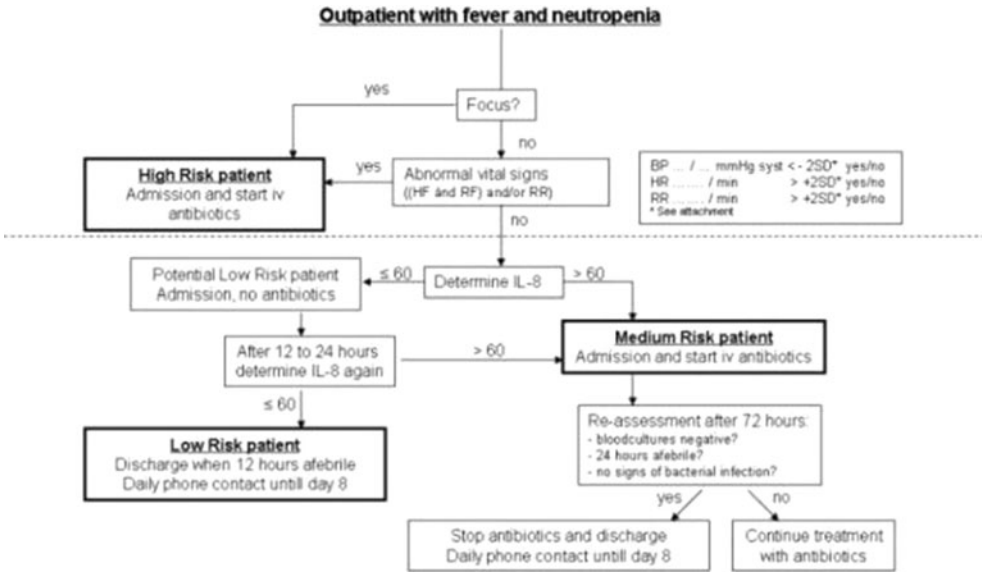
Objectives: In this national multicenter intervention study, we examined the feasibility of shortening the duration and withholding antibiotics in selected pediatric cancer patients with febrile neutropenia.

Methods: Outpatients with febrile neutropenia were allocated to one of three groups by a risk assessment model which combined objective clinical parameters and the plasma IL-8 level (see figure).

Results: One hundred thirty-four pediatric cancer patients with 234 febrile neutropenic episodes were included: 64 (28 %) high risk, 123 (53 %) medium risk (73 (31 %) with full treatment, 50 (21 %) with only 3 days of antibiotic treatment), and 47 (20 %) low risk. Duration of antibiotic treatment and admission were significantly lower in the experimentally treated patients compared to patients who received standard care. In the low-risk group, there were three readmissions with relapse fever and three patients with coagulase-negative staphylococci (CoNS) in their blood culture. No complications occurred in these six patients.

Conclusions: Of the patients, 41 % benefit from the risk assessment model based on objective clinical parameters and the IL-8. It was safe to shorten antibiotic treatment in a subgroup of medium-risk patients and safe to withhold antibiotics in low-risk patients, but two problems were encountered in this group: relapse fever and CoNS cultures. Thus, the risk assessment model can be implemented in practice, but it remains important to carefully examine every individual patient that presents with febrile neutropenia.



Risk assessment model

655
The response shift phenomenon in childhood cancer patients and its effect on HRQL

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Objective: Cancer patients often report good health-related quality of life (HRQL) despite a deterioration in their health status. Apparently, cancer changes an individual's perception of HRQL. This change in perception, called response shift, might affect the magnitude of changes in HRQL over time. This study assessed the response shift phenomenon in childhood cancer patients.

Methods: Participants included children ≥8 years (n=37), their parents, and parents of children ≥2 years (total number of parents, n=80). The then-test method was used to determine response shift. HRQL was assessed within 2 weeks after diagnosis (pretest) and 3 months later (posttest) using both child and parent reports of PedsQL and Cantril's ladder. The posttest and then-test were administered concurrently.

Results: HRQL improved between pre- and posttest. Cantril's then-test was lower than the pretest in both child and parent reports, indicating an overestimation of the overall HRQL at pretest. Children experienced a greater response shift than parents. No differences were found between the PedsQL then-test and pretests.

Conclusions: Both child and parent report ratings of overall HRQL were affected by response shift, resulting in an underestimation of the improvement in the overall HRQL between diagnosis and 3 months post-diagnosis. No response shift was demonstrated in the more

specific domains of HRQL (PedsQL). Therefore, the use of the PedsQL instruments is recommended in future studies that aim to demonstrate changes in HRQL. By explicitly measuring response shift, differences between HRQL ratings of childhood cancer patients can be interpreted more accurately.

657
Nutritional changes in non-small cell lung cancer (NSCLC) are not linked to chemotherapy side effects: results from a pilot study

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Objectives: Weight loss (WL) caused by mechanisms incompletely understood is frequently observed with non-small cell lung cancer (NSCLC). We hypothesized that chemotherapy causes only small variations in body composition, while tumor with its inflammatory processes leads to decreased intake and diminished muscle mass.
Methods: Patients with NSCLC before chemotherapy (group before, GBe, n=12) were compared to patients during chemotherapy (GCh, n=24). Body mass index (BMI), WL (compared to 6 months ago), nutritional impact syndrome (NIS, each parameter scored from 0 to 10), caloric (CI, in kilocalories per kilogram per day), and protein (PI, in grams per kilogram per day) intake were prospectively recorded. Cross-sectional areas of muscle (MT) and adipose tissue (AT) were measured by CT image analysis using Slice-O-Matic software.
Results: In all populations, only one had a BMI below 18.5, yet 83 % were sarcopenic. There was no difference between the NIS scores: 8.7 (GBe) vs. 8.1 (GCh). When comparing GBe to GCh, there was a trend toward an increase in WL (−6.9 % GBe vs. −1.1 % GCh) and a decrease in both CI (24.2 GBe vs. 30.9 GCh) and PI intake (1.0 GBe vs. 1.4 GCh), though the differences were not significant. There were no differences in AT and MT. When NIS score was <10, CI and PI were higher (33.8 and 1.5) compared to an NIS score >10 (22.2 and 1.0, $p<0.05$ and $p=0.03$, respectively).
Conclusions: Before any chemotherapy, patients exhibited weight loss, decreased intake, and increased NIS. These nutritional parameters were ameliorated during chemotherapy. The lack of significance may be due to the small population. Caloric and protein intake are correlated with NIS.

659
Antibiotic and other lock treatments for tunneled central venous catheter-related infections in children with cancer: a systematic Cochrane review

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Objectives: The risk of developing a tunneled central venous catheter (CVC)-related infection ranges between 0.1 and 2.3 per 1,000 catheter days for pediatric oncology patients. These infections are difficult to treat with systemic antibiotics (salvage rate, 24–66 %). Lock treatments can achieve 100–1,000 times higher concentrations locally. Our objective was to investigate the efficacy of antibiotic and other lock treatments in the treatment of CVC-related infections in pediatric oncology patients.
Methods: An extensive literature search was performed (until August 2011) for eligible randomized-controlled trials (RCTs) and controlled clinical trials (CCTs). Two authors independently selected studies, extracted data, and performed a quality assessment of the included studies.
Results: Two RCTs and one CCT (including 132 children with CVC-related infections) evaluated lock treatments (n=71: 56 urokinase, 15 ethanol) and concomitant systemic antibiotics versus systemic antibiotics only (n=61). The preliminary results show that in 50 of 71 (70 %) children in the experimental group and in 42 of 61 (69 %) in the control group, the CVC-related infection was cured (relative risk (RR)=1.03, 95% CI=0.82–1.29). In the experimental and control groups, 18 (25 %) and 16 (26 %) CVCs, respectively, were removed prematurely (RR=0.96, 95% CI=0.55–1.69).
Conclusions: The preliminary results show no significant effect of urokinase or ethanol lock in addition to systemic antibiotics. However, this could be due to low power. Final results will be available at the conference. No RCT or CCT was published on antibiotic lock treatment only. More well-designed RCTs are needed to further explore the effect of antibiotic or other lock treatments.

660
The fear-related death and fear-overcoming methods expressed by Korean terminal cancer patients and their families

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Purpose: The aim of this study was to identify fear-related death and fear-overcoming methods experienced by patients in the terminal stage and their families.
Method: Data collections were conducted in the 41 terminal cancer patients and 46 principal family members in the 12 nationwide hospitals and hospice in Korea according to appropriate ethical procedures, from 15 March 2011 to 16 August 2011. Qualitative analysis of the assembled data from the written answers to six open-ended questions was used.
Results: “Process of death,” “mortem-death,” “connection break-off,” “family's burden,” “not concluding one’s life,” “being at the end of life,” and “the life after bereavement” were the fears revealed in both patients and families. The only fears shown in patients were “post-mortem judgments,” “decay of body after burial,” “separation from one’s family,” “being at the end of life.” However, the families revealed “the loneliness and life after bereavement.” The identified overcoming methods were “existence of a meaningful person,” “pursuit of divinity,” “accepting the death as reasonableness,” “finding the hope of life,” “thinking of a dead family member,” “taking counsel, acts for surmounting the thought of oneself dying,” “looking away from the circumstance.” There was little difference in expressions between the patients and their families.
Conclusion: There were some differences between patients and families in the fears, which are considered as those related to how each group of persons views his or her life after death.

661
Writing national guidelines on oncologic supportive care: an example with the “pressure ulcer” guidelines and healthcare professionals’ part

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Objectives: New French recommendations and regulations on pressure ulcers cope with prevention materials and the use of bandages, especially in wet healing wound care. These changes make the home healthcare professionals' job more difficult when choosing the right material or bandage. Writing new guidelines is the answer to these difficulties because, most of the time, guidelines do not take into account home care constraints. Furthermore, because of the specificity of oncologic care, healthcare professionals have to define personalized care objectives well adapted to patients and their life environment.
Methods: Elaborating national guidelines for oncologic supportive care by AFSOS (Association Francophone pour les Soins Oncologiques de Support) is based on an inter-regional work carried out by hospital professionals gathered in a network. In Lorraine, we altered our workgroup membership, adding home healthcare professionals such as doctors, nurses, and pharmacists. This group wrote the guidelines, while hospital professionals from two other regions (Champagne-Ardenne and Rhône-Alpes) suggested modifications.
Results: These guidelines were approved during the AFSOS National Congress. Guidelines comprise decision-making tools (decision trees, illustrations and photographs, advice sheets, synoptic tables) and links to other supportive care guidelines. The participation of home healthcare professionals during the elaboration work enabled the guidelines to meet the expectations of both home and hospital care professionals.
Conclusion: This experience shows that oncologic supportive care implies necessarily a global, multidisciplinary approach with every healthcare professional dealing with cancer disease.

662
Mastery and optimism as predictors of individual differences in distress among parents of children with cancer

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Objectives: Parents of children with cancer experience multiple stressors. This may lead to a range of emotional reactions (e.g., anxiety, depression, stress). Some parents, however, are more distressed than others. Candidates to predict differences in distress are optimism and mastery. The objectives of this study were to examine the amount of distress in parents of children with cancer (3 months post-diagnosis) and the predictive value of mastery and optimism in ratings of parental distress (e.g., anxiety, depressive symptoms, illness-related parenting stress).
Methods: Participants were 96 parents of newly diagnosed pediatric cancer patients. Measures included the Revised Life Orientation Test, Pearlin & Schooler Mastery List, State Trait Anxiety Inventory, Center for Epidemiologic Studies Depression Scale, and the Pediatric Inventory for Parents.
Results: Fifty-one percent of the parental ratings of anxiety and 37 % of ratings of depressive symptoms were above the clinical cutoff. Regression analyses showed that parental age, optimism, and mastery were inversely related to parental distress. The full model explained respectively 40 % of the variance in anxiety, 44 % of the variance in depressive symptoms, and 42 % of the variance in illness-related parenting stress. When mastery was entered in the models of anxiety and illness-related parental stress, optimism was no longer significant.
Conclusions: At 3 months after the diagnosis of childhood cancer, elevated levels of anxiety and depressive symptoms were prevalent in a substantial proportion of the parents. Furthermore, optimism and especially mastery are useful resources for parents of children with cancer. Mastery should be promoted by tailored interventions.

663
Breakthrough febrile neutropenia and associated complications among elderly cancer patients receiving adjuvant chemotherapy with primary G-CSF prophylaxis

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Objective: Current guidelines advocate routine prophylaxis with granulocyte colony-stimulating factors (G-CSF) in elderly patients receiving adjuvant chemotherapy. This study evaluates the incidence, impact, and predictors of breakthrough febrile neutropenia (FN) in this high-risk group of patients.
Methods: This was a single-center, observational, retrospective cohort study. Elderly (>65 years old) cancer patients receiving adjuvant chemotherapy with primary G-CSF prophylaxis between January 2008 and August 2011 were included in this analysis.
Results: One hundred six patients and 507 cycles of chemotherapy were analyzed. Majority of patients were Chinese (81.1 %) and female (60.4 %). Median age was 70 years (range, 65–85 years). The majority were diagnosed with lymphoma (54.7 %), followed by breast (32.1 %) and small cell lung cancers (11.3 %). Twenty-one patients (19.8 %) manifested at least one episode of FN, half of which (47.6 %) occurred during the first cycle of treatment. Patients who manifested FN received lower dose intensities of chemotherapy as compared to those who did not (86.3 vs. 98.8 %, $p=0.01$). After adjustment for confounding factors (gender and baseline absolute neutrophil counts), patients with cardiovascular disease were at higher risk of developing breakthrough FN (adjusted odds ratio=3.7, 95% CI=1.3–10.8, $p=0.02$)
Conclusion: Despite routine prophylaxis with G-CSF, breakthrough FN is highly prevalent among elderly cancer patients receiving adjuvant chemotherapy, particularly among patients who have a history of cardiovascular disease. Patients experiencing breakthrough FN are also more likely to suffer from dose reduction of their chemotherapy, which may impact the outcomes of their cancer treatment.

664
Symptoms of depression in patients with head and neck cancer in radiotherapy treatment: a prospective study

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Objective: The objective was to evaluate the frequency of depressive symptoms in patients with head and neck cancer at the beginning, middle and, end of radiotherapy treatment.
Methods: A prospective exploratory study with a quantitative approach was conducted with 41 head and neck cancer patients, on radiotherapy treatment, at the Oncology Outpatient Clinic in Ribeirão Preto, São Paulo, Brazil. Data were collected using the Beck Depression Inventory.
Results: The symptoms of dysphoria increased during the treatment, as well as the number of patients with depression. The results show the importance of health professionals to detect the levels and prevalence of depression symptoms as these symptoms tend to increase and may

lead to consequences such as lack of adherence to treatment and a decrease of the quality of life of patients.
Conclusions: Symptoms of depression are common in patients with cancer undergoing radiotherapy treatment. Head and neck cancer patients, undergoing oncological treatment, may develop symptoms of depression due to various factors related to the cancer itself and to the treatment. They may experience functional changes, such as difficulty breathing, swallowing, and impaired verbal communication, leading to social isolation, and adherence to treatment may be adversely affected. The results of this study showed the importance of healthcare professionals detecting the frequency and levels of depressive symptoms and planning actions that minimize these symptoms in order to improve the quality of life of head and neck cancer patients undergoing radiotherapy treatment.

665
Dispositional optimism and pessimism in adolescents with cancer: is it more important to be optimistic, less pessimistic, or both?

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Objectives: Prior research using a composite score of dispositional optimism/pessimism (i.e., overall optimism) has shown that dispositional optimism is an important resource for patients with cancer. Recent studies suggest, however, that optimism and pessimism are separate dimensions. In this study, we aim to investigate the levels of optimism and pessimism in adolescents with cancer as compared to healthy controls and the separate effects of optimism and pessimism on concurrent and longitudinal well-being.
Methods: Thirty-three adolescents with cancer (3 months post-diagnosis) and 66 matched controls completed the optimism/pessimism subscales of the Youth Life Orientation Test. Furthermore, patients completed the State Trait Inventory for Children, the Memorial Symptom Assessment Scale, Cantril's ladder, and the PedsQL 3.0 Cancer Module at 3 (T1) and 6 months (T2) post-diagnosis.
Results: Our results show that adolescents with cancer were not more optimistic, but significantly less pessimistic than their peers ($t_{97}=-4.76$, $p<0.00$). Furthermore, regression analyses showed that pessimism is a more important predictor of adolescents' well-being than optimism. Pessimism at T1 explained 28 % of the variance in anxiety and 16 % of the variance in cancer-related worry. Initial pessimism also predicted follow-up well-being, even when earlier assessments of the outcome were controlled for.
Conclusions: Often found high levels of overall optimism in cancer patients might be better understood from low pessimism than from high optimism. Also, low levels of pessimism might be more indicative of well-being in the long run than optimism. It might be that low pessimism is a factor related to resiliency.

666
Coping strategies used by parents of children with cancer

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Aim: The aim of this research was to determine the level of family adaptation among parents of children diagnosed with cancer spectrum disorder and to identify differences in F-COPES scores based on family demographics, children characteristics, and time of cancer diagnosis.
Methods: A cross sectional co-relational study was conducted. A descriptive survey used a convenience sample of 50 parents (38 mothers and 12 fathers) of children with cancer. Family adaptation was measured by the Family Crisis-Oriented Personal Evaluation Scales (F-COPESs). All data were analyzed using SPSS 14.0 for Windows.
Results: Analysis of the means and standard deviation shows that parents use more strategies of reframing ($M=3.8$, SD=0.7) than spiritual support ($M=2.9$, SD=0.9). Acquiring social support as neighborhood was the less used coping strategy ($M=1.8$, SD=0.8). We did not find statistical significant differences between coping strategies used by parents of children with cancer and children's age at the time of diagnosis or gender ($p>0.05$). Families with no other children mobilized to acquire and accept help and acquired social support more frequently ($p<0.05$).
Conclusions: These results will be useful to professionals working with families of children with cancer.

668
Skin self-examination and skin cancer screening behaviors and practices among medical students in Tirana, Albania, with family history for skin cancer

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Introduction: Cutaneous malignant melanoma prevalence, incidence and mortality rates are increasing in white populations worldwide more rapidly than any other cancer site (American Cancer Society 2006). Despite the potential importance of regular skin self-examination and promotion of self-protection practices, little is known about the prevalence of these practices in medical students in an Albanian population.
Methods: This is a descriptive, quantitative cross-sectional study. In this study were included a sample of 150 individuals chosen among the students of the Faculty of Medicine based on their family history of skin cancer. This study was started on the 3rd of October and finished on the 12th of November. Subjects had to fill out a structured, self-administered questionnaire. All participants lived within the Republic of Albania, but at the time of the study were students in the University of Tirana.
Results: In this study, we included 150 individuals supposed to have a risk of skin cancer based on their family history. Two hundred individuals were approached for participation. Of these, 150 individuals returned the questionnaire data, yielding a response rate of 75 % among eligible, successfully contacted participants. The mean age of the sample was 20.05 years; the faculty itself was represented unequal.
Conclusion: It is important for those individuals with a family history of skin cancer (which inherently indicates risk of skin cancer) to develop self-examination and SSE behaviours and practices in order to have a protection and at least an early detection (if onset) of the different forms of melanoma.

669
Supportive care needs in advanced cancer patients undergoing palliative treatment in rural New South Wales, Australia

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Objective: The objective was to conduct a comprehensive assessment of the unmet supportive care needs of cancer patients being treated in rural oncology centres.
Methods: Seventy-five patients being treated at one of three rural oncology centres are given the validated Needs Assessment for

Advanced Cancer Patients (NA-ACP) questionnaire, measuring 132 supportive care needs on a five-point scale (no need to high need). Ethics Committee Approval has been obtained and verbal consent taken from the participants. Patients' standardised scores on the NA-ACP were summarised using means and standard deviations and compared across gender and cancer groups using *t* tests and analysis of variance. The five most common moderate to high needs were also extracted.
Results: Patients' mean age was 68 years (range, 27–89 years; men=42.7 %; women=57.3 %). Men (mean=51, SD=19) reported a slightly higher mean NA-ACP score compared to women (mean=48, SD=13, $p=0.50$). Lung cancer patients (mean=59, SD=22) reported higher mean unmet needs compared to patients treated for breast (mean=46, SD=9), colorectal (mean=47, SD=16) or other cancers (mean=48, SD=12, $p=0.06$). The most common unmet needs were 'lack of energy' (31 %), 'not being able to do the things you used to do' (24 %) and dealing with 'work around the house' (26 %), 'changes to usual routine and lifestyle' (23 %), and 'concerns of family' (21 %).
Conclusions: The study identifies the unmet supportive care needs of a rural population. It shows that more research in cancer-related fatigue and strategies to overcome this will go a long way in reducing morbidity and improving the well-being of advanced cancer patients.

670
Coping behaviour in patients with colorectal cancer

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Aim: The aim of the work was to the study the coping behaviour of patients with colorectal cancer.
Methods: In our study, 60 (42 men and 18 women; age: mean±SD, 62.4±13.4) patients were entered. As an instrument, the F. Helm questionnaire was used.
Results: The prevalence rates of the following forms of coping strategies were revealed: behavioral—"altruism", "active avoidance" (23 %); "distraction" (51 %); emotional "optimism" (48 %); "repression of emotions" (23 %); cognitive—"prevalence of self-control" and "dissimulation" (23 %). Using colorectal cancer as a model has shown the prevalence of emotional adaptive coping mechanisms over maladaptive in patients with psychosomatic disorders, which allows estimating positively their adaptation abilities.
Conclusion: From the results of our study, it seems necessary to apply cognitive behavioural psychotherapy in the system of treatment methods of patients with colorectal cancer to facilitate acquiring more constructive forms of coping behaviour.

671
Rehabilitation interview with lung cancer patients after surgery: a qualitative evaluation of a nursing intervention

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Objective: A study of lung cancer patients assesses the effect of a structured rehabilitation interview after surgery using a questionnaire, but there is no evidence of the patients' experiences of the interview. The purpose of this research was a qualitative evaluation of the intervention to investigate patients' experiences of the rehabilitation interview as a complement to quantitative assessment
Methods: Nine patients were enrolled for a qualitative interview 3 weeks after discharge. Data were analysed by the use of Steiner Kvale's theory.
Results: Through analysis of the interviews, patients' experiences of the rehabilitation interview appeared, which are described as themes such as physical symptoms, reduction of function, lifestyle changes, worries and existential concerns, lack of information, breaches of everyday life, and family and health system as resources. Patients did not experience unresolved problems during the first 3 weeks after discharge, but some patients experienced uncertainty around the time of discharge related to insufficient information. The patients were generally positive about the rehabilitation interview and had experienced that it was based on their own deliberations. Some patients had difficulty remembering the interview, and few patients found the interview irrelevant.
Conclusion: Patients exposed to the systematic rehabilitation interview mainly experienced it as meaningful, despite short and compressed hospitalization. To optimize the proceeds of the rehabilitation interview, and therefore also the involvement of the patient, as an active agent in his/her own life situation and rehabilitation, there is a need to focus on the nurse's relational skills.

672
The journey from the diagnosis of prostate cancer: having a radical prostatectomy and beyond

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Introduction: Continued investigation into the health concerns of men prior to and post-treatments for prostate cancer is required.
Aim: The aim of this study was to provide a retrospective picture of men's experiences of surgery for prostate cancer from the initial diagnosis through their surgery and beyond.
Methods: A qualitative, descriptive design was employed. Ethical approval was obtained. A volunteer sample ($n=8$) of men 15 years or less post-radical prostatectomy were interviewed. Data were analysed using qualitative thematic content analysis. Trustworthiness of data was established through prolonged engagement, member checking and review of transcripts for the creation of themes by two researchers independently.
Results: Men identified a number of themes related to their prostate cancer journey. Important concerns for men preoperatively included the process of 'getting diagnosed'. Men also spoke at length in relation to their very real need for information and the need for peer, family and healthcare professional support. Post-surgery, a number of important themes also emerged. Specifically, a number of participants spoke of their quest to return to normal life. Physical side effects of surgery (urinary incontinence and erectile dysfunction) emerged as major concerns post-surgery. In addition, men were fearful of the possibility of reoccurrence of cancer.
Conclusions: In a healthcare system which increasingly values the 'patient's view', this type of information is vital in order to tailor healthcare services to meet the unique needs of each patient. Increased emphasis needs to be placed on supporting men post-prostatectomy in the longer term.

674
Involvement of hypothalamic cyclooxygenase-2 and POMC in the development of docetaxel-induced anorexia in rats

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Objectives: Docetaxel is frequently used for the treatment of primary and metastatic breast cancer or non-small cell lung cancer. Clinical reports demonstrated that this agent often induces anorexia, but the

etiology is not completely understood. To elucidate a possible mechanism, we investigated the involvement of the central activation of cyclooxygenase (COX)-2 and pro-opiomelanocortin (POMC) in the development of docetaxel-induced anorexia in rats.
Methods: Rats received docetaxel (5 or 10 mg/kg, i.p.) with or without pretreatment of selective COX-2 inhibitors, celecoxib (30 mg/kg, i.g.), then their food intake was hourly monitored for 24 h after the administration. In addition, we also examined the expression COX-2 or POMC mRNA in the hypothalamus of docetaxel-treated rats 8 and 18 h after drug administration. Finally, we investigated the effect of pretreatment with celecoxib on the docetaxel-induced POMC mRNA expression in rats.
Results: Docetaxel (10 mg/kg) induced anorexia within 8 h of the administration, and anorexia persists for 24 h. Pretreatment with celecoxib completely restored the anorexia. Administration of docetaxel increased COX-2 and POMC mRNA expression in the hypothalamus of rats, and the time required to increase these gene expressions was comparable to the latency period of docetaxel-induced anorexia. Furthermore, pretreatment with a COX-2 inhibitor suppressed the docetaxel-induced expression of POMC mRNA.
Conclusions: These results suggest that COX-2 mRNA expression and subsequent activation of POMC in the hypothalamus may contribute to the development of docetaxel-induced anorexia in rats.

675
Radical prostatectomy versus watchful waiting for prostate cancer: a systematic review

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Background: The lack of evidence regarding the effectiveness of treatment options for clinically localised prostate cancer continues to impact on clinical decision making. Two such options are radical prostatectomy (RP) and watchful waiting (WW). WW involves providing no initial treatment and monitoring the patient with the intention of providing palliative treatment if there is evidence of disease progression. This paper seeks to describe the process used to complete a Cochrane review and to outline the findings of that review.
Aim of systematic review: The aim was to compare the beneficial and harmful effects of RP versus WW for the treatment of localised prostate cancer.
Data collection and analysis: Data extraction (from included studies) and quality assessment were carried out independently by two authors. Results: Two trials met the inclusion criteria. Both trials commenced prior to the widespread availability of prostate-specific antigen (PSA) screening; hence, the results may not be applicable to men with PSA-detected disease.
Conclusions: It is the presenters' contention that the existing trials provide insufficient evidence to allow confident statements to be made about the relative beneficial and harmful effects of RP and WW for patients with localised prostate cancer. The results of ongoing trials should help to inform treatment decisions for men with screen-detected localised prostate cancer.

677
Predicting neutropenic fever in Asian patients with cancer through data reduction techniques

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Objective: Neutropenic fever (NF) is a serious complication among patients receiving myelosuppressive chemotherapy. Patient-specific risk factors and chemotherapy-related and disease-related characteristics can affect the clinical outcome and management of NF. Although many patient-specific, chemotherapy-related and disease-related risk factors have been identified, they vary among different patient populations. This study explored the feasibility of data reduction techniques in identifying NF predictors.
Methods: A single-centered, retrospective study was conducted from May to July 2011 at the National Cancer Centre Singapore. Demographics and risk factor data were collated from electronic health records and four cancer registries. Data were summarized using descriptive statistics, while categorical principal component and multiple correspondence analyses were used to identify potential NF predictors.
Results: A total of 583 patients were analyzed. The majority was females (79 %), Chinese (75 %) and diagnosed with breast cancers (60 %). Six risk factors were identified as potential predictors: types of cancer (16.9–19.8 % of variance), chemotherapy regimen (anthracycline-based, 11.8–12.9 %; taxane-based, 8.1 %), liver function tests (alanine transaminase, 8.6 %; alkaline phosphatase, 4.0 %), renal function tests (serum creatinine, 3.1 %), prior granulocyte colony-stimulating factor (G-CSF) use (5.6 %) and diabetes mellitus (6.6–6.9 %). In terms of cancer types, lymphomas were more predictive than breast cancers.
Conclusion: The use of data reduction techniques has managed to identify six risk factors that can be potential clinical predictors of NF. The use of these risk factors to identify patients at risk for NF can allow clinicians to optimize prophylactic G-CSF usage in these patients.

678
Rehabilitation with focus on weight reduction among overweight breast cancer survivors

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Objectives: The objective was to describe a 6+2-day rehabilitation program developed at Rehabilitation Centre Dallund in Denmark with focus on weight reduction for breast cancer survivors.
Methods: Rehabilitation Centre Dallund had offered rehabilitation to cancer survivors as a 6-day residential program since 2001. The program consists of physical, psychological, social, work-related and existential issues. In 2011, we developed a special program for overweight breast cancer survivors with focus on weight reduction. The key focus was to work with their motivation to change habits by using cognitive therapy tools, communicating knowledge and letting the women try a healthy lifestyle for a week.
Results: The program is varied between lectures, group-based dialogs, individual consultations and physical activity. The first 6 days consisted of two sessions with focus on motivation and change of habits, physical activity, session with a dietician, mindful eating, individual activities and working out their own action plan for the future. The 2 days of follow-up had a focus on women's experience of acting up to their action plan after 10 weeks at home; there was a psychologist group session, a workshop about existential issues, individual activities, mindfulness and physical activity. In this residential program, the women not only heard about healthy living but were also physically active and a healthy diet was served.
Conclusion: This program motivated the women to change habits and lose weight. Furthermore, they reported that an active and healthy lifestyle increased their well-being. Data from 37 women will be presented in another poster at the conference.

679

Cognitive impairment in colon cancer (CC) patients after receiving adjuvant chemotherapy (CT)

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Objective: Patients treated with chemotherapy (CT) often report some loss of memory. This has been studied mostly in patients receiving adjuvant CT for breast cancer, but there are no data about adjuvant treatment of colon cancer. The aim of this study was to investigate whether adjuvant CT induces impaired memory in colon cancer (CC) patients.
Methods: Between January 2008 and September 2011, 89 patients were included, diagnosed with stage II–III CC, which received adjuvant CT for 6 months. Verbal memory (Test Barcelona), executive function (Trail Making Test B), and psychomotor ability (Trail Making Test A) were investigated pre- and post-CT and after 6 months of follow-up.
Results: We have data of 73 patients who completed the analysis pre- and post-treatment. Population characteristics: males, 67 %; mean age, 67.6 years; <5 years of education, 78 %; stage II/III, 43/57 %; treated with FOLFOX-4/Xeloda, 83/17 %.
Conclusions: Verbal memory impairment was demonstrated after adjuvant CT in CC and persisted after 6 months. Remembering history is significantly deteriorated, affecting immediate recall of stories, even when clues are given. Executive function is affected too, although slightly. This can have a negative impact on the patient's quality of life. More studies are necessary to try to prevent cognitive impairment following CT.

680

Differential relationships between music perception and cognitive domains in breast cancer survivors and healthy controls

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Objectives: A significant percentage of breast cancer survivors (BCS) report changes in cognition after chemotherapy, specifically in memory and executive function. Music perception is a form of general cognition that has strong relationships with cognitive domains in healthy adults and adults with cochlear implants. The purpose of this analysis was to determine whether music perception was related to standard cognitive domains (learning, memory, attention, language, executive function) in long-term BCS and age- and education-matched (HC) and whether those relationships were different depending on group.
Methods: Twenty-seven BCS and 27 HC without a history of stroke or other significant neurologic disease completed standardized cognitive testing and the Montreal Battery of Evaluation of Amusia. Cognitive testing scores were combined to indicate domains of learning, memory, attention, language, and executive functioning. Correlations were adjusted for age, years of education, depression, and pure tonal average. Mixed models were used to compare correlations between BSC and HC.
Results: There were significant, positive overall correlations between (1) language and contour, interval, rhythm, meter, and memory; (2) learning and memory and contour; and (3) executive functioning and rhythm. The BCS showed higher correlation between scale and attention and executive functioning than the controls. HC showed higher correlations between rhythm and learning and memory than BCS.
Conclusions: There are differential relationships between some cognitive domains and music perception subscales depending on group status. Higher rhythmic processing related to learning and memory in HC point to potential music-based interventions for cognitive rehabilitation in learning and memory in BCS.

682

Rehabilitation with focus on weight reduction can motivate overweight breast cancer survivors to change habits and lose weight

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Objectives: The objective was to assess whether a 6-day rehabilitation program can motivate overweight breast cancer survivors to increase physical activity, reduce their weight, and experience fewer late effects.
Methods: Rehabilitation Centre Dallund is offering rehabilitation to cancer survivors with a 6-day residential program. The program consists of physical, psychological, social, work-related, and existential issues. In 2 weeks in 2011, the focus of all issues was on weight reduction for breast cancer survivors. There were 2 days of follow-up 10 weeks after. Before each of the two stays, the women received questionnaires about their weight, diet, physical activity, and late effects. Each stay was evaluated by the women. They will be send questionnaires 6 months after the first stay.
Results: Thirty-seven breast cancer survivors participated in the first stay and 32 in the second (86 %) stay. All women were overweight; the mean BMI was 31.7. More than 90 % was motivated to lose weight, inspired to change their diet, and increase their physical activity. Preliminary results show that more women reported strenuous exercise and that the number of self-reported late effects was significantly reduced from the first to the second stay. Furthermore, the participants had lost 2.9 kg on average from the first to the second stay. At the conference, data from the 6-month follow-up will be presented.
Conclusion: It seems that our 6-day rehabilitation program can motivate overweight breast cancer survivors to change habits and lose weight. Furthermore, the women experienced the advantage of trying a healthy lifestyle in practice in this residential program.

683

Nutritional status as a prognostic marker in palliative situation

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Objective: Is there a correlation between the results of bioimpedance analysis (BIA) and the survival time of patients at the palliative care unit?
Methods: We analyzed the nutritional status of 100 consecutive patients (30 women, 70 men) who died at our PCU. The mean age was 60±11.6 years. Ninety-three of 100 patients suffered from cancer. The results of BIA (reactance, resistance, and phase angle), body mass index (BMI) of patients, and the individual survival time were included for further calculations.
Results: The following mean values were seen: resistance, 510±144 Ω/m; reactance, 31±12 Ω/m; BIA phase angle, 3.48±0.96; body mass index, 22.76±4.52 kg/m²; overall survival, 27.95±49.8 days. A multivariate analysis has shown a phase angle <4.0 as the most sensitive

point for shorter survival (<30 days). BMI and body weight were not sensitive regarding the survival of PCU patients.
Conclusion: Decreased BIA phase angle (<4.0) seems to be a prognostic marker regarding an end-of-life situation. Performing bioimpedance analysis could support physicians in palliative treatment decisions.

684
Evaluation of efficacy of Caphosol in the prevention and alleviation of acute side effects in patients treated with radiotherapy for head and neck cancers

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Post-irradiation mucositis during radiotherapy in the head and neck region is a side effect which is usually most severe with severe painful symptoms and difficulties in food ingestion. All the adverse effects result in prolonged hospitalization time and increased use of narcotic analgesics and have a negative impact on the quality of life.
The purpose of this study was to assess the efficacy of Caphosol in the prevention and alleviation of acute side effects to irradiation in patients irradiated for head and neck cancers.
Caphosol is an electrolyte solution containing calcium and phosphate ions. Patients with head and neck cancer referred to radiotherapy with radical intent had been entered to this protocol. Caphosol was assessed in a non-blinded, matched clinical study. Each treatment arm consisted of 50 patients treated with the same methods. The groups were similar with respect to the clinical diagnosis and the treatment. The only difference was the Caphosol in the experimental arm. Caphosol has been used from the beginning of the irradiation and 2 weeks after treatment. The severity of mucositis, xerostomy and dysphagia was assessed by radiotherapists once a week.
Results: We noticed a statistically significant difference in the mean severity of mucositis, dysphagia and xerostomia ($p<0.001$ for all reactions); in the use of opioids ($p<0.001$); and also a difference in the frequency of prolonged hospitalisations ($p<0.001$) between the observed groups.
Conclusion: The use of Caphosol reduces the severity of acute mucositis, dysphagia and xerostomia, exerting a positive effect on comfort in the oral cavity in patients irradiated for head and neck tumors.

685
Start therapy: self-titration with oral morphine sulphate in cancer pain patients

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Introduction: The European Association for Palliative Care recommends fixed doses of immediate-release oral morphine sulphate (oMS) every 4 h for the initial treatment of moderate to severe cancer pain. However, too often, one dosage does not fit all. This is probably due to the single-patient genetic variability and individual characteristics.
Patients and methods: We designed a phase II prospective study in opioid-naive cancer patients: group 1 (visual analogue scale, VAS 4–7) received 5 mg of oMS as many times as needed for the first 3 days in order to achieve complete pain relief; group 2 (VAS 8–10) received 10 mg with the same modalities. The primary end point was the analgesic effect rate (VAS<2) after a 3-day auto-clinical titration.
Results: We enrolled 80 cancer patients. The median values of oMS/24-h dosage to a 72-h follow-up were 24.2 mg (group 1) and 55.4 mg (group 2). However, single-patient variability was significantly high, ranging from 10 to 30 mg/day for group 1 patients and from 40 to >60 mg/day for group 2.
Conclusion: Our results confirmed that a 3-day start therapy with self-titration of oMS is an effective "targeted" clinical model to achieve pain control in cancer pain. This approach offers the possibility of avoiding under- or overtreatment and allows the patient to achieve pain relief, minimizing related toxicity.

688
Opinion of nursing professionals about delivering information to the terminal and advanced patient

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Introduction: The communication of bad news represents an emotional burden for medical and nursing professionals.
Target: Our aim was to know the opinion of nursing professionals about the communication of diagnosis and prognosis to advanced and terminally ill patients.
Material and methods: This is a descriptive, prospective, and multicenter study based on a questionnaire completed by professional nurses working in different services. A sample of 135 professionals was selected.
Results: Of the professionals surveyed, 71.4 % believe that those patients who have been diagnosed with terminal cancer should be informed compared to 6.8 % that believe otherwise; 18.8 % have doubts and 3 % did not answer. To the question "why?", 65.2 % of the respondents answered. Out of them, 63.6 % wielded reasons related to the right of the patient, 31.8 % made it dependent on the patient's condition, and 4.5 % claimed that they should not be informed in any case because they believe that the quality of life improves with ignorance.
Regarding the delivery of the information, 54.1 % referred to a physician in any of the proposed variables (9.6 % pointed to the GP, 32.6 % to the specialist, and 11.9 % to the professional that established the diagnosis); 34.1 % believed that it is a team effort; and 10.4 % referred to a professional psychologist. These opinions far exceeded those who think that the communication should be conducted by a professional nurse (0.7 %) or the family (0.7 %).
Conclusion: Nursing professionals seem to have given up interfering in the communication of diagnosis and prognosis to terminally ill patients and prefer taking a complimentary role in this function.

689
Future of collaboration of cancer NGOs with MASCC

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Background: Data from a lung cancer registry provides health professionals/researchers and politicians detailed information on the incidence, trend, and survival statistics Traditional cancer registries are population-based and seek to describe the incidence, rates, and trends of lung cancer within set populations. Clinical cancer registries provide complementary staging, treatment, and allied clinical data required to monitor clinical care/outcomes.
Objective: Our cancer NGO developed a primary plan in consultation with four divisional hospitals and the Health Ministry. We plan to integrate this concept at major cancer institutes in Asia with expertise from

the Multinational Association of Supportive Care in Cancer (MASCC). Proposal of intent has been approved at the national level.
Methods: We relate our experience of initiative aimed at establishing the methodology, statistical analysis, and supportive control center for multi-collaborator lung cancer data collection, aiming to establish a national lung cancer data repository.
Results: Initiated from four sites from India, modern technology data collection, storage and analysis, and distribution are optimized toward the implementation of a sustained comprehensive and multi-collaborator data registry. Lessons have been learned with regard to establishing minimum datasets and customization of technology to suit needs, data capture, storage, and retrieval. We have developed our national database, but need the participation of private cancer care institutes and naturopathy clinics. The total participants projected by 2013 are 46.
Conclusion: Data can be collated centrally in a secure and private manner. Multicentre, multi-clinician collaboration is possible with collaborative efforts with MASCC. A national lung cancer registry is a distant dream in resource-poor nations. But we have taken a step in forward direction on this burning issue.

690
Identifying deficits and needs in palliative care

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Objectives: We need to focus on the development of palliative care. For developing nations, this approach will certainly have a positive impact.
Method: Our NGO volunteers and nurses conducted this pilot study in six rural villages of India. Seven nurses, two physicians, and one counselor participated. One hundred forty-six patients, 34 caregivers, and 18 spiritual/community leaders participated. Relief of distressing symptoms was reported in 80 %. Responses on palliative care were analyzed using questionnaires.
Results/findings: Poor well-being, appetite, pain, and fatigue were the most prevalent symptoms reported by patients. Fifty percent of the patients reported severe pain and 9 % reported no pain. Spiritual pain control had the highest correlation with quality of life in comparison to functional, emotional, physical, and social well-being. Ninety percent of patients and caregivers reported free communication about illness.
Conclusions/recommendation: MASCC/WHO must take an initiative in propagating such efforts in developing nations. The development of a comprehensive lung cancer service program is a distant dream in resource-poor nations. We, NGO patient advocates, need international funding support for palliative care programs. This study gives a demographic picture of terminal cancer patients and family caregivers in public healthcare system and some aspects of palliative care. Resource-poor nations need NGOs to develop such programs in the absence of a government-run healthcare setup. There is a need to discuss our project ideas/concerns/difficulties with senior researchers from USA/Europe.

691
A case of dysgeusia caused by zinc deficiency after pancreaticoduodenectomy

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Introduction: Pancreaticoduodenectomy (PD) is one of the invasive operations in digestive apparatus surgery and is performed to treat cancerous tumors on the head of the pancreas. We report a patient who experienced zinc deficiency with glossitis, dysgeusia, and acrodermatitis enteropathica-like eruption after PD.
Patient: A 73-year-old woman with pancreatic head adenocarcinoma underwent PD in Shizuoka Cancer Center in July 2005. She was discharged from the hospital in August 2005. But several weeks later, she noticed remarkable dysgeusia and tongue pain.
Status praesens and treatment progress: Clinical findings revealed atrophy of the tongue with soreness and a remarkable taste disorder. Her extremitas skin was erythematous, dry, and scaly. Serum zinc level was decreased to 30 μg/dl. She was given trace element formulation (Zn, 4 mg) intravenously four times for 2 weeks, but the serum zinc level was not changed. In November 2005, she needed to undergo management of nourishment with total parental nutrition under hospitalization. Serum zinc level was improved to 99 μg/dl after 20 administrations. As oral and skin symptoms recovered, she left the hospital end of November. But 1 month later, the serum zinc level decreased to 35 μg/dl again. The port catheter was implanted and she continued zinc supply in her home. Serum zinc values were gradually improved to normal range and were maintained. There was no recurrence and metastasis of primary tumor, without oral and skin trouble until the present time.
Conclusion: Severe zinc deficiency after PD may need persistent zinc supplementation intravenously.

692
Perceived cognitive function in breast cancer survivors: impact on self, social relationships, work ability, and life satisfaction

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Purpose: Breast cancer survivors often report symptoms of cognitive impairment. However, little is known regarding its impact on quality of life. Thus, the study purpose was to examine perceived cognitive impairment and its impact on relationships, daily functioning, work, and overall life satisfaction after breast cancer diagnosis and treatment.
Methods: ndividual qualitative interviews were done with 22 breast cancer survivors who reported cognitive impairment and who were on 1-year post-cancer treatment which included chemotherapy. Interviews were recorded, transcribed verbatim, and analyzed using content analysis.
Results: Breast cancer survivors expressed concerns in five major domains including memory (short-term and long-term), speed of processing, attention and concentration, language, and executive functioning. Concerns emerged as salient after treatment ended as other symptoms resolved. All of the survivors found these impairments frustrating, and some also reported that these changes were detrimental to their self-confidence and social relationships. Employed survivors reported working harder to perform tasks and using compensatory strategies to complete work tasks. Life satisfaction remained high. Validation of perceived cognitive impairment by family, friends, and healthcare providers was perceived as important to adjustment.
Conclusions: Perceived cognitive deficits have broad implications to the well-being of breast cancer survivors. Findings underscore the broad consequences of this symptom and providing direction for theory development, measurement selection, and additional intervention targets.

693
Trabectin-related rhabdomyolysis in a patient with Li–Fraumeni syndrome

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Introduction: Trabectedin (ET 743) is an antitumor drug which is being increasingly used in the treatment of advanced soft tissue sarcoma. Clinical trials of this drug have shown significant toxicities, amongst which neutropenia and transaminitis are more common; in addition, fatal cases of severe rhabdomyolysis have also been reported. We report a patient with sarcoma of the thigh who was treated with trabectedin and developed severe rhabdomyolysis with renal failure, but recovered completely.
Case report: A 1-year-old lady with Li–Fraumeni syndrome and known metastatic left thigh sarcoma was admitted with severe nausea, myalgias, and dark brown urine for a few days. She had undergone resection of the thigh sarcoma twice and had failed chemotherapy with adriamycin/ifosfamide and gemcitabine/docetaxel. She was currently on cycle 2 of third-line chemotherapy with trabectedin. Admission labs were significant for elevated transaminases and CK. Treatment was initiated with aggressive IV hydration and IV analgesics. She developed severe rhabdomyolysis and complete renal failure resulting in anuria. She was treated with IV sodium bicarbonate for alkalinization of urine. She managed to recover completely with return of her renal function without dialysis.
Conclusion: Rhabdomyolysis is a rare fatal complication of ET 743 therapy with incidence of only 0.5 % and has been observed to develop usually after the second cycle of chemotherapy. Trabectedin-associated rhabdomyolysis, although extremely rare, has certainly to be considered as a potential life-threatening adverse reaction. Careful clinical and biochemical monitoring at each cycle of trabectedin chemotherapy and prompt management can prevent its fatal outcome. All cases in recent literature with such a degree of rhabdomyolysis with trabectin have been known to be fatal. However, in this case, our patient made a complete recovery.

694
Terminal delirium—what a pain!

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Objectives: The aim of this presentation was to identify causative factors and examine appropriate management of terminal delirium. It discusses the difficulties faced in assessing terminal delirium, comparing presenting features with those of pain at the end of life when a patient is unresponsive, requiring visual assessment by the health professional.
Methods: A literature search revealed a paucity of assessment tools for both delirium and pain at the end of life, the pathogenesis of delirium, and the presenting features of delirium and pain. Suggested strategies for management of terminal delirium were also sought. A retrospective review of deceased patients' notes, all of whom had been referred to palliative care nurses with uncontrolled "pain," was performed to assess their end-of-life symptom management.
Results: Delirium is common in terminally ill patients and is associated with increased morbidity and mortality. It is frequently misdiagnosed and poorly managed due to the similarities in presentation with pain and psychological disorders such as dementia and depression. The pathogenesis of delirium is multifactorial, complex, and poorly understood, and no single cause has, to date, been identified. Management of delirium requires accurate assessment and investigation of potential causes and may include both pharmacological and non-pharmacological strategies.
Conclusion: The difficulties identified included lack of awareness and poor recognition of delirium, paucity of assessment tools for both delirium and pain at the end of life, and the underuse of assessment tools that are available. Two case studies will be presented.

696
Awareness and completion of advance directives in patients with advanced cancer

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Objective: It is generally recommended that patients with advanced cancer discuss their end-of-life (EOL) wishes with their family and physicians and create an advance directive (AD). We evaluated awareness and completion rates of AD (living will, power of attorney (POA) for personal care and do-not-resuscitate order (DNR)) in patients receiving chemotherapy for advanced cancer.
Methods: Patients with advanced (recurrent or metastatic) solid tumours receiving outpatient chemotherapy completed a questionnaire assessing knowledge and completion of AD, demographics, performance status and symptom severity. A chart review confirmed oncologic diagnosis, treatment course and metastatic site. Associations of these factors with AD completion were examined using logistic regression.
Results: Recruitment is ongoing. Preliminary analysis of 81 patients shows that despite a high level of awareness of AD (93, 91 and 83 % for living will, POA and DNR, respectively), the completion rates were low, at 28, 48 and 17 %, respectively. Of those who completed AD, 55 % did this before their cancer diagnosis, 20 % within 1 year of diagnosis and 15 % at recurrence or detection of metastasis. Only 43 % of patients had discussed EOL wishes with their partners and 7 % with a physician. More than 50 % stated they would want aggressive resuscitation measures and ICU transfer. On multivariable analysis, only older age was associated with completion of AD ($p=0.002$).
Conclusions: Despite awareness of AD, the completion rates were low and often predated the cancer diagnosis. Increased discussion of AD with patients with advanced cancer may clarify the goals of care and avoid unwanted aggressive care at the EOL.

697
Efficacy of a psychooncological rehabilitation intervention: the experience of CeRiOn (Centre for Oncological Rehabilitation), Florence, 2007–2010

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Objectives: Combining medical and psychological knowledge and accompanying patients in an individualised path, CeRiOn aims at offering efficacious integrated rehabilitation interventions.
Methods: Six hundred eighty-four out of 1,308 new patients cared for in 2007–2010 were treated by the Psychooncological Service. Among them, 378 participated in three or more encounters and were followed up for clinical and life status until December 2011. Whereas the great majority of them did not have formal conclusion of the individual psychological support, either for dropout or for last contact occurring as group participation only, 63 had both a baseline and a follow-up measure of distress by the Psychological Distress Inventory (PDI) and Distress Thermometer (DT). All of them were women with non-advanced breast cancer.
Results: The table shows the statistically significant before–after amelioration in this selected group of highly psychologically suffering cancer patients (20 % of psychiatric consultation versus 5 % among all the psychological supported patients).

	Age	Time since diagnosis (years)	Length of psychological support	No. of psychological encounters	No. of support group participation (art therapy, music therapy, relaxation, logo therapy)	PDI baseline score	PDI follow-up score	DT baseline score	DT follow-up score
Mean	57.3	5.2	1.7	13.8	2.0	34.4	29.9	5.4	2.2
Standard deviation	10.1	2.8	0.9	8.8	1.8	8.6	7.1	2.2	1.6
P value	n.a	n.a	n.a	n.a	n.a	<0.0001		<0.0001	

Results of a set of 63 patients

Conclusions: Seven patients out of 30 with PDI>35 (clinical cutoff) at the baseline maintain a PDI score above the cutoff at the end of the rehabilitation treatment. The average psychological support time was quite longer (1.7 years). Almost all the patients (but 10 %) received both group and individual psychological support.

698

Caphosol®, a calcium phosphate mouthwash, gives no additional protection against mucositis in patients with cryotherapy undergoing stem cell transplantation

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Introduction: Oral mucositis is a feared complication of intensive chemotherapy, especially after conditioning therapy for stem cell transplantation (SCT). Oral cryotherapy (OC) has been shown to reduce mucositis, the use of i.v. opioids, and the need for total parental nutrition (TPN) and is the standard of care in SCT in our institution. One previous report has suggested that Caphosol, a hypersaturated calcium phosphate mouth rinse solution, has a protective effect in a SCT setting [1].
Aim: Our aim was to evaluate whether addition of Caphosol® enhances the protective effect of OC in patients undergoing allogeneic SCT.
Method: All patients ≥16 years scheduled for allogeneic stem cell transplantation (n=40) were included consecutively and randomised to an experimental group (EXP) receiving OC+Caphosol® (n=20) or a control group (CTR) receiving only OC (n=20). OC was given from the start of myeloablative therapy (day 0). Caphosol® mouth rinse was given from day 0 to day 22. The degree of mucositis and intensity of oral pain were recorded daily, and data on the use of TPN and i.v. opioids were collected.
Results: No significant differences were seen.

Day 0-21	EXP	CTR	,
Mucositis WHO grade 3-4	75 %	55 %	NS
Total dose iv opioids (mg)	665 (323-4266)	412 (6-2069)	NS
Opioid treatment	70 %	60 %	NS
TPN	65 %	55 %	NS
Mean pain score VAS 1-10	4.1	5.45	NS

No significant differences were seen.

Table 1

Conclusion: In patients treated with oral croytherapy during conditioning for SCT, there was no additional benefit of using Caphosol® during conditioning and for 3 weeks afterwards.
[1] Papas et al. (2003) Bone Marrow Transplant 31:705–712

699

Hemoglobin concentrations and QOL levels in patients receiving chemotherapy

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Aims: The aim of the present work was to study the plasma immunoerythropoietin and haemoglobin levels of cancer patients treated with platinum or 5-fluorouracil (5-FU)-based chemotherapy. The study also explored a relationship between decreased hemoglobin levels and quality of life (QOL).
Methods: Plasma was obtained from 30 (21 women, 9 men; age range, 18–80 years) patients who were about to receive chemotherapy for malignancy: 15 treated with cisplatin or carboplatin and 15 with 5-fluorouracil-based chemotherapy. Blood was collected on the first day (before drug administration) and around day 14 of every chemotherapy course. Complete blood count, haemoglobin levels and creatinine were measured. On each control, every patient answered the originally created questionnaire which was constructed on the basis of SF-36. The primary end points were changes in haemoglobin and QOL.
Results: A decrease in haemoglobin (Hb) levels occurred following every course of 5-FU or platinum-based chemotherapy in patients with steady concentrations of creatinine, as well as in QOL scoring. In patients who were on substitution therapy, we observed an increase in Hb levels and in QOL scoring towards normal just before the following course. This phenomenon was evident in every course.
Conclusions: Our results suggest that chemotherapy administration, using the current standards of substitution therapy and forced diuresis, slightly lowered Hb levels, but did not influence QOL scoring, both in 5-FU- and in platinum-treated subjects. Encouraging results regarding Hb levels and QOL scores during chemotherapy warrant another trial designed to confirm these findings.

700

Satisfaction with ambulatory oncology care: patient and caregiver agreement

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Objectives: Little is known about the level of agreement between patient and caregiver individual reports of satisfaction with healthcare, and no such study has been conducted in the advanced cancer setting. We aimed to assess the level of agreement in satisfaction with

oncology care between patients with advanced cancer and their caregivers and to identify factors associated with satisfaction.
Methods: Patients with advanced cancer and their caregivers were recruited from oncology clinics. Satisfaction with care was measured using FAMCARE—patient and caregiver versions. Patients completed measures of symptom severity (ESAS) and quality of life (QOL: FACT-G, FACIT-Sp). Caregivers completed a QOL measure (CQOL-C). Agreement between patient and caregiver satisfaction scores was assessed using intraclass correlation coefficient (ICC) and weighted kappa statistics; multivariable regression was used to determine predictors of satisfaction.
Results: For 191 patient–caregiver pairs, caregivers were less satisfied than patients (mean FAMCARE scores, 67.5 vs. 65.7 out of 90, $p=0.02$). Overall agreement between patients and caregivers was moderate (ICC=0.59). Agreement for individual items on FAMCARE was low ($\kappa=0.11$–0.37). Both patients and caregivers were least satisfied with information on prognosis and managing pain. Factors associated with patient satisfaction were lower education level, better patient QOL, and less symptom severity; with caregiver satisfaction, lower education levels and better caregiver QOL.
Conclusions: Despite considerable discrepancy between caregiver and patient ratings, there was agreement regarding elements of care needing improvement the most. Greater attention to pain control and communication regarding prognosis would improve patient and caregiver satisfaction with care in advanced cancer.

701
Prognostic factors of lymphocele in patients with cervical cancer after pelvic lymph node dissection and hysterectomy

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Objective: The objective of this study was to identify the prognostic factors of lymphocele after hysterectomy and pelvic lymph node dissection in patients with cervical cancer.
Methods: A retrospective review was undertaken of records regarding 62 cervical cancer patients who had undertaken hysterectomy with pelvic lymph node dissection between May 2005 and October 2010 at Konkuk University Medical Center, Korea. Univariate and multivariate analyses were executed to evaluate the potential variables for lymphocele.
Results: At a median follow-up of 34 months (range, 12–69 months), 20 patients (32.3 %) had developed lymphocele. Of the 20 patients, eight patients (40.0 %) had symptoms and needed managements. On univariate analysis, the prognostic factors that had correlation with lymphocele were the number of removed lymph nodes and radiation therapy. On logistic regression analysis, the results were the same as that of univariate analysis. The number of lymph node and radiation therapy was correlated with the development of lymphocele.
Conclusion: In the author's analysis, a more extensive lymph node dissection and radiation therapy may increase the incidence of lymphocele in patients with cervical cancers who undergo hysterectomy and pelvic lymph node dissection.

702
An open-label study of Evomucy mouth spray for oral mucositis

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Objectives: The primary objective of this study was to examine the safety and tolerability of Evomucy mouth spray in cancer therapy-induced oral mucositis.
Methods: Twenty-two cancer patients, receiving a chemotherapy regimen that causes ulcerative oral mucositis, were asked to apply the Evomucy mouth spray to the oral mucosa three times per day, beginning during chemotherapy administration and ending 10±3 days after the last dose of the chemotherapy cycle. Subjects completed daily written questionnaires regarding use and tolerability of the studied mouth spray and adverse events (AEs). The primary endpoint was the percentage of subjects in whom mouth spray use was interrupted or stopped due to a related AE.
Results: Fifteen of the 22 subjects experienced ulcerative oral mucositis during the study. Of 15 subjects who used the original mouth spray flavor, six subjects (40 %) discontinued use prematurely due to not liking the taste of the mouth spray and one subject interrupted use temporarily due to stinging on oral lacerations caused by an ill-fitting appliance. A new lemon flavor of the same product was used for the remaining seven subjects, and this was much better tolerated, with no subject (0 %) interrupting or discontinuing use prematurely. Overall, mouth spray use was interrupted or stopped prematurely due to an AE attributable to the mouth spray in 7 of 22 subjects (32 %). There were no AEs impacting on subject safety.
Conclusions: There were no safety concerns with the use of Evomucy mouth spray in chemotherapy patients. Tolerability was significantly better with the lemon flavor than the original flavor ($p=0.029$).

703
Anticancer treatment near the end of life

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Objectives: To assure good end-of-life care, it is critically important to discontinue anticancer treatment on time, when treatment burden outweighs its own benefits.
Material and methods: We analyzed the medical documentation of 269 cancer patients who have died at our hospital in 2009. We have compared the frequency and severity of common adverse events during the last 4 weeks of life between a group (G) of patients who have (ChT) or have not received (noChT) anticancer therapy at that time.
Results: During the last 4 weeks of life, 116 (43.1 %) out of 269 patients have received anticancer therapy. Comparing ChTG with noChTG, there were more anemia G3/4 (19.8 vs. 6.5 %, $p<0.001$), neutropenia G3/4 (19.8 vs. 0.7 %, $p<0.001$), thrombocytopenia G3/4 (20.7 vs. 6.5 %, $p=0.001$), febrile neutropenia (11.2 vs. 1.3 %, $p<0.001$), and infection G3/4 (43.1 vs. 7.2 %, $p<0,001$). Eleven (9.5 %) patients in ChTG were admitted in the intensive care unit during the last 4 weeks of life, with five (3.3 %) patients in noChtG. In contrast, only four (3.5 %) patients in the ChtG group were presented to a palliative care unit compared with 32 (20.9 %) patients in noChtG. Patients in the ChtG group were hospitalized for more than 2 weeks in 47.4 % and patients in noChtG in 36.6 %. On average, patients were in the hospital 14.2 days in ChtG and 12.1 days in noChtG.
Conclusions: Inappropriate maintenance of anticancer treatment in advanced/metastatic cancer patients near the end of life may result in severe toxicity, leading to poor quality of life, more outpatient visits, more and longer hospitalizations, or even in ICU admission.

704

Modulating autophagy: a strategy for cancer therapy

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Autophagy is a process in which long-lived proteins, damaged cell organelles, and other cellular particles are sequestered and degraded. This process is important for maintaining the cellular microenvironment when the cell is under stress. Many studies have shown that autophagy plays a complex role in human diseases, especially in cancer, where it is known to have paradoxical effects—namely, autophagy provides the energy for metabolism and tumor growth and leads to cell death, which promotes tumor suppression. The link between autophagy and cancer is also evident in that some of the genes that regulate carcinogenesis, oncogenes and tumor suppressor genes, participate in or impact the autophagy process. Therefore, modulating autophagy will be a valuable topic for cancer therapy. Many studies have shown that autophagy can inhibit the tumor growth when autophagy modulators are combined with radiotherapy and/or chemotherapy. These findings suggest that autophagy may be a potent target for cancer therapy.

705

Epilepsy in neurooncology: guidelines of the French Supportive Care Association

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Objectives: Our objective was to propose French guidelines for epilepsy management in central nervous system (CNS) tumors.
Methods: After a review of the literature (Medline–PubMed, December 2011), a national committee of specialized national caregivers (neuro-oncologists and epileptologists) elaborated guidelines secondarily approved by the AFSOS (Association Française de Soins Oncologiques de Support) and ANOCEF (Association des Neuro-OnCologues d'Expression Française).
Results:
When to treat?
In case of CNS tumor, an antiepileptic drug (AED) treatment is recommended after the first seizure (no indication for AED prophylactic treatment).
How to treat?
Enzyme inductor AEDs should be avoided since they may decrease the efficacy of anti-neoplastic agents or supportive medication. Enzyme inhibitors should be used with caution due to the increased toxicity of chemotherapy.
Status epilepticus (SE)
Identification of associated etiology is mandatory. Treatment options are presented according to general status and prognosis. They could follow general guidelines regarding SE treatment.
Complementary exams and hospitalization
A brain MRI should be performed in case of unexplained increase in seizure frequency or modified semiology. EEG is recommended for diagnosis purpose.
Contraception, fertility, pregnancy
AED and oral contraception may interact. A decrease of libido and fertility may be observed. Preconceptional neurological and obstetrical advices are needed.
Medico-social aspects
Epilepsy impacts daily life. A specific authorization for driving is required. An adaptation of work may be necessary.
End of life
Intravenous or subcutaneous drugs should be preferred because of swallowing disorders. Associations with treatments that reduce the epileptogenic threshold should be avoided.
Conclusion: Management of epilepsy implies respecting simple rules. A specialist opinion may sometimes be required.

706

Prevalence and predictors of supportive care needs among cancer patients

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Objectives: The purpose of this study was to investigate the prevalence and predictors of supportive care needs among patients with early and advanced cancer across all major tumor entities and care settings.
Methods: A total of 1,047 participants with heterogeneous tumor entities were recruited in inpatient and outpatient cancer care facilities (female, 51 %; median age, 57 years; breast cancer, 26 %; prostate cancer, 22 %; hematological cancers, 13 %); 476 patients (41.5 %) had advanced disease (UICC cancer stage III/IV). Validated questionnaires measuring supportive care needs (SCNS-SF34-G), anxiety and depression (HADS), social support (ISSS), and distress (DT) were used.
Results: Seventy percent of participants indicated at least one unmet need on the health system/information and psychological domain each, 59 and 55 % reported physical and daily living as well as sexuality needs, and 48 % needed support in patient care and support. No significant group differences between inpatient and outpatient settings ($p=0.83$), early and advanced disease ($p=0.32$), and gender ($p=0.19$) in supportive care needs were found. Linear regression analysis was conducted in order to identify the variance in supportive care needs accounted for by demographic (age, gender, partnership, school education, income), cancer- and treatment-related (tumor entity, cancer treatment, cancer stage, time since diagnosis), and psychosocial factors. Anxiety, depression, overall distress, and detrimental social interactions remained in the final model (R^2 adjusted=0.28, $p<0.001$).
Conclusions: Our findings show that supportive care needs are highly prevalent across all tumor entities and treatment settings. The importance to provide a variety of evidence-based psychosocial support offers and interventions is emphasized.

708

Quality of life of brain metastases patients receiving stereotactic radiosurgery using the EORTC QLQ-C15-PAL and the EORTC QLQ BN20+2

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Objectives: The objective of this study was to investigate the quality of life (QOL) in patients before and after stereotactic radiosurgery (SRS) for brain metastases using the EORTC QLQ-BN20+2 and the EORTC QLQ-C15-PAL questionnaires.
Methods: Patients who received SRS for brain metastases completed the EORTC QLQ-BN20+2 and the QLQ-C15-PAL at baseline prior to treatment and 4 weeks post-treatment. Scale scores at baseline and at the 1-month follow-up were calculated using the EORTC scoring manual.
Results: Thirty patients treated with SRS (13 men and 17 women) were included. Median age, Karnofsky Performance Status and Graded Prognostic Assessment scores were 59, 80 and 2, respectively. The most common primary was lung cancer (n=19). When comparing baseline and follow-up data for the EORTC QLQ-C15-PAL questionnaire, patients overall experienced an increase in dyspnoea (1.1 %), appetite loss (5.6 %) and fatigue (4.7 %); a decrease in pain (−0.7 %), insomnia (-6.7 %), constipation (−6.7 %), QOL (−6.3 %), physical functioning (−1.1 %), nausea/vomiting (−2.2 %) and emotional functioning (−0.6 %). For the EORTC QLQ-BN20+2 questionnaire, patients receiving SRS experienced an increase in drowsiness (10.2 %), itchy skin (9.9 %), weakness of legs (0.4 %), trouble controlling bladder (1.3 %) and difficulty with cognitive functioning (1.9 %); a decrease in future uncertainty (−8.8 %), visual disorder (−6.0 %), motor dysfunction (−2.0 %), communication deficit (−4.4 %), headaches (−4.4 %), seizures (−1.1 %) and difficulty with hair loss (−0.85 %).
Conclusions: One month after SRS for brain metastases, worsening and improvements in general QOL scores were identified; improvements were identified in seven brain-specific QOL items. Future studies in this population should include the assessment of QOL as an endpoint.

709
A comparison of pain management: the last 3 days of life of hospitalized adult and old cancer patients

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Objectives: Knowledge concerning pain management in the oldest terminally ill cancer patients is deficient. The objectives of the study were to investigate whether there were differences in healthcare workers' documentation of pain characteristics in adult (36–77 years) and old (78–99 years) cancer patients, in addition to what types of analgesics that were administrated to these patients.
Methods: The study included 54 adult and 56 old cancer patients who were inpatients in a general hospital in Oslo, Norway. Data were extracted from the patients' electronic records using the Resident Assessment Instrument for Palliative Care.
Results: The mean age for adult patients and old patients were 65.4 (SD=9.8)years and 84.8 (SD=4.7)years, respectively. The two groups did not differ with regard to the mean length of stay in the hospital, sex, residential status, or ward admittance. A significantly higher proportion of the adult patients lived with family members or others. There were no significant differences between adult and old patients with regard to the frequency of pain, intensity of pain, breakthrough pain, new pain, and pain control. Of the total sample, 10.3 % did not receive adequate pain control. Morphine (57.3 %), paracetamol (44.7 %), and fentanyl (36.9 %) were the most frequently administered analgesics for both groups.
Conclusions: In contrast to previous studies, this study found no significant differences between adult cancer patients and old cancer patients with regard to pain characteristics and treatment. There were potentials for improvement for better pain control.

710
Idiographic assessment of quality of life of women with high-risk gynecological malignancies—pilot study of symptom burden assessment

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Objective: Women with high-risk gynecological malignancies experience psychosocial and physical symptoms that affect quality of life (QOL). Traditional instruments for assessment including the EORTC Quality of Life Questionnaire have been validated. However, we hypothesize that the domains of symptom burden are underestimated by these methodologies. The goal of this pilot study was to evaluate the feasibility of idiographic assessment.
Methods: Sixteen patients with gynecologic malignancies with <30 % of 5-year survival prognostication were identified and asked to complete a QOL survey including traditional and idiographic measures. Data from 14 evaluable surveys were analyzed.
Results: Of eligible patients, 88 % agreed to answer the study survey. The most troublesome symptoms from the EORTC QLQ-30 included fatigue, mobility, and interference with socialization. Idiographic survey produced 121 goal statements. Thirty percent of goal statements were not yet attained by patients, and 24 % of patients were not satisfied with their progress. Of the goals, 73 % were reported as difficult to achieve, help was needed for 51 %, and more help was asked for in 36 %. Symptoms provoked by goal attainment included pain (51 %) and fatigue (60 %). Of the 17 identified domains, the most common were cancer treatment, independence, and interpersonal relationships. There was a difference in the goal attainment of interpersonal relationships versus independence (90 versus 40 %, $p<0.05$).
Conclusions: Idiographic survey is feasible in an ethnically, racially, and socioeconomically diverse population with high-risk gynecologic malignancies. Idiographic survey may provide a measurement of symptom burden that more accurately reflects issues that impact patient QOL than traditional tools.

711
Attrition rates, reasons, and predictive factors in supportive/palliative oncology clinical trials at a comprehensive cancer center

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Background: Few studies have documented the reasons and predictors for dropout in supportive/palliative oncology clinical trials. We aimed to determine the rate, reasons, and factors associated with attrition both before reaching the primary endpoint (PE) and the end of study (EOS).
Methods: We conducted a review of all prospective interventional supportive/palliative oncology trials by our department between 1999 and 2010. Patient/study characteristics and attrition data were extracted.
Results: Fifteen blinded randomized and three single-arm trials were included. Baseline demographics for the 1,214 patients were: median

age, 60 years (23–93 years); female, 56 %; Caucasians, 69 %; ECOG performance status ≥3, 41 %; gastrointestinal malignancies, 23 %; median fatigue, 7/10; appetite, 5/10; and pain, 4/10. The attrition rate was 26 % (N=311) for PE and 44 % (N=535) for EOS. Common reasons for EOS dropout were patient preference (N=93, 17 %), symptom burden (N=87, 16 %), death (N=45, 8 %), and hospital admission (N=43, 8 %), which were similar for PE dropouts. No predictors were identified for PE attrition. In multivariate analysis, poor performance status (P<0.001), anorexia (odds ratio (OR)=1.1, 95% CI=1.01–1.14, P=0.02), and dyspnea (OR=1.1, 95% CI=1.03–1.18, P<0.001) were associated with EOS attrition.
Conclusions: The attrition rate was high among supportive/palliative oncology trials and associated with poor function and symptom burden. These findings have implications for future study designs including eligibility criteria and sample size calculation.

712
Spontaneous bacterial peritonitis in cancer patients: should we reconsider the definition?

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Objectives: Spontaneous bacterial peritonitis (SBP) increases the polymorphonuclear neutrophil counts (PMN, cells per deciliter) in the ascitic fluid (AF). Two thresholds are used to define SBP: PMN>250 and one type of microorganism found. The objective of this study was to assess this PMN cutoff and describe the microorganisms recovered in cancer patients.
Methods: This retrospective study was conducted in a cancer hospital. SBP was defined when culture was positive in AF (n=80). Patients with coagulase negative staphylococci, *Corynebacterium* sp. and negative culture in AF were included in the control group (CG, n=170). Each infected patient was his own control by using data from paracentesis prior to SBP (n=50). The others were matched by tumor and cause of ascites.
Results: In SBP compared to CG, fever >38° was observed in 15 and 3 % (p<0.001), and abdominal pain in 27 and 12 % (p<0.004). Inflammatory parameters were higher in SBP vs. CG, respectively, for CRP, 161±11 vs. 88±87 (p<0.0001), and PMN, 13.3±9.6 vs. 8.9±5.6 (p<0.0001). In AF, PMN were higher in SBP (306±707) vs. CG (28±123, p<0.0001). For 56 of 80 SBP, PMN was <250/mm^3. The microorganisms which were recovered are: *Streptococcus* sp. (66 %), *Enterobacteriaceae* sp. (39 %), anaerobes (13 %), and *Candida* sp. (6 %). More than one type of microorganism was recovered in 26 % of the samples
Conclusion: CRP and PMN in the blood samples were increased in SBP patients. Only 15 % of them presented fever; 70 % had a PMN level in AF below the infection threshold.

714
Comparison of occupational stress in a palliative radiotherapy clinic's interprofessional team, the radiation therapists and the nurses at an academic cancer centre

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Objectives: The objectives were to assess the current levels of and determine the predictive factors for occupational stress within the Rapid Response Radiotherapy Program (RRRP), radiation therapists (RT) and nurses at the Odette Cancer Centre (OCC).
Methods: All RRRP team members (N=15), RTs (N=130) and nurses (N=80) at the OCC were asked to complete a demographics sheet and three validated surveys: the Maslach Burnout Inventory (MBI), General Health Questionnaire (GHQ-12) and the Professional Quality of Life Scale. Questionnaires were scored and predisposing factors for stress were determined for each group. Simple univariate general linear regression was used to detect significant predictors for stress and one-way ANOVA to compare stress between groups.
Results: The overall response rate was 28 %: 80 % for RRRP, 20 % for RTs and 31 % for RNs. Females were more likely to report greater personal accomplishment (p=0.0393). Younger (p=0.0041) males (p=0.0056) with less professional experience (p=0.008) and members of the RRRP team (p=0.0019) experienced greater depersonalization. Greater self-reported spirituality was predictive of higher compassion satisfaction (p=0.0064), and those reporting no/lower spirituality experienced great burnout (p=0.0053). Participants reporting a greater work percentage with palliative patients had higher GHQ-12 scores. Lower GHQ-12 scores were reported by respondents that participated in stress-relieving activities. A significant difference between all three groups was seen in the MBI scale assessing depersonalization (p=0.0077), with the RRRP experiencing the greatest depersonalization.
Conclusions: Future initiatives should place emphasis on stress-relieving activities, stress management courses and the overall importance of increasing awareness of the potential signs and causes of occupational stress.

715
Incidence and characteristics of adverse drug events in hospice and palliative care patients during hospitalization

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Objectives: The objective was to determine the incidence and characteristics of adverse drug events (ADEs) in hospice and palliative care patients during their hospital stay.
Methods: This is a prospective observational study at a comprehensive teaching cancer center. Patients who were admitted to hospice and palliative care service were evaluated for any drug-related adverse events during their hospital stay. The ADEs were identified by reviewing the medical records and during the multidisciplinary rounds. An ADE was defined as injury or patient harm resulting from medical intervention related to a drug. All suspected ADEs were reviewed by the hospice and palliative care physician and pharmacist. ADEs were classified based on the system involved, medication class, severity, and preventability.
Results: This is an interim analysis for the first 4 months of 132 patients admitted or referred to hospice and palliative care; 32 (24 %) patients experienced a total of 42 ADEs during their hospital stay. Of the reported ADEs, 31 % (n=13) were considered preventable. The ADEs were considered moderate in 34 (81 %) cases and mild in eight (19 %) cases. The most common ADEs based on the system involved were neurological (n=11, 26 %), gastrointestinal (n=10, 24 %), and endocrine (n=5, 12 %). The drug classes most commonly associated with the suspected ADEs were opioids (n=18, 43 %), antiepileptics (n=5, 12 %), diabetes mellitus agents (n=4, 10 %), and anticoagulants (n=3, 7 %).
Conclusion: ADEs are common among hospice and palliative care patients during hospitalization and were related mostly to opioids, antiepileptics, diabetes mellitus agents, and anticoagulants. Since 31 % of the ADEs were preventable, prevention strategies should be implemented.

716

Comparison of the Taiwanese version of ICD-10 Fatigue Diagnosis Questionnaire with QLQ-C30 and BFI-T for cancer-related fatigue

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Objectives: The objective was to validate the Taiwanese version of the ICD-10 Fatigue Diagnosis Questionnaire for cancer-related fatigue (CRF) through comparison with the Chinese version of QLQ-C30 and BFI-T in cancer patients whose chief complaints involved words such as "tired," "listless," "feeble," or "low-spirited."
Methods: A cross-sectional and descriptive correlational design was used in this study. The study selected patients with lung cancer who did not receive chemotherapy, radiotherapy, or radical surgery within 1 month. The Taiwanese version of the ICD-10 Fatigue Diagnosis Questionnaire was developed using a translation and back-translation process.
Results: Of the 30 lung cancer patients, 53.3 % were classified as cancer-related fatigue by the ICD-10 fatigue questionnaire. The internal consistency of ICD-10 was very good (alpha coefficient=0.93). BFI-T was assessed in 16 out of the 30 patients (53.3 %). Cronbach's alpha coefficient of FACT-F reached 0.97. Each of the ten individual items correlated well with the total score of the other nine items. QLQ-C30 was assessed in 16 patients classified as CRF by the ICD-10 criteria. It showed good internal consistency, and reliability was 0.98. The correlation between ICD-10 and BFI-T was 0.879 ($p<0.01$). It also showed good correlation between ICD-10 and QLQ-C30 (0.908, $p<0.01$).
Conclusions: The ICD-10 Fatigue Diagnosis Questionnaire can be recommended as a diagnostic tool in Taiwan. It has shown good reliability and validity. The reliability was supported by high internal consistency. The ICD-10 fatigue diagnosis questionnaire's overall validity was supported by good concurrent validity, as indicated by the significant correlation between BFI-T and QLQ-C30 subscale scores.

717

Amelioration of radiation-induced lung injury by curcumin in rat

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Objective: Radiation-induced lung injury is a significant dose-limiting side effect of radiotherapy for thoracic tumors. Curcumin is shown to have potential anti-inflammatory and antioxidant effects. This study aimed to evaluate the effect of curcumin on radiation-induced lung injury in rat.
Methods: Thirty Sprague–Dawley rats were randomly divided into four groups: control group ($n=5$), curcumin group ($n=5$), radiation group ($n=10$), and radiation+curcumin group ($n=10$). A model of lung damage was established by single dose of 18 Gy radiation exposure to the whole thorax area. Curcumin was orally administered with 200 mg/kg of curcumin over 9 weeks, beginning from 1 week before the radiation. Expressions of TNF-α, Cox-2, and TGF-β were determined by Western blot analysis and immunohistochemical stain.
Results: At 8 weeks of radiation, based on histopathological grading, the radiation+curcumin group had statistically significantly less macrophage accumulation, alveolar septal thickening, and perivascular fibrosis compared to the radiation-only group. Serum TGF-β levels were lower compared to the radiation-only group. In the lung tissues of the radiation+curcumin group, TNF-α and Cox-2 expressions decreased compared to the radiation-only group.
Conclusion: These results suggest that curcumin has a potential to reduce the radiation-induced lung injury in rat. The optimal dose, number, and timing of the administration of curcumin require further investigation.

718

Toxicity of intensive polychemotherapy in children with high-risk Ewing's family tumors

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Aim: Our aim was to investigate the toxicity of intensive polychemotherapy (PHT) with alternating courses of VAC (vincristine, adriamycin, cyclophosphamide) and IE (etoposide and ifosfamide).
Methods: From 1996 to 2006 in our institute, 133 patients under 18 years of age (median, 11 years) with high-risk Ewing's family tumors (HR EFT) were treated with 307 courses of VAC (vincristine, 1.5 mg/m^2; adriamycin, 75 mg/m^2; cyclophosphamide, 4.2 g/m^2, per course) and 206 courses of IE (etoposide, 500 mg/m^2; ifosfamide, 12 g/m^2, per course).
Results: The overall response rate (CR+PR) to intensive VAC/IE PHT was 94.6 %. Neutropenia grade 4 was 83 % in VAC and 70.8 % in IE ($p<0.05$). Median time of neutropenia grade 4 was 10 days for VAC and 7 days for IE. The rates of febrile neutropenia were 72 % in VAC and 30 % in IE. The median time of febrile neutropenia grade 4 was 4 days for VAC and 2 days for IE. Thrombocytopenia grade 4 was 36.5 % in VAC and 7.7 % in IE ($p<0.05$). Anemia grade 4 was 14.3 % in VAC and 10.2 % in IE. Mucositis 4 grade was 5.2 % in VAC and 0 % in IE ($p<0.05$). The rates of cardio-, nephro-, and hepatotoxicity grade 4 were under 2 %. The rate of sepsis was 3.2 % for VAC and 1.4 % for IE. Three died (0.9 %) during VAC PHT and one (0.5 %) during IE.
Conclusion: The high response rate and acceptable toxicity profile support using intensive PHT in children with HR EFT.

719

The effectiveness of the complete decongestive therapy and the change in psychosocial variables—preliminary results: 6 months of follow-up

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Background: Approximately 28 % of women treated for breast cancer are at risk of developing breast cancer-related lymphedema. Complete decongestive therapy (CDT) is often recommended to treat lymphedema.
Objective: The objectives of this study were to evaluate, in 100 patients, the effectiveness of CDT in reducing lymphedema in post-breast cancer surgery at 1 and 6 months and to measure the patterns of physical and psychosocial variables over time.
Methods: This is a longitudinal study. Arm circumference and volume were used to measure upper limb impairments. FACT-G, FACT-B, HADS, ASI, and three visual analogue scales to quantify lymphedema severity and curability, and quality of life were used. Physical and psychological measures were collected at baseline (T0) and at 1, 3, 6, and 12 months.

Results: Ten women completed the 6-month follow-up. Lymphedema appeared 0–6 years post-breast cancer surgery. At T0, the mean difference in arm circumferences between the affected and non-affected limb was 35.8 cm (SD=18.5, range=13.7–68.0). After 4 weeks CDT, lymphedema showed a mean reduction of 12.0 cm (SD=7.2, range=4.1–26.4). After 6 months, the mean reduction was 14.4 cm (SD=9.8, range=3.2–34.5), ranging from 4.4 to 22.9 %. Short- (T1) and long-term positive effects (T3) emerged in investment in one's appearance and perceived lymphedema curability. No effects appeared in psychological distress scores and only moderate effects in the quality of life scores.
Conclusions: These results suggest that physical rehabilitation is required for lymphedema to improve short- and long-term postoperative physical functioning. If they will be confirmed, screening and treatment for psychological distress will be required for mental distress.

720
Hospital and retail outlets partnership: clinical breast examinations for mass breast cancer screening

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Background: Clinical breast examination (CBE) is the traditional technique of physical examination of the breast by a healthcare provider. CBE should be part of any program for the early detection of breast cancer worldwide, provided that follow-up medical and oncology care is available. Some studies (Benjamin et al. 2003; Mittra 2006; Saslow 2007) have found CBE to be a promising means of averting some deaths from breast cancer, whereas breast self-examination appears to have little or no impact on breast cancer mortality.
Material and methods: CBEs were offered by doctors and nurses to women in randomly chosen retail outlets following publicity in the media. A self-administered tool was used to elicit pertinent information relating to breast health, including history of breast cancer in the family, self breast examinations, history of breast, and breast imaging. All women were taught self breast examination during the encounter with a healthcare provider.
Results: About 2,000 women have been screened through clinical breast examinations in retail outlets over the last 12 months. Fifteen percent of the women presented with breast problems such as fixed lumps with lymph nodes and bloody nipple discharge. Twenty percent have done mammograms which they would not have otherwise done. The project is ongoing.
Conclusions: Breast screening in retail outlets is an excellent low-cost method of promoting early detection, reaching women, and demystifying cancer. Clinical breast examination is a suitable option for countries in economic transition, where the incidence rates are on the increase but limited resources do not permit screening by mammography.

721
Family physicians (FP) are rarely involved in managing acute onset symptoms during cancer treatment

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Objectives: The emergency oncology department (EOD) manages the acute onset symptoms (AOS) of cancer patients being treated at our institute. About 80 % of them visited the EOD without referring to their family physicians (FP). The aim of our study was to analyse whether these specialised consultations are justified.
Methods: This is a prospective study. Cancer patients (n=112) who visited the EOD for AOS were questioned about the reasons for not referring to their FP. The second part is to evaluate whether the AOS require a specialised advice. This assessment has been conducted by a junior FP (JFP) and a senior physician (SP) specialised in supportive care. Patients who could not answer the questions were excluded.
Results: Prior to admission to the EOD, 37.5 % had a consultation with their FP, and 57 % of them visited the EOD despite their FP's advice. The FP was judged not qualified to manage AOS by 35 % of the patients. Colorectal, breast, lung and prostate cancers were identified in 16, 14, 12 and 12 % of visits. The main complaints were fever (21 %), pain (16 %), dyspnoea (14 %), gastrointestinal issues (13 %) and fatigue (13 %). These AOS required an urgent assessment in 75 % for JFP and 71 % of the cases for SP. This assessment had to be conducted by a trained physician in supportive care in 73 % of the cases for JFP and 85 % for SP.
Conclusions: Our study shows that an assessment was required by a well-trained physician in supportive care for more than three fourths of the acute onset symptoms.

722
Examining the use of rescue antiemetic medication for chemotherapy-induced nausea and vomiting in a Medicaid population

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Introduction: Chemotherapy-induced nausea and vomiting (CINV) is a significant adverse effect of cancer treatment. The 5-hydroxytryptamine$_3$ receptor antagonist (5-HT$_3$-RA) class of antiemetics is indicated for the prevention of CINV.
Objective: This study examined the use of rescue antiemetics for CINV in patients diagnosed with cancer and undergoing single-day chemotherapy.
Methods: A retrospective cohort analysis using the MarketScan® Medicaid database was conducted. Adult patients diagnosed with cancer, treated with a moderately or highly emetogenic chemotherapy, and who received a prophylactic 5-HT$_3$-RA from 1 January 2005 to 31 December 2009 were identified. The outcome of interest was the rate of rescue antiemetic administration per cycle of chemotherapy between 5-HT$_3$-RA treatment cohorts. Rescue antiemetic utilization was defined as the HCPCS code for administration of an antiemetic on days 2–5 following single-day chemotherapy.
Results: A total of 8,812 patients were identified. The mean age was 57.3 years; 63 % were women. Patients were treated with a total of 43,418 cycles of chemotherapy. The most common 5-HT$_3$-RA utilized was palonosetron (44 % of cycles), followed by ondansetron (32 %), granisetron (13 %), and dolasetron (11 %). The overall unadjusted rate of rescue medication administration per cycle was 12.2 %, and the rate differed by the 5-HT$_3$-RA used. Patients treated with palonosetron were significantly less likely to require a rescue antiemetic (8.3 %) compared to patients treated with another 5-HT$_3$-RA (15.2 %, $p<0.0001$).
Conclusion: The results from this retrospective analysis suggest that rescue antiemetic utilization may be significantly reduced in patients undergoing chemotherapy after appropriate prophylactic use of palonosetron vs. another 5-HT$_3$-RA for the prevention of CINV.

723
An international prospective study establishing minimal clinically important differences in the EORTC QLQ-BM22 and QLQ-C30 in cancer patients with bone metastases

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Objectives: Quality of life is a more appropriate endpoint in clinical trials involving patients with advanced cancer. Though the statistical significance of minimal differences can be achieved with sufficient sample size, the clinical relevance of such change is unknown. The purpose of this study was to determine the minimum level of change for the bone metastases module, EORTC QLQ-BM22, to constitute a meaningful change.
Methods: Patients with bone metastases across seven countries were prospectively enrolled to a trial prospectively validating the EORTC QLQ-BM22 internationally and completed the QLQ-BM22 and the parent module (QLQ-C30) at baseline and after 1 month. Minimal important differences were calculated for each scale for both improvement and deterioration using both an anchor- (performance status) and distribution-based approaches.
Results: A total of 93 patients completed both baseline and follow-up quality of life (QOL) and had recorded performance status at both intervals. Statistically significant meaningful differences were seen in only seven scales. Improvements of 30.5, 20.1, 30.5, and 19.6 in the pain, painful site, painful characteristic, and functional inference scales, respectively, would demonstrate clinical significance. Deteriorations of 12.4, 22.4, and 13.4 are required to represent clinical significance in emotional functioning, global health status, and financial issues, respectively. Minimal differences for improvement were closest to 0.5 SD, while for deterioration, closer to 0.3 SD.
Conclusions: Identification of requirements for clinical significance can assist clinicians in determining the relevance of QOL changes after treatment and assist in sample size determination in future trials.

724
Cancer patients' symptoms during the first month of treatment by a home palliative care unit in Greece

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Introduction: "Galilee" is the first multidisciplinary palliative care unit providing palliative care for adult cancer patients, without charge, in a large suburban area of Athens, under the auspices of the Metropolitan of Mesogaia and Lavreotiki (Orthodox Church of Greece).
Objectives: The objective was to explore patients' symptoms during the first month of treatment at a home palliative care setting.
Methods: One hundred five cancer patients were treated during the initial 2 years of Galilee's activities. Retrospective data collection included: demographic and clinical characteristics, patients' ESAS-r (Edmond Symptom Assessment System—Revised), and evaluation of symptoms (Likert-type 1–10 scale) at the time of referral to the service (T_0) and 1 month later (T_1).
Results: The majority of patients were women (55.2 %), with a mean age 66.0 years and a mean ECOG 2.7. The prevalent diagnosis was gastrointestinal cancer (21.9 %). Patients' mean length of treatment was 85.3±84.3 days, and 25.7 % died within the first month. The mean number of home visits was 15.1±15.0, while 52.9 % were not hospitalized during care. Prevalent symptoms scored >5 reported by the patients at admission and 1 month later were anxiety (T_0=6.2±3.5, T_1=4.8±3.8), depression (T_0=5.9±3.3, T_1=5.4±3.2), and fatigue (T_0=5.0±3.5, T_1=4.6±3.1). Despite a trend for improvement in almost all symptom scores (except for constipation and drowsiness), this was not statistically significant ($p>0.050$), except for anxiety ($Z=-3.7$, $p<0.001$) and lack of appetite ($Z=-1.7$, $p=0.048$).
Conclusions: The study results highlight that improvement of symptoms after 1 month of care, by a newly developed service, has not been substantial.

725
Perception of pain in cancer patients treated with pain-relieving therapies

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Background: Approximately 40–90 % of people with cancer experience pain. Chronic cancer pain can be successfully treated by about 95 % of people with the drug and non-drug therapies that are currently available.
Objectives: The objectives were to measure pain in patients treated with pain therapies and to explore the associated variables.
Methods: Consecutive cancer patients were included in the cross-sectional study, and the SF-36 pain subscale and mental component score (MCS) were used for analysis.
Results: Among the 63 patients (61.9 % women; mean age, 52 years), 34 had metastases. Patients receive different supportive therapies depending on the regimens to which they are subjected. Thirty-one (49.2 %) reported pain as measured by the SF-36 pain subscale. In multiple logistic regression analyses, worse SF-36 pain score was independently predicted by the MCS (odds ratio (OR)=18.50) and metastasis (OR=5.33) after adjustment for potential confounders (educational attainment and type of cancer).
Conclusions: With today's availability of pain-relieving therapies, no one should have to suffer from unrelieved pain. Our results highlight that despite physicians' control of the disease, of pain, and other symptoms, mentally distressed patients and those who had metastasis reported pain, suggesting the need of psychological treatments.

726
The effects of the mouth rinse, calcium phosphate solution, Caphosol®, on the nutritional status of patients during bone marrow transplantation period

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Objective: Oral mucositis (OM) is a result of the cytotoxic effects of many chemotherapeutic treatments administered for hematological malignancies and bone marrow transplantation. It is a source of clinical complications and negative consequences for the patient, such as longer hospitalization and need for antiemetic and total parenteral nutrition (TPN), which can lower patients' quality of life.
Conclusion: This is a small sample study and it is difficult to draw any conclusion that Caphosol® has an additive effect on OM and nutritional status on patients receiving chemotherapy and bone marrow transplantation. There were no significant differences in weight loss, TPN, or use of an antiemetic. It would be necessary in further studies on Caphosol® to increase the number of patients to reach significant results. Weight loss in the experimental (EXP) group was lower (7 %) compared to the controls

(CRT, 11 %). The EXP group used more TPN (mean, 10 days) compared to the CTR (mean, 5.6 days), and there were no significant differences in the use of an antiemetic. This is a randomized, controlled open study (n=40). Patients were randomized 1:1 to standard treatment oral cryotherapy (OC; CTR, n=20) or mouth rinse and OC (EXP, n=20). Weight loss, days of TPN, and antiemetic were analyzed.

727
High hopes and high hurdles: post-allogeneic BMT survivorship in a group setting

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Allogeneic bone marrow transplantation (BMT) is an established life-saving treatment for selected patients with aplastic anemia, acute and chronic leukemia, MDS, and lymphoma. It is the second most frequent major organ transplantation performed in the USA. Annually, there are approximately 20,000 allogeneic transplants performed in the USA. Many patients become educated by the treatment team and learn how to manage the demands of the acute complications during the treatment phase. However, education and psychosocial support for patients who enter the post-transplant survivorship phase are sparse. Given the rigors of allogeneic transplantation, patients find themselves potentially at risk of treatment-related complications adversely affecting their long-term survival as well as their mental health and well-being. Recovery into survivorship often appears as a daunting task filled with mixed emotions of relief, despair, and isolation.

This poster highlights the establishment of a unique support group which came together in the early fall of 2008 as a direct effort to respond to the post-transplant psychosocial needs of this patient population.

This group comprised patients who are post-allogeneic bone marrow transplants and are known to the host institution. Psycho-educational in nature, this group's main focus is to provide education and support to patients challenged by their post-BMT experience, thereby reducing psychosocial morbidity. This presentation will further illustrate how strategies used within the group setting directly influence post-allogeneic BMT survivorship.

728
Examining the rate of chemotherapy-induced nausea and vomiting in a Medicaid population

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Introduction: Chemotherapy-induced nausea and vomiting (CINV) is a significant adverse effect of cancer treatment. The 5-hydroxytryptamine$_3$ receptor antagonist (5-HT$_3$-RA) class of antiemetics is indicated for the prevention of CINV.

Objective: This study examined the rate of CINV per cycle of chemotherapy in patients diagnosed with cancer, undergoing chemotherapy, and treated with a 5-HT$_3$-RA in a Medicaid population.

Methods: A retrospective cohort analysis using the MarketScan® Medicaid database was conducted. Adult patients diagnosed with cancer, treated with moderately or highly emetogenic chemotherapy, who received a prophylactic 5-HT$_3$-RA from 1 January 2005 to 31 December 2009, were identified. The outcome of interest was the rate of CINV per cycle between 5-HT$_3$-RA treatment cohorts. CINV was defined as a diagnosis of nausea, vomiting, fluid depletion or replacement, or the use of rescue antiemetic medication following chemotherapy.

Results: A total of 8,812 patients were identified. The mean age was 57.3 years; 63 % were women. Patients were treated with 43,418 cycles of chemotherapy. The most common 5-HT$_3$-RA was palonosetron (44 % of cycles), followed by ondansetron (32 %), granisetron (13 %), and dolasetron (11 %). The overall unadjusted rate of CINV was 17.0 %, and the rate differed by 5-HT$_3$-RA used. Patients treated with palonosetron were the least likely to experience CINV (13.0 %), followed by patients treated with ondansetron (16.2 %), dolasetron (23.5 %), and granisetron (26.6 %, p<0.001).

Conclusion: In this retrospective study, patients treated with palonosetron were significantly less likely to experience CINV compared to those treated with another 5-HT$_3$-RA. The results were similar to those seen in patients covered by commercial health benefits.

729
Texas bus rounds: characteristics of an innovative educational model of palliative care delivery at a cancer hospital

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Objectives: Physicians (MD, midlevel providers (MLP), and additional healthcare professionals (HCP) receive minimal education in palliative care delivery (PCD) and lack exposure to palliative care in patients' homes and continuing care facilities. Bus rounds (BR) provides an innovative model of PCD in 4-h, patient-based interactive sessions where HCP are taken into the community.

Methods: Participants anonymously completed a questionnaire/survey of each BR regarding achievement of educational goals (EG) and satisfaction. Successful achievement was defined as the percentage that agreed or strongly agreed to:

1. Identify/manage complex medical, ethical, spiritual/psychosocial issues in advanced cancer patients
2. Demonstrate understanding of best practices in PC within a patient care setting
3. Discuss/manage difficult issues with an interdisciplinary team to improve PCD
4. Evaluate/manage cancer pain to improve quality of life
5. Model/demonstrate effective ways of communicating with patients/caregivers to improve care
6. Provide/administer improved psychosocial/spiritual care model administered to patients and families. Analysis was descriptive.

Results: In 2011, 75 HCP participated in five BR. A total of 16 patient cases were reviewed. HCP included MD (25 %), other HCP (45 %), MLP (4 %), and PhD and others (24 %). Successful achievement of 95 % (EG 1), 95 % (EG 2), 96 % (EG 3), 97 % (EG 4), and 99 % (EG 5 and 6) were shown. Most (95 %) HCP agreed or strongly agreed that BR met their expectations when asked about their satisfaction.

Conclusions: BR were evaluated as effective in teaching PCD to HCP. A broad range of themes was addressed during each BR. Successful achievement of EG has increased educating HCP in PCD in the community.

730
Prevalence and characteristics of sudden fatigue/exhaustion: a subset of cancer-related fatigue?

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Objectives: Fatigue in cancer can be persistent or stable at a constant background level, but vary substantially in intensity. Unexpected,

sudden fatigue/exhaustion is frequently claimed by oncology patients. However, empirical information about this symptom experience is limited. This study investigated the occurrence and features of sudden fatigue in patients treated for breast cancer.
Methods: This cross-sectional descriptive study took place in oncology outpatient settings in the Midwestern USA. One hundred fourteen breast cancer chemotherapy outpatients were screened for sudden fatigue. Those who experienced sudden fatigue completed an investigator-developed Sudden Onset of Fatigue Questionnaire on the day of their chemotherapy treatment. The prevalence and clinical characteristics were examined by descriptive statistics.
Results: Nearly half (46 %) of the participants (aged 31–67 years, 62 % Black, 70 % unemployed) reported sudden fatigue/exhaustion. Sudden fatigue was described as abrupt transitory exhaustion/weakness. In reacting to the abrupt exacerbation of fatigue, median intensity of 9±1.6 on 0–10 (highest) scale, individuals stopped activities and sought immediate rest. Most participants (81 %) experienced multiple (median=3) episodes per day; 67 % of episodes lasted 60 min or less. Sudden fatigue was most likely to affect individuals while they were active (94 %) and often (66 %) accompanied by other symptoms, e.g., weakness, dizziness, shortness of breath, and pain.
Conclusions: Sudden fatigue/exhaustion is characterized by abrupt onset, transitory exhaustion, and multiple symptoms. The intensity and multiple occurrences can greatly affect an individual's functioning. This phenomenon needs to be recognized by oncology professionals. Patients should be educated about sudden fatigue/exhaustion to enhance sense of control and prevent harm.

731
Meaningful change in oncology quality of life instruments: a literature review

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Objectives: Quality of life (QOL) is increasingly being recognized as an important endpoint in oncology clinical trials. The purpose of this study was to review the literature on what constitutes a meaningful change in oncology QOL instruments.
Method: A literature search was conducted in Medline, Embase, Cochrane Central, and Cochrane Database of Systematic Reviews. Articles determining the requirements for clinically meaningful change were selected, and those examining the presence of predetermined meaningful changes were excluded.
Results: A total of 26 publications were identified. Twelve studies used both anchor- and distribution-based approaches, nine used only an anchor-based approach, and one used only distribution-based. Common anchors were performance status, global rating of change, and overall QOL. The distribution approach utilized values of 0.2 standard deviations (SD), 0.5 SD, and 1 standard error of measurement (SEM). The common limitations were the high attrition rate, optimism bias, and a change in the patient's internal frame of reference.
Conclusion: Between studies, discrepancies have been found regarding a single instrument as the values of meaningful change have not been consistent. Evaluation of what constitutes meaningful change is important to determine whether an intervention truly influences QOL. Such analyses should be conducted in population-specific samples as meaningful change varies depending on patient characteristics. Consistently, meaningful change for improvement has been demonstrated as smaller than that for deterioration, suggesting that patients are more responsive to improvement.

732
Content validation of the EORTC QLQ-BN20+2 by patients and health care professionals to assess quality of life in brain metastases

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Objective: The validated EORTC quality of life (QOL) questionnaire QLQ-BN20 is a cancer subtype-specific supplement to the QLQ-C30 general questionnaire for patients with primary brain neoplasms. The QLQ-C15-PAL core palliative questionnaire is an abbreviated version of the QLQ-C30 designed to decrease patient burden. We conducted content validation of the QLQ-BN20+2 (with the addition of two cognitive items) for patients with brain metastases.
Methods: Patients undergoing treatment for brain metastases, as well as healthcare professionals (HCPs), completed the QLQ-C15-PAL and QLQ-BN20+2 questionnaires. A structured interview followed to evaluate any difficulties and irrelevant items and whether additional pertinent items should be included.
Results: Seventy-four patients and 71 HCPs participated. The majority of patients (84 %) were receiving whole-brain radiotherapy only. Over 50 % of patients felt that seizures, hair loss, and trouble controlling bladder were not related to brain metastases. Questions regarding uncertainty about the future were the most difficult, although still described as such by a small proportion (12–16 %). All items were endorsed by over 50 % of HCPs as "quite" or "very" relevant to brain metastases patients, with two exceptions: 15 and 12 % of HCPs rated pruritis and future uncertainty as irrelevant, respectively.
Conclusion: We report the first content validation of the QLQ-BN20+2 and QLQ-C15-PAL QOL questionnaires for patients undergoing treatment for brain metastases, demonstrating feasibility and relevance. These questionnaires should be used together as universal QOL assessment tools in this setting.

733
Long-term survival in patients with brain metastases from non-small cell lung carcinoma: a case series

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Objectives: The objective was to report on a cohort of patients with brain metastases from non-small cell lung carcinoma experiencing long-term survival.
Methods: A prospectively gathered database from an outpatient palliative radiotherapy clinic was retrospectively searched for patients referred between January 2005 and July 2009 who experienced long-term survival after a diagnosis of brain metastases from non-small cell lung carcinoma. Demographic, treatment, and survival data were reviewed.
Results: From 748 patients referred with symptomatic brain metastases, five with non-small cell lung carcinoma had survived ≥12 months after brain metastases had been diagnosed. Patient 1 was Recursive Partitioning Analysis (RPA) class 2 with Graded Prognostic Assessment (GPA) score of 1.5 at the time of referral who survived 22 months from the time of brain metastases diagnosis. Patient 2 was RPA class 2 with a GPA score of 1.0 who survived 36 months. Patient 3 was RPA

class 2 with GPA score of 1.5 who survived 13 months. Patient 4 was RPA class 3 with a GPA score of 2.0 who survived 23 months. Patient 5 was RPA class 1 with a GPA score of 3.0 who survived 23 months. Three patients received surgery and radiotherapy and two radiotherapy alone for brain metastases treatment.
Conclusion: Long-term survival with brain metastases from non-small cell lung carcinoma is rare, but possible. Treatments should be customized according to patient, tumor, and treatment-related factors.

734
Outcome of severe infections in afebrile neutropenic cancer patients

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Objectives: Absence of fever is associated with poor outcome in patients with severe infection. We hypothesized that afebrile neutropenic cancer patients with infection have worse outcomes than patients with febrile neutropenia.
Methods: We identified all adult cancer patients with chemotherapy-induced neutropenia who required hospitalization in the intensive care unit (ICU) at the Institute of Oncology of Ljubljana between 2000 and 2011 due to severe infection. Information on cancer treatment and episodes of infection were retrieved from patients' charts. Association between 30-day in-hospital mortality (IHM) and different prognostic factors was tested by χ^2 and Fisher's exact tests.
Results: We identified 69 episodes of neutropenic infections in 65 patients. Their median age was 58 years (range, 31–86 years); 61 % were men and 75 % had lymphoma. The median length of hospital and ICU stay was 14 days (1–52 days) and 5 days (1–34 days), respectively. Only 13 % (n=9) of eligible patients were afebrile at diagnosis of neutropenic infection. Overall, the IHM rate was 55 %. There was a trend for a higher IHM rate in afebrile patients compared to febrile patients (78 vs. 52 %, p=0.17). While MASCC index<15, lactic acidosis, and use of mechanical ventilation were associated with significantly higher IHM rates, we did not find any significant association between IHM rate and age, cancer type, comorbidities, presence of bacteremia, and G-CSF use.
Conclusions: Absence of fever might be associated with increased risk of death in neutropenic cancer patients with severe infection. Its prognostic role should be further explored in large prospective studies.

735
Initial evaluation of the relationship of quality of life (QL) and patient-reported outcomes (PROS) to survival and response in a large prospective multi-center trial in patients with advanced NSCLC receiving chemotherapy: the Asia-Pacific QL Trial

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Objectives: Chemotherapy continues to be the major treatment modality in patients with advanced non-small cell lung cancer (NSCLC) even as the role of molecularly targeted agents enlarges. This trial was designed with quality of life (QL) as the primary endpoint to clarify the impact of chemotherapy on several key goals, including evaluation of

1. The impact of chemotherapy on QL and symptoms for all patients
2. The effect on QL by response category
3. Whether PROs can identify patients benefiting from chemotherapy earlier than imaging

Methods: All patients received initial docetaxel-based chemotherapy (83 % plus cisplatin or carboplatin) based on known response and survival results (Fossella JCO 2003) and were assessed every 3 weeks with the eLCSS-QL validated QL instrument with computer assistance.
Results: Six hundred thirty-eight patients entered at 58 sites in nine countries. Demographics were as follows: 77 % stage IV, 72 % men, 67 % adenocarcinoma, median age of 58 years, and KPS 90–100= 66 %, 70–80=34 %. Ninety-one percent of patients completed the eLCSS-QL multiple times over the treatment period. The database will be locked by February 15, 2012, with full data analysis then to be completed and presented at MASCC 2012.
Conclusions: This is the largest prospective NSCLC study with QL as the primary endpoint. The results from this trial will illustrate the impact of chemotherapy on QL for all patients and for those with response to treatment. These findings should aid in designing trials using only chemotherapy and those incorporating chemotherapy with targeted agents and should determine whether PROs can be used effectively to determine whether to continue treatment.

736
The nutritional challenges post-treatment of cancer patients

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Objective: Managing nutrition in patients with gastrointestinal (GI) and head and neck cancer (HNC) is crucial. Following treatments, these individuals frequently experience severe side effects which affect their ability to eat, often leading to malnourishment. The dietitian on the Palliative Rehabilitation Program (PRP) team addresses eating problems and decline in nutritional state.
Method: Patients enrolled in PRP were asked to complete a nutritional assessment measure prior to and following participation in an 8-week program that included an individualized nutritional counseling intervention. The Patient-Generated Subjective Global Assessment (PG-SGA) and Edmonton Symptom Assessment Scale (ESAS) completed by the patients enable the dietitian to assess GI symptoms and nutritional status. The basal metabolic index (BMI) and the percentage and rate of weight change reflect the risk of malnutrition.
Results: Of 16 patients, 11 with head and neck cancer and five with gastrointestinal cancer completed the 8-week palliative rehabilitation program. Paired t tests were used to assess changes from patients' scores at baseline versus at the end of treatment. There was a significant difference in PG-SGA activity (p<0.001), the total PG-SGA score (p<0.003), and appetite as recorded on the ESAS (p<0.034). However, there was no significant change in BMI and weight.
Conclusion: The PG-SGA and ESAS appear to be useful tools to screen and monitor nutrition-related issues in patients with cancer. Nutritional guidance and counseling as a component of palliative rehabilitation for GI and HNC patients is beneficial.

738
Development of a shortened FACIT-Pal for patients with advanced cancer

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Objectives: Brief quality of life (QOL) tools are advantageous in palliative care patients. The purpose of this study was to identify the most important items of the FACIT-Pal to create an abbreviated questionnaire for future palliative trials.
Methods: Healthcare professionals (HCPs) and patients assessed the relevance of each item of the FACIT-Pal and whether they would include the item in a final questionnaire. Patients and HCPs identified their top 10 most important issues and were asked whether items were inappropriate, upsetting, or irrelevant.
Results: Sixty patients and 56 HCPs participated. The 46-item questionnaire was shortened to contain 14 questions, including several items from the FACT G and issues pertaining specifically to palliative care patients. Items within the emotional, physical, and functional subscales were retained along with various symptoms including constipation, nausea, dyspnea, and sleeping issues. No issue outside of the items covered by the FACIT-Pal was identified consistently by either HCPs or patients. Similarly, no item was consistently rated as being inappropriate, upsetting, or irrelevant.
Conclusions: A shortened 14-item questionnaire has been generated for the palliative care population. We recommend the use of this instrument for evaluation of QOL in palliative care settings, producing further validation data.

739
Study of an educational video to improve the understanding of radiotherapy side effects on head and neck cancer patients

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Objectives: Side effects in head and neck radiotherapy are very common and can interfere with a patient's treatment. However, there is a lack of information on patients' understanding of the side effects. Therefore, the aim of this study was to assess the effect of an educational video to improve the understanding of the collateral effects on head and neck cancer patients submitted to radiotherapy.
Methods: A 6-min video about head and neck radiotherapy side effects was produced by a multidisciplinary oncologic team. A randomized study was performed with two groups: control group (N=7), which received verbal information, and the video group (N=11), which received verbal information and watched the video. A questionnaire with 14 items was applied in both groups 1 week after to receive the information and before the beginning of the radiotherapy.
Results: Eighteen patients were included in the study (mean age, 56 years). Eighty-nine percent had less than a high school education. All patients of the video group answered correctly why they were doing radiotherapy. On the other hand, 17 % of the control group did not answered properly. All patients of the video group were shown to have knowledge about the radiotherapy side effects, while only 57 % of the control group answered accurately. Only 9 % of the video group had doubts about the treatment compared to 29 % of the control group.
Conclusions: The present study showed that an educational video may improve patient's understanding of head and neck radiotherapy and its side effects despite their education level.

740
'Chemobrain' in breast carcinoma: Indian experience

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Introduction: Problem of study in cognitive impairment in cancer treatment is a widespread fear that is attached to the diagnosis. Prospective evaluation may help to rationally judge the extent of chemobrain related to various regimens of breast cancer chemotherapy while treating locally advanced breast cancer in adjuvant setting. However, in the neoadjuvant setting, the scenario is different. Patients of two categories were separately examined and compared to find out changes in their cognitive function.
Methods: Forty-three women with breast carcinoma underwent a comprehensive neuropsychologic evaluation before receiving both neoadjuvant and adjuvant therapy for non-metastatic primary breast carcinoma over a period of two and a half years until September 2011. We took account of amnesia, dementia, delirium, anxiety disorders, mood disorders, and also psychotic disorders. Beck Depression Inventory, Numeric Matrix Test and Rey Auditory–Verbal Learning test, Female Sexuality Questionnaire, Dyadic Adjustment Scale, and Greene Climacteric Scale were used to evaluate cognitive function.
Results: Women reported losing memory and concentration. "Chemobrain" effect was demonstrated more in the neoadjuvant than in the adjuvant group. We found a significant increase in anxiety disorders and mood disorders. Psychotic disorders were seen in three cases. Significant deterioration of body image was demonstrated. Hot flushes and fatty deposition of android type was found in a few cases.
Conclusions: Older women undergoing adjuvant and neoadjuvant breast cancer therapy experienced less impairment in cognitive function, including important quality of life as well as sexuality. Intervention is necessary to treat this condition. Chemobrain is a reality in Indian breast cancer patients also.

741
Using evidence to guide the control of chemotherapy-induced nausea, vomiting, and retching (CINVR)

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Introduction: Although there have been multiple advances in the pharmacologic management of CINVR, these symptoms remain the most dreaded aspect of chemotherapy for patients and family members.
Objective: The purpose of this presentation was to provide an overview of essential information to guide the management of chemotherapy-induced nausea, vomiting, and retching (CINVR) including pathophysiology, relevant system and symptom-related factors, risk assessment, and future implications.
Background/significance: Improved management of infections through the use of growth factors and antimicrobials has allowed the administration of escalated doses of chemotherapy for enhanced results in cancer therapies while at the same time leading to an increased potential for CINVR. Although healthcare professionals tend to believe they are controlling CINVR, patients and family members indicate that this is not always their experience. Poorly controlled CINVR impacts quality of life, healthcare costs, ability to continue working, and desire to continue recommended cancer therapies. Both symptom and system factors impact CINVR management. Evidence-based practice antiemetic guidelines are well established and readily available on the Internet, yet not well integrated into practice.
Implications: Improved management of CINVR requires skilled assessment with an awareness of the different types of CINVR, timely

evidence-based interventions, and supportive teaching to ensure optimal outcomes. Clinicians will be able to utilize the information presented to enhance their ability to provide quality care.

742
Jaw osteonecrosis associated with medication (JOM): report of two cases with unanswered clinical research questions

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Objectives: We report on two cancer patients, one with breast and another with breast and endometrial carcinoma, who developed two events of jaw osteonecrosis each.
Case report: In both patients, the first osteonecrosis lesion occurred during therapy with an aminobisphosphonate following a dental extraction and a tooth exfoliation, respectively. Pain, tooth mobility, and purulence preceded the loss of the involved teeth. Bisphosphonate discontinuation was followed by osteonecrosis healing under conservative treatment in both cases. Thirty-seven months after bisphosphonate discontinuation, the first patient presented with pain, swelling, tooth mobility, and gingival hemorrhage not responsive to antibiotics. Osteonecrosis stage II was diagnosed in a location different from the first lesion. Dental extraction, under antibiotics, resulted in symptom remission and the downstaging of osteonecrosis to stage I. In the second patient, osteonecrosis stage II appeared as a recurrence on the site of the previous lesion 17 months after bisphosphonate discontinuation and 11 months following bevacizumab administration. Conservative treatment, combined with ozone applications, resulted in sequestrum exfoliation and healing.
Conclusions: The dental extraction as the consequence and not the cause/risk factor for osteonecrosis, the long-term effect of bispbosphonates on the risk of osteonecrosis, and the potential cumulative effect of the anti-resorptive and anti-angiogenic therapy are important questions that could be investigated within an appropriately designed osteonecrosis registry, with the participation of an experienced dental team. Useful insights in the pathobiology of osteonecrosis and the clinical dilemmas in the decision-making process could be provided.

743
Effect of exercise training on functional capacity and quality of life in head and neck cancer patients receiving chemo-radiotherapy: a randomized controlled trial

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Objectives: Patients with head and neck cancer (HNC) undergoing chemoradiotherapy (CRT) suffer from fatigue, causing a decrease in functional capacity and quality of life (QoL). Limited research on the topic of exercise training among these patients demanded the need for this study to assess the effects of exercise training on functional capacity and quality of life.
Methods: A randomized controlled trial was conducted on 48 subjects with HNC undergoing CRT at Shirdi Sai Baba Cancer Hospital, Manipal, India. The exercise group received an individually tailored, supervised exercise program for 6 weeks, while the control group did not receive any form of exercise. Functional capacity and QoL were assessed at baseline and at the end of the intervention using the 6-min walk distance (6MWD) and Medical Outcomes Survey Short Form 36 (SF-36).
Results: The mean age of patients was 52 years, with 42 of 48 being men. After 6 weeks, the 6MWD improved by 42 m ($p=0.039$) in the exercise group, while the control group showed a decrease of 96 m ($p<0.001$). There was an improvement in scores on both the physical and mental components in SF-36 for the exercise group (2.8, $p=0.478$; 14.4, $p<0.05$), while a decrease in scores was seen in the control group (-6.3, $p<0.05$; -14.4, $p<0.05$). When 6MWD and SF-36 were compared between the groups, there was a statistically significant difference seen after 6 weeks.
Conclusion: Exercise training improves functional capacity and QoL in HNC patients undergoing CRT.

744
Tailored intervention protocol for oral chemotherapy adherence

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Objectives: While cancer patients express a preference for oral medications, compliance to these medications varies. Patients often have difficulty adhering to the prescribed schedule because of lack of understanding, inadequate support, or treatment-related side effects. The aims of this NCI funded study were to

1. Test the effectiveness of a tailored protocol to promote adherence to oral chemotherapeutic agents in adults
2. Examine adherence to oral chemotherapeutic agents over time

Methods: This randomized clinical trial examined the adherence rates in adults started on a new oral chemotherapeutic agent. A control group received standard chemotherapy education. The experimental group received the standard education, an assessment, and the tailored intervention delivered by an advanced practice nurse via telephone over 6 months. Patient adherence rates were measured in both groups at 2, 4, and 6 months using self-report, symptom profiles, and pharmacy fill rates. To determine the effectiveness of the adherence protocol, we used generalized estimating equations, which provide a unified approach to longitudinal modeling techniques for normally and non-normally distributed outcome variables.
Results: To date, 47 patients have been enrolled. At the 2- and 4-month self-reports, patients are reporting adherence rates ranging from 57 to 100 %, yet pharmacy refill rates are not congruent with the self-report data. Results for the 2- and 4-month adherence rates will be presented.
Conclusions: We will discuss barriers to adherence including patient factors (lack of understanding, side effects, and need for reminder cues) and system barriers (late pharmacy deliveries and lack of coordination by providers).

745
Characterization of late recurrence in long-term survivors (LTS) of primary glioblastoma (GBM)

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Objectives: Traditionally, overall survival (OS) in primary glioblastoma (GBM) was dismal, with 5 % at 2 years, but recent advances have improved OS in this population. Long-term survivors (LTS), while rare, can now be identified and evaluated.

Methods: In a single-center, retrospective analysis, we identified GBM LTS as defined by survival ≥5 years from diagnosis. To characterize late recurrence in LTS GBM, we extracted a patient subset that experienced a disease/treatment-free period of ≥2 years. Demographic data were obtained along with characteristics of late recurrence: location, pathology, associated clinical symptoms, and calculation of time to death from late recurrence.
Results: One hundred thirty-nine primary GBM patients were identified as LTS from 1 January 1998 to 31 August 2011. Forty-three (31 %) had a late recurrence. Twenty-four (55.8 %) were men and the average age was 46.1 years (range, 23.1–66.5 years). Twenty-five (58.1 %) had new neurological symptoms to indicate recurrence, but the remaining 41.9 % were found to have recurrence on serial MRIs. Median OS was 6.6 years (95% CI=5.03–13.49 years) and median time to late recurrence was 3.57 years (95% CI=2.32–10.13 years). Once patients progressed, median time to death from recurrence was 1.07 years (95% CI=0.27–3.13 years), indicating a more aggressive cancer.
Conclusions: GBM LTS can develop late recurrences in their disease trajectory even after a protracted disease/treatment-free time period. Continued close monitoring with frequent clinical evaluations and MRI imaging is warranted in this population. Establishment of survivorship programs should be considered for GBM LTS to address disease-related and psychosocial issues.

746
Palliative radiotherapy for Merkel cell carcinoma

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Objectives: Merkel cell carcinoma (MCC) is a rare neuroendocrine carcinoma of the skin. This is an aggressive tumor with high propensity for locoregional and distant metastasis. MCC is radioresponsive, and radiotherapy (RT) plays an important role in definitive and adjuvant therapy. The use of RT in the palliative setting has not been well reported.
Methods: The database from our multidisciplinary skin clinic was reviewed from 2004 to the present and patients who received palliative RT for MCC identified. Response to treatment was recorded at the last date the patient was seen.
Results: Eleven patients received 22 courses of palliative RT. Six were men and median age was 80 years (range, 77–90 years). Primary tumor site was head and neck (3), extremity (7), and trunk (1). Treatment sites were primary (6), in transit skin metastases (4), nodal (9), and distant disease (3). Dose/fractionation schemes ranged from 5 Gy/1 fr to 50 Gy/20 fr, with the most common being 20 Gy/5 fr and 30 Gy/10 fr. Symptoms at presentation included mass effect from growing adenopathy or skin nodules (19), confusion (1), and bleeding (2). Responses to RT based on lesion size or symptom response were CR=9, PR=7, and PD=1 and could not be assessed in four patients not returning for follow-up. Mean follow-up was 11 months (range 0–41 months).
Conclusions: RT plays an important role in palliating local symptoms from MCC. A CR of 41 % was seen, highlighting the radioresponsiveness of MCC, although failure outside of the RT field was common. Follow-up was limited given the inherent aggressiveness of the disease and elderly population.

747
Safety and efficacy of an intra-oral electrostimulator for the relief of dry mouth in chronic graft versus host disease

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Objectives: The aim of this study was to investigate the safety and efficacy of an intra-oral electrostimulator (GenNarino) in symptomatic chronic graft versus host disease (GVHD) patients.
Methods: A sham-controlled, crossover, randomized double-blind study was performed. Each treatment was delivered for 4 weeks. The sham treatment represents the mechanical effect of the device only, whereas the active treatment represents the mechanical and the electrical effects of the device on the oral tissues. Subjective and objective data were collected regarding oral mucosal and salivary gland involvement.
Results: The treatment was tolerable in five of the six patients. Most of the oral manifestations of chronic GVHD were not on surfaces in contact with the GenNarino device (11 out of 12 measures), and the lowest rates of any oral GVHD signs were noted on the mucosal surface in contact with the electrodes (4 out of 12 measures). There was no clear trend during the trial for increasing or decreasing GVHD manifestations in areas in contact with the device. There was a trend of increased unstimulated salivary flow rate in both the active and sham arms (60 and 29 % increases, respectively). Subjective feeling of dry mouth (xerostomia) improved compared to baseline (an average increase from 32 to 48 points on a 0–100 scale).
Conclusions: This study suggests that it is safe to use GenNarino and that the electrostimulating device does not cause oral mucosal side effects in chronic GVHD patients. Moreover, the use of GenNarino resulted in subjective and objective improvements in dry mouth condition.

748
The profile of cancer patients who suffer from dyspnoea and need hospitalization

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Introduction: Dyspnoea is a common and distressing symptom experienced by cancer patients. It is shown that 20–80 % of end-stage cancer patients suffer from dyspnoea. Moreover, it is often presented as the first symptom in the diagnostic procedure of lung cancer.
Purpose: The objective of this research was to determine the profile of cancer patients who need hospitalization because of dyspnoea.
Methods: Patient files that entered the clinic, due to dyspnoea, the first 6 months of the past year were studied retrospectively. The covariates that were studied included age, sex, type of cancer and staging, treatment, comorbidity, associated symptoms, in-hospital interventions, days of hospitalization, final diagnosis, and outcome.
Results: Sixty patients were included, 44 men and 16 women. Median age for men was 73±8 years and for women was 69±13 years. Seventy-eight percent were smokers. In 48 % of the patients, lung cancer was already diagnosed; 30 % of the patients had undiagnosed lung cancer when they entered the clinic, and 22 % suffered from other cancers with lung metastases. Hospital interventions included: oxygen therapy, antibiotics, bronchodilators, corticosteroids, diuretics, pleurodesis, chemo/radiotherapy, opioids, or others. Patients were hospitalized for approximately 8 (8.25±8)days.

Conclusions: It is assumed that the predominant profile of a cancer patient with dyspnoea who enters a hospital is male gender, smoker and about 73 years old. The treatment that he will receive includes oxygen, antibiotics, bronchodilators, corticosteroids and diuretics. He will stay in the hospital for approximately 8 days and will probably meliorate.

749
Characteristics and treatment of breakthrough pain in Canadian cancer patients

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Objective: The objective was to explore the experience of breakthrough cancer pain (BTCP) in Canadian cancer patients.
Methods: Sixty oncology centre outpatients completed a questionnaire about their pain, impact on functioning, current management and interest in novel routes of administration.
Results: Median age range was 60–69 years. Ninety-eight per cent stated that cancer pain impacted daily life. Over half could not shop, drive, work or prepare meals due to cancer pain. Fifty-four per cent stated that opioids provided "good relief". Forty-six per cent had more than three BTCP episodes per day. Mean pain intensity was 7.9/10, and mean time to peak intensity was 15 min. Forty-two per cent of the respondents reported duration of >60 min and 26 % of <10 min. BTCP markedly impacted general activity (mean, 7.5/10) and normal work (7.6/10). Fifty-six per cent stated that it took over 15 min for their opioid to start providing pain relief. Of the patients, 76 % were dissatisfied or only slightly satisfied with the speed of onset of pain relief. The most frequent reasons cited for not taking BTCP medication were that the pain was not always long-lasting or severe enough or concerns about tolerance/addiction. Relieving pain completely and quickly were the top-ranked features for any new BTCP treatment. Patients would consider sublingual/buccal (85 %) or nasal products (66 %) for the management of BTCP.
Conclusion: BTCP is highly prevalent, impacts on everyday life, and there is room for improvement in management. Patients are open to novel routes of medication delivery.

750
Peripheral and central markers of fatigue in men receiving localized radiation therapy

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Objective: This study explores serologic markers of peripheral and central mechanisms of fatigue in patients with localized prostate cancer receiving external beam radiation therapy (EBRT). Aldolase is known to predict physical fatigue when muscle damage occurs. Monocyte chemoattractant protein 1 (MCP1) is related to neural spasticity and is observed in cancer survivors with prolonged fatigue.
Method: Subjects were enrolled in an NIH protocol (NCT00852111) exploring fatigue symptoms of men receiving EBRT. Data were collected at baseline, midpoint, and completion of EBRT. Fatigue was measured using the revised Piper Fatigue Scale. Aldolase and MCP1 levels were measured using ELISA from serum samples. *T* tests were used to analyze the differences of mean scores between groups. Pearson correlation coefficient was used to determine correlations between aldolase and MCP1 with fatigue scores.
Results: Twenty-three men with localized prostate cancer, aged 55–70 years, scheduled to receive EBRT were enrolled in the study. Fatigue changed significantly from baseline to midpoint of EBRT ($p<0.001$) and from baseline to completion of EBRT ($p<0.001$). Aldolase levels trended toward a significant change from baseline to midpoint ($p=0.06$), but not from baseline to completion of EBRT ($p=0.42$). MCP1 levels did not show significant change from baseline to midpoint ($p=0.44$) and from baseline to completion of EBRT ($p=0.89$). Aldolase ($p=0.01$, $r^2=0.30$) was significantly correlated with fatigue score overtime during EBRT.
Conclusions: This initial evidence suggests that fatigue experience in this population may be a peripheral phenomenon and may be related to muscle injury. Further investigation is warranted to support this initial observation.

751
Health care professional perspectives on quality of life issues most important to patients with brain metastases

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Objective: The objective was to determine the most important quality of life issues identified by healthcare professionals (HCPs) for patients with brain metastases.
Methods: HCPs involved in the care of patients with brain metastases assessed the relevance of each item of the Functional Assessment of Cancer Therapy-Brain (FACT-Br) and ranked the top 10 issues. HCPs were asked to name items they would remove or consider inappropriate or upsetting.
Results: A total of 46 HCPs were included, the majority being radiation oncologists (41 %) and with an average of 7.2 years of professional experience. All items were rated as relevant by more than 40 % of HCPs. Being able to care for oneself (89 %); experiencing headaches (81 %), weakness (78 %), and seizures (67 %); difficulties with coordination (67 %); and expressing oneself (67 %) were rated most by HCPs as top issues for patients with brain metastases. Being afraid of seizures (19 %), putting thoughts into action (17 %), reading (14 %), writing (11 %), and putting thoughts together (8.3 %) were rated as the least important by HCPs. No items were frequently rated as being missing, inappropriate, or upsetting.
Conclusion: Healthcare professionals prioritize physical symptoms rather than functional abilities in patients with brain metastases. These data should be compared with patient responses to determine possible correlations or discrepancies. The FACT-Br appears to cover major issues relevant to patients with brain metastases.

752
Wrong evidence-based medicine, osteoporosis, targeted breast and endometrium cancer therapies plus palliatives care

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Statement of purpose: Our aim was to look for a new track for treating osteoporosis and palliatives cares with regard to breast and endometrium cancers.
Statement of method: We have performed a bibliography review on a worldwide basis and from our own experience.
Statement of results: The long-term studies in the WHI Study were initiated because over the years, a number of research studies presented

a complicated picture of the risks and benefits of hormone therapy, and its continued use for the prevention of cardiovascular diseases was controversial. An increased risk of breast cancer in women taking estrogen plus progestin was found. There were no differences in the number of women who had endometrial cancer or in the number of deaths. Women who were randomized to receive active hormones were taking conjugated equine estrogens 0.625 mg each day and medroxyprogesterone acetate 2.5 mg each day. Genes and cells must be involved and in part by an age-related decline. Capacity of osteoprogenitor cells is maintained during aging and in patients with osteoporosis; other mechanisms must be responsible for it.
Statement of conclusions: Breast and endometrium cancers increase with age. Oestrogens decrease and osteoporosis increase. Stem cell might be infused to osteopenic subjects in order to replenish their stem cell pool. It is necessary to take into account the external environment and the oxidative cascade into osteoporosis through apoptosis. On the other hand, cyclic bone remodelling must be taken into account for treatment and avoiding palliative care.

753
Acupuncture supportive treatment for breast cancer patients undergoing adjuvant chemotherapy: a randomized clinical trial

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Objectives: The objective was to evaluate the efficacy of an acupuncture supportive treatment on the quality of life of breast cancer patients undergoing adjuvant chemotherapy.
Methods: Sixty-two stage I–III breast cancer patients, after surgery and before the first cycle of adjuvant chemotherapy with anthracyclines, were randomized to receive conventional support treatment (control arm) or additional acupuncture support (experimental arm) during adjuvant chemotherapy. The EORTC QLQ-C30, the breast-cancer specific module BR23, and the Chinese Quality of Life questionnaire (ChQoL) were administered before randomization (baseline assessment) and after the second (intermediate assessment) and the fourth cycles of chemotherapy (final assessment). The primary endpoint was the score difference (final−baseline assessment) of the Global Health Status (GHS) scale of the EORTC QLQ-C30.
Results: A significant improvement in the GHS scale was observed at the intermediate assessment ($p=0.038$), but not at the final assessment ($p=0.39$). Patients who received acupuncture support showed significant relief of dyspnoea at intermediate ($p=0.018$) and final ($p=0.015$) assessments and of fatigue ($p=0.025$) and future perspectives ($p=0.044$) at intermediate assessment. A significant improvement ($p=0.042$) in the stamina scores of the ChQoL, which measures fatigue and physical strength, was observed at the intermediate assessment for patients receiving acupuncture.
Conclusions: Although the study did not show a significant improvement of QoL in patients receiving acupuncture according to the primary endpoint, no negative effects of acupuncture were reported. The results suggest a potential improvement in symptoms control (with the maximal effect after two cycles of chemotherapy for fatigue and dyspnoea) that should be assessed in further studies.

754
A comparison of health care provider versus patient perspectives on the FACIT-Pal

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Objective: The objective was to examine the agreement of healthcare providers (HCP) and patients' evaluation of quality of life on the Functional Assessment of Chronic Illness Therapy—Palliative Care (FACIT-Pal) Scale.
Methods: Sixty patients and 56 healthcare providers completed the FACIT-Pal. In the survey, patients and HCPs ranked the top 10 issues affecting the quality of life most profoundly. The percentage of participants selecting each item as one of their ten most relevant items was calculated, and comparisons were made between HCPs and patients.
Results: Patients and HCPs both felt that items regarding personal and emotional well-being were of greatest importance. Patients ranked emotional support from family (40.9 %) as the most important, followed by pain (38.6 %), lack of energy (31.6 %), and being forced to stay in bed (25 %). HCPs ranked items in the following order: pain (73.4 %), lack of energy (63.4 %), nausea (51.2 %), and dyspnea (51.2 %). Patients rated nausea at 18.2 % and dyspnea at 9.09 %. HCPs tended to rate physical symptoms such as nausea, vomiting, and dyspnea much higher than patients. Overall, HCPs rated all items as being much more important than patients (top item by HCPs rated to be included by 73 %, whereas top item by patients was only 41 %).
Conclusion: There was a discrepancy between the scores of patients and HCPS as they may prioritize differently. HCPs tended to put more emphasis on physical symptoms, whereas patients prioritize psychosocial and global issues. As result, provider-based ratings of patient status may be misleading.

755
Experiment personalized care during and after cancer

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Objectives: Our objective was to follow grant programs by the National Cancer Institute entitled "Piloting this personalized care during and after cancer." We have selected "head and neck cancer" because of patient characteristics often from disadvantaged socio-professional classes and important repercussions in terms of quality of life of disease and treatment. The main objective was to present our project and preliminary results.
Method: From September 2010 to January 2011, a "coordination nurse" has been selected to be placed at the heart of the organization. Detection tools for various problems: speech therapist, nutritionist, psychologist, social worker, geriatrician, physician anti-pain, addiction, etc. A specific file was produced.
Results: Since January 2011 in December 2011, 80 new patients with head and neck cancer were included: 59 males and 21 female subjects, mean age 67 years (35–86 years). The three most common reasons for coordination were: needs in social, psychological support, and swallowing disorders. Coordination "city-hospital" was necessary for 31 patients.
Conclusion: The management of these cancers is complex from both the technical point of care support. The first function of the "coordination nurse" is to detect, inform, and guide the patient and family based on needs. The second point is to optimize the link with the "city," including the attending physician who is one of the priorities of the second "cancer plan". As such, tools such as "satisfaction survey" are underway to evaluate this project by the patient, his family, and the attending physician.

756
Avoiding palliative cares to wrong evidence-based medicine in targeted breast cancer drugs

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Aim: Our aim was to search for new answers in the link between breast cancer, osteoporosis, and targeted breast cancer drugs.
Method: We have performed a bibliography review on a worldwide basis and from our own experience.
Results: While the exact cause of breast cancer is not known, the risk of developing it increases with age. Breast cancer risk is strongly related to age, with 81 % of cases occurring in women aged 50 years and over. Women in developed countries are at increased risk of breast cancer compared with women from less developed countries. A large part of this variation can be explained by the fact that women in developed countries have fewer children on average and a limited duration of breastfeeding, it is said. But in reality, the reproductive factors that influence breast cancer risk do not explain it. Female breast cancer incidence rates vary considerably in the world. Postmenopausal osteoporosis usually affects women over the age of 60 years. The leading cause of osteoporosis is the lack of estrogen in women and opposite drugs. Osteoporosis, affecting one in two women, is now three times more common than breast cancer. Bisphosphonates may contribute to fewer breast cancers. That is not clear. The cell cycle consists of four phases. DNA and RNA viruses have been shown to be able to cause cancer and referred to as carcinogens.
Conclusions: The natural lack of estrogen does not decrease breast cancer incidence and increase osteoporosis and cares thereof. Targeted breast cancer therapies are to be better studied.

757
Addressing cancer survivors' concerns through a multidisciplinary survivorship clinic

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Introduction: Methods: Aggregate de-identified data from a prospectively maintained institutional survivorship clinic database were queried to determine the concerns of cancer survivors and the success of a multidisciplinary survivorship clinic in addressing these.
Results: From September 2010 to November 2011, 94 cancer survivors presented to the Yale Survivorship Clinic (median age, 53 years; range, 24–78 years). The majority were white (n=59, 83.1 %), female (n=87, 92.6 %), and breast cancer survivors (n=58, 68.2 %). The median time since diagnosis was 14 months (range, 1–360 months). Only four patients (5.6 %) had stage IV disease. The main concerns of cancer survivors were nutrition (n=48, 16.6 %), recurrence (n=45, 15.6 %), and exercise (n=34, 11.8 %). After a multidisciplinary visit including an oncologist, nutritionist, physical therapist, and social worker, the majority of patients (n=81, 96.4 %) felt that their concerns were addressed. The proportions of patients ranking their experience with the nutritionist, physical therapist, oncologist, and social worker as "very helpful" were 95.2, 95.0, 94.2, and 84.2 %, respectively. The overall average patient satisfaction (on a scale of 1–10) for the multidisciplinary visit was 9.6.
Conclusion: Cancer survivors are interested in healthy lifestyles and rank nutrition and exercise among their top 3 concerns, along with recurrence. Multidisciplinary survivorship clinics that offer interactions with nutritionists and physical therapists may help address these concerns.

758
Projected referral for health care services in an outpatient palliative radiotherapy clinic

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Objectives: Our objective was to investigate the projected referral for other healthcare services in an outpatient palliative radiotherapy clinic based on moderate to severe symptom scores.
Methods: Patients referred for palliative radiotherapy (RT) between 1999 and 2009 were evaluated. Basic demographic information was collected for all patients, including age, primary cancer site, and Karnofsky performance status. The Edmonton Symptom Assessment System (ESAS), which assesses nine symptoms on a scale of 0–10, was completed by all patients prior to RT consultation. The numeric scale was converted into a categorical scale of none (score 0), mild (score 1–3), moderate (score 4–6), and severe (score 7–10). Patient characteristics and ESAS scores were expressed as the mean, standard deviation, median, and range for continuous variables. Categorical variables were expressed as proportions. Patients with moderate to severe symptoms were identified as potential referrals to other healthcare services for the purpose of symptom management.
Results: Tiredness (66 %), poor sense of well-being (64 %), pain (57 %), and poor appetite (52 %) had over half of patients scoring in the moderate to severe range. This was followed by moderate to severe drowsiness (43 %), dyspnea (26 %), and nausea (14 %). Moderate to severe anxiety and depression occurred in 39 and 30 % of patients, respectively, reflecting the potential percentage of projected referrals for symptom and/or psychosocial management.
Conclusion: Cancer symptoms are complex, where a multidisciplinary and collaborative approach should be taken to provide timely management and maintain patient's quality of life at the end of life. Appropriate resources need to be allocated accordingly.

759
Cancer cachexia in lung cancer

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Introduction: Cancer cachexia is characterized by anorexia, muscle wasting, and increased resting energy expenditure. It represents a major clinical problem regarding its prevention, identification, and treatment.
Purpose: The purpose of this review was to summarize data concerning cancer cachexia among lung cancer patients. The potential influence of cancer cachexia on overall survival is also examined.
Materials and methods: A systematic literature search was performed in Medline and Embase.
Results: Our search yielded 100 studies and review articles about cancer cachexia among lung cancer patients. The prevalence of cancer cachexia is high among patients with advanced lung cancer. Fundamental in the pathophysiology of this syndrome is the interaction between the host and the tumor. The tumor cells release proinflammatory cytokines and generate specific cachectic factors, the cachexins (proteolysis inducing factor and lipid mobilizing factor), while the host shows an acute phase protein response with prototypical reactant, C-reactive protein, elevation. Treatment of cancer cachexia comprises progestins and corticosteroids as appetite stimulants, while under investigation are eicosopentaenoic acid diester, adenosine 5′-triposphate infusions, and selectivecyclooxygenase-2 inhibitors. Lung cancer cachectic patients have worse quality of life, weaker response to anticancer therapy, and shorter survival.

Conclusions: Cancer cachexia in lung cancer is a multifactorial process and requires multimodal therapy. Treatment of cachexia improves quality of life, increases survival, and reduces medical costs. Further studies need to be conducted in order to understand cancer cachexia mechanisms and to develop effective anti-cachectic agents.

760
Quality of life after lung cancer resection

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Introduction: Lung cancer is the leading cause of cancer death in the USA for both men and women. For patients with early-stage non-small cell lung cancer, lung resection still achieves the best long-term results. The long-term goals of lung cancer surgery include cancer control, survival, and quality of life. In a patient population with such a high mortality rate, evaluation and preservation of quality of life (QoL) after treatment is imperative.
Aim: Our aim was to review the literature and discuss the available data regarding post-lung cancer surgery QoL.
Results: Early-stage lung cancer patients already have significantly lower QoL when compared with the normal population before surgical treatment, with significant impairment in physical and emotional functioning. Several studies have shown that the physical domains of QoL deteriorate early after lung cancer surgery, but improve to baseline by 6 months to 1 year after surgery. Chronic pain is the most common complication after lung cancer surgery, and impaired cardiopulmonary function following pulmonary resection is an important predictor of immediate postoperative morbidity. Lung cancer survivors do not experience the same length of life and QoL as their age-matched peers or other cancer survivors probably because of the nature of the cancer and the smoking history. Age, extent of surgery, preoperative lung function, access technique, and adjuvant treatment may all influence postoperative QoL.
Conclusion: There is clearly a need to identify and intervene with subgroups of cancer patients who are at an elevated risk of premature death and diminished QoL after lung resection.

761
A prospective Caphosol audit for prevention of oral mucositis in autologous stem cell transplant recipients after high-dose melphalan (CASH)

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Objectives: The Caphosol Audit in Autologous Stem Cell Transplant (ASCT) Recipients after High-Dose Melphalan (CASH) evaluates the prevention of severe oral mucositis (OM) with Caphosol, a supersaturated calcium phosphate rinse; the decrease of incidence, severity and duration of OM and incidence of fever, infections, opioid and antibiotic use; and length of hospital stay.
Methods: A multicenter, observational prospective cohort audit was performed in 154 ASCT recipients treated with high-dose melphalan (HDM, 200 mg/m²) for multiple myeloma. Patients with melphalan ≥5.25 mg/kg after recalculation (100 % expectation rate of OM) received standard oral care and Caphosol four times daily. Patients with <5.25 mg/kg melphalan received standard oral care only. The WHO oral toxicity scale (0–4) was used daily from day 1 of HDM until day +20. Neutropenic fever (defined as temperature >38°C and a neutrophil count of $<0.5\times10^9$/L), time to neutrophil engraftment, duration of hospitalisation, concomitant medications and incidence of infections were also monitored daily.
Results: Forty-seven patients actually received ≥5.25 mg/kg melphalan and were ordered Caphosol treatment. The incidence of severe OM in the Caphosol group was only 45 %, instead of the expected incidence of 65 % (POMA). The maximum mean WHO OM grade was not significantly different compared with standard OC only. Neutropenic fever occurred in 25 patients in the Caphosol group (53 %) and in 81 patients (76 %) in the group with standard OC ($p=0.0055$).
Conclusions: Caphosol is effective in the prevention of (severe) OM and neutropenic fever in ASCT recipients after HDM.

763
Behavioral and neuropathological studies in rats with a single docetaxel injection

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Objectives: The aim of this study was to determine the characteristics of docetaxel-induced neuropathic pain in rats.
Methods: A total of 48 Sprague–Dawley male rats were randomly divided into four groups with 12 rats in each group. The rats were administrated a single injection of either vehicle or docetaxel solutions (5, 10, or 15 mg/kg) intravenously by vain tail. Eight days after injection, behavioral testing, analysis of the expression of substance P in the lumbar spinal cord using immunohistochemistry, and a morphological analysis of the sciatic nerve by electron microscopy were performed.
Results: We found that a single injection of docetaxel (5 and 10 mg/kg) in rats can produce mechanical allodynia and heat hypoalgesia without changes in Rota-Rod results. The levels of substance P in the spine were increased after docetaxel injection. Electron microscopy revealed severe myelinated fiber degeneration associated with mild unmyelinated impairment in the sciatic nerve after docetaxel injection.
Conclusions: These results demonstrate that this new rat model can reproduce the characteristics of peripheral neuropathy observed in clinical practice, making it a useful tool for the investigation of the mechanisms underlying docetaxel-induced neuropathy and for the prescreening of neuroprotective agents.

764
Anxiety, depression, awareness of the diagnosis and its relation with the sense of coherence in patients diagnosed with lung cancer

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Background: The lung cancer diagnosis, with poor life expectancy, implies considerable psychological burden on patients. Furthermore, the ability of sense making, understanding and management of the disease consequences may be related to the degree of the sense of coherence.

Purpose: The purpose of this study was to investigate the prevalence of anxiety and depression in Greek patients diagnosed with lung cancer and its relation with the sense of coherence and awareness of the diagnosis.
Methods: The study included 100 lung cancer patients. All participants filled out the Sense of Coherence and the Hospital Anxiety and Depression Scale.
Results: Regarding the awareness of diagnosis, 45 % of patients were informed, 28 % did not know the diagnosis, and 27 % of patients, although they were not informed, were suspicious of the diagnosis. The subgroups of unaware and suspicious of the diagnosis patients had higher scores of anxiety and depression than those who were aware (ANOVA Bonferroni, $p<0.05$). Furthermore, patients who suspected their diagnosis presented a lower degree of sense of coherence compared to those who were ignorant and to those who were aware (ANOVA Bonferroni, $p<0.05$). A significant correlation was observed between anxiety and depression scores.
Conclusions: This study confirms the high prevalence of anxiety and depressive symptomatology in patients with lung cancer. However, the presence of a high degree of sense of coherence seems to be a protective factor. Awareness of the diagnosis affects the degree of sense of coherence.

765
Detection of HPV in fresh tissue samples, saliva, plasma and oral exfoliated cells extracted from patients with oral leukoplakia: a preliminary study

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Oral leukoplakia is considered as a pre-malignant lesion for the development of oral squamous cell carcinoma (OSCC), and several risk factors can be related to this carcinogenesis, including human papillomavirus (HPV). HPV is the main cause of cervical cancer, and its role in oral carcinogenesis is still controversial. In the oral mucosa, the association of oral leukoplakia with HPV has been made. This study was analyzed and approved by the Ethics on Research Committee of Aracatuba School of Dentistry–Univ Estadual Paulista (UNESP), Brazil. The aims of this study were to detect the presence of HPV DNA in fresh tissue samples, plasma, and oral exfoliated cells extracted from patients with oral leukoplakia analyzed using the technique of nested PCR and to make a comparison among these biological material sources. For this preliminary study, eight patients with oral leukoplakia were evaluated. Extraction of DNA and amplification of the human β-globin gene in all samples to confirm the presence and integrity of DNA were performed. Nested PCR assays revealed the presence of HPV in 37.5 % of fresh tissue, 50.0 % of plasma, and 62.5 % of oral exfoliated cells extracted from patients with oral leukoplakia. Based on the current experiment and the available literature, HPV could potentially be an etiologic cofactor in the pathogenesis of oral leukoplakia.

766
Topical curcumin for the prevention of oral mucositis in pediatric patients

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Objectives: The aim of this pilot study was to assess the tolerability of a topical application of curcumin mouthwash. The secondary aim was to describe the parameters of oral mucositis in pediatric patients undergoing doxorubicin-containing chemotherapy using topical curcumin mouthwash.
Methods: An interventional study using curcumin-based solution as a topical agent was conducted. Participants were pediatric patients and young adult patients treated for pediatric tumors. During the period of high-dose chemotherapy, curcumin was given topically in the oral cavity as a fluid extract (98 %) at a dose of ten drops, two times a day. Adverse events were recorded. Oral mucositis was assessed by the World Health Organization (WHO) scale and the Oral Mucositis Assessment Scale (OMAS) and pain level on the visual analogue scale (VAS; 0–10, based on patients' reports) on days 0, 7, 10, 14, and 21 of two consequent cytotoxic courses.
Results: No oral adverse events were documented in any patients treated with curcumin. No possibly related systemic adverse events were observed. The WHO, OMAS, and VAS scores were low relative to the reported incidence of oral mucositis.
Conclusions: In this study, topical application of curcumin as a mouthwash was safe and well tolerated. Large-scale randomized controlled research about the efficacy of topical curcumin in the prevention of oral mucositis is warranted.

767
Referral to specialized palliative care by Canadian oncologists

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Objective: The objectives were to describe current referral practices of Canadian oncologists to specialized palliative care services (SPC) and to define demographic characteristics, practice situations and opinions associated with referral.
Methods: Physician members of the Canadian Association of Medical Oncologists, Canadian Association of Radiation Oncologists and Canadian Society of Surgical Oncology were invited to participate in a survey assessing SPC referral practices. The survey assessed demographics, availability/nature of SPC, referral practices and opinions about SPC. Participants received two e-mailed and two mailed invitations. Responses were received anonymously; the results were compiled and statistically analysed.
Results: The response rate was 72 % (603/839): 37 % were medical oncologists/haematologists, 50 % were radiation oncologists, and 12 % were surgical oncologists. The majority (94 %) reported that some form of SPC was available to them. Most respondents referred terminally ill patients usually/always to SPC (84 %), more often for uncontrolled symptoms (particularly with prognosis <1 year) or discharge planning than for spiritual, social or psychological issues. Only 37 % of respondents stated that patients receiving chemotherapy were accepted by the SPC services available to them. Predictors of higher frequency of referral included number of SPC disciplines available, satisfaction with SPC availability, SPC acceptance of patients receiving chemotherapy and oncologist comfort in referring patients before they were close to death (all $p<0.01$).
Conclusions: Canadian oncologists refer frequently to palliative care, most often for patients with short prognosis and uncontrolled symptoms. Better availability of high-quality multidisciplinary SPC and better integration of SPC into routine oncology care would further improve access to SPC for patients with cancer.

768

The diagnosis of breast cancer has a devastating impact on the patient and the family: the disease is increasing in alarming manner leaving many families in poverty and young ones without parents

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The diagnosis of breast cancer has a devastating impact on the patient and the family; the disease is increasing in an alarming manner, leaving many families in poverty and young ones without parents.
Purpose: The purpose of the study was to explore the difficulties a family undergoes while taking care of a cancer patient.
Method: A survey done at Meru District has shown that in every 20 families, there is one patient with breast cancer undergoing treatment or newly diagnosed. The immediate families are more depressed and suffer along with the patient, hence reducing their performance at work.
Results: There is increasing poverty in the families, forcing them to sell their properties in order to afford the treatment. Having a patient means stopping most of daily activities, especially when a patient becomes paraplegic. One out of five patients ends up being paralyzed, increasing dependence to others, and half of the patients' partners ends up remarrying, hence stopping the support. The illness mostly spreads to the bones, especially in the spinal cord, complicating the support, treatment, and increasing finance problems. Patients have problems in accessing strong painkillers, making their life a nightmare. It has been shown that most of the patients need wheelchairs which our health intuitions are not able to supply, hence becoming a challenge to the family members. Buying is another issue since by the time the patient is paralyzed the family has spent all.
Conclusion: Increased palliative care and availability of strong painkillers in affordable prices and increased awareness of early signs and symptoms at the community level are needed.

769

Predictive factors for overall quality of life in advanced cancer patients from EORTC QLQ C30

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Objective: The improvement or maintenance of quality of life (QOL) is the main treatment goal for advanced cancer patients. The purpose of this study was to identify which domains/symptoms from the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30) was predictive of overall QOL in advanced cancer patients.
Methods: Patients with brain or bone metastases from sic countries completed the EORTC QLQ-C30 questionnaire at consultation. Regression analysis was conducted to determine the predictive value of the QLQ-C30 functional/symptom scores for overall QOL (question 30). Univariate linear regression analysis was used to determine significant predictors of overall QOL, followed by multivariate linear analysis, which identified the most significant factors.
Results: Data from 447 patients were analyzed; median age was 57 years and median KPS was 80. The most common primary cancers were of the breast (65 %), lung (11 %) and prostate (10 %). This patient sample was composed of more females (74 %) than males (26 %). In the total patient sample, worse cognitive functioning, global health status and fatigue were the most significant predictive factors for worse QOL. In the subgroup of patients with bone metastases (n=400), the aforementioned three factors were also the most significant predictors of worse QOL, whereas in patients with brain metastases (n=47), only worse global health status most significantly predicted worse QOL.
Conclusion: Deterioration of certain QLQ-C30 functional/symptom scores significantly contributes to worse QOL. Special attention should be directed towards managing these factors in caring for palliative cancer patients.

770

A study of the correlation among pain, anxiety, and family support in lung cancer patients

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Introduction: Lung cancer is a very stressful condition for both the patient and his/her family. The anxiety and pain accompanying cancer and its treatment have a significant negative influence on the patient's quality of life.
Aim: Our aim was to investigate the correlation between anxiety, pain, family support, and the clinical characteristics of the patients.
Methods: The sample consists of a total of 101 patients with lung cancer treated in the Oncology Department of the "Sotiria" General Hospital. We used Spielberger's State–Trait Anxiety inventory as well as the Family Support and a Brief Pain Inventory in order to assess the qualities of pain (pain severity and pain interference) supplemented by information gathered from the patients' medical records.
Results: Our analysis showed that there is a correlation between anxiety and pain and the support exhibited by the family environment. The intensity of pain (interference and severity) has a positive correlation with state anxiety and trait anxiety and a negative correlation with family support. The effect of pain (interference and severity) in everyday life also exhibits a positive correlation with state anxiety and trait anxiety and a negative correlation with family support. Anxiety (both state and trait) has a significant negative correlation with family support.
Conclusions: The implementation of appropriate interventions does reduce anxiety and augment the patients' feelings of being supported by the family and has a positive influence on patients' pain levels.

771

Evaluation of laser therapy in the prevention and treatment of radiation-induced mucositis: double-blind randomized study in head and neck cancer patients

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Objective: The purpose of this prospective study was to determine the effect of the low-level laser in the prevention and treatment of mucositis in head and neck cancer patients.
Patients and methods: A total of 70 patients with malignant neoplasms in the oral cavity or oropharynx were evaluated. The patients were randomized into two low-level laser therapy groups: group 1 (660 nm/15 mW/3.8 J/cm²/spot size 4 mm²) or group 2 (660 nm/5 mW/1.3 J/cm²/spot size 4 mm²) starting on the first day of radiotherapy. Oral mucositis was assessed daily and weekly using the NCI and WHO scales. Oral pain was scored daily with a visual analogue scale before laser application.
Results: Patients in group 1 had a mean time of 13.5 days (range, 6–26 days) to present mucositis grade II, while patients in group 2 had a

mean time of 9.8 days (range, 4–14 days; both WHO and NCI $p=0.005$). In addition, group 2 also presented a higher mucositis grade than group 1, with significant differences found in weeks 2 ($p=0.019$), 3 ($p=0.005$), and 4 ($p=0.003$) for the WHO scale and weeks 2 ($p=0.009$) and 4 ($p=0.013$) for the NCI scale. Patients in group 1 reported lower pain levels ($p=0.004$).
Conclusion: Low-level laser therapy during radiotherapy was found to be effective in controlling the intensity of mucositis and pain.

773
Palliation across—Silkeborg

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Project "Palliation across—Silkeborg" is an innovative collaborative project between Region Hospital Silkeborg, the community of Silkeborg, and general practitioners. The project focuses on how to create coherent offer to ensure that all patients in need of palliative care are provided with an available offer. The aim of the project was to improve the quality of palliative care for patients with life-threatening chronic illness who require palliation which today are not established as services. The project is based on adult patients with cancer, COPD, and heart failure.
Methods: Qualitative methods are used to identify patients who need palliative care. Field studies have been performed to identify existing organizational palliative offer and working procedure. Individual interviews with patients with life-threatening illness have been performed to uncover the needs for palliative care, as have focus group interviews with relatives to identify their problems, highlight their needs, and obtain ideas for new initiatives.
Results: The project uses innovative methods to generate ideas for future offerings. Project teams with selected healthcare personnel have been established and have been working with different solutions of identified problems. A cooperative model is developed and has focused on: optimizing the communication between the healthcare personnel whom the patients meet and using a screening tool as part of an interview guide when patients are told that their disease is incurable.
Conclusion: We have managed to get employees involved in the development of palliative care. The cooperation model and the results of testing the initiatives and the process will be presented.

775
Incidence and risk factors for venous thromboembolism (VTE) in multiple myeloma (MM) patients

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Objectives: Multiple myeloma (MM) patients are at an increased risk for venous thromboembolism (VTE) due to multiple risk factors related to host, disease, and treatment. Modern regimens with immunomodulatory derivatives (IMiDs), thalidomide or lenalidomide, with dexamethasone (Dex), have improved outcomes, but pose additional risks for VTE. The purpose was to investigate the incidence and risk factors for VTE among MM patients.
Methods: A retrospective study was conducted to review the medical records of all MM patients newly referred to MDACC in 1 year (2006) for the incidence and risk factors for VTE during 1-year follow-up.
Results: Of 159 MM patients, 60 % were men and 40 % women, with median age of 59 years (range, 31–89 years); 21 % patients had relapsed or refractory disease. The incidence of VTE was 20 % (32/159): 24 (75 %) deep vein thrombosis, 6 (19 %) pulmonary embolisms, and 2 (6 %) concurrent. Thirty-one percent of VTE occurred within 3 months and 56 % within 6 months from referral. Of the 84 patients (53 %) who received thromboprophylaxis (anti-coagulants/anti-platelets), the incidence of VTE was 13 % (11/84) compared to 28 % (21/75) for those not receiving ($p=0.019$). The incidence of VTE was highest among those who received IMiD+Dex (26 %). Among 99 patients receiving IMiD+Dex, the incidence of VTE was 5 % (2/39) with low-molecular-weight heparin, 14 % (2/14) with warfarin, 33 % (6/18) with anti-platelet agents, and 57 % (16/28) with no thromboprophylaxis ($p<0.0001$).
Conclusions: The incidence of VTE is high with IMiD+Dex and can be significantly reduced with appropriate thromboprophylaxis.

776
Chemotherapy-induced nausea and vomiting (CINV) in patients receiving intraperitoneal and systemic DCF-like regimen in advanced gastric cancer with peritoneal dissemination

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Objectives: Neoadjuvant intraperitoneal and systemic chemotherapy (NIPS) is a new treatment modality in gastric cancer with peritoneal seeding. Phase II clinical trials with cisplatin-based NIPS and cytoreductive surgery have shown an increase in overall survival with an acceptable toxicity in Japanese populations. There is a lack of data related to chemotherapy-induced nausea and vomiting (CNIV) with this regimen in Western populations. We report the CINV observed in the first experience in Spain with cisplatin-based NIPS.
Methods: Ten consecutive patients have been enrolled in this protocol in a compassionate use program in our center from 2009 to 2011. DCF-like NIPS (weekly): cisplatin 25 mg/m^2, intraperitoneal, day 1; docetaxel 25 mg/m^2, intraperitoneal, day 1; 5-fluorouracil 600 mg/m^2, bolus intravenous (i.v.), day 1; and methotrexate 100 mg/m^2, i.v., day 1. NIPS was delivered through an implantable peritoneal catheter. There were six men and four women, median age, 43.5 years (range, 28–56 years). ECOG 0/1/2 were 30/50/20 %, with previous systemic chemotherapy/radiotherapy/surgery in 90 %/10 %/10 %. The median number of chemotherapy was 4 (range, 2–6). CTCAE v4.0 was used to describe CINV.
Results: The antiemetic regimen employed for CINV prevention was: granisetron 1 mg, i.v., day 1 and dexametasone 16 mg, i.v. day 1, except in one patient who received granisetron 3 mg, i.v., upfront due to previous emesis with systemic chemotherapy. Aprepitant was not included as primary prophylaxis. Chemotherapy-induced nausea in grades 1–3 were 30, 20, and 10 %, respectively. Chemotherapy-induced vomiting in grade 2 was 30 %; no grade 3–4 toxicity was described.
Conclusions: The first results suggest that CINV with this regimen is manageable with primary prophylaxis with granisetron and dexamethasone. Upfront aprepitant may improve outcomes.

777
How do we treat pain in lung cancer patients in Croatia?

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Objectives: Lung cancer is the most common malignancy in men in Croatia; in women, it is the third most common. Among more than 2,800 new lung cancer patients discovered annually, most of them suffer from pain. As pain continues to be a prevalent and undertreated symptom experienced by most non-small cell lung cancer patients worldwide despite analgesics, we wanted to find out the situation in Croatia.
Methods: A prospective study was undertaken to elucidate the prevalence and intensity of pain and adequacy of pain management in lung cancer patients in Croatia. After collecting data about pain characteristics, transdermal fentanyl was used in the analgesic protocol based on the WHO ladder strategy during the 3-month period.
Results: Overall, 301 patients were enrolled, with median age of 63 years, most were men (74 %), metastatic disease (57 %) and good PS (58 %). The prevalence of moderate and severe pain was >70 %. Pain intensity was higher in patients with advanced disease (28 vs. 13 %), worse performance status (46 vs. 11 %), and bone metastases (45 vs. 23 %). More than 90 % of patients were treated with opioid "as needed"; >60 % took all analgesics "as needed" at the beginning of the study.
Conclusions: Controlling pain in lung cancer patients in Croatia is still inadequate, mostly due to the administration of incorrect pain therapy among healthcare professionals. All patients can benefit from opioid therapy when correctly applied according to the WHO guidelines, underlying the necessity of better education and need for improvements in pain management all over the world.

778
Predictive factors for overall quality of life in advanced cancer patients from EORTC QLQ-Pal-15

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Objective: This study examined which domains/symptoms from the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire Core 15 Palliative (EORTC QLQ-C15-Pal), an abbreviated version of the health-related EORTC QLQ-C30 questionnaire designed for palliative cancer patients, was predictive of overall quality of life (QOL) in advanced cancer patients.
Methods: Patients with brain or bone metastases from six countries completed the QLQ-C30 at consultation. Select data representative of the QLQ-C15-Pal questionnaire were extracted for the present analysis. Regression analysis was conducted to determine the predictive value of the QLQ-C15-Pal functional/symptom scores for overall QOL (question 15). Univariate linear regression analysis was used to determine significant predictors of overall QOL, followed by multivariate linear analysis, which identified the most significant factors.
Results: Data from 342 patients were analyzed. In all patient samples, the overall QOL score, algorithmically calculated using all QLQ-C15-Pal questions, significantly correlated with the patient-reported QOL score in question 15. In the total patient sample, pain and constipation were the most significant predictive factors for worse QOL. In the subgroup of patients with bone metastases (n=233), worse pain and constipation were the most significant predictors of worse QOL, whereas in patients with brain metastases (n=109), only worse fatigue most significantly predicted worse QOL.
Conclusion: Deterioration of certain QLQ-C15-Pal functional/symptom scores significantly contributes to worse QOL. Special attention should be directed to managing these factors to ensure optimal QOL for palliative patients.

779
Coping strategies affecting the cancer survivor–caregiver relationship

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Background: Informal caregivers (IC) of hematopoietic cell transplantation (HCT) survivors care for a medically fragile cancer population. A committed IC is required. Female and male caregiver spouses report post-transplant higher levels of emotional symptoms and less marital satisfaction post-transplant than their survivors or healthy controls. This study presents coping strategies used by survivors and their IC post-transplant as an approach to understanding this relationship change.
Methods: A focus group design was implemented. Eligibility included 1–3 years following an allogeneic transplant. Survivors and IC attended separate simultaneous focus groups. Directed content analysis of the focus group transcriptions was conducted using relational theory as a framework.
Results: Three survivor/IC case studies were selected to illustrate the positive and negative effects of coping strategies on the marital relationship. Couples included

1. A young couple with five young children and the wife having the transplant
2. An older couple with grown children and the husband having the transplant
3. A couple married 20 years with a 12-year-old son and the wife having the transplant

Each couple illustrates coping strategies used since transplant discharge resulting in long-term protective and threatening effects on the marital relationship.
Discussion: This study explores the relationship dynamics in dyads of survivors and their IC. The findings underscore the importance of health professionals analyzing coping mechanisms used by survivors and IC. Support following allogeneic transplant should include ways to promote long-term physical and psychological recovery in couples at risk.

780
Clinical and mammographic breast cancer screening evaluation in the Western Amazon, Brazil

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Objectives: The objectives of this study were to estimate breast clinical examination (BCE) and mammographic (MM) coverage and to identify conditions associated with their adhesion failure in a Western Amazon capital in Brazil.
Methods: A population-based health survey was carried out in Rio Branco, AC, and 324 women 40–69 years old randomly enrolled were interviewed between November 2007 and October 2008.
Results: The observed distribution of reported BCE 2 years before interview was 37 % and for MM was 40.1 %, mainly carried out in private health services. A statistically significant association between low education and failed performance of both procedures was observed. A statistically significant linear trend was also observed for education and breast cancer screening adhesion, with higher prevalence ratios of failed coverage in the lower educated stratum.

Conclusions: Low BCE and MM coverage was observed in Rio Branco, which may result from the reduced local health services operational capacity to provide early breast cancer detection. The observed results also highlight the need to promote specific public health policies toward low educated population strata, aiming to increase their breast cancer screening coverage.

781
Surgical treatment of bisphosphonate-related osteonecrosis of the jaws

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Introduction: Bisphosphonates are drugs commonly used for treating osteoporosis, hypercalcemia of malignancy, and bone metastases. However, the administration of bisphosphonates has been associated with osteonecrosis of the jaws. The treatment of this disorder has not been elucidated, and some cases show unsatisfactory results. The treatments described vary from conservative such as antibiotics, local wound care and superficial debridements to radical surgery with removal of all affected bone. However, few studies showed the success of surgical treatment of osteonecrosis.
Objective: The objective of this study was to evaluate the response of radical surgical treatment in patients with bisphosphonate-associated osteonecrosis of the jaw.
Patients and methods: A total of 33 patients with 46 areas of bisphosphonate-related osteonecrosis of the jaws were treated by surgery between 2004 and 2010.
Results: Most of patients were female (25 patients) and ranged in age from 39 to 83 years (mean, 65.6±10 years). Complete healing rate was 87 % and partial improvement (symptom control and reduction of area of exposed bone) was 7 %, resulting in 94 % of clinical benefit using this therapy. Among the remaining regions, 4 % showed no significant changes and 2 % worsened compared to preoperative aspect; these cases were located in the posterior mandible region. The number of applications and type of bisphosphonate did not influence the response of surgical treatment.
Conclusions: Our data demonstrate that surgical treatment of bisphosphonate-related osteonecrosis of the jaw is effective with a high rate of complete healing; however, the posterior mandible region presents the worst response.

782
Evaluation of socket healing in patients under bisphosphonate therapy: experience of a single institution

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Objective: The objective was to assess clinical features of exodontias performed in cancer patients who underwent therapy with intravenous bisphosphonates (BPs).
Patients and methods: This is a retrospective cohort study in which the sample consisted of 20 patients using BPs, who had 62 teeth extracted. Univariate and multivariate analyses were performed, with IO=95 % through Mann–Whitney *U* test, Pearson's correlation test, and multiple linear regression model. Socket healing time (HT) was compared among exodontias performed according to its motive, such as periodontal disease or caries, type of BPs, and use of corticosteroid.
Results: From the 62 tooth extractions performed, four exodontias had evolved to BOJ. Of another 57 exodontias without development of BOJ, HT was significantly better for tooth extraction performed in patients receiving corticosteroid (p=0.01), for tooth extracted due to caries (p=0.04), and under pamidronate (p=0.03). There was no correlation among the period of last BP infusion with exodontia with HT (r=0.25). Sockets after exodontias due to periodontal diseases had odds of 15.22 times (95% CI=1.73–133.66, p=0.01) for delayed HT, whereas exodontias performed under corticosteroid use had odds of 0.04 times (95% CI=0.01–0.40, p<0.001) and r exodontias performed under zoledronate had odds of 0.31 (95% CI=0.08–1.25, p=0.10).
Conclusion: It could be inferred that zoledronate plays a role at delayed healing related to tooth extraction. In addition, periodontal disease also delays the HT of exodontias. Despite the limitation of the present study, we can suggest that inflammation plays a role on delayed healing process related to sockets after exodontias.

783
Providing palliative care to children in a resource-limited setting in Western Kenya region

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Introduction: Palliative care for children with life-limiting conditions is an active approach to care from the point of diagnosis through to death and bereavement for family. A child is defined as a young person aged up to 19 years. The population of young people with life-limiting conditions is growing and reaches a crisis during late adolescent and young adulthood. Healthcare providers working in rural facilities are faced with the day-to-day challenge of providing care to and handling these children due to limited knowledge and skills.
Objective: The objective of this study was to highlight the challenges faced by healthcare providers in rural facilities caring for children with life-limiting conditions in their setup. Interventions were carried out to improve their capacity to care for these children.
Method: Facilitators from a regional referral hospital made planned visits to 13 facilities within the region being supervised by Homabay District Hospital. Averages of 15 healthcare providers per facility were taken through the basic skills of palliative care. Handouts were given to them for reference.
Results: Children visiting facilities were handled. Healthcare providers show increased interest in providing palliative care despite having limited resources. Control of moderate to severe pain is a challenge since narcotic analgesics are not among the components of essential drugs, thus not accessible.
Conclusion: There is need for continued capacity building through training healthcare providers on palliative care services and the importance of collaboration and continuous monitoring. There is a gap in reliable source of narcotic analgesics.

784
Developing paediatric palliative care service in Moldova

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Palliative care is a concept which successfully works in many countries of the world, but in some states, it is still a new field of the national healthcare system, which makes first steps in its development.

Paediatric palliative care is an even more unexplored area, and in many countries, it still remains neglected.
Palliative care, as well as adequate palliative treatment, is a new domain in the Republic of Moldova both for the general public and healthcare professionals. It was initiated in 2000 by different non-governmental oragnisations. Currently, there are no state services which can provide palliative care to different categories of incurable patients, including those with cancer.
The Charity Foundation for Public Health "Angelus-Moldova" is one of the non-governmental organisations that have been providing palliative care services to incurable cancer adult patients in the capital of the country since November 2001. Since November 2008, it also has been rendering paediatric palliative care services for incurable cancer children, starting with seven little patients in 2008 and gradually increasing the number of children to 28 in 2009 and to 43 in 2010 correspondingly.
Despite the fact that medical legislation with regard to palliative care in the country, including adequate access to weak and strong opiates, import of their oral forms and paediatric doses of necessary medications, still remains unchanged, 3-year practice shows that qualified pediatric palliative care services can be provided until the state system is created and developed.

785

Frequency, indications, outcomes and factors associated with successful opioid rotation (OR) in cancer patients presenting to an outpatient supportive care center (SCC)

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Background: Limited data exist on opioid rotation (OR) in cancer outpatients. Our aim was to determine the frequency, indications, outcomes, and factors associated with successful OR.
Methods: We reviewed consecutive patients with a 5-week return visit to a supportive care center in 2008. Demographics, Edmonton Symptom Assessment Scale (ESAS), Memorial Delirium Assessment Scale, pain characteristics, opioid use, indications for OR, outcomes, and morphine equivalent daily dose (MEDD) were collected. One OR was randomly selected from patients with multiple ORs. Successful OR was defined as 2 points or a 30 % reduction in ESAS or resolved opioid-induced neurotoxicity (OIN) and continuation of new opioid at follow-up.
Results: One hundred ninety of 938 (20 %) patients had OR and 112 (59 %) followed up within 5 weeks: median age, 55 years; male, 61 % (68/112); white, 71 % (79/112); gastrointestinal cancers, 23 %; advanced disease, 79 % (89/112); median performance status, 1; and median time (Q1–Q3) between OR and follow-up, 14 (7–21)days. Pain characteristics were 50 % nociceptive, 23 % mixed, and 11 % neuropathic. The median baseline pain was 7 (5–8). The most common indications for OR were uncontrolled pain (83 %) and OIN (13 %).
Thirty percent had partial OR and 25 % had more than one reason for OR. Median (Q1–Q3) pain and symptom distress score (SDS) improvement were −2 (−4 to 0, $P<0.0001$) and −5 (−14.75 to 6.75, $P=0.0029$), respectively. The median change in MEDD (Q1–Q3) was not significantly different from 0 at 7.5 (−50 to 80, $P=0.37$). Sixty-six percent (74/112) had successful OR. The most common opioids before/after OR were fentanyl (43 %)/methadone (54 %), respectively. SDS improvement predicted successful OR ($P=0.0004$).
Conclusion: Twenty percent of patients had OR with a 66 % success rate in treating uncontrolled pain and OIN. Further research is needed to determine predictors of successful OR.

786

A prospective study of cancer patients diagnosed with unsuspected venous thromboembolism (VTE) on routine computed tomography (CT) scans

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Objectives: The objectives include estimating the prevalence of unsuspected venous thromboembolism (VTE) in oncology patients on routine staging CT scans of the thorax, abdomen, and pelvis; to identify common symptoms, risks, and demographic characteristics; and to determine the incidence of recurrence of VTE.
Methods: One thousand one hundred eighty-seven patients were enrolled while awaiting staging CT scans. Twenty-six were excluded, thus 1,161 patients studied. Eligibility included age≥18 years, cancer diagnosis, no history of VTE, and no anticoagulant treatment. VTE cases were identified and followed at 3 and 6 months. Patients completed symptom survey tools at enrollment. Standard distributions for continuous and categorical variables and Fisher's exact test for group comparisons were used.
Results: .The mean age was 58 years, with 51 % male and 16 % having genitourinary cancers. The prevalence was 1.8 % (CI=0.98–2.63 %). Significant variables in patients with VTE were being female, receiving chemotherapy or immunological treatment, prior CVA, or presence of comorbidities. Significant symptoms among cases included "worst" fatigue ($p<0.01$), anxiety ($p<0.01$), stress ($p<0.01$), depression ($p=0.01$), poorer quality of life ($p<0.01$), and worst discomfort with breathing ($p=0.04$). Thirty-eight percent of VTE cases were treated with an anticoagulant, with 5 % documented VTE recurrence after 8 months, 19 % bled within 6 months, and 24 % died within 1 year.
Conclusion: The prevalence of unsuspected VTE on routine staging CT scans is lower than previously documented in a retrospective study (4.1 %), likely due to the exclusion of VTE history. Patients with VTE on staging CT scans often have poorer quality of life, higher symptom burdens and comorbidities, and receive chemotherapy.

788

Xerostomia and quality of life in head and neck cancer patients who received radiotherapy or chemoradiotherapy

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Objectives: The objective was to evaluate xerostomia and long-term quality of life (QoL) in head and neck cancer patients who received radiotherapy or chemoradiotherapy.
Methods: Patients treated for head and neck cancer with radiotherapy or chemoradiotherapy were included in the study. The subjective grade of xerostomia was evaluated by a 100-mm visual analogue scale (VAS). QoL was assessed using the quality of life core questionnaire

EORTC QLQ-C30 and the head and neck module EORTC QLQ-H&N35.
Results: Twenty-three patients (mean age, 60.2 years) were assessed following radiotherapy or chemoradiotherapy. Oral cavity (39.1 %) and nasopharynx (26.1 %) were the most common tumor sites. Mean total radiotherapy dose was 66.04 Gy. Chemotherapy was administered to 87 % of patients. The mean follow-up time following the completion of radiotherapy was 18.9 months. The majority of patients (95.6 %) complained of xerostomia, with mean VAS score of 49.74. Mild, moderate, and severe xerostomia was reported by 30.4, 47.8, and 17.4 % of patients, respectively. Mean score for the Global Health Status/QoL was 67.17, and the mean scores in functional scales ranged from76.08 to 86.44. The most disturbing symptoms were fatigue (27.05, QLQ-C30) and dry mouth (65.21), sticky saliva (57.97), and less sexuality (42.1, QLQ-H&N35). There were significant ($p<0.05$) correlations between the VAS score of xerostomia and Global Health Status/QoL (−0.49), social functioning (−0.48), fatigue (0.47), pain (0.47), swallowing (0.42), trouble with social eating (0.48), and dry mouth (0.57, $p<0.01$, Spearman correlation).
Conclusions: Xerostomia is common in head and neck cancer radiotherapy or chemoradiotherapy, significantly affecting patients' quality of life. Interventions for prevention or treatment of post-radiotherapy xerostomia are justified.

789
Lower extremity lymphedema after lymph node dissection in ovarian cancer patients: a retrospective chart review

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Objectives: The aims of this pilot study were to assess the incidence of lower extremity lymphedema after lymph node dissection for ovarian cancer treatment in a cohort of patients using a retrospective chart review and to identify risk factors for developing this postoperative complication.
Methods: A retrospective chart review was carried out for all patients who underwent a pelvic and/or a para-aortic lymph node dissection for the treatment of ovarian cancer in the University Medical Center Utrecht between 1996 and 2009. Patients were excluded if they were referred to a regional hospital for follow-up.
Results: Of 26 patients reviewed, five developed lower extremity lymphedema (19.2 %). Dissection of both pelvic and para-aortic lymph nodes and dissection of more than ten lymph nodes were identified as risk factors for developing lymphedema. Other risk factors such as age, BMI, or vascular problems were not identified in this small group of patients.
Conclusions: Using this retrospective chart review, a fairly good impression on the incidence and risk factors of lower extremity lymphedema was obtained. We will extend our review including all patients of the midst of Holland to confirm our and literature findings.

791
Comprehensive investigation of adverse event (AE)-related costs in patients with metastatic breast cancer (MBC) treated with first- and second-line chemotherapies

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Objective: This study examined incremental costs of chemotherapy-associated adverse event (AEs) in metastatic breast cancer (MBC).
Methods: The PharMetrics Database (2000–2010) was used to identify MBC patients treated with first- or second-line taxane- (paclitaxel or docetaxel) or capecitabine-based regimens for ≥30 days. Patient characteristics were balanced between patients with/without AEs using inverse probability weighting methods. AE-related incremental costs were assessed by comparing costs incurred during treatment episodes with and without AEs and included inpatient, outpatient, emergency room, pharmacy (chemotherapy and other drugs), and total healthcare costs.
Results: Three thousand two hundred twenty-two women (mean age= 57 years) received taxane or capecitabine as first- or second-line therapy for MBC. Of 2,678 first-line patients, 69.7 % received taxanes and 30.3 % capecitabine. AEs were commonly identified in patients treated with first-line taxane and capecitabine (94.6 and 83.7 %, respectively). The average total monthly incremental cost associated with AEs was 38 % higher (US $3,547) for taxanes and 9 % higher (US $854) for capecitabine. Inpatient and other drug costs accounted for the majority of these costs. Of 1,084 second-line patients, 66 % received taxanes and 34 % capecitabine. Of the patients, 94.4 % receiving taxanes and 84 % of those treated with capecitabine had AEs. The average total monthly incremental costs associated with AEs for taxane were US $5,320 and US $4,933 for capecitabine (69.5 and 82.9 % higher than patients without AEs). Differences in pharmacy costs drove the incremental AE-related costs in patients receiving taxanes; inpatient and outpatient costs accounted for the majority of these costs in capecitabine users.
Conclusions: Chemotherapy-related AEs are associated with a substantial economic burden primarily explained by increased inpatient, outpatient, and pharmacy costs.

793
Association between negative attitudes towards cancer and anxiety and depression among cancer survivors

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We performed a nationwide survey in 2010 to evaluate cancer survivors' attitude and stigma toward cancer and its association with anxiety and depression. Total of 12 questions grouped into three domains (impossibility of recovery, cancer stereotypes, and discrimination) were used to assess attitudes toward cancer; anxiety and depression were measured using Hospital Anxiety and Depression Scale.
A total of 595 patients with cancer participated in the study. The mean age of the patients was 58.1 years (SD=12.38), 45.9 % were male, and 38.8 % had SEER stage and regional cancer. Thirty-one percent of the patients agreed that cancer is impossible to be treated regardless of highly developed medical science, 36.7 % believed that they were not socially active with diagnosed with cancer, and 9.5 % reported that they have problems with their family and married life because of the disease. There were 8.8 and 25.6 % of patients with abnormal anxiety and depression respectively. Patients who had negative attitudes were 4.0 times more likely to have abnormal anxiety and 4.6 times more likely to have depression compared to patients who had positive attitudes toward cancer, adjusting for all other socio-demographic and clinical factors.
Cancer patients commonly had negative attitudes, stereotypes, and discriminating attitudes toward cancer, and they were strongly associated with anxiety and depression. Our findings emphasize the need for public education and advocacy to provide a more supportive environment for cancer survivors.

794

End-of-life care in a racially and ethnically diverse population of women with gynecologic malignancies—a pilot study

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Objective: There is limited information about end-of-life care for women with gynecologic malignancies. The purpose of this study was to generate pilot data regarding the role of palliative measures versus invasive interventions.
Methods: One hundred patients who died from gynecologic malignancies were retrospectively identified. Only patients who had received treatment with a gynecologic oncologist within 1 year of death were included. Charts were reviewed for information.
Results: The mean age of the patients was 60 years. Racial/ethnic distribution was 38 % White, 34 % Black, and 15 % Hispanic. Seventy-five percent of patients received chemotherapy in the last 6 months of life; 29 % received chemotherapy within the last 6 weeks of life. The median number of days hospitalized during the last 6 months of life was 28 (range, 0–80 days). During the last 6 months, 45 % of patients had invasive procedures, 19 % were admitted to the intensive care unit, 17 % were intubated, 5 % had terminal extubations, and 12 % had cardiopulmonary resuscitative efforts. Sixty-six percent had a family meeting and 49 % had palliative medicine consultations. Median days from do-not-resuscitate order (DNR) to death for patients who had palliative medicine consultation and those who did not was 23 versus 8 days ($p=0.009$). Patients who were single were less likely to have consultations ($p=0.005$).
Conclusion: End-of-life care for patients with gynecologic malignancies often includes aggressive treatments and invasive procedures. It is unknown whether these measures contribute to longevity or quality of life. These data suggest that factors for the implementation of DNR, family support, and legacy building may include specialists trained in palliative medicine.

796

Medical end-of-life decisions in Belgium: cancer patients compared with noncancer patients

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Objectives: In this study, we investigate, for the first time since the Belgian euthanasia law, differences in the incidences and characteristics of medical end-of-life decisions with possible/certain life-shortening effect (ELDs) between non-sudden cancer and noncancer deaths.
Methods: We sampled 6,927 certificates of all deaths in 2007 in Flanders, Belgium, and mailed questionnaires to the certifying physicians. Data were corrected for stratification and non-response. All differences in results are statistically significant after multivariate testing, with P values<0.001.
Results: The response rate was 58.4 %. Among 2,729 non-sudden deaths, ELDs occurred in 79.7 % of cancer versus 65.4 % of noncancer patients. Possibly life-shortening pain alleviation occurred more frequently (53.8 versus 31.7 %) and non-treatment decisions less frequently (16.6 versus 30.1 %) among cancer patients. Physicians performed euthanasia/assisted suicide more often among cancer patients (6.8 versus 0.9 %). No difference was found for life ending without patient's explicit request (2.5 versus 2.7 %). Discussing ELDs with patients having the capacity to make decisions and with relatives of patients who lack this capacity occurred less frequently among cancer than noncancer patients.
Conclusions: The higher frequency of possibly life-shortening pain alleviation in cancer patients may be due to their need for higher (opioid) doses for pain. Cancer patients more often receive euthanasia as they more often conform to all due care criteria of the euthanasia law. That decisions are less often discussed with cancer patients or relatives may be because physicians do not feel the need to confer with them as many of these decisions are straightforward and according to medical standards.

797

Pooled efficacy analysis examining different palonosetron-based regimens for prevention of delayed nausea (DN) in 554 women undergoing highly emetogenic chemotherapy (HEC)

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Objectives:

1. Does palonosetron plus single-dose dexamethasone result in suboptimal control of delayed nausea (DN) when compared to the same regimen with additional dexamethasone?
2. Is the combination of palonosetron, dexamethasone, and aprepitant a more effective coverage against DN?

Methods: Outcomes in chemo-naive women with solid tumors enrolled in four trials of highly emetogenic chemotherapy (cisplatin or AC combination) were analyzed. Patients received the following regimens:

1. Palonosetron 0.25 mg plus dexamethasone 8 mg (IV) before chemotherapy (1-day regimen, $n=243$)
2. The same regimen followed by dexamethasone 8 mg orally on days 2 and 3 (3-day regimen, $n=207$) or palonosetron plus dexamethasone plus aprepitant 125 mg on day 1 followed by aprepitant 80 mg on days 2 and 3 (triple regimen, $n=104$)

The pre-specified primary end point was the proportion of patients with no DN (days 2–5 after chemotherapy initiation). The two primary comparisons were 1- vs. 3-day regimen and triple vs. 3-day regimen, with statistical significance set to the 0.025 level.
Results: The 1- to 3-day regimen comparison was not statistically significant [44 vs. 47.8 %, risk difference (RD)=−3.8 %, 95% CI=−5.4 to 12.9 %, $P=0.421$]. The triple to 3-day regimen comparison was also not significant (57.7 vs. 47.8 %, RD=+9.9 %, 95% CI=−1.9 to 21.3 %, $P=0.101$).
Conclusions: The present analysis suggests that palonosetron plus 1- or 3-day dexamethasone yields similar prevention of DN. The addition of aprepitant does not markedly improve the control of DN. Complete results utilizing a multivariable model accounting for risk factors and trial heterogeneity will also be presented.

798

Georgian national palliative care strategic plan—achievements, challenges, and perspectives in the implementation of palliative care in Georgia

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The main topic of this paper concerns presenting the current situation, achievements, challenges, and barriers in the way of incorporating palliative care (PC) in the healthcare (HC) system in Georgia.
Georgia is a former Soviet country with a population of 4.5 million. Approximately 42,000 death cases are registered annually in Georgia; approximately 25,000 patients require PC and pain relief. Given that at least two family members provide care for patients, approximately 75,000 people can be achieved through PC service annually.
During the last years in Georgia—through the permanent collaboration of devotees with governmental institutions and NGOs—the basis for the development of PC as an integral part of the National HC System was created. In 2010, the HC and Social Issues Committee of the Parliament of Georgia approved the Georgian National Program for PC (Action Plan for 2011–2015). This document represents the middle-term program for the development of PC throughout the country.
Since 2010, significant changes have been made in the country. More than ten mobile teams provide home-based PC; three palliative–supportive care units for inpatients function on 50 beds, and two of them are accredited by ESMO as designated centers. More than 120 persons are working in the field of PC. The handbooks, guidelines, and instructions are provided in the Georgian language. PC has become a non-separate part of the healthcare system in Georgia.
The main challenges on the way to PC development are lack of adequate information among the society as well as potential stakeholders and decision makers, knowledge among HC professionals, and finances.

799

Comparison of the EORTC QLQ-BM22 and the FACT-BP for the assessment of quality of life in cancer patients with bone metastases

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Objectives: Currently, the EORTC QLQ-BM22 and the FACT-BP are the only two palliative quality of life (QOL) tools validated for use specifically for bone metastases patients. The purpose of this study was to compare the development and characteristics of these two tools as well as their current use in palliative research.
Methods: Studies detailing the development process for the QLQ-BM22 and the FACT-BP were identified and consulted. A comparison between the development, characteristics, validation, and use of both questionnaires was conducted.
Results: The QLQ-BM22 was developed with collaboration from patients and healthcare professionals and consultation from the literature, whereas the FACT-BP was created strictly through interviews with patients. The two tools have identical approaches to the types of QOL they assess, generally concerning themselves with the four fields of physical well-being, emotional well-being, social well-being, and functional well-being. Scoring, organization, response options, and item format are different; however, the recall period is the same. Both tools serve as bone metastases supplements to core items relevant to all patients with advanced cancer.
Conclusions: Both the QLQ-BM22 and FACT-BP are designed for the assessment of QOL issues specific to cancer patients with bone metastases. Each instrument has unique strengths and weaknesses, and choice between these tools is dependent on the investigator and study needs.

800

Measurement of bone mineral density in patients with breast cancer initiating therapy with aromatase inhibitors (AI): low utilization and ethnic disparities

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Background: Therapy with aromatase inhibitors (AI) results in estrogen deficiency and bone loss. The American Society of Clinical Oncology (ASCO) recommends BMD testing (dual-energy X-ray absorptiometry, DXA) in patients initiating treatment. We examined the use of DXA in Texas women with breast cancer starting AI therapy.
Methods: We identified in the Texas Cancer Registry all women with breast cancer ≥66 years old, diagnosed between 2006 and 2007, and linked data to Medicare (A/B/D) claims.
Results: One thousand four hundred seventy-nine women were included (75 % White; mean age, 74.8 years). Only 556 (37.6 %) of the patients had a DXA claim within 1 year before to 6 months after initiating AI. Statistically significant differences were observed across ethnic groups, with 40 % of Whites, 33 % of Hispanics, and 28 % of African-Americans having a DXA claim (p=0.011). In a multivariate logistic regression model, age, ethnicity, cancer stage, and use of osteoporosis drugs were associated with DXA use. Odds ratios (OR) using Whites as the reference group were 0.65 (95% CI=0.42–0.99) for African-Americans and 0.73 (95% CI=0.54–0.99) for Hispanics. Younger patients and those with advanced disease were less likely to undergo DXA, while patients receiving osteoporosis drugs were more likely to have undergone testing.
Conclusion: Less than 40 % of Texas women with breast cancer initiating AI had a DXA within 1 year before or 6 months after initiating AI therapy. Marked disparities were observed, with African-Americans and Hispanics being less likely to undergo testing than Whites. Our results show lack of adherence with ASCO bone health recommendations in these patients, particularly concerning ethnic minorities.

802

Palliative radiotherapy for painful bone metastases: how fast and how long?

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Objectives: The objective was to compare the efficacy of two commonly used radiotherapy regimens in the management of painful bone metastases, focusing on the time for onset of pain relief and the duration of pain control.
Methods: Seventy-six patients (age interval, 28–91 years; median age, 61 years; men-to-women ratio, 0.9:1) with a total of 86 symptomatic osseous metastases have been treated from December 2009 to December 2011. Irradiated sites included: vertebral column (61 %), extremities (29 %), and ribs and sternum (10 %). Two fraction regimens were used to treat the sites: 20 Gy in five fractions (59.3 %) and 16 Gy in two fractions (40.7 %).
Results: Pain was rated using a verbal Numerical Rating Scale (NRS) to assess its reduction from baseline, the need for analgesics, and need for retreatment. An overall response rate of 82 % was seen, with 30 % achieving complete response. An average of 3.5 weeks (2–5 weeks) was needed to achieve pain relief for the two-fraction regimen and 4 weeks (2–5 weeks) for the five-fraction regimen. The median duration of pain control was 13.5 weeks (two fractions) and 17.0 weeks (five fractions). Ten patients had multiple sites treated, and for all, response at one site predicted for response at other sites.
Conclusions: No significant difference in the time for onset of pain relief was observed for the different fraction regimens. A longer

duration of pain control and lower number of relapses was observed after five fractions. The treatment of one metastatic site is a good prognostic factor for the treatment of other sites.

803
Inpatient unit for supportive care in cancer: is it possible?

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Objectives: To improve the management of patients in complex situations during and after cancer care, a four-bed inpatient unit for supportive care in cancer (SCCU) was created. The activity of this unit is evaluated.
Methods: The first year of activity was analysed in an observational study from 1 January 2011 to 31 December 2011.
Results: One hundred fifty-eight patients were admitted during this period. The average length of stay was 9.7 days for an occupancy rate of 100 %. Ninety percent of patients admitted came from home, avoiding emergency admission. No chemotherapy is given in the unit, the objective being an interdisciplinary work with the various teams (psycho-oncology, pain, palliative care, etc.). The main disease types were head and neck cancer, 43.3 %; lung cancer, 27.3 %; and urologic cancer, 14.4 %. Bad performance status in 31.6 %, pain in 16.4 % and practice of invasive procedures in 12.6 % were the main reasons for hospitalization. Levels of severity of disease were in most cases at levels 3 and 4 (on a scale of up to 4), with the main diagnostic groups: pain (22 %), palliative care (11.5 %) and nutritional disorders (10.2 %). Discharge of patients was organized back home for 51.8 % of patients, to a recovery unit 17 %, to a palliative care unit 12 % and to the original service 11.3 %. Of the patients, 6.9 % died in the unit.
Conclusion: With the help of the SCCU and the related network, most of the patients recover better health status, allowing home care return. This unit generates financial income of 658,979€, and the management of patients in the SCCU has a great impact both in quality and quantity of care.

804
Interdisciplinary team care plans in acute care palliative medicine

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Objectives: The interdisciplinary team (IDT) meets daily to discuss patients admitted to an acute care palliative medicine unit. The primary objective was to identify the daily clinical problems experienced by patients and their plan of care discussed by the IDT. We also aimed to identify discharge trends for future research.
Methods: This was a retrospective analysis of a quality improvement project. The IDT daily reports for 40 days were derived from 100 consecutive admissions using a preprinted template. The IDT report included the processes of care and the outcomes of interventions for each person. Key issues with care plan, actions/interventions/consults, goals of care, and discharge plan were analyzed descriptively.
Results: Data included 367 IDT reports for 90 patients. Of those 90 patients, 50 (56 %) were men. Mean age was 64±16 years. The IDT consisted of staff and fellow physicians, nurses, social workers, nutritionists, chaplains, physical therapists, and music therapists. Pain management was the most commonly recorded key issue in 175 out of 367 (48 %). Symptom management was the most common daily goal (62 %, n=228), followed by pain control (48 %, n=175), discharge planning (37 %, n=137), and family conference (10 %, n=35). Most patients were discharged either to home (127 out of 367, 35 %) or hospice (107 out of 367, 29 %).
Conclusions: IDT meetings are routine practice in palliative medicine to address medical and psychosocial needs. Symptom management (pain) and discharge plans were the most frequently addressed issues.

805
Outcome assessment of an oral chemotherapy management clinic: a 3-month report

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Background: Use of oral chemotherapy (OC) increases risks of nonadherence and drug interactions, causing adverse therapeutic outcomes and patient safety. A new OC management clinic provided patient comprehensive OC and concurrent medication (CM) services with scheduled follow-up in education, monitoring, and safety assessments. This evaluation aims to measure the effectiveness of this practice model in patient care.
Methods: Patient demographics, Zung depression scores, CM, interventions, and outcome over time are collected.
Results: The majority of 29 patients (9 men and 20 women; mean age, 64.5 years) were college and high school graduates, social drinkers, nonsmokers, with stage IV cancer, not depressed, without caregiver, and have at least two comorbid conditions and more than five CMs.

Types and no. of interventions	Initial (N=29)	3-day (N=15)	7-day (N=15)	3-month (N=4)
OC—adverse event	9	3	4	1
OC—adherence	6	6	1	0
OC—drug interaction	3	0	1	0
CM—adverse event	5	3	0	0
CM—adherence	1	0	0	0
CM—drug interaction	3	0	0	0
CM—medication error	8	0	1	0
Disease/symptom management	6	3	1	1

Interventions over time

Complete or improved responses were observed in >70 % of interventions. Patients with higher stage cancer and greater number of CM are associated with higher intervention complexity scale (no. of interventions/visit).
Conclusion: This evaluation demonstrated the need for early interventions and impact of OC management clinic to improve patient care.

806
Integrating cancer services for the elderly persons: where are we and where should we go?

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Objective: This project investigates the various understandings of an "integrated oncogeriatric approach" (IOGA) in order to guide further research and inform clinical and administrative decision makers in their efforts to monitor and improve quality of cancer care for elderly persons.
Methods: An integrative literature review on geriatric oncology, multidisciplinarity, as well as cancer and health services integration covered the period from 2005 to 2011. Some 618 potential citations were identified from AgeLine, CINAHL, PsycINFO, PubMed, Medline, IPSA, Abstracts in Social Gerontology, and SocINDEX and were reviewed. To be included in the review, articles had to meet proper quality evaluation criteria and provide a good description of care delivery in the context of an oncogeriatric approach. A thematic analysis was independently performed by two reviewers with health services research and social policy background.
Results: Sixty-two articles were retained. Most of the articles reviewed described some form of geriatric assessment, comorbidity, and cancer treatment outcomes. Some articles focused on collaboration between oncologists and geriatricians. However, few addressed the integration of cancer services. None specifically explored the effects of IOGA for patients, providers or health systems.
Conclusion: This review provided important insights on a range of aspects of integrated cancer services for the elderly that are not usually treated in the literature. These aspects include interprofessional and inter-organizational collaboration, primary care, and support services in the community and health policy. This project contributes to improvement efforts in supportive care for the elderly.

807
Comparing prognostic factors in patients with spinal metastases

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Objectives: The expected prognosis of patients with spinal metastases plays a large role in guiding treatment decisions, the outcome of which will likely influence the patient's quality of life. This current study aims to review the factors and prognostic scoring systems reported in the literature that accurately predict the survival of patients with spinal metastases.
Methods: We conducted a literature search on studies identifying prognostic factors using PubMed (1966–2011), Ovid Medline (1948 to July 2011), and EMBASE (1947–2011) databases. Articles were included if they conducted retrospective or prospective analyses on the predictors of survival for patients with spinal metastases; articles validating or examining the accuracy of existing scoring systems using prognostic factors were also included.
Results: A total of 29 studies were identified. A general consensus of the literature was found with respect to three prognostic factors: the patient's primary cancer site, the extent of the metastases, and the general condition or performance score. Further research was recommended to determine the prognostic value of age, neurological deficit, and previous treatment. The Bauer scoring system was found to be the superior prognostic model for heterogeneous populations. The Tokuhashi scoring system was found to perform well for breast and prostate cancer patients, but poorly for renal and lung cancer patients.
Conclusions: No current scoring method was shown to be robust enough to accommodate all spinal metastases patients. For future studies, we encourage others to develop methods for determining which prognostic factors and scoring systems are appropriate for specific patient populations.

809
Occurrence of hematologic conditions in myelodysplastic syndrome patients receiving hypomethylating agents or supportive care

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Objectives: This study aims to describe the prevalence of hematologic conditions in patients with myelodysplastic syndromes (MDS) treated with hypomethylating agents (HMAs)—decitabine and azacitidine—and in MDS patients receiving supportive care.
Methods: Continuously enrolled MDS patients (both treated and untreated) were identified in two large claims databases between 2005 and 2009. For treated patients, the initial HMA treatment was the index date. For supportive care patients, the initial MDS diagnosis served as the index date. Patients were followed up for 1 year post-index.
Results: There were 318 treated MDS patients and 1,133 newly diagnosed supportive care patients. HMA-treated patients were older (70.7 vs. 62.9 years) and had a greater proportion of males (65.1 vs. 45.6 %) compared to supportive care patients ($p<0.05$). Twenty-five percent of treated patients developed acute myeloid leukemia compared to 6.4 % of supportive care patients. They had more hematologic conditions: 93.4 vs. 64.9 % had anemia; 37.1 vs. 14.1 % had transfusions; 64.8 vs. 20.9 % had neutropenia; 25.5 vs. 12.8 % had potential complications of neutropenia; 33.6 vs. 22.9 % had thrombocytopenia; and 25.8 vs. 12.7 % had pancytopenia ($p<0.001$). Treated patients used more erythropoietin (70.1 vs. 25.4 %) and granulocyte colony-stimulating factors (54.7 vs. 6.9 %).
Conclusions: In our retrospective study, a majority of MDS patients received supportive care rather than HMA treatment. MDS patients who were older, male, and had more hematologic conditions were more likely to initiate treatment with HMAs. Hematologic conditions were more common in treated patients.

810
Barriers in adequateness of pain management—Georgian experience

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Clear understanding of the substance, role, and place of palliative care (PC) still remains one of the most essential hindrances on the way to its incorporation in the national healthcare system. Between former Soviet countries, Georgia was one of the leaders to develop PC services since 2002, and several successful steps have been made during this period.
For evaluation of the educational background of healthcare professionals (HCP) and societies, three different studies were performed in 2009–2011 in Georgia (funded by GNSF, OSI, and OSGF). About 650 HCP, patients, and their family members were interviewed in the scale of the aforementioned studies.
Evaluation of questionnaires showed that due to basic information of population and the level of PC elements between the significant numb-

ers of HCP, there are several important and challenging barriers in the adequateness of pain management:

Understanding of PC
Education for medical professionals
Organization of medical service
Society mentality
Opioid *availability*
Opioid phobia in society and between the medical professionals
Policy
Laws and regulations

The main challenges on the way to PC development are lack of adequate information among the society as well as stakeholders and decision makers, knowledge among HCP, and finances. The long-lasting tradition of tabooing cancer diagnoses as well as the widespread non-argument opioidophobia also have prevented proper understanding of this issue.
Increase in the educational activities and informational campaigns in cooperation with international organizations and experts to involve more donors and sponsors and stakeholders seem to be the real ways to further development of PC in Georgia.

811
Patterns of psychological adjustment among partners and caregivers of cancer survivors

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Objectives: This study aims to identify patterns of psychological adjustment among partners and caregivers of cancer survivors within the first 2 years post-diagnosis and the predictors of these patterns.
Methods: Partners and caregivers were referred to the *Partners and Caregivers Study* by cancer survivors participating in the *Cancer Survival Study* and completed a survey at approximately 6, 12, and 24 months post-survivor diagnosis. To identify the patterns of adjustment, anxiety (N=510), and depression (N=511), data were analyzed using SAS finite mixture model procedure called TRAJ. Associations between the trajectories and selected variables were tested using chi-square analyses for categorical data and ANOVA for continuous data.
Results: More than half of participants experienced no anxiety across time (52.9 %); however, one third (33.2 %) experienced *borderline* and 13.9 % experienced *clinical* anxiety across time. Similarly, for depression, more than half did not experience depression across time, but a quarter of participants sustained a score nearly indicative of borderline depression across time. A smaller group of participants reported chronic, *clinical* depression (<5 %). Psychosocial variables associated with caregivers' course of anxiety and depression included caregiver burden, physical quality of life, social support, and coping.
Conclusions: This analysis confirms that the course of anxiety and depression differs across caregivers. The findings challenge the assumption that the prevalence of anxiety and depression among partners and caregivers decreases over time and highlight that up to a third might experience chronic anxiety or depression across time. These findings emphasize the importance of periodic screening for distress and sustained intervention for partners and caregivers.

812
Toxicity of chemoradiation in the anal cancer

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Objectives: The purpose of this analysis was to assess the results and toxicities of chemoradiation (CRT) in patients with anal carcinoma.
Methods: This is a review of all patients treated for anal cancer at one center from January 2008 to September 2011, collecting data regarding demographics, stage at diagnosis, treatment, and toxicity. Only patients treated with CRT were included. Stage was classified according to the 7th Edition of the TNM, and CTC-AE v. 4 was used to characterize toxicity.
Results: Sixteen patients were included, 19 % (n=3) were male and 81 % (n=13) female. The median age was 66 years (range, 45–84 years). All the patients included had TNM stage III. Fifty percent (n=8) of patients were treated with fluorouracil (5-FU) plus mitomycin and 44 % (n=7) with capecitabine plus mitomycin. The median radiation dose was 58 Gy (range, 43–64 Gy). Endpoints included the absolute neutrophil count, hemoglobin, and platelet count nadirs. Overall, 12 % (n=2), 38 % (n=6), and 19 % (n=3) experienced neutropenia, anemia, and thrombocytopenia, respectively. Grade 2–3 adverse events included neutropenia (n=2, 12 %), anemia (n=5, 31 %), and thrombocytopenia (n=1, 6 %). Grade 4 toxicity was reported in only one patient who developed thrombocytopenia. Three patients had persistent disease after CRT. Of these, one patient had unresectable disease and was further treated with CT; two other patients were submitted to salvage surgery. Recurrent disease was documented in two patients at 11 and 21 months of follow-up, respectively. Two patients died with disease.
Conclusions: In our analysis, CRT with mitomycin and 5-FU/capecitabine provides local control with an acceptable toxicity profile.

814
Laparoscopic intraperitoneal chemohyperthermia for intractable ascites in patients with peritoneal carcinomatosis

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Peritoneal carcinomatosis (PC) is still a dismal disease. Intraperitoneal chemohyperthermia (IPCH) coupled with cytoreductive surgery may improve survival in selected patients with PC. However, the majority of patients are still treated with palliative systemic chemotherapy and supportive measures. Ascites due to PC may lead to complications including pain, respiratory distress, ionic disturbances, oedema and altered quality of life.
In selected patients with extensive PC not candidates for cytoreductive surgery, 3–12 L of heated fluid with mitomycin-C, oxalipatin or cisplatin was irrigated laparoscopically under pressure with a temperature of 41–43°C. The main indication for IPCH was intractable ascites.

Twenty-nine patients had the procedure (19 women and 10 men). The cause of PC was ovarian in eight patients, colorectal in seven, gastric in seven, pancreatic in four and miscellaneous in three. Operative mortality was 3.4 %. Overall morbidity rate was 17.2 %. Significant improvement in the quality of life was found using several scores. Ascites was controlled in 75.8 % of patients.
The use of palliative laparoscopic IPCH in selected patients with PC is feasible and relatively safe. Symptomatic control is achieved in more than 75 % of patients. The quality of life is also improved.

815
Osteoporosis knowledge, health beliefs, and healthy bone practices in men on androgen deprivation therapy for prostate cancer

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Purpose: Androgen deprivation therapy (ADT) used in the treatment of prostate cancer leads to bone loss and increased risk for osteoporosis (OP). Guidelines exist for the prevention/management of bone loss, including baseline dual-energy X-ray absorptiometry (DXA) scans and initiation of healthy bone behaviours (HBBs): daily intake of 1,200 mg of calcium, 800–1,000 IU vitamin D, weight-bearing exercise, limiting alcohol and quitting smoking. In women, OP knowledge, self-efficacy (SE) and health beliefs can predict HBBs, but little is known of their contribution in this high-risk population. In a sample of men on ADT therapy, this study quantifies the proportion meeting the OP guidelines and evaluates OP knowledge, SE, health beliefs and the independent contribution of these factors on HBBs.
Methods: Men (n=150) receiving ADT were recruited from genitourinary clinics at Princess Margaret Hospital. They completed questionnaires assessing current HBBs, OP knowledge, self-efficacy and health beliefs (motivation, perceived susceptibility and seriousness).
Results: Many respondents reported taking vitamin D (77 %), calcium (59 %) and meeting recommendations for exercise (59 %). Only 46 % had received a DXA scan in the past 2 years. OP knowledge was low (X=8.78±4.22; range, 0–19) and perceived SE moderate (84.46±24.73; range, 0–120). Health motivation was fairly high (23.66±3.25; range, 6–30), but lower for susceptibility (16.71±4.3) and seriousness (16.6±4.25) of OP. Knowledge and SE significantly influenced HBBs.
Conclusions: The results suggest the need for education and counseling interventions specific to this population and the need for active knowledge translation processes to encourage uptake of OP guidelines in healthcare providers treating this population.

816
Practicing oncology in Iraq: how do clinicians' religious and spiritual (R/S) beliefs affect care?

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Objectives: This study aims to assess religious and spiritual (R/S) beliefs of Iraqi physicians and how beliefs might affect patient care.
Methods: Using an online tool, we surveyed physicians in Baghdad in 2011 with R/S, Levenson locus of control, and demographic questions. Summary statistics were used.
Results: Six hundred ten out of 823 responded; 298 saw ≥50 % oncology patients and comprised the study sample. Seventy-one percent were aged 31–50 years; 75 % were male. Fifty-nine percent were Shiite, 32 % were Sunni, and 10 % were Christian. Forty percent reported that their R/S beliefs are a source of comfort. Nineteen percent self-categorized as both religious and spiritual and 20 % neither spiritual nor religious. Ninety-two percent had palliative care training and 65 % had psychological and pain management training. Thirty-four percent always/frequently (A/F) take R/S history and 31 % A/F pray with patients. Forty-one percent agreed that telling patients they are going to die is difficult. Forty-four percent are uncomfortable when patients suggest God is going to rid them of their cancer. Only 34 % A/F consider patients' R/S beliefs when discussing end of life. Answers did not differ by religion, gender, or age. Physicians reporting lower belief in powerful others and self found it difficult to tell patients that they were going to die (P=0.005 and P=0.0091, respectively).
Conclusion: Iraqi doctors report high levels of supportive care training. Compared to our prior study of gynecologic oncologists, lower percentages of Iraqi physicians state that their own R/S beliefs are a source of personal comfort and consider patients' R/S beliefs when discussing end-of-life issues, and only a third of Iraqi MDs in our study take R/S history from patients.

819
Comparison of qualitative assessment of lymphoscintigraphy with extracellular fluid and arm volume measurements in women with secondary lymphedema

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Objectives: This study aims to determine the relationship between qualitative assessment of lymphoscintigraphy and measurements of swelling in women with secondary lymphedema.
Methods: Forty-nine women previously diagnosed with and treated for upper limb lymphedema secondary to cancer and five women without history of cancer or lymphedema underwent lymphoscintigraphy imaging and clinical assessment of arm swelling bilaterally. Lymphoscintigraphy images were obtained immediately post-injection (^{99m}Tc antimony sulphur into the second and fourth web spaces bilaterally) and at 60, 120 and 180 min thereafter. A single nuclear medicine physician, blinded to the presence of lymphedema, assessed the lymphoscintigraphy images for dermal backflow. The volume of extracellular fluid, which includes lymph, was quantified in each arm with bioimpedance spectroscopy and expressed as a ratio between arms. Absolute inter-limb volume difference was determined using a perometer. Women were categorised as swelling present, borderline (i.e. within 5 % of the cutoff) and none present.
Results: All women who, on the day of assessment, were categorised as having 'swelling present' showed some degree of dermal backflow.

Five women previously diagnosed with lymphedema were found to have neither dermal backflow nor any significant findings on the clinical measurements. Length of duration of lymphedema was not related to the quantity of dermal backflow.
Conclusions: Increases in extracellular fluid and overall limb volume, consistent with lymphedema, are associated with changes in the lymphatic drainage pathways consistent with the appearance of dermal backflow. Women who have experienced transient changes or have never had lymphedema did not have dermal backflow present.

820
Psychometric properties of cancer multisymptom assessment instruments

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Introduction: We aimed to evaluate the characteristics of cancer multisymptom assessment instruments to determine their psychometric qualities.
Methods: All published instruments from 2005 to 2010 (with at least one validity test) were included. We excluded those who only reported content validity. Instruments were categorized by the three major types of symptom measurement scales they employed: visual analogue scale (VAS), verbal rating scale (VRS), and numerical rating scale (NRS). They were then examined in two areas:

1. Psychometric thoroughness (number of tests)
2. Psychometric strength of evidence (validity and reliability)

Finally, we assigned a global psychometric score (which combined the concepts of thoroughness and strength of evidence) to rank the instruments.
Results: We analyzed 46 instruments (15 original and 31 modifications). They varied in types of scales used, symptom dimensions measured, and time frames evaluated. Of the 46 instruments, 6 used VAS, 24 VRS, and 16 NRS. The ESAS, HADS, POMS, SDS, MDASI, and some MDASI translations were the most thoroughly evaluated. Only the original MDASI had very good validity and good reliability. The ESAS, ASDS-2, MSAS-SF, POMS, SDS, some MDASI translations, and MDASI-Heart Failure all had good validity and reliability.
Conclusions: In most studies, the VAS, VRS, and NRS instruments revealed moderate to good validity and poor to good reliability. ESAS was the most completely evaluated. Several concerns about instrument development and validation were identified and provide opportunities for further research.

821
A pilot phase report of a randomized trial comparing two strategies for switching to methadone in cancer pain (CP) management

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Background: Unique pharmacokinetic and pharmacodynamic properties mean switching to methadone is a reserve option in difficult cancer pain (CP) syndromes. The Edmonton switching method (EdM) is a 3-day phased reduction in original opioid dose, incremental daily regular eight-hourly doses of methadone reaching a pre-calculated target dose of methadone on day 3 of the switch. The Liverpool method (LpM) involves day 1 discontinuation of original opioid using three-hourly prn-only doses for 5 days and regular 12-hourly doses on day 6 based on the preceding 48-h prn consumption.
Objectives: This study aims to the compare efficacy and safety of two commonly used protocols, EdM and LpM, when switching to methadone in poorly controlled CP syndromes.
Methods: Consecutive, cognitively normal palliative care unit inpatients requiring a switch to methadone were enrolled and randomised to EdM or LpM. Patients rated pain intensity daily (0–10). The main outcome was time to stable pain: time from initiating methadone until pain scores were ≤ 3 over a 3-day period and/or <3 breakthrough methadone doses were administered daily over these 3 days. Intensity of respiratory depression, sedation and drowsiness were physician-rated (0–3) daily.
Results: Proportionately, the EdM ($n=7$) and LpM ($n=8$) groups reached stable pain control at a median of 4 days (range, 4–7 days) and 10 days in five out of seven (71 %) and two out of eight (25 %), respectively ($p=0.13$). No side effect differences were noted.
Conclusions: Limited pilot phase data suggests that the EdM and LpM for switching to methadone in CP management appear equally efficacious and safe. Confirmation is required in an adequately powered randomized trial.

822
Practicing oncology amidst war and religious strife—how do physician beliefs affect care and work-related stress?

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Objectives: The medical literature suggests that culture, region, and beliefs affect healthcare decisions. The goal was to assess issues physicians face when providing supportive care for oncology patients in Iraq.
Methods: Using an online tool, we surveyed the demographics of clinicians in Iraq, availability of pain medications, palliative care education, locus of control, and work-related stress in 2011. Descriptive statistics were used; correlations determined relationships. Oncologists' scores on surveys were compared to a previous sample of gynecologic oncologists (significance at $p<0.0025$).
Results: Six hundred ten out of 823 Iraqi physicians responded. Of 610, 298 saw ≥50 % oncology patients and comprised the final study population. Seventy-five percent were male; 92 % had palliative care training. Survey responses did not differ by religion, gender, or age. Forty-eight to 56 % of time narcotics were never/rarely available. Eighty-five percent reported that resource allocation plays a role in medical decision making, 84 % said they have had to turn away patients due to lack of radiation or medicine, and 29 % reported limited resources always/frequently (a/f) limit the ability to give curative treatment; however, 50 % said this was a/f true before 2002. In comparison to a prior survey on gynecologic oncologists, Iraqi oncologists scored higher on locus of control (LOC) chance, LOC powerful others, death anxiety, and work-related stress (WRS; 0.0001). Age, religion, race, gender, LOC, and DA did not appear to influence WRS.
Conclusion: Compared to our prior work with international gynecologic oncologists, Iraqi oncologists have stronger beliefs in the role of

chance, powerful others, and more death anxiety- and work-related stress.

823

Clinical value of fungal serology and PCR in the management of invasive fungal disease (IFD) in paediatric immunocompromised patients

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Objectives: The objective of the study was to retrospectively evaluate (2000–2011) the clinical value of a non-culture-based approach in paediatric patients with possible/probable invasive fungal (IFD).
Methods: One hundred seventy-five patients with haematological malignancies (n=117), solid tumours (n=34) and benign haematological conditions (n=24) were evaluated by PCR/ELISA for the detection of *Candida*/*Aspergillus* in 526 biological samples (serum/BM/CSF/BAL).
Results: Forty-five out of 175 patients fulfilled the EORTC-MSG criteria for possible/probable IFD. In 23 out of 175 patients (13.1 %), *Aspergillus* galactomannan (GM) antigen was positive (8 out of 23, two or more samples), whilst PCR-*Aspergillus* was positive in 24 out of 175 cases (13.7 %). In 39 out of 175 patients (22.3 %), *Candida* antigen (CM) was detected, and 35 out of 175 patients (20.0 %) were positive by PCR. Despite intermittently positive GM antigens in eight patients, only one out of eight (12.5 %) and 2 out of 24 PCR-positive patients (8.3 %) established aspergillosis by culture. Out of five patients with positive *Aspergillus* cultures, only one presented with simultaneous ELISA/PCR positivity. Among 39 CM-positive patients, only 5 out of 39 (12.8 %) developed proven invasive candidiasis, and among 35 PCR-positive patients, the respective ratio was 3:35 (8.6 %). Among 18 children proven positive by culture/histology, 6 out of 18 (33.3 %) presented with positive CM antigen and/or PCR positivity. The suggestive positive (PPV)/negative prognostic values (NPV) for GM and CM antigens were 0.125/0.97 and 0.13/0.90, while PCR PPV/NPV values were 0.08/0.98 for *Aspergillus* and 0.09/0.98 for *Candida*, respectively. Eighteen out of 175 patients (10.3 %), all under intensive chemotherapy/severe immunosuppression, developed proven candidiasis (n=15) and aspergillosis (n=3).
Conclusions: Despite GM/CM and PCR assay limitations in paediatric cohorts and whilst international consensus for standardization is pending, fungal serology and PCR evaluation may serve as early infection markers prior to IFD confirmation. However, NPV of PCR/serology is superior to the corresponding PPV. In any case, IFD management remains multidisciplinary, combining culture, imaging, serology/PCR as well as appropriate clinical approach.

824

Integrating a non-traditional (parenteral) Chinese medicine into community-based oncology

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Objectives: Kanglaite injection (KLTi), a lipid fraction from Coix seed, was developed and approved in China as an intravenous antineoplastic, but is formulated, packaged, and labeled to suit the practice of traditional Chinese medicine. We sought to overcome these limitations for Western cancer patients, comparing gemcitabine alone to gemcitabine+KLTi in advanced pancreatic cancer in a prospective, randomized trial.
Methods: We pooled 100 mL KLTi bottles into TPN bags, to a total dose of 30 g/bag, converting the month-long, low Chinese dose schedule to daily×5 days, 3 weeks on, 1 week off. Most doses were administered in patients' homes using portable pumps. The primary end point was progression-free survival (PFS). Quality of life, grip strength, and safety data were also collected.
Results: Except for one patient with transient confusion, no SAEs were seen with more than 1,900 doses. Interim analysis showed a statistically significant difference in PFS.

Treatment (n)	KLTi+Gem (26)	Gemcitabine (12)
PFS rate		
1 month	95 %	75 %
3 months	77 %	25 %
4 months	46 %	25 %
p value (log rank)	0.032	

PFS, cohort 1 (at least one dose G or KLTi)

Conclusion: A non-traditional Chinese oncology product is being successfully tested in a randomized, multicentric clinical trial. A higher dose, 50 g/bag, cohort 2, and a second-line trial in non-small cell lung cancer are ongoing.

827

Concordance between patient and clinician regarding perception of comorbidity burden

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Objectives: Perceptions about a patient's capacity to tolerate treatment may influence treatment decisions. We examined the concordance between patients' and physicians' perceptions of comorbidity burden (CB).
Methods: As part of an ECOG study of 3,106 patients with invasive cancer of the breast, colon/rectum, prostate, and lung (regardless of phase of care or stage of disease), patients and oncologists rated their perception of how bothered patients were by difficulties related to health problems other than cancer using a five-point scale. Agreement was scored as numerical agreement between patient and clinician. Cohen's weighted kappa coefficient was used as a measure of agreement. Logistic regres-

sion models were used to identify factors associated with concordance.
Results: The proportion of patients whose assessment of CB was in complete concordance with their physician ranged from 34 to 43 % and differed by disease site (Fisher's exact $p=0.004$). Weighted kappa statistics indicated a relatively low concordance (0.17–0.31). Factors associated with high concordance included lower patient-reported bother (all disease sites). Clinicians were less likely to indicate significant patient bother due to comorbidities than patients (25 vs. 33 % moderately or higher, Fisher's exact $p<0.0001$). Factors associated with physician underestimation of CB varied by disease type. There were no differences in concordance associated with sex, race/ethnicity, or practice setting (minority- vs. majority-based).
Conclusion: There is a lack of concordance in the perception of comorbidity burden between patients and their physicians.

828
A cross-sectional, multidisciplinary study to evaluate knowledge and attitude of safe handling of oral chemotherapy

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Background: Use of oral chemotherapy (OC) extended exposure risks, leading to potential public health hazards. Better understanding of the current knowledge level and attitude on safe handling of OC is warranted to address educational needs.
Methods: A single-center 25-question (categories 1–7) survey with supplemental seven-question (categories 8 and 9) survey was conducted for selected practitioners. Subject demographics included gender, specialty training, and years of practice. Statistical analyses involved ANOVA and *t* test.
Results: Seventy-six subjects (77.6 % women, 90 % oncology-trained physicians, nurses, and pharmacists) participated. Majority of subjects have practice experience <5 years (41 %) or >10 years (41 %). Performances of each category are outlined in Table 1. Subjects with 5–10 years of experience achieved statistically significantly higher scores when compared to <5 years ($p=0.003$) and >10 years groups ($p=0.023$).
Conclusion: This survey identified several areas of needed improvement which are not emphasized in current guidelines.

Category	No. of questions	No. of subjects	Range of correct response (‰)
Drug administration	4	76	30.3–100
Drug storage	3	76	82.9–94.7
Drug manipulation for administration	2	76	86.8–94.7
Handling of contaminated materials	8	76	48.7–100
Proper disposal	4	76	77.6–98.7
Attitude	1	76	69.7
Route of exposure	3	76	76.3–94.7
Institutional safe handling	4	65	81.5–98.5
Safe handling on dispensing	3	7	28.6–100

Table 1

829
Quality of life in patients with brain metastases using the EORTC QLQ-BN20 and QLQ-C30

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Introduction: Given the poor life expectancy of the majority of patients with brain metastases, quality of life (QOL) end points are especially valuable to assess in this population. The present study assessed QOL in patients with brain metastases before and after treatment for brain metastases.
Methods and materials: The European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30) and the EORTC Brain Cancer Module (EORTC QLQ-BN20) Questionnaire were administered to assess the QOL of patients with brain metastases before and 1 month after treatment. Linear regression analysis was applied to assess changes in QOL scores over time and to examine associations between the QLQ-BN20 and QLQ-C30 scales, patient demographics, and clinical variables. Associations between the QLQ-BN20 and QLQ-C30 scales were evaluated using Spearman correlation.
Results: There were 47 patients assessed at baseline; 31 (67 %) completed follow-up at 1 month post-treatment. The majority (81 %) of patients received whole-brain radiotherapy only. Future uncertainty (QLQ-BN20) and fatigue (QLQ-C30) were the most prominent symptoms at baseline. Most QLQ-BN20 and QLQ-C30 scales did not significantly change from baseline to follow-up, with the exception of hair loss and itchy skin, which worsened post-treatment. Baseline KPS was positively correlated with the QLQ-C30 physical functioning scale, but negatively correlated to QLQ-BN20 motor dysfunction, hair loss, and leg weakness as well as QLQ-C30 pain and appetite loss.
Conclusion: The maintenance of nearly all QOL scores 1 month after treatment indicates that the treatment intervention likely played a symptom-stabilizing role and prevented QOL deterioration in the palliative setting.

830
Cancer symptom clusters and statistical methods

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Introduction: The identification of symptom clusters (SC) varies across studies. Ideal approaches to cluster identification are yet to be established. We explored whether SC varied by analytical technique.
Methods: We reanalyzed a symptom dataset of 527 patients with advanced cancer. Thirty-eight symptoms were analyzed for both prevalence (present, absent) and severity (none, mild, moderate, severe). Spearman test measured the similarity between two symptoms. Hierarchical cluster analysis (HCA) identified SC at various cutoff points. Identification of final clusters was based on visual interpretation of the constructed dendograms. These SCs were validated by the *K*-means cluster method. This technique requires only the number of SC to be determined before the analysis; no dendograms or cutoff points are needed.

Results: There were *N*=527 patients, 55 % were males, with median age of 65 years (range, 56–72 years), and 62 % with ECOG PS3 or PS4. The most frequent cancers were lung (24 %), gastrointestinal (11 %), and breast (9 %). HCA identified 16 SC using a cutoff point of 0.6, 13 SCs at a cutoff point of 0.5, and 11 SCs at a cutoff point of 0.4. Five SCs were present regardless of the cutoff point employed:

1. Fatigue–anorexia/cachexia cluster: weight loss, anorexia, early satiety, taste changes, dry mouth, lack of energy, fatigue, weakness
2. Upper gastrointestinal cluster: bloating, belching, dyspepsia, hiccough
3. Nausea–vomiting: nausea, vomiting
4. Aero-digestive cluster: cough, dyspnea, dysphagia, hoarseness, wheezing
5. Neurologic cluster: memory problems, hallucinations, confusion

The *K*-means analysis confirmed the most meaningful SC.
Conclusions: Five SC derived from both prevalence and severity data were consistent irrespective of the statistical method employed.

831

Toll-like receptor-4 gene expression in pancreatic cancer patients after immune-enhancing nutrition

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Objective: The impact of nutrition on the innate immune system still remains unclear. The purpose of our study was to investigate the influence of immunonutrition on the changes of innate immunity in pancreatic cancer patients.
Methods: After the nutritional assessment, randomized studies were performed on 16 pancreatic cancer patients who received the preoperative enteral immunonutrition for 5 days (20 g of glutamine per day) and in 20 patients without preoperative nutrition. In the preoperative period before and after immunonutrition, TLR4, MyD88 and NOD1 gene expression was measured in peripheral blood leukocytes with RT real-time PCR. Additionally, the serum concentrations of TLR4, MyD88, TNF, IL-1, IL-1ra and sTNFR1 were measured at the same time points using ELISA. Nutritional status was assessed according to the ESPEN definition of malnutrition. The investigation did not include patients with unresectable tumor and treated with chemotherapy or radiotherapy.
Results: Disease-related malnutrition was detected in 80 % of patients with pancreatic cancer. Treatment with glutamine was associated with decreased TLR4 (p=0.009) and MyD88 (p=0.05) and increased NOD1 (p>0.05) gene expression. After immunonutrition, concomitant decrease of sTNFR1 (p=0.03) and non-significant changes of TLR4, MyD88, IL-6, IL-1, IL-1ra and TNF serum concentrations were observed.
Conclusions: We suggest that, in pancreatic cancer patients, glutamine may be a modulator for the innate immune system. One of the mechanisms by which preoperative enteral immunonutrition with glutamine decrease the incidence of postoperative septic complications in malnourished pancreatic cancer patients is probably associated with the down-regulation of TLR4 and MyD88 expression.

832

Non-pharmacological prevention of severe complications in GYN cancer patients treated by chemoradiation (CHRT)

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Background: Chemoradiation improves survival in GYN cancer, but is associated with increasing rates of complications and expensive drug prevention. Non-pharmacological therapeutic procedures (N-PHT) can be used for effective low-cost correction of complications associated with chemoradiation (CHRT).
Materials and methods: Two hundred thirty-four GYN cancer patients under CHRT were compared, 134 patients (arm A) underwent N-PHT (low-intensity laser, ozone therapy, ureter stenting, special dieting) and 100 patients (arm B) were treated conventionally. In 104 (77.6 %) patients with haematological complications, grades II–III, 10–15 intravenous infusions of ozonized 0.9 % NaCl solution, ozone concentration (OZC) 2–10 mg/l, were used. Twenty-five (18.7 %) patients received ozone–oxygen gas mix rectal insufflations (OZC 15–60 mg/l) Nutridrink® or Forticare® (Nutricia) as a special dieting or nutritive support for rectitis and enterocolitis grade I–III therapy. In 89 (66.4 %) patients, intravesical infusions (OZC 5–15 mg/l) were performed daily for cystitis grades I–III. Cervical and vaginal mucositis were treated in 37 (27.6 %) with intravaginal infusions (OZC 25–30 mg/l). Low-intensity laser (0.67 or 1.06 mkm, pulse mode) was used: 0.05–0.1–1 W, 5–11 min, six to seven impulse modes, ∑15–30 J for mucositis therapy; 0.1 W, five to six modes, ∑15–20 J for transcutaneous blood irradiation. Ureter(s) were stented preventively in 69 (51.5 %) patients to avoid their damage during CHRT.
Results: N-PHT common efficacy was 80.6 %; toxicity grades II–IV RTOG-EORTC decreased in arm A vs. arm B: leucopenia, 10.4 vs. 31 %; anemia, 8.3 vs. 23 %; cystitis, 11.9 vs. 34 %; rectitis, 2 vs. 11 %; enterocolitis, 13.4 vs. 41 %; 10.4±7.8 days less break duration (p<0.05).
Conclusion: N-PHT significantly improves CHRT tolerance in GYN cancer patients.

833

Role of best supportive care (BSC) with oral morphine solution (OMS) therapy in recurrent head and neck cancer? "Adding life to days"

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Patients with recurrent head and neck cancers, who were aged with poor general conditions and comorbidities, were not suitable for any active palliative treatments. When these patients failed on step I and II analgesia, they were referred to the Department of Palliative Medicine (DPM) at our institute for symptom relief. At DPM, they would be started on best supportive care (BSC) with oral morphine solution (OMS) therapy with the concept of relief of "total pain."
Materials and methods: One hundred eighteen patients with recurrent head and neck cancers who received BCS and OMS therapy were retrospectively analyzed.
Objectives: Primary objectives were quality of life (QOL) assessment based on ECOG, PS, overall survival and cost effectiveness of treatment. Secondary objective includes clinicopathological profile.
Results: Male/female ratio was 1:1.62. Median age was 51 years. The commonest cancer was buccal mucosal cancer. Of the patients, 69.5 % had poor ECOG PS 3 or 4 and 11.9 % were in the aged population, >65 years. Approximately two thirds of patients expired after 6 months.

Conclusions: The QOL improved in approx. 48.3 % of patients after 2–3 months. The median survival was 5 months. The approximate cost of this treatment was INR 900 per month (US $18 per month) when compared to palliative chemotherapy protocols, which gave median survivals of 5–10 months at a cost ranging from US $1,200 to US $13,000 in a highly select population. Hence, BSC and OMS therapy is an alternative, cost-effective method with comparable overall survival in aged and patients with poor general conditions who are otherwise unfit for any active palliative treatments.

834
Standard exercise training offers advantages over Qigong for patients with advanced lung and gastrointestinal cancer

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Background and objectives: The McGill Cancer Nutrition–Rehabilitation Program uses a multidisciplinary team approach to address problems of weight loss, nutritional symptoms, and impaired functional status in patients with advanced cancer. Qigong, a movement and breathing practice used in traditional Chinese medicine, is becoming increasingly popular with cancer patients from Western countries as a method of addressing distress and other psychological needs. Our aim was to determine the relative benefits of Qigong and standard exercise therapy (SET) for reducing depression and anxiety and improving quality of life in patients with advanced non-small cell lung cancer (NSCLC) and gastrointestinal (GI) cancer.
Methods: Each participant was randomized to perform either twice weekly Qigong or SET for 6 weeks. Psychological functioning, quality of life, and symptoms were assessed before and after the intervention period using the HADS, FACT, and ESAS tools. In addition, physical functioning was assessed using the Simmonds test battery.
Results: After the intervention period (Qigong: $n=11$, SET: $n=13$), we found no differences in the effect of exercise on anxiety (Qigong: $\Delta_{anx}=-0.6$, SET: $\Delta_{anx}=-0.4$, $p=0.8$) or depression (Qigong: $\Delta_{dep}=-0.7$, SET: $\Delta_{dep}=-1.6$, $p=0.5$). However, after SET, participants reported significant improvements in sleep, quality of life, and strength compared to after Qigong (all $p<0.05$). In addition, we found greater functional improvements measured by the 6-min walk test after SET intervention (Qigong: $\Delta_{6MWT}=-4$ m, SET: $\Delta_{6MWT}=+73$ m, $p<0.01$).
Conclusions: Each type of intervention had similar attendance rates and received positive satisfaction ratings from participants; however, our results suggest that SET offers more symptom and functional benefits than Qigong for advanced NSCLC and GI cancer patients.

835
Risk and outcomes of chemotherapy-induced diarrhea among patients with colorectal cancer

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Objectives: Chemotherapy-induced diarrhea (CID) is reported in chemotherapy clinical trials, but its epidemiology is undescribed. We studied the risk and outcomes of self-reported CID among patients receiving multi-cycle chemotherapy for colorectal cancer (CRC).
Methods: We studied 114 patients who received folfox (96 patients, 530 cycles), folfox+monoclonal antibodies (10 patients, 49 cycles), or Folfiri (9 patients 50 cycles). CID was identified from diaries completed at baseline and daily during a maximum of eight chemotherapy cycles using two supplemental questions on the Oral Mucositis Daily Questionnaire, a reliable and valid tool for collecting patient-reported outcomes. Patients scored CID severity from 0 "none" to 10 "worst possible." Quality of life was measured using the FACT-G instrument.
Results: CID occurred among 89 % of patients who received Folfiri, 50 % who received folfox+monoclonal antibodies, and 56 % who received Folfox alone. The risk of a first episode was highest during cycle 1 (35 %) and dropped to <10 % during cycles 3–5; almost no patient developed a first episode of CID during cycles 6–8. Patients who developed CID reported poorer mean quality of life scores than those without CID (77.1 vs. 80.7).
Conclusions: Diarrhea occurs commonly during chemotherapy for CRC. The risk of CID is highest during the first exposure to chemotherapy, suggesting that some patients are more susceptible than others. Identification of this high-risk subgroup for prophylaxis could improve quality of life among this high-risk group.

836
A longitudinal investigation of fear, anxiety, and depression severity in patients receiving radiation therapy for cancer

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Objectives: A cancer diagnosis and radiation therapy may place significant burden on a patient. We observed such patients to have fear, anxiety, and depression, all of which can affect treatment adherence and interest in symptom control or cure. To better understand these conditions, we performed a longitudinal pilot study of fear, anxiety, and depression severity before, during, and after a course of radiation therapy. This is the first longitudinal study of these three conditions in the same patient cohort.
Methods: Patients ($N=24$) completed questionnaires (PHQ-9, BAI, Fear Questionnaire-adapted) before beginning treatment, weekly during treatment, and 1 month after treatment. Medication data were also collected.
Results: Severities ranged from none to moderate (fear), none to severe (anxiety), and none to severe (depression). Within patients, condition severity did not change during treatment. Depression was more prevalent in patients with head and neck ($N=7$) and gastrointestinal (GI) tract ($N=5$) cancers compared with patients having either lung ($N=6$) or breast ($N=6$) cancer. Patients with GI cancers had virtually no fear throughout treatment. All patients were taking pain medications corresponding to at least level 1 of the WHO Analgesic Ladder. An antidepressant or benzodiazepine was taken by 28 % of patients.

Conclusions: These preliminary findings suggest that fear, anxiety, and depression are prevalent among patients undergoing radiation therapy. Larger samples will help us determine the extent to which cancer site may predict likelihood of psychological comorbidity. Further studies will enable physicians to better anticipate and more effectively treat psychological conditions that can adversely affect clinical outcomes.

838
Nutritional risk and contributing symptoms to poor dietary intake throughout chemotherapy: a prospective cohort study

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Background: Patients undergoing chemotherapy are at risk of poor dietary intake and malnutrition.
Objectives: He objective of this study was to describe nutrition risk and symptoms contributing to poor dietary intake throughout chemotherapy.
Methods: Data for a 12-week prospective cohort study were collected at baseline, 6 weeks, and 12 weeks after commencing chemotherapy. Nutrition risk and symptoms were captured using the Patient-Generated Subjective Global Assessment (PG-SGA), with ≥9 indicating high risk. Performance was assessed by the ECOG scale. Categorical data were analysed by Fisher's exact or Wilcoxon signed-rank test for ordinal data.
Results: Eighty-five patients, with median age 57 years (21–85 years), weight 75 kg (50–121 kg), BMI 26.9 kg/m^2 (17.7–44.5), and 58 % female, were included. Main tumour types included 28 (33 %) breast, 13 (15 %) colorectal and 9 (11 %) lymphoma. Median PG-SGA score was 4 (1–19) at baseline, with no change over time. High nutrition risk was identified in 19 (23 %) patients at baseline, 17 (23 %) at 6 weeks and 15 (22 %) at 12 weeks. Higher scores were associated with poor performance (p=0.017), BMI<18.5 kg/m^2 (p=0.028) and poor dietary intake (p<0.05). At baseline, 32 (38 %) patients reported poor dietary intake. Contributing symptoms included poor appetite (53 %) and early satiety (34 %). At 12 weeks, 44 % reported poor intake despite 25 % having ceased chemotherapy. The prevalence of symptoms impacting dietary intake increased from baseline (mouth sores (p<0.001), taste changes (p< 0.001), nausea (p=0.006) and diarrhoea (p=0.021)).
Conclusions: Nutritional risk factors are prevalent before and throughout chemotherapy; however, the factors themselves change over time. Patients should be regularly screened to identify patients at risk of malnutrition.

839
Effects of demographic and clinical factors on the information level of cancer patients attending the day hospital in a cancer centre

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Objectives: Information is pivotal to cancer patients. Physician–patient communication in oncology remains challenging. The aims of this study were to evaluate the self-reported information level of cancer patients attending the day hospital in a comprehensive cancer centre and search for possible associations with patients' demographic and clinical characteristics.
Methods: This is a transversal observational study including adult patients with solid tumours undergoing chemotherapy at the Jules Bordet Institute's day hospital over a 10-day period. EORTC QLQ-C30 and EORTC QLQ-INFO25 questionnaires were administered. Demographic and clinical data were collected. Descriptive and inferential statistics were used.
Results: One hundred two patients were included (99 % questionnaire completion rate; 78.2 % female; 74.3 % Belgian; mean age, 56.9± 12.8 years). The primary site was breast in 58.4 % and gastrointestinal tract in 19.8 %. ECOG was 0–1 in 87.1 % and disease metastatic in 65.3 %. Patients presented a higher global information level, particularly regarding disease and treatments, but a lower information level relative to other items examined in the population from QLQ-INFO25 validation study. Patients desired more information on treatment side effects, long-term outcomes, nutrition and recurrence symptoms. Patients enrolled in clinical trials (28.7 %) reported having received less information about their disease and written information than patients outside clinical trials. Higher information levels were associated with higher quality of life (QoL) scores and higher patient satisfaction.
Conclusions: Patients were satisfied with the information received, which correlates with higher QoL scores; however, they still expressed some unmet information wishes. Additional studies are required to investigate the information perception and needs of patients enrolled into clinical trials.

840
Skills to live well after cancer: pilot testing an Internet-based, cognitive-behavioral intervention for adolescents and young adults after cancer treatment

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Objectives: Adolescents and young adults (AYAs) with cancer face a unique set of challenges and may not always have the coping skills to adapt well to this event. Recent research by our team indicates that AYAs with cancer respond positively to a multi-session, peer group intervention and rate online sources of support highly. Here, we report on a pilot study of a new, online, cognitive–behavioral intervention for AYAs in the critical post-treatment period, called 'ReCaPTure LiFe'. This 6-week, one-hourly group intervention aims to reduce distress and build adaptive coping skills. Sessions involve three to five AYAs and are facilitated by a psychologist.
Methods: AYAs aged 15–25 years who finished cancer treatment in the last 3 years were recruited. Two weeks following participation,

AYAs completed a questionnaire evaluating the program, as well as a semi-structured telephone interview.
Results: Six AYAs have been enrolled to ReCaPTure LiFe, with one full treatment program completed in December 2011. Attendance has been excellent (all sessions fully attended) with few technical difficulties reported. All AYAs found the program's coping skills elements to be the most beneficial, followed by peer discussion. The findings of this study led to several changes to the program content, to reflect a greater emphasis on skills to manage fear of cancer recurrence, as well as integrating positive changes into their life.
Conclusions: ReCaPTure LiFe is a promising model of support for young people at the cusp of survivorship. Recruitment to a phase II randomized-controlled trial will commence in 2012 at nine hospitals across Australia.

841
Anticholinergic levels and risk of delirium in advanced cancer

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Objective: Measuring abnormalities in central cholinergic neurotransmission in the clinical setting is not possible, and a surrogate marker of cholinergic abnormality may be clinically useful in understanding delirium risk and pathophysiology. A serum anticholinergic radioreceptor assay has been developed to quantify serum anticholinergic activity/levels (SAL) which may be affected by both exogenous and endogenous anticholinergic loads. The study aim was to explore whether an association exists between SAL calculated anticholinergic load and other clinical factors on admission with presence of delirium in advanced cancer.
Methods: Patients were recruited from two palliative care units in Australia over a 2-year period. Clinical characteristics collected were cancer type/metastases, comorbid illness, medication and performance status. Anticholinergic load of medications was calculated using a clinician-rated anticholinergic scale. Patients were monitored daily by Memorial Delirium Assessment Scale (MDAS), and if delirium occurred, delirium aetiology was collected. Serum was collected at baseline, day 7 and at delirium.
Results: Mean SAL at baseline was 19.2±13.4 pmol/ml (n=126). SAL at baseline showed no association with clinician-rated anticholinergic score or with the number of anticholinergic medications. At baseline, there was a negative correlation between SAL and total MDAS score, which was strongest in the group with lower performance status. There was, however, an association of baseline SAL with MDAS over subsequent days.
Conclusions: Mean SAL in advanced cancer is higher than the levels reported in geriatric populations. SAL at baseline is not predictive of future development of delirium in advanced cancer.

842
Aprepitant use with cisplatin- and taxane-based chemotherapies

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Introduction: Aprepitant is used in the prevention of highly and moderately emetogenic chemotherapy. Aprepitant increases the concentrations of oral dexamethasone (Dex) taken concomitantly. This drug interaction is difficult to manage when Dex is used as premedication with taxanes. The effect of aprepitant on taxane metabolism and toxicities has not been widely reported.
Methods: This retrospective study analyzed outcomes in patients receiving cisplatin-based highly emetogenic chemotherapy and taxanes. Patients were assigned if they received, or not, aprepitant as part of their antiemetic regimen. The objectives were to assess aprepitant efficacy and compare toxicities between the two groups.
Results: From June 2008 to September 2011, 158 patients received cisplatin-based chemotherapy with docetaxel or paclitaxel±5FU for head and neck cancer. Sixty-five patients received aprepitant-based antiemetics (APR) and 93 patients received only setron and Dex (control group, CTR). Patient characteristics were similar in both groups, except for chemotherapy: patients in the APR group received docetaxel (62 %) or paclitaxel (38 %) and patients in the CTR group received mostly docetaxel (95 %). Nausea or vomiting was reported in 47 % of patients in APR group and 42 % of patients in the CTR (p=0.5). Vomiting was reported in 11 and 19 %, respectively (p=0.11). Even if growth factors were administered in more than 70 % of patients, febrile neutropenia occurred only in the CTR group (5 %). Anemia and hepatic disturbances occurred more frequently in the CTR group.
Conclusion: Although this was a retrospective analysis, the addition of aprepitant did not significantly improve NVIC control or add additional toxicities to the chemotherapy regimen.

843
A phase II randomised controlled trial of a rapid-response home-care intervention for complex palliative care or end-of-life needs

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Objectives: Up to 90 % of people with a life-limiting illness prefer to be cared for and die at home. Palliative Care Extended Packages at Home (PEACH) offered 24-h, tailored, community-based nursing for symptom assessment, personal care and medication management to transition to community care. The aims were to assess the acceptability of PEACH to patients and caregivers; inform its further development; and assess feasibility of recruitment, randomization and outcome measurement for a future phase III randomized-controlled trial (RCT).
Methods: A pilot phase II study (3:1 randomisation to (PEACH) versus usual community care) was conducted to evaluate whether PEACH expedited discharge or enabled patients to remain at home. Participants had a life-limiting illness, an identifiable caregiver and had complex symptom, end-of-life or physical management needs.
Results: Sixty-five patient and caregiver dyads were approached and 32 consented (49 % response rate); one dyad withdrew following randomization (n=24 PEACH, n=8 usual care). Dyads randomized

to PEACH expressed high satisfaction. Feasibility was high, with 84 % of dyads completing all measures. Thirteen dyads met the criteria for EOL care and 20 for complex care. Mean days at home was 13.09 (SD=11.45) in the PEACH arm versus 12.13 (SD=9.63) in usual care.
Conclusions: The PEACH intervention shows promise in meeting the needs of patients with complex palliative care needs and their caregivers and is feasible to evaluate in a phase III RCT.

844

How do young people fit the idea of "cancer" into their lives? The role of memory and future thinking

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Objectives: Due to their young age upon entering 'survivorship', addressing adaptation to life after cancer is critical for adolescents and young adults (AYAs). Unfortunately, AYAs may experience more long-lasting distress than other age groups. Little research has examined cognitive factors that account for individual differences in AYAs' post-cancer adaptation. Research suggests that the ability to integrate the cancer experience into personal memory, and into an ongoing sense of self in the future, promotes good adaptation. One factor that may impede this process is rumination—a maladaptive thinking style associated with depression. This study examined the role of rumination on autobiographical memory and illness-related future thinking.
Methods: A non-clinical sample of N=60 high and low health-anxious undergraduate students was used as a model for post-cancer illness concerns (e.g., fear of recurrence). The effects of maladaptive thinking were mimicked experimentally using a rumination induction. Participants also completed two illness-focused autobiographical memory and future imaginings tasks.
Results: Engaging in rumination led to more vivid illness-related memories, particularly amongst high health-anxious participants (p=0.015). However, rumination also predicted a more general, avoidant health-related future thinking (p=0.000). Greater preoccupation with illness-related memories was associated with more negative, illness-related future thinking (p=0.000). Participants with more illness-related future thinking were more likely to expect a serious illness (e.g., cancer) diagnosis in the next 5 years (p=0.002).
Conclusions: The way young people remember illness-related events significantly alters how they picture their future. These findings implicate rumination as a viable process to target in the treatment of post-cancer illness concerns in AYAs.

845

Waiting for radiotherapy and quality of life: implications and suggested actions

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Objectives: Waiting lists in Greek radiotherapy departments are getting longer through time. The aim of this study was to seek for data concerning the implications of postponing radiotherapy in patients' lives and the actions taken in other European health systems.
Methods: Scirus and Medline/PubMed databases were searched using the following keywords: "radiotherapy," "cancer," "waiting times," "delay" and "outcome." Eight relevant articles were chosen, published between 2000 and 2011.
Results: A delay in radiotherapy has a negative implication in both tumour control probability (TCP) and the patients' quality of life. In particular for head and neck cancers, a 16–19 % decrease in TCP has been described, whilst patients experience a prolonged agony, a sense of losing control, express doubts concerning the success of the treatment, are often forced to commute in search of an earlier appointment and have to deal with the extra costs. The solutions that have been applied in other European health systems include: an estimation of the current and prospective needs, investments in infrastructure and equipment, recruitment and continuous training of human resources, use of computerized administration of appointments, predefined patient pathways through the system from diagnosis to follow-up and coordination of the multidisciplinary treatment approach.
Conclusions: The delays in radiotherapy have serious consequences in the patients' quality of life. There is a need for further studies measuring the delays in treatments in order to determine future actions towards a prompt delivery of effective and efficient treatment for cancer patients in Greece.

847

Comparative cardioprotective effect of curcumin, demethoxycurcumin and bisdemthoxycurcumin in adriamycin chemotherapy-induced cardiotoxicity

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The present study investigates the comparative cardioprotective effects of curcumin, demethoxycurcumin, and bisdemethoxycurcumin in adriamycin (ADR) chemotherapy, particularly in terms of their antioxidant effects. Wistar albino rats were used in this study. ADR was administered intraperitoneally in six equal injections (each containing 2.5 mg/kg ADR at a 48-h interval) to a total cumulative dose of 15 mg/kg over a period of 2 weeks to produce cardiotoxicity. Isolated curcuminoids (curcumin, DMC, and BDMC) were administered (30 mg/kg) as pretreatment. The enzyme biomarkers CPK, LDH, and ALP were monitored after 36 h of the last dose and the biochemical parameters AST, ALT, tissue glutathione (GSH), malondialdehyde, catalase, and superoxide dismutase (SOD) were monitored after 2 weeks of the last treatment. Pretreatment with curcuminoids significantly protected the myocardium from the toxic effect of ADR by increasing the levels of antioxidant enzymes such as GSH, SOD, and CAT toward normal and decreased the increased level of malondialdehyde. Also, the result suggests that prior administration of curcuminoids maintained the levels of marker enzymes (AST, ALT, CPK, LDH, and ALP) in the pretreatment group when compared to the ADR group. It has also reduced the severity of cellular damage of the myocardium, further confirmed by histopathology. The restoration of the endogenous antioxidant system clearly depicts that curcuminoids have produced protective effects by scavenging reactive oxygen species in the order curcumin> DMC>BDMC. The study strongly supports the use of this spicy antioxidant in the treatment of ADR-treated cardiotoxicity.

848

Therapeutic effects of percutaneous vertebroplasty for vertebral metastases

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Introduction: Pain associated with vertebral metastases can markedly reduce patients' quality of life (QOL) if not properly controlled by conservative treatments, such as narcotics, corsets, and radiotherapy. Spinal reconstruction can sometimes drastically improve patients' QOL, but is still highly invasive. If life expectancy is short, therapeutic options are currently limited, treatments must be chosen to maximize pain relief without burdening the patient.
Aim: We have performed percutaneous vertebroplasty (PV) using polymethylmethacrylate (PMMA) for patients with vertebral metastases since 2002. This study investigated the therapeutic effects of PV on vertebral metastases.
Patients and methods: A retrospective (2002–2008) review was conducted for 69 consecutive patients with 141 metastatic vertebrae treated with PV using PMMA. The clinical background of the patients, visual analog scale (VAS), improvement rate, outcomes, and complications were evaluated.
Results: The mean preoperative VAS score was 7.3 and significantly improved to 1.9 postoperatively (at discharge), with a mean improvement rate of 73.3 %. With regard to complications, no new fractures of adjacent vertebral bodies were encountered, but cement leakage was seen in 49 % of the patients. Most patients were asymptomatic during the postoperative course, although two patients (3 %) experienced dyspnea that was suspected to be adult respiratory distress syndrome or a pulmonary embolism.
Conclusion: PV can offer pain relief to patients with painful vertebral metastases and short life expectancy whose general condition makes surgery difficult.

849

Making decisions about delirium: a qualitative comparison of nurses' decision making on palliative care, aged care, aged care psychiatry, and oncology

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Objective: Delirium impacts significantly on nursing practice from diagnosis and management, with under-detection and variable management of delirium being international problems. This study aimed to explore nurses' assessment and management of delirium when caring for people with cancer, the elderly or older people requiring psychiatric care in an inpatient setting.
Methods: Participants in this qualitative study were nurses working in Australian public hospital inpatient dedicated units in palliative care, aged care (geriatrics), aged care (geriatric) psychiatry, and oncology. Semi-structured interviews were used to explore nurses' views about specific areas of delirium assessment and management. Purposive sampling was used and interviews conducted until thematic saturation was reached. A thematic content analysis was performed from a grounded theory perspective.
Results: Forty participants were included in the study. The analysis revealed four broad analytical themes:

1. Superficial recognition and understanding of the operational definition of delirium or recognition of delirium as a syndrome
2. Nursing assessment: investigative versus problem-solving approaches
3. Management: maintaining dignity and minimising chaos
(4) Distress and the effect on others

Conclusion: Nurses have limited knowledge of the features of delirium regardless of their specialty discipline. Delirium was uniformly identified as a highly distressing experience for patients, families and staff alike. The majority of nurses had a superficial understanding of delirium management and adopted a task-orientated approach aimed at addressing the more noticeable problems. These findings have implications for both education and knowledge translation. Innovative approaches to align health professional behaviours with best evidence delirium care are needed.

851

Cost-effective analysis of topical chlorhexidine in hematologic patients at risk for oral mucositis: a decision analysis

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Objectives: Chlorhexidine (CHX) mouthwash has been extensively investigated for the prevention of oral mucositis. However, the literature in this area presents conflicting results, with some suggesting that there is limited or inconclusive evidence of the benefits of prophylactic CHX mouth rinse. The aim of our study was to explore whether CHX mouthwash could be a cost-effective method to manage oral mucositis in hemato-oncologic or hematopoietic stem cell transplantation (HSCT) patients.
Methods: A cost-effectiveness analysis model of prophylactic CHX mouthwash use versus no CHX mouthwash use for the prevention of oral mucositis was developed for patients undergoing cytotoxic therapy or HSCT. The outcome variable was survival. The primary variables were CHX use, probability of mucositis, and length of hospital stay. Probability and cost data were obtained from the literature. The literature was reviewed using PubMed searches of English language literature according to a list of related terms.
Results: Our analysis selected CHX use during anticancer treatment as the preferred strategy for the base case analysis (marginal value, 0.026). There was a US $5,317 cost difference per patient between the two strategies.
Conclusion: The results of this study suggest that CHX mouth rinses during anticancer treatment would result in an increased survival and decreased cost for the population studied. Using our base case data, an additional 26 of every 1,000 hemato-oncologic or HSCT patients will survive when employing the preferred strategy of prophylactic CHX mouthwash.

852

Content validation of the FACT-Br in patients and healthcare professionals to assess quality of life in brain metastases

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Objective: Our objective was to validate the content of the FACT-Br in patients with brain metastases.
Methods: Patients with brain metastases and healthcare professionals (HCPs) involved in their care completed the FACT-Br. Participants were also asked whether each item in this quality of life (QOL) questionnaire was relevant and to provide rankings of the top 5 or 10 items. A structured interview followed which asked respondents about any further issues not covered or items that were difficult, irrelevant, or upsetting.
Results: Fifty patients, mostly undergoing radiotherapy (98 %), and 46 HCPs, mostly radiation oncologists (51 %), were included. All items were rated as being relevant by over 65 % of patients and HCPs. The most relevant items pertained to caring for oneself (95 %), headaches (90 %), weakness (90 %), expression of one's thoughts (89 %), coordination (88 %), and seizures (88 %). Of the few identified additional issues not covered by the FACT-Br, no single issue was mentioned consistently. None of the items were consistently reported as being difficult, irrelevant, or upsetting by either HCPs or patients.
Conclusions: Patients and HCPs agree that items of the FACT-Br are relevant to patients with brain metastases. This first step is important in standardizing QOL assessment in this population. Future studies should use the FACT-Br for evaluation of quality of life in patients with brain metastases.

855
Translating research into clinical practice: use of a Wiki platform to develop and maintain evidence-based guidelines for the nutritional management of patients with head and neck cancer

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Objectives: The high prevalence of malnutrition in patients with head and neck cancer impacts on outcomes. The aims of this project were to develop evidence-based nutritional management guidelines for patients with head and neck cancer and to present the best available evidence on a widely accessible and easily updated web-based Wiki platform to maintain currency and facilitate translation of research into clinical practice.
Methods: Under the auspices of the Clinical Oncological Society of Australia (COSA), traditional guideline development methodology was used to critically appraise the literature. The body of evidence was assessed to determine the grades of recommendations addressing clinical questions throughout the nutrition care pathway. The guidelines are published on a Wiki platform, facilitating international dissemination and interactive consultation.
Results: Two hundred eighty-eight studies were identified for independent critical appraisal revealing high-level evidence for the benefit of nutrition intervention. Google Analytics indicates the guidelines have been accessed by 33 countries to date, with the majority from Australia (80 %), UK (8 %), Canada (2 %), and New Zealand (2 %). Referral sites include a direct link (37 %), Google (27 %), and the COSA homepage (16 %). The most frequently visited sections of the guidelines have been nutrition screening and assessment and the summary.
Conclusions: The guidelines provide clinicians with access to evidence-based recommendations aiming to influence practice internationally following endorsement by professional dietetics associations of Australia, Britain, and New Zealand. The Wiki platform proved successful in ensuring currency through facilitating collaboration and online public consultation and is recommended for future guideline development and maintenance.

856
Support to families of outpatients undergoing cancer treatment

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This study aims at understanding the support extended by nurses to families of cancer outpatients. The subjects are 18 nurses who have supported such families. Data from focus group interviews were analyzed qualitatively and inductively. The subjects consented to take part in the study after being given a written explanation.
The results are summarized as follows:

- Nurses understand that family members of cancer patients are experiencing distress and yet cannot alleviate it, do not have support resources, have unexpressed concerns, or are shouldering the burden of safeguarding the survival of a patient.
- Nurses place importance on developing a relationship with each patient's family for the sake of communicating better with them.
- When extending support, nurses intuit family members' tacit messages before determining the appropriate involvement, get involved with the families proactively, or assist the families in doing the utmost under their difficult circumstances.
- It is not easy to extend support when nurses wish to get involved with patients' families, but do not have opportunities to see them. It is also difficult for nurses to determine the proper time to extend support.

This study sheds light on a problem for nurses working at medical care facilities. Nurses have limited opportunities to see family members of patients; thus, it is difficult for nurses to precisely understand the circumstances affecting the patients and their families and to get involved with the families at the proper time.

857
Implementing Advanced Support for Quality-of-Life in Oncology (ASQO): seeking, intervening, and educating

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Objectives: The objectives of this study were to increase early cancer detection and decrease surgery and/or chemotherapy indications through oncologic advanced support in a private palliative care unit; to lead patients back to daily life activities as soon as possible; and to increase the percentage of terminally ill patients dying at home with full support.
Methods:

1. Screening and immediate treatment programs for diabetes, prostate, colorectal, breast, and cervical cancers
2. Educative talks and distribution of booklets about disease and treatment complications
3. Aggressive support to hamper complications of oncologic treatment adverse events through pre-hospital care following protocols

designed for symptoms and interventions (analgesic, antiemetic, antibiotic, hydration, GCSF, etc.), besides laboratory analysis
4. Standard palliative care for patients immediately after the diagnosis of metastatic disease until the end-of-life period

Results: Private hospital cancer statistics will be checked and compared before and after ASQO implementation.
Conclusion: We expect that these interventions will increase early cancer detection and decrease in-hospital cancer mortality, translating better quality of life for patients and families.

858
Early discussion of palliative care option for patients with advanced non-small cell lung cancer leads to choose less invasive end-of-life care

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Background: Less than 20 % of patients with advanced cancer reported having formal end-of-life discussion with their health care providers in South Korea. We explored the feasibility of early intervention of palliative care discussion including end-of-life care discussion within <1 month of initial diagnosis of advanced non-small cell lung cancer.
Method: Thirty-one patients diagnosed with advanced non-small cell lung cancer were enrolled. Palliative care discussion was designed, with ten questionnaires regarding the options of palliative chemotherapy and end-of-life care, e.g., ICU care, respirator care, CPR, etc., followed by meetings with patients/family members/doctors included. The first discussions were held <1 month of the diagnosis of non-small cell lung cancer. The follow-up discussions were held between 6 and 12 months after the first one. The patients' choices in the first discussion and their effects on end-of-life care characteristics were analyzed.
Results: In their first discussion, over 90 % of patients chose a noninvasive end-of-life care option; their choices were not changed much in the following discussions. Those who chose a noninvasive end-of-life care option were satisfied with their option in their own end-of-life period. Most patients expressed that early discussion might help them understand the nature of end-of-life care option and lead them to choose a more noninvasive end-of-life care procedure.
Conclusions: Early intervention of palliative care discussion in patients with advanced non-small cell lung cancer was feasible and might help in understanding and choosing a noninvasive treatment.

859
Prophylaxis of chemotherapy-induced febrile neutropenia (CIN/FN): practice principles reported by centers in MONITOR-GCSF, an observational study of biosimilar filgrastim (EP-2006)

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Objective: The objective was to describe practice principles in the prophylaxis of chemotherapy-induced febrile neutropenia (CIN/FN) with biosimilar filgrastim (EP-2006) reported by centers in the MONITOR-GCSF Study.
Methods: One hundred twenty-three (out of 185 open) centers in 11 European countries were surveyed about: center type, patient volume, guideline use, cancer types and chemotherapy regimens, primary/secondary prophylaxis, and EP-2006 treatment patterns.
Results: Providing services mainly outpatient (72 %) by oncology/hematology specialists (median=90 %), centers are evenly divided between academic/teaching (48 %) and non-academic (52 %). Centers reported seeing on average 3,385±4,823 cancer patients, including 852±1,287 newly diagnosed, in 2009. Most centers (81 %) had a FN prevention policy and 62 % a prevention protocol, based mainly (68 %) on EORTC guidelines. Top cancers treated with GCSF were breast (38 %) and lymphoma (30 %). Centers administer GCSF as primary prophylaxis in 92 % of breast and 85 % of lymphoma patients receiving chemotherapy agents with >20 % CIN/FN risk; primary prophylaxis with chemo agents having 10–20 % CIN/FN risk are 42 and 21 %, respectively. Rates vary depending on risk factors such as prior FN (89 % in both breast cancer and lymphoma) and being elderly (50 and 82 %, respectively). Most centers (61 %) initiate GCSF within 72 h of chemotherapy, although 39 % initiate ≥4 days after start of chemotherapy. GCSF is administered either for a fixed number of days (56 %) or until neutrophils normalize (35 %); 9 % treat on intermittent days.
Conclusions: Considerable variability in center-reported GCSF prophylaxis was found. This variation underscores the need to compare center-reported prophylaxis to actual MONITOR-GCSF patient-level treatment and to examine center-level determinants of clinical outcomes in CIN/FN prophylaxis.

860
Reminiscence therapy for cancer patients with recurrence

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Objectives: The psychosocial intervention for mental anguish such as anxiety and depression in cancer patients has been variously examined. However, effective interventions for cancer patients with recurrence have not been provided. The purposes of this study were to conduct reminiscence therapy among cancer patients with recurrence and to assess its efficacy using a randomized controlled trial.
Methods: We carried out individual reminiscence therapy for the intervention group for a total of eight sessions, once a week, for 60 min each. The control group only answered the questionnaires at the same time as the intervention group. The Profile of Mood States (POMS), Rosenberg Self-Esteem Scale, Functional Assessment of Chronic Illness Therapy-Spiritual, and General Self-Efficacy Scale were used to evaluate mental states and quality of life (QOL). Evaluations were performed on three occasions: before the start of intervention and immediately and 3 months after the completion of the intervention. This study was conducted with the approval of the Institutional Review Board of Hiroshima University.
Results: Patients in final analysis were 24 in the intervention group and 30 in the control group. Concerning the evaluation measure scores, the intervention group presented sufficient improvement in all measures after intervention, and there was a significant improvement in the POMS score.

Conclusions: For cancer patients with recurrence, participation in these sessions strongly influenced their psychological perceptions and feelings toward the recurrence of cancer. These results suggested that reminiscence can be used as an effective method for improving the QOL of cancer patients with recurrence clinical setting.

861
Quality of life (QOL) of advanced cancer patients (AdCa) and their caregivers expressing spiritual pain in the palliative care setting

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Background: Spiritual pain may affect the physical, psychological, religious, or social experience of the person. Limited research has been done on spiritual pain and its impact on quality of life (QOL) in advanced cancer patients (AdCa) and caregivers. In this prospective cross-sectional study, we examined these associations.
Methods: One hundred AdCa and 43 caregivers were interviewed in our outpatient palliative care clinic. Spiritual pain was assessed using numeric rating scales (0=lowest, 10=highest). They completed validated questionnaires assessing QOL (FACIT-Sp-Ex, SBI-15R, CGQOL). Univariate and multivariate regression analyses were utilized in the data analyses.
Results: The median age (range) for AdCa was 53 years (range, 21–85 years), 61 % were women, 74 % were white, 88 % were Christians, 4 % Jewish, and 4 % Agnostic. The median age (range) for caregivers was 52 years (21–83 years), 32 (67 %) were women, 34 (78 %) white, 7 (17 %) African American, and 2 (5 %) were Hispanic. Ninety-one percent were Christians and 37 (86 %) were married. Twenty-five (58 %) were patients' spouse, 5 (12 %), friends, and 13 (30 %) other family member.
Spiritual pain was reported in 44 % of the AdCa and in 23 of 40 (58 %) caregivers, with medians (range) of 3 (1–6) and 5 (2–8), respectively. AdCa reported worse QOL [81 (73–87) vs. 68 (59–80), $p<0.001$]. Caregivers with spiritual pain expressed denial (3 vs. 2, $p=0.01$), behavioral disengagement (3 vs. 2, $p=0.011$), dysfunctional coping strategies (19 vs. 16, $p=0.02$), and worse QOL (CGQOL, 70 vs. 51, $p<0.001$). Of the 23 caregivers who reported having spiritual pain, 11 (48 %) had their loved ones expressing also spiritual pain.
Conclusion: Spiritual pain is highly prevalent in AdCa and caregivers and affects negatively their QOL, and might affect the way they cope in their lives. This supports the need of spiritual assessment and supporting the spiritual needs of AdCa and caregivers. Further research is needed.

862
Coping styles and psychosocial outcomes in newly diagnosed patients with breast cancer in Korea: a cluster analysis

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Objectives: The purposes of this study were to identify subgroups of coping styles in newly diagnosed patients with breast cancer in Korea; to explore whether patients in the subgroups differed on socio-demographic and disease-related characteristics; and to determine whether patients in the subgroups differed on anxiety, depression, and health-related quality of life (HRQOL).
Methods: A convenient sample of 132 patients was recruited from an oncology-specialized hospital in Korea. Measurements included the Mini-Mental Adjustment to Cancer (Mini-MAC), Hospital Anxiety and Depression Scale, and the European Organization of Research and Treatment for Cancer QLQ-C30. Based on the five subscales of coping styles from Mini-MAC, we identified subgroup clusters of coping styles using *K*-means cluster analysis.
Results: Cluster analysis distinguished two groups, labeled: "High helpless–hopeless, anxious preoccupation and low fatalism, fighting spirit, and cognitive avoidance" (HHA group, $n=59$, 44.0 %) and "Low helpless–hopeless, anxious preoccupation and high fatalism, fighting spirit, and cognitive avoidance" (HFFC group, $n=73$, 56.0 %). There were no significant differences between the subgroups in terms of socio-demographic and disease-related factors. There were significant differences in anxiety, depression, and HRQOL between the HHA and HFFC groups. The HHA group of patients reported higher levels of anxiety and depression and poorer HRQOL than the HFFC groups.
Conclusions: These findings suggest that a coping style assessment may be a useful tool in predicting psychosocial outcomes in newly diagnosed patients with breast cancer in Korea. More research is needed to explore how these coping styles influence psychosocial outcomes during and following treatment.

864
Physical well-being in women with breast cancer participating in randomized trial of gabapentin for hot flashes

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Objectives: Hot flashes (HF) reduce quality of life (QOL) in women with breast cancer (BC). In a randomized, double-blind, placebo-controlled trial of gabapentin for HF, 900 mg of the drug was found to reduce HF in women with BC; however, their physical well-being (PWB), a QOL domain, has not been studied. We conducted a secondary analysis to examine the PWB in the trial participants.
Methods: A nationwide sample of women with BC and HF≥2/day was studied at baseline (T_1), 4 weeks (T_2), and 8 weeks (T_3) of treatment with gabapentin 300 mg/day (G300), 900 mg/day (G900), or a matching placebo (PLACEBO). PWB was assessed via a subscale of the Functional Assessment of Cancer Therapy—Breast. Linear mixed model analysis of PWB was conducted.
Results: The majority of women ($N=384$; age, 54.9±8.07 years, 72 % >50 years) were married (76 %), Caucasian (95 %), and had more than high school education (71 %); 10 % were undergoing chemotherapy and 9 % radiotherapy. Mean PWB (M) showed significant time effect and interaction of time and treatment ($p<0.0001$). It improved in G300 by T_2, which was maintained at T_3, while PLACEBO and G900 showed a modest improvement at T_2 that continued at T_3 (PLACEBO: T_1, $M=20.7$; T_2, $M=21.2$; T_3, $M=21.6$; G300: T_1, $M=20.9$; T_2, $M=22.2$; T_3, $M=22.2$; and G900: T_1, $M=21.2$; T_2, $M=21.5$; T_3, $M=21.7$).
Conclusions: G300 showed significant improvement in PWB. As reported previously, G900 is effective in reducing HF; however, it showed minimal effects on PWB. Future studies to further examine the physical well-being in this population are needed.

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865
Dietary risk factors of adult-onset glioma: a case–control study

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Objectives: Evidence regarding the role of dietary intakes in the etiology of primary brain cancers is inconclusive. This is the first study to explore the contribution of nutritional factors to the development of gliomas in a developing country where the prevalence of other risk factors (i.e., smoking and alcohol intake) is low.
Methods: This case–control study included 128 incident cases of gliomas and 256 matched controls recruited from hospitals in Iran. Dietary intakes were collected using a validated 168-item food frequency questionnaire.
Results: Compared to the controls, glioma cases had significantly higher consumption of cereals and hydrogenated fat ($p<0.001$), while their intakes of dairy, fruits, nuts, tea/coffee, mono- and poly-unsaturated fatty acids, calcium, and vitamin C were significantly lower ($p<0.008$). Participants in the highest tertile of cereal intakes had 4.9 times higher risk of gliomas compared to those in the lowest. Being in the third tertile of dairy, legumes and tea/coffee intake was associated with 61, 59, and 44 % lower risk of gliomas, respectively. In addition, participants in the highest tertile of cholesterol showed 170 % higher risk of gliomas, while those in the third tertile of calcium and vitamin C had 80 and 66 % lower risks of this malignancy, respectively.
Conclusion: Findings from this study suggest a possible role for dietary patterns high in cereals, hydrogenated fat, and cholesterol and low in dairy, legumes, tea/coffee, calcium, and vitamin C in pathogenesis of gliomas. Nutritional interventions targeting these dietary factors might prove effective in the prevention of this fatal malignancy in developing countries.

866
Baseline data of patients enrolled in MONITOR-GCSF: an observational study of chemotherapy-induced febrile neutropenia (CIN/FN) prophylaxis with biosimilar filgrastim (EP-2006)

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Objective: The objective of this study was to describe patients in the MONITOR-GCSF Study in terms of demographics, clinical and cancer status and treatment with biosimilar filgrastim (EP-2006, Sandoz).
Methods: This is a prospective observational study of practice patterns and outcomes for prophylaxis of chemotherapy-induced febrile neutropenia (CIN/FN) with biosimilar filgrastim. Five hundred forty-three (of target 1,500) patients from 123 (of 183 open) centres in 11 European countries have been enrolled to date.
Results: The mean±SD age in this predominantly female (58 %) sample was 61.8±12.0 years. The most common cancer types were breast (36 %), lung (22 %) and lymphoma (18 %). Twenty-five per cent of patients had no prior antineoplastic therapy. Forty-nine patients had CIN/FN history, mainly (78 %) one episode, occasionally febrile (26 %) and 31 % with hospitalization; in 61 %, cancer treatment was affected. EP-2006 treatment was initiated as primary prophylaxis in 68 % of oncology and 57 % of haematology patients, within 72 h (51 %) or on days 5–6 (25 %), typically (42 %) for 5 days. Table 1 summarizes EP-2006 therapy stratified by prophylaxis and tumour type.

	Dose		Initiation		Duration	
	300 μg	480 μg	±72 h	Days 5–7	3 days	5 days
Prophylaxis type						
Primary (%)	69	31	49	35	16	49
Secondary (%)	67	33	54	24	26	27
Tumour type						
Oncology (%)	65	35	54	28	20	42
Haematology (%)	86	14	32	51	17	42

Table 1
Conclusions: Variability in patients and treatment should be considered when evaluating the effectiveness of EP-2006 and optimizing associated treatment outcomes.

867
Adolescents and young adults whose sibling has cancer: family functioning as a predictor for unmet needs and psychological distress

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Objectives: This study sought to explore the levels of unmet needs and psychological distress of adolescents and young adults (AYAs) who have a sibling with cancer and the impact of family functioning on these variables.
Methods: AYAs aged 12–24 years ($n=106$) whose sibling had been diagnosed with cancer within the last 5 years completed a survey measuring unmet needs (Sibling Cancer Needs Instrument, SCNI), psychological distress (Kessler 10), and family functioning [Adult Sibling Relationship Questionnaire (ASRQ), Sibling Perception Questionnaire (SPQ) and Family Relationship Index (FRI)]. The predictive value of family functioning was assessed through multiple linear regression.
Results: Almost all participants (98 %) reported at least one unmet need and 86 % reported at least ten unmet needs from the 45 items in

the SCNI. Additionally, 57 % of the participants reported high or very high levels of distress. The regression modelling revealed that higher levels on the Affection subscale of the ASRQ and higher levels on the Interpersonal subscale of the SPQ were both significant predictors of higher levels of unmet needs. Additionally, higher levels on the Interpersonal subscale of the SPQ were a predictor of higher levels of psychological distress. The Intimacy ASRQ subscale, the Communication SPQ subscale and FRI had no relationship with unmet needs or distress.

Conclusions: This research helps explain the impact of the family, in particular the sibling relationship, on young people who have a brother or sister with cancer, allowing healthcare professionals to provide more targeted care and support.

868

Prevalence and selected predictors of distress and worry among Indigenous Australian cancer patients

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Up to 30 % of cancer survivors experience significant levels of psychological distress. Psychological distress or worry about cancer can decrease the patients' quality of life and impact on their decision making. Indigenous Australians experience poorer cancer survival, are diagnosed at later stage, and have more aggressive cancers than non-Indigenous Australians and are thus likely to experience high levels of distress and worry; however, the rates remain unknown. We describe the prevalence and selected predictors of distress and worry among Indigenous cancer patients.

Methods: We interviewed 87 consecutive adult patients undergoing/commencing treatment in a Queensland hospital. Validated screening tools were used to assess their levels of distress (Distress Thermometer) and worry (Cancer Worry Chart).

Results: All participants were identified as Indigenous, 55 % were female, the average age was 52 years (19–78 years), and most were diagnosed with breast (22 %), head and neck (10 %), lung (9 %), and lymphoma/leukemia (9 %) cancers.

Fifty-nine percent of participants reported being moderately to severely distressed (median=6), and 52 % were moderately to extremely bothered by thoughts or worry about their cancer. There was substantial agreement between the two tools (κ=0.62). A higher proportion of younger patients (<45 years) reported distress (70 vs. 57 %) and worry about their cancer (65 vs. 48 %). Patients with lymphoma/leukemia reported higher levels of distress and worry.

Conclusion: Australian Indigenous cancer patients appear to have elevated levels of distress and worry compared to that reported in other patient groups. The rates were higher in younger participants and varied according to cancer type. Our findings underscore the need for further investigation.

870

Couple-coping within a cancer context: theoretical perspectives and measurement

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Objectives: There is increased recognition that patients and their partners react to the cancer diagnosis as an interdependent system. This presentation examines the theoretical frameworks used in the cancer literature to explicate couple-coping and the measures developed to operationalize this concept and proposes a pragmatic framework for implementing theories of couple-coping in future research.

Methods: A literature review of 65 studies that assessed couple-coping among patients with cancer and their partners was completed. Studies were identified through an electronic search of the CINAHL, ISI Web of Knowledge, PubMed, PsycInfo and Medline databases. The analysis of these studies was guided by the framework of concept analysis proposed by Morse et al. (1996).

Results: The three most commonly used frameworks of couple-coping were: attachment theory, relationship-focused coping and dyadic coping. Common adaptive couple-coping patterns described by these frameworks include open communication and emotional disclosure. Common maladaptive couple-coping patterns include overprotectiveness, distancing and minimising concerns. Each framework placed different emphasis on variables that influence the type of couple-coping used (e.g. stress appraisal and couples' behavioural/cognitive responses). Within each of these frameworks, various measures have been proposed to ascertain couple-coping in cancer.

Conclusions: The lack of a clear, overarching framework for understanding the complex relationships of couples' coping with cancer has stalled understanding as to how a couple-coping cancer framework may best predict adjustment for couples and how these can guide interventions. Based on systems theory, a more succinct and pragmatic frame work is proposed, which includes a focus on the reciprocal nature of stress communication and appraisal in cancer.

871

Dronabinol for the prevention of nausea from cyclophosphamide and/or adriamycin

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Background: Prevention of chemotherapy-induced nausea (CIN) remains challenging. Cannabinoids may reduce nausea.

Methods: Adult solid tumor patients receiving cyclophosphamide ≤1,500 mg/m^2 (C) and/or doxorubicin≥40 mg/m^2 (A) were eligible. Patients could have received prior mildly emetogenic chemotherapy (EC). Patients were not eligible who were receiving other moderately or highly EC; were receiving cranial, abdominal, or pelvic radiotherapy; had CIV/CIN with previous chemotherapy; had habitual cannabinoid use; had other causes for nausea/vomiting besides chemotherapy; or were scheduled to receive other antiemetics. All patients received palonosetron 0.25 mg and dexamethasone 10 mg IV before chemotherapy. Patients were randomized double-blind to receive dronabinol 5 mg (D) or matching placebo (P) three times a day for 5 days. Nausea, vomiting, and toxicity data were collected daily for 5 days.

Results: Sixty-two patients were entered in the study: female/male, 61:1; White/Black/Hispanic/other, 45:14:2:1; median age (range), 58 years (29–76 years). No significant difference was noted in CIV-

dependent end points (including no vomiting, complete response, or complete protection) or in rescue medication use. However, patients receiving D had a shorter duration of nausea—mean number of days of nausea, 1.86 vs. 3.10 days (D vs. P, $p=0.027$)—and a trend toward greater frequency of no nausea, 37 vs. 17 % (D vs. P, $p=0.143$). Common toxicities included fatigue (D/P, 17:11), headache (D/P, 16:16), dizziness (D/P, 14:7), constipation (D/P, 14:11), and diarrhea (D/P, 13:6).

Conclusion: Adding low-dose dronabinol to palonosetron and dexamethasone decreased the duration of chemotherapy-induced nausea in patients receiving cyclophosphamide and/or adriamycin.

872

Modafinil for fatigue associated with docetaxel-based chemotherapy: a randomized controlled trial

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Aims: Chemotherapy-induced fatigue is common for patients with cancer. We investigated whether modafinil could reduce fatigue in patients on chemotherapy.

Methods: A multicenter, randomized, double-blind, placebo-controlled, parallel-group study was conducted in patients with metastatic prostate or breast cancer suffering significant chemotherapy-related fatigue whilst undergoing docetaxel-based chemotherapy. Patients were enrolled at the start of their third or subsequent cycles of docetaxel which was continued for up to four further treatment periods. Patients were randomized 2:1 to receive modafinil 200 mg/day or placebo for 15 days during each treatment period. Fatigue was evaluated by the MD Anderson Symptom Inventory (MDASI). The primary end point was MDASI area under the curve (AUC) during the first 7 days of study medication for the first two treatment periods.

Results: Eighty-three patients were randomized and received at least one dose of study medication.

Treatment period	Least squares mean Placebo (N=28)	Modafinil (N=55)	Difference (95% CI)	P
1 and 2 (primary end point)	39.6	35.9	−3.7 (−8.9, 1.4)	0.15
1	39.4	38.0	−1.4 (−7.0, 4.2)	0.62
2	40.1	33.7	−6.4 (−12.2, −0.6)	0.03

MDASI AUC3-10 scores—first two treatment periods

The toxicity profile was largely consistent with docetaxel-based chemotherapy and with previously reported adverse events associated with modafinil use.

Conclusion: Managing chemotherapy-related fatigue remains a major challenge. Despite not reaching the primary end point, there was a consistent trend towards improvement of chemotherapy-related fatigue in the modafinil arm. Further studies are needed to better understand the implications of these findings.

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873

Rehospitalization rates among older cancer patients

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Background: Readmission rates have become a focal point for policy makers and payers to potentially improve quality and reduce costs. To date, most of the attention has been on the most common conditions contributing to rehospitalizations, such as heart failure and COPD. Less is known about rehospitalizations in the USA among those admitted with a principal diagnosis of cancer.

Methods: The study examined (1) patterns of rehospitalization among cancer patients 65 years of age and older and (2) the relationship between rehospitalizations and selected patient characteristics using 2007–2008 data from California, Florida, and New York State Inpatient Databases, Healthcare Cost and Utilization Project, and Agency for Healthcare Research and Quality.

Results: About one fifth of the 133,789 patients 65 years and older with cancer were readmitted within 30 days and almost one third readmitted within 90 days. The three most common diagnoses for within 30- and 90-day readmissions were metastatic disease, complications of surgical procedures or medical care, and cancer of the bronchus or lung. The three most common complications requiring readmission included postoperative infection, requirement of blood products, and hemorrhage related to an operative procedure. Significant independent patient predictors of rehospitalizations included African American race, male gender, and age ≥75 years.

Conclusions: Rehospitalization rates among older cancer patients are similar to those seen for CHF, MI, and pneumonia in the overall Medicare population; surgical/medical complications are the second most common reasons for readmissions. Care transition interventions to reduce post-hospitalization complications may improve outcomes for older cancer patients.

874

Prevalence of *mecA* on oral mucosa in patients undergoing hematopoietic stem cell transplantation

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Objectives: Severe oral mucositis occurring after hematopoietic stem cell transplantation (HCT) is associated with a risk of systemic infection related to bacteremia. We reported antibiotic-resistant bacteria detected on the oral mucosa frequently during the period of HCT and indicated an association between oral mucositis and antibiotic-resistant bacterial infection (2011 MASCC/ISOO Annual Meeting). Methicillin-resistant *Staphylococcus aureus* (MRSA) is one of the major causes of systemic infection, and colonization of the pathogen in the oral cavity may act as a reservoir for the antibiotic resistance gene, *mecA*. Here, we examine the frequency of *mecA* carrier in patients undergoing HCT.

Methods: Thirty-seven patients (20 males, 17 females; age, 16–67 years; median, 55 years) who received bone marrow transplantation were enrolled in this study. Buccal swab samples were obtained four times from day −7 to day +21 (once per week), and *mecA* was detected by PCR. Twenty-one healthy subjects (15 males, 6 females; age, 25–40 years; median, 30 years) were also enrolled as controls. The ethical committee of Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences approved this study, and informed consents were obtained from all of subjects.
Results: *mecA* was detected in 23 out of 37 patients (62 %), while the gene was not detected in healthy subjects (n=31). Detection frequency of *mecA* was significantly different (Fisher's exact test, p<0.001).
Conclusion: Bacteria colonized on the oral mucosa are a potential reservoir of *mecA* in patients undergoing HCT. Maintenance of good oral hygiene after HCT may contribute to reducing the amount of *mecA* in the oral cavity and MRSA infections.

875
The perspectives of Indigenous Australian cancer patients, their families and health workers on the use of tele-oncology as an acceptable model of care

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Background: Indigenous Australians are less likely to survive cancer than non-Indigenous Australians. Research into the use of telemedicine and video consultation (VC) techniques for Indigenous patients is limited.
Aim: We aimed to describe the responses of rural and remote Indigenous patients, their families and the health workers who participated in VC, and such tele-oncology services, from a tertiary referral centre.
Methods: Indigenous patients and their family member/s who participated in VC between 2007 and 2011 via Townsville Cancer Centre and accompanying health workers were invited to the study. Patients and family members recorded their responses on a five-point Likert scale of agreement to statements relating to four themes; health workers were asked open-ended questions.
Results: Nine of 23 Indigenous patients who participated in VC between 2007 and 2011 (13 had since died and one could not be contacted), two family members and six health workers were interviewed. Patients/family members strongly agreed/agreed to statements regarding satisfaction with the quality of VC (96 %); establishing satisfactory rapport with the specialist (97 %); benefits of VC over face-to-face consultation (97 %); and satisfaction with care received via tele-oncology (87 %). Health workers reported benefits for patients, educational value for themselves and closer working relationships with specialist teams. All groups indicated an overall preference for VC over face-to-face consultation.
Conclusions: Tele-oncology can assist in overcoming barriers to care by reducing travel costs, travel time and removal from support networks often experienced by Indigenous patients. High levels of satisfaction from participants suggest that tele-oncology is an acceptable model of care for Indigenous Australians.

876
'For the first month I was telling everyone i had melanoma': addressing the information needs of myeloma patients

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Objectives: Individuals diagnosed with multiple myeloma (MM) are faced with a cancer with no curative intent, significant heterogeneity, increasingly complex and advancing treatment schedules, and significant morbidities. As limited research has been undertaken examining the information needs of patients with MM, we aimed to identify the information and education needs of patients with MM in order to develop resources and programs addressing these needs.
Methods: An exploratory descriptive qualitative design was employed utilising individual and focus group interviews guided by a semi-structured interview schedule. No one directly involved in patient care was present. Interviews were audio-recorded and transcribed verbatim. Content data analysis was used. Forty-seven participants agreed to participate. Interested participants who could not attend the focus groups were offered individual interviews. For patients, range of time since diagnosis was from 6 months to 18 years.
Results: Managing uncertainty emerged as a predominant theme with a range of information seeking behaviours (HISB) utilised as coping mechanisms. Three major subthemes—contextualising, (to place, person, stage of disease); learning the culture (navigation, accommodating and assimilating, dynamic process); and managing toxicities (constant, compounding, impact on roles)—emerged as significant subthemes. Unmet needs seem to be more process- than content-driven.
Conclusions: Identifying accurate and appropriate information is a significant challenge for patients with MM. Specialist care coordination, led by a healthcare professional, can assist with navigating the complexities of multiple lines of therapy, significant predictable toxicities over remitting and relapsing course. Interventions assisting coordination are highly valued by patients.

877
Empowering health care workers regarding breast cancer prevention and control

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Seventy-two percent of the Indian population resides in villages and we have roughly 100,000 new cases of breast cancer annually, so the need of the hour is the training of healthcare workers working in villages at grass root level regarding the early detection and prevention of breast cancer.
Objectives: The objectives were:

1. To develop a self-structured teaching program (SSTP) regarding breast cancer and its prevention along with teaching the same to the experimental group
2. To demonstrate individually to each participant of the experimental group the correct method of performing BSE
3. To find out the effectiveness of SSTP with selected independent variables—age, class, type of community, qualifying examination, type of college, and self-perceived knowledge of breast cancer

Methods: A quasi-experimental research design was used on 150 BSN students (75 experimental and 75 control) studying in government and private nursing colleges of two different states of India. Purposive sampling was adopted; the tool consisted of 50 MCQs and six independent variables. First day pretest was taken by both groups, second day structured teaching program was given to the experimental group, and the fourth day posttest was taken by both groups. Sufficient distance was kept between both colleges to prevent contamination of results.

Results: There was no statistically significant difference in mean pretest and posttest knowledge scores of the control group (21.02 and 22.36) at the $p>0.05$ level, whereas the pretest and posttest knowledge scores of the experimental group (23.05 and 47.22) were highly significant at the $p<0.001$ level.
Conclusions: A structured teaching program regarding breast cancer raised the knowledge levels of the experimental group significantly.

878
Correlates of post-traumatic stress disorder (PTSD) and post-traumatic growth (PTG) in oncology populations: a systematic review and meta-analysis

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Objectives: The diagnosis and treatment of cancer is commonly viewed as a potentially traumatic event. This is supported by evidence showing that some individuals experience cancer-related post-traumatic stress disorder (PTSD) while others experience positive changes such as PTG. Although studies have suggested various correlates of PTSD and post-traumatic growth (PTG), these typically rely on small samples and produce findings that are widely variable. This paper will present the results of a systematic review and meta-analysis of studies examining the associations between such variables and symptoms of PTSD and PTG, respectively, in cancer patients.
Methods: A systematic review was conducted to identify eligible studies that used cross-sectional designs with samples of adult cancer patients and reported associations between proposed correlates and symptoms of PTSD and PTG. Random effects meta-analyses were used to synthesise the results.
Results: The systematic review identified $k=73$ studies that considered a range of correlates including age, gender, stage of disease, distress, perceived life threat, prior exposure to trauma, social support, optimism and physical quality of life. The current paper will present the best available estimate of the association between each risk factor and PTSD and PTG based on all studies. The degree of variability across studies will be examined, as will the clinical characteristics of studies that may explain any variation.
Conclusions: This review is the first to systematically examine the correlates of PTSD symptoms and PTG in oncology populations and provides the best available estimate of these associations based on all available data.

882
Measurement of lymphedema in the head and neck region

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Objective: Is it possible to use bioimpedance analysis (BIA) to evaluate the grade of interstitial lymphedema of the head and neck?
Methods: We have performed mono-frequent (50 Hz) BIA in 17 head neck cancer patients (16 men, one woman; mean age, 58.9±9.8 years) after finishing radiotherapy. The distance between both electrodes (medioclavicular and preparotid) was 15 cm. We measured resistance (Rz) and reactance (Xc) as markers of total body water and the capacity of cellular parts within the electrical field. The results were analyzed in relation to the clinical grade (0—none, 1—mild, 2—severe) of lymphedema of the neck region as a classical toxicity of irradiation.
Results: We included 33 measurements in 17 individuals. We have seen an inverse relation between the grade of lymphedema and the measured resistance ($p<0.05$): neck edema 0° ($n=17$), median Rz/Xc= 46/7Ω; neck edema 1° ($n=10$), median Rz/Xc=36.5/7Ω; neck edema 2° ($n=6$), median Rz/Xc=24/4.5Ω.
Conclusion: BIA may be a useful procedure to objectify the interstitial lymphedema of the neck region after finishing radiotherapy of head and neck cancer.

883
Association between body image concerns and weight loss among advanced cancer patients and their caregivers

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Background: Our aim was to examine associations between weight loss and body image for patients with advanced cancer and their caregivers.
Methods: Patients with advanced cancer and different levels of BMI, along with their caregivers, were recruited from a supportive care clinic. Patients' body image was assessed using Body Image Scale (BIS) and Multidimensional Body-Self Relations Questionnaire. Symptoms were assessed using Edmonton Symptom Assessment System (ESAS) and Hospital Anxiety Depression Scale (HADS). Caregivers were asked to assess patients' body image satisfaction and to rate their quality of life, their overall distress and distress regarding patient's weight using the Distress Thermometer (DT).
Results: We included 81 patients and 30 caregivers. Forty-eight (59 %) patients had experienced weight loss of at least 10 % of their usual weight during the previous 6 months. The mean BIS score for all patients was 11.23 (SD=7.24). BIS score was significantly correlated with weight loss ($r=0.26$, $P=0.020$), anxiety (HADS-A: $r=0.54$, $P<$ 0.001; ESAS anxiety: $r=0.356$, $P=0.001$), depression (HADS-D: $r=$ 049, $P<0.001$; ESAS depression: $r=0.41$, $P<0.001$), sexual interest ($r=0.30$, $P=0.009$), fatigue ($r=0.32$, $P=0.005$), and well-being ($r=$ 0.31, $P<0.001$). Caregiver BIS score was correlated with caregiver quality of life ($r=0.48$, $P=0.007$) and caregiver's distress regarding weight (DT: $r=0.54$, $P=0.002$).
Conclusion: Body image concerns were strongly associated with patients' weight loss and psychosocial distress in patients and their caregivers.

884
Patient–physician communication about code status preferences: a randomized controlled trial

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Purpose: Code status discussions are important in cancer. The best modality for such discussions has not been established. Our objective was to determine the impact of a physician ending a code status discussion with a question (autonomy approach) versus a recommendation (beneficence approach) on patients' do-not-resuscitate (DNR) preference.

Methods: Patients in a supportive care clinic watched two videos showing a physician–patient discussion regarding code status. Both videos were identical, except for the ending: one ended with the physician asking for the patient's code status preference and the other with the physician recommending DNR. Patients were randomly assigned to watch the videos in different sequences. The main outcome was the proportion of patients choosing DNR for the video patient.
Results: Seventy-eight patients completed the study. Seventy-four percent chose DNR after the question video and 73 % after the recommendation video (p=NS). Median physician compassion score was very high and not different for both videos (p=0.73). Thirty of 30 patients who had chosen DNR for themselves and 30 of 48 patients who had not chosen DNR for themselves chose DNR for the video patient (100 vs. 62 %, $p<$ 0.001). Age (OR=1.1/year, p=0.01) and white ethnicity (OR=9.43, p= 0.004) predicted DNR choice for the video patient.
Conclusion: Ending DNR discussions with a question or a recommendation did not impact DNR choice or perception of physician compassion. Both approaches are clinically appropriate. All patients who chose DNR for themselves and most patients who did not choose DNR for themselves chose DNR for the video patient. Age and race predicted DNR choice.

886

A randomized trial of supervised exercise versus print materials on muscle strength and function in prostate cancer survivors from radar

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Objectives: Androgen deprivation therapy for prostate cancer survivors is associated with reduced muscle strength, resulting in decreased function and increased morbidity. This study examined the effects of a 6-month supervised exercise program (EX) compared to print material (PM) on objective measures of muscle strength, physical functioning, appendicular skeletal muscle (ASM), and patient-rated function.
Methods: Forty-four men (58–85 years) from one site of the RADAR-Exercise Multicentre Trial were randomized to EX (n=19) or PM (n= 25) and undertook additional outcome measures including muscle strength (one repetition maximum), ASM (dual X-ray absorptiometry), physical functioning (chair rise time), and patient-rated functioning (EORTC QLQ-30). The EX group underwent supervised aerobic and resistance training twice weekly. The PM group was provided with a booklet prescribing aerobic and resistance exercise and a pedometer.
Results: At baseline, participants' testosterone was 13.5±8.2 nmol/L, with a PSA of 1.2±3.3 μg/L (mean±SD). Following 6 months, EX was superior to the PM for chest press (+7.2 %, p=0.029), leg extension (+17.6 %, p=0.001), seated row (+7.9 %, p=0.002), and ASM (+0.5 kg, p=0.026). EX showed improvement in chair rise time at 6 months (−5 %); however, the between-group changes were not significant (p= 0.198). Changes in patient-rated physical functioning, role functioning, and cognitive functioning favored EX (+4.8, +8.4, and +4.6, respectively); however, the between-group differences were not statistically significant (p=0.111, p=0.735, and p=0.257, respectively).
Conclusions: Our preliminary results indicate that supervised exercise training is superior to PM for improving muscle strength, function, and ASM in prostate cancer survivors previously treated with androgen deprivation.

887

Barriers to research in palliative care

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Aim: Our aim was to explore the barriers and difficulties faced by healthcare professionals (HCPs) involved in research in palliative care.
Method: We performed a cross-sectional descriptive study. We sent a questionnaire to physicians, nurses, and psychologists of every French palliative care team. The goal was to assess employment status, research activities, and the list of barriers to conduct research in palliative care. We sent the questionnaire to 1,374 identified HCPs.
Results: We obtained 382 (27.8 %) responses. One hundred twenty-one of 382 (31.7 %) HCPs were interested in a research project in the last 5 years versus 92 who were involved in a research project in the last 5 years. Only 71 of 382 (18.6 %) HCPs were currently involved in a research project in palliative care. Predictors for being involved in a palliative care research project were male gender (p=0.004), being a physician (p=0.02), in a university hospital ($p<$0.001), and working in a palliative care unit (p=0.05). The main barriers identified by the 121 HCPs interested in a research project were lack of time (110/121, 90.9 %) and financial resources (92/121, 76.0 %). Lack of methodological support and difficulty for patient accrual were also reported as major barriers, respectively 77 of 121 (63.6 %) and 80 of 121 (66.1 %).
Conclusion: Our study was declarative and anonymous, and we did not have the possibility to compare the number of publications of every HCP to their pattern of answer. More research is needed to confirm these results and on the best way for research development in palliative care.

888

A comparison between education before and after education about BSE with booklet in nursing and midwifery students in Islamic Azad University Karaj Branch

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Introduction: Breast cancer is the most common type of cancer among women worldwide, ranking second in mortality from cancer. Breast self-exam (BSE) is a screening method that should be taught at an early age so as to educate women about the importance of early detection of breast cancer.
Aim: The aim of this study was to evaluate the level of knowledge of midwifery and nursing students regarding breast self-examination after and before education.
Materials and methods: This study is descriptive of 29 midwifery and 30 nursing students. Data collection tool was a questionnaire that included questions about demographic characteristics and about knowledge of breast self-examination before and after education with booklet about BSE. Data were analyzed using descriptive statistics.
Results: Our results have shown average age to be 18–19 years, with the majority of the respondents being single (98 %) and twins (2 %). Our result showed no significant differences in midwifery and nursing knowledge ($p>$5 %). Students of midwifery and nursing after education showed significant differences ($p<$5 %).
Conclusion: It seems that despite the importance of BSE in the early diagnosis of breast cancer, the majority of women have poor knowledge and practice about BSE. Based on the positive attitude of most women about BSE, increasing knowledge of women by education of breast cancer, especially BSE, will be available with more attention of public health centers, TV, and newspapers for increasing women's awareness.

892

Serum syndecan-1 in multiple myeloma patients who received bisphosphonates and developed bisphosphonate-related osteonecrosis of the jaws (BRONJ)

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Objective: The objective of this study was to examine the value of soluble syndecan-1 in serum of multiple myeloma (MM) patients treated with bisphosphonates, the time that bisphosphonate-related osteonecrosis of the jaws (BRONJ) was developed, and 1 year after the development of BRONJ compared to controls.
Methods: Eight patients, aged 57–73 years, with MM who had previously received bisphosphonates were included in the study. All patients had been diagnosed with BRONJ, and the treatment protocol included antibiotics and topical antiseptics. Soluble syndecan-1 was determined by commercially available ELISA kit. Sera from ten healthy individuals were used as controls. For statistical evaluation, SPSS software (IBM, SPSS 17.0 software) was used.
Results: At the time of diagnosis, the mean soluble syndecan-1 of MM patients was 99 mg/ml, two times higher than that of controls (44 ng/ml). One year after diagnosis of osteonecrosis, the value of syndekan-1 has been three times higher compared to controls (143.5 vs. 44 ng/ml). The difference was statistically significant (p=0.008). One year after the diagnosis, all patients reported no pain; however, BRONJ has been increased in size in five patients. Syndecan-1 was increased in patients with progression in contrast to patients with stabilized BRONJ.
Conclusions: Soluble syndecan-1 in serum of MM patients 1 year after diagnosis of BRONJ was significantly increased when compared to the controls (p=0.008). Soluble syndecan-1 may play an important role in the healing process of BRONJ. Further studies are needed to evaluate the potential use of syndecan-1 as a prognostic and/or an early diagnostic marker of BRONJ.

893

A short tool to help oncologists to detect and treat depression

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Objectives: Major depression is frequent among cancer patients and remains underrecognized and undertreated, although it worsens quality of life. Systematic screening is recommended, but mainly aims to eliminate non-depressed patients. In order to improve depression diagnosis accuracy, oncologists and nurses must be able to detect depressive symptoms and evaluate their level, which they are found to poorly perform. Furthermore, studies find that the majority of patients who meet depression diagnosis criteria are not prescribed antidepressant or receive an inadequate dosage. We have planned to build French short guidelines to help oncological teams diagnose and accurately treat depression in daily practice, even in busy oncology settings.
Method: A literature review focused on depression screening and integrative care models has been performed by a group of experts, mainly senior psychiatrists in oncology. Guidelines have been then discussed with a multidisciplinary working group in a half-day workshop.
Results: First, we have established short guidelines recalling the wide impact of underrecognized depression, depression risk factors, French-validated screening tools, main clinical symptoms, models of care organization, and treatments. Second, we have built a decision tree summarizing how to detect and treat depression.
Conclusion: Guidelines and decision tree are being published and aim to be disseminated among oncological teams in the next few months. Evaluation will be made with a randomized trial to check whether it increases accurate depression diagnosis and treatment.

894

Management of secondary immunodeficiency (SID) under clinical practice conditions

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Objective: There is lack of robust data on the management and long-term outcomes of patients with primary or secondary immunodeficiency (PID and SID) treated with immunoglobulins (IgG).
Methods: This is an observational prospective cohort study. No exclusion criteria have been defined in order to minimise selection bias. Research questions include the relationship between the dosage, route of administration or IgG trough levels, respectively, and infection rates and other outcomes. Quality of life is measured every 6 months with detailed questionnaires (EQ-5D, WHO-5, FLZ-M, SF-36). Long-term tolerability of the various IgG preparations will be compared. Ancillary economic analyses will be performed. The study follows Good Epidemiological Practice standards and uses plausibility checks at data entry, queries and on-site monitoring with source data verification. Study identifier at ClinicalTrials.Gov is NCT01287689.
Results: As of 31 January 2012, 182 patients (of a total of 367 in the database) reported with SID, 53 % men, mean age of 63.6±14.9 years: 80 (44 %) had CLL, 46 (25 %) indolent lymphoma, 22 (12 %) multiple myeloma and 34 (19 %) another form of SID such as HIV infection or non-Hodgkin's lymphoma . The majority of patients had comorbidities (89 %). Disease duration since first symptoms was 6.3±9.6 years. Ninety-four patients (54 %) were newly treated with IgG (4 % unknown). In the last 12 months prior to baseline, 50 patients (29 %) had no infections, 8 serious bacterial infections (pneumonia, bronchitis, abdominal abscess), and 113 (66 %) general infections.
Conclusions: It is expected that SIGNS will contribute to the optimization of therapy in this diverse patient population.

896

Qatar's experience in palliative care: a 3-year review

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Objective: Palliative care is an essential part of cancer treatment. Specialized palliative care units are starting to be incorporated into advanced healthcare systems. Qatar opened its first ten-bed acute

palliative care unit in 2008 located in the National Center for Cancer Care and Research. The objective of this study was to report and analyze the patterns of admissions and discharges of the patients referred to this unit over a period of 3 years.
Methods: We retrospectively reviewed the medical records of all patients admitted to our unit from July 2008 to June 2011. The length of stay (LOS) was calculated from the day of admission to the unit to the day of discharge. The imaging studies were reviewed for evidence of metastasis. Statistical analysis was done using SPSS.
Results: A total of 223 patients were included in this study. The average age of the patients was 60.5 years, with 61 % below 65 years old. About half of the patients were men (51.5 %) and less than half (41.6 %) were local Qataris. Gastrointestinal malignancies formed the most common (34.5 %), and 88 % of the patients had metastatic disease. The average LOS per admission at this unit was 30.5 days. The LOS has no association with age, gender, or presence of metastasis. The in-hospital mortality in our unit was 61.7 %.
Conclusions: The LOS and mortality rates were higher than those reported in the literature. We attributed that to the lack of other models of palliative care in the country and to cultural factors.

897
Barrier to disclose the truth to cancer patients near death: single-center experience

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Purpose: To examine barriers to disclose death to cancer patients near death, we investigate the practice relating to the do-not-resuscitate (DNR) directive on their deathbed requiring DNR consent.
Methods: The records of 322 patients admitted into the dying room of Seoul National University from July 2006 to June 2009 were identified and reviewed to assess end-of-life (EOL) care and DNR delineation. All patients, except one who died from viral hepatitis, were diagnosed with malignancy. Demographic characteristics, EOL care, the DNR directive, and the time interval between DNR consent and death were evaluated.
Results: All DNR consents were made between the physician and family without involving the patient. In total, 240 patients made written DNR consents and 81 patients made a verbal promise of DNR. Terminal CPR was performed on seven patients. DNR directives were enacted at a median of 1.8 days (95% CI=1.41–2.11) before death. DNR discussion was made within 3 days of the day of death on 35 %.
Conclusions: The DNR decision by proxy might be performed within the last days of the patient's life in Korea. Physician should disclose death to cancer patients in advance and lead to patients' participation for their EOL.

898
Self-reliance and perception of psycho-oncology service needs among distressed women with gynaecological cancer

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Aims: Our aim was to explore the use of psychosocial services by distressed women diagnosed with gynaecological cancer, including motives for accepting or declining referral to specialised psychological services.
Methods: A convenience sample of 20 women recently diagnosed with a gynaecological cancer who scored at least 4 on the Distress Thermometer was recruited from a gynaecology oncology outpatient clinic in Newcastle, Australia. Participants' semi-structured interviews were audio-taped, transcribed verbatim and coded using a grounded theory framework.
Results: Women who declined psychological support reported being most distressed by side effects and prioritised practical informational support to manage these. Whilst these women reported a range of worries and emotions, many spoke about their needs to cope with these on their own and 'move on'. Many relied on their existing social support networks or other community resources and did not believe that psychological support could add. Few thought they would accept psychological support if their emotions became unmanageable. In contrast, women who accepted psychological support felt this was their 'buoy' as they struggled to cope. Many lacked social support, were managing concurrent life stressors and/or felt their repertoire of coping skills was insufficient to 'remain afloat'. These women found relief in being able to 'talk things through' and consider options to cope.
Conclusion: Many women who declined support wanted to overcome cancer challenges independently. Self-reliance has not been typically considered in studies examining the use of psychological support. The findings suggest the regular follow-up with women who refuse referral is important for monitoring the efficacy of their coping strategies.

900
Evaluation of predictors of adverse outcome in febrile neutropenic episodes in pediatric oncology patients

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Introduction: Febrile neutropenia is an oncologic emergency and is the second most common admitting diagnosis among pediatric oncology patients, second only to admissions for chemotherapy.
Objectives: The objectives of the study were to identify predictors associated with adverse outcomes in febrile neutropenic episodes among pediatric oncology patients between 1 and 18 years age and to ascertain the prevalence of invasive infection (bacterial or fungal)/mortality in febrile neutropenic episodes in pediatric oncology patients.
Methods: It was an observational, descriptive study wherein pediatric oncology patients with febrile neutropenic episodes were enrolled. Relevant history was taken and detailed clinical examination was done for all patients. Investigations included chest X-ray, detailed hemogram, and blood cultures for all patients. All details were recorded on a proforma. Logistic regression analysis was used to identify significant predictors of adverse outcome in febrile neutropenic episodes.
Results: Of the 155 febrile neutropenic episodes studied, adverse outcomes occurred in 53 of the episodes. The history of three or more previous episodes of febrile neutropenia, child being already on oral antibiotics, and chest X-ray abnormality at presentation were found to be significantly associated with adverse outcome after multivariate logistic regression analysis. Documented invasive bacterial infection was seen in 27.8 %, fungal infection in 14.2 % of episodes, and mortality in 5 % of episodes.
Conclusions: On multivariate analysis, the variables significantly associated with adverse outcome in febrile neutropenic episodes were: three or more previous episodes of febrile neutropenia, child being already on oral antibiotics, and chest X-ray abnormality at presentation.

901

Lacrimal drainage obstruction in gastric cancer patients receiving S-1 chemotherapy

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Purpose: Our purpose was to determine the incidence and clinical characteristics of lacrimal drainage obstruction (LDO) in patients receiving S-1 chemotherapy.
Patients and methods: Consecutive 170 patients with gastric cancer (GC) who underwent curative surgery and received adjuvant S-1 chemotherapy were enrolled. S-1 was administered orally (40 mg/m^2 b.i.d. on days 1–28 every 6 weeks) for 1 year. Ophthalmologic examinations were performed on patients complaining of epiphora after S-1 chemotherapy.
Results: Thirty-one patients (18.2 %) developed epiphora. The 1-year cumulative incidence of epiphora was 17.3 %. Among the 31 patients, 25 underwent ophthalmologic examinations and 22 (88.0 %) were diagnosed with LDO. The median time to the onset of LDO was 2.9 months (95% CI=1.6–4.0 months, range=0.7–6.8 months). The most common site of obstruction was the nasolacrimal duct (86.4 %, 19/22); punctal occlusion (22.7 %, 5/22) and canalicular obstruction (13.6 %, 3/22) were also noted. In multivariate analysis, total gastrectomy [vs. partial gastrectomy: hazard ratio (HR)=2.9, 95% CI=1.2–6.7, P=0.014] and creatinine clearance<50 mL/min (vs. ≥50 mL/min, HR=2.9, 95% CI=1.1–7.9, P=0.038) were independent risk factors for the development of LDO. S-1-induced LDO was not spontaneously improved even after completion of S-1 therapy and required surgical intervention (lacrimal silicone intubation±punctoplasty) for symptom improvement.
Conclusions: Considering the high incidence of LDO in patients receiving S-1 chemotherapy, oncologists should be alert to epiphora and cooperate with ophthalmologists in the early stages to improve the quality of life of patients and avoid more complicated ophthalmologic procedures.

902

A new classification for potentially malignant disorders of the oral cavity

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Introduction: Oral potentially malignant disorders (OPMDs) of the oral cavity were classified as "lesions" and "conditions" by the WHO in 1978. The current Working Group (WHO) does not favor such subdivisions and refers to all the clinical presentations that carry the risk of oral squamous cell carcinoma (OSCC) as "OPMD." Many disorders have been reported in the literature carrying the risk of malignant transformation. But efforts for grouping these OPMDs are missing in the literature.
Objectives: Literature search to find out various disorders that carry the risk of OSCC was conducted to propose a new classification system for OPMDs.
Material and methods: Information was found by an electronic search of PubMed using the terms "oral squamous cell carcinoma transformation," "oral potentially malignant disorders," "oral precancerous lesion," and "oral precancerous condition."
Results: The various groups designed in this classification are as follows:

Group I: Morphologically altered tissue in which the external factor is responsible for the etiology and malignant transformation

Group II: Morphologically altered tissue in which chronic inflammation is responsible for malignant transformation (chronic inflammation-mediated carcinogenesis)

Group IIa: Chronic inflammation caused by internal derangement

Group IIb: Chronic inflammation caused by external factors

Group III: Inherited disorders that do not necessarily alter the clinical appearance of local tissue, but are associated with a greater than normal risk of PMD or malignant transformation

Group IV: No clinically evident lesion, but oral cavity is susceptible to OSCC

Conclusion: The proposed classification has a pathogenetic base and thus can be proven to be useful for therapeutic implications.

904

Interregional guideline of management of secondary lymphedema of the upper limb after breast cancer

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Introduction: The frequency of secondary lymphedema after breast cancer is about 15–28 % after axillary dissection and 2.5–6.9 % after sentinel node technique. Patients with lymphedema have over women free of it, deteriorated quality of life, more limited physical abilities, and a greater psychological distress. Prevention, early diagnosis, and staging assessment are difficult in daily oncology services. Management needs a multidisciplinary approach.
Objectives: Our objective was to elaborate a guideline to the decision making and management of lymphedema.
Method: In accordance with the procedure of the AFSOS [1], the study involved constitution of an interregional working group including oncologists, surgeons, physiotherapists, supportive care specialists, nurses, and other professionals involved in the treatment or management of lymphedema.

- Analysis of the literature published on this question
- Several phone meetings allowing circumscribing the question and defining the methodology and elaborating a work plan
- Presentation and debate about the work during the national supportive care guidelines sharing days, organized by AFSOS on December 2nd and 3rd, 2011Integration of modifications and validation by consensus in a plenary session
- Integration of modifications and validation by consensus in a plenary session

Result and conclusion: A shared interregional and multidisciplinary guideline is a very useful tool to help teams prevent, assess diagnosis and staging, and build decisions of treatment and support (combination treatment compression, bandaging).
[1] French Association of Supportive Care in Oncology

905

Comparison of "sandwich chemoradiotherapy" and six cycles of chemotherapy followed by adjuvant radiotherapy in patients with stage IIIC endometrial cancer: a single-center experience

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Purpose: We aimed to compare "sandwich chemoradiotherapy" with six cycles of chemotherapy followed by adjuvant radiotherapy with respect to tolerability and acute toxicity.
Methods and materials: Twenty women with surgically staged IIIC endometrial cancer were included into the study. Treatment consisted of either three cycles of paclitaxel (175 mg/m²) and carboplatin (AUC=6) on a q21 day schedule followed by irradiation (45 Gy)± brachytherapy or six cycles of the same chemotherapy followed by radiotherapy. We assessed the acute toxicity related to either chemotherapy or radiotherapy.
Results: Median age was 62 years (range, 36–83 years). Ten patients had sandwich chemoradiotherapy and others had radiotherapy after six cycles of chemotherapy. There were seven (35 %) non-hematologic, eight (40 %) grade 3, and four (20 %) grade 4 hematologic toxicities related to chemotherapy. There were 13 (65 %) and 17 (85 %) grade 1 and 2 genitourinary and gastrointestinal toxicities during the course of radiotherapy, respectively. Nine of the patients had pelvic and para-aortic radiotherapy and five of them had sandwich chemoradiotherapy. Three of the patients who underwent sandwich chemoradiotherapy with the pelvic–para-aortic region could not complete all the chemotherapy cycles. Unplanned treatment breaks because of acute gastrointestinal toxicities during radiotherapy were present for six patients, and four of them had sandwich chemoradiotherapy with the pelvic and para-aortic region.
Conclusion: Sandwich chemoradiotherapy seems to be more toxic particularly for patients who had pelvic and para-aortic irradiation. Therefore, it might be more convenient to delay radiotherapy after six cycles of chemotherapy for patients with indications of pelvic–para-aortic radiotherapy.

906
Psychological distress and care needs in early-stage lung cancer patients—age group comparisons

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Objectives: The purposes of this study were to explore and compare the differences of psychological distress and supportive care needs in early-stage lung cancer patients with different age groups.
Methods: A cross-sectional design was conducted to recruit 149 post-operative early-stage lung cancer patients from a medical center in Taiwan. The Hospital Anxiety and Depression Scale Chinese version; Supportive Care Needs Survey, Chinese version; and Background Information Form were used to collect data. Analysis of variance was used to analyze data in three age groups (≤50 years, 51–60 years, and ≥61 years).
Results: The major results showed:

1. The distribution of age groups (younger than 50 years, 51–60 years, and older than 61 years) and the percentages were 14.1, 36.9, and 49.0 %, respectively.
2. The youngest group had a significantly higher anxiety level than the other two groups.
3. Generally, patients reported to have relatively higher care needs in health system/information domain across all age groups.
4. Patients in the "younger than 50" group reported higher supportive care needs, especially in psychological and sexuality domains.
5. Patients in the 51- to 60-year-old age group reported higher supportive needs in physical and daily living than in the older group.

Conclusions: This study suggests that age differences should be concerned for providing tailoring supportive care interventions to fit in early-stage lung cancer patients' care needs. Future research to test the intervention by age groups is suggested.

907
Chemotherapy-induced nausea and vomiting: validation of inter-regional guidelines

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Introduction: Chemotherapy-induced nausea and vomiting (CINV) affect patients' quality of life, professional, social, and daily life activities. CINV could be prevented or significantly controlled by antiemetic drugs and non-drug treatment. As patients are still dreading CINV, providing an optimal antiemetic prevention remains a major goal of supportive care in cancer patients.
Objectives: The objective was to spread antiemetic guidelines to French cancer physicians and caregivers in order to improve prevention of CINV.
Method:

- In accordance with the procedure of AFSOS (French Association of Supportive Care in Oncology), the creation of an interregional task groups including oncologists, pharmacists, physicians, nurses, supportive care specialists, and other professionals involved in the prevention or treatment of CINV
- Analysis of the literature published on this issue
- Several meetings to define the methodology and to draw up a work plan
- Presentation and discussion during the national supportive care guidelines sharing days, organized by AFSOS on December 2nd and 3rd, 2011
- Corrections then validation in plenary session

Result and conclusion: Based on decision-making tools (synoptic tables, decision trees), guidelines specify antiemetic prophylaxis according to the emetogenic potential of chemotherapy. Validated by each of the interregional task group, these French antiemetic guidelines would be widely implemented in France through AFSOS and interregional groups.

908
Percutaneous cryoablation and ^{125}I seeds implantation combined with chemotherapy for the treatment of advanced pancreatic cancer: reports of 96 cases

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Objective: The objective of this study was to assess the efficacy and the safety of percutaneous cryoablation (PCC) and ^{125}I seed

implantation combined with chemotherapy in the treatment of advanced pancreatic cancer.
Methods: Ninety-six patients (58 men; average age, 56.9 years) with advanced pancreatic cancer (55 with pancreatic head cancer, 80 in stage IV) who underwent PCC and ^{125}I seed implantation combined with concomitant chemotherapy (gemcitabine hydrochloride and DDP) were analyzed. One hundred and seventeen percutaneous procedures of cryosurgeries combining ^{125}I seed implantation were performed. Clinical benefit response, therapy-related complications, post-cryoablative CT imaging, and the survival rates were assessed.
Results: Eighty-seven patients were followed up successfully. Median survival was 10.5 months, and 6-month and 1-year survival rates were 69.6 % (stage III vs. IV, 66.7 vs. 71.4 %) and 43.1 % (stage III vs. IV, 50.0 vs. 40.1 %), respectively. The maximum survival reached 47 months. CR, PR, and SD were achieved in 9, 26, and 53 patients, respectively. Sixty-eight and 63 in 79 patients experienced a ≥50 % reduction of pain score and analgesic consumption, respectively, 26 patients experienced a ≥2 kg weight gain, and average KPS increased significantly ($P<0.05$). No serious therapy-related complications except pancreatic fistula accompanied abdominal hemorrhage, bile leakage, acute pancreatitis, and ^{125}I seeds left in the needle track occurred in one, one, two, and in one case, respectively.
Conclusion: PCC and ^{125}I seed implantation combined with chemotherapy are effective and safe for the treatment of advanced pancreatic cancer.

909
Australian survey of current practice and guideline use in adult cancer pain assessment and management: perspectives of oncologists and hematologists

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Objectives: Cancer pain continues to be undertreated despite the availability of evidence-based guidelines. This study aimed to:

1. Inform understanding of barriers and facilitators to adult cancer pain assessment and management as perceived by Australian oncologists and hematologists
2. Identify perceived need for new Australian guidelines and implementation strategy
3. Find out which guidelines are used
4. Inform understanding of barriers and facilitators to guideline use

Methods: A survey was administered using a secure online platform. Invitations were circulated via peak bodies and clinical leaders. Comments were coded independently by two researchers.
Results: Seventy-five oncologists/hematologists responded. Evidence-based practices were reported to be widely implemented, except validated pain scales. Perceived barriers included insufficient non-pharmacological interventions, access to and coordination between services, and time. Only 24 % of the respondents reported using guidelines. The Australian *Therapeutic Guidelines—Palliative Care* and the US *National Comprehensive Cancer Network Clinical Practice Guidelines in Oncology—Adult Cancer Pain* were the most widely used and familiar to respondents. Perceived barriers to guideline use included lack of access, awareness, and any single standard. Respondents were generally supportive of new Australian guidelines, especially an implementation strategy.
Conclusions: Barriers to evidence-based practice and guideline use identified by our survey might be best addressed via a clinical pathway that gives instructions on how to implement guidelines along with a framework for evaluation. Particular attention should be paid to promoting validated scales, patient education and non-pharmacological interventions, advocacy for and training of an appropriately skilled workforce, and improving care coordination. Challenges will be discussed.

910
GanSui BanXia Tang for the treatment of lymphedema in breast cancer: three case reports

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Introduction: The treatment of complementary and alternative medicine is common, varied, and considered to be effective among women with lymphedema in breast cancer. Lymphedema is a condition characterized by impaired drainage of lymphatic fluid, commonly resulting to swelling and skin changes. In ancient Chinese medicine, there were records about the remedy of excessive fluid accumulated in the body. GanSui BanXia Tang is one of these remedies. The ingredients of the formula "GanSui BanXia Tang" are Euphorbia kansui (GanSui), Rhizoma Pinelliae Ternatae (BanXia), Radix Albus Paeoniae Lactiflorae (BaiShao), and licorice root Radix Glycyrrhizae (ZhiGanCao).
Aim: Clinically, we used GanSui BanXia Tang for several patients who suffered from stage 0 to stage I lymphedema in breast cancer and recorded the following process of patients' symptoms and signs after taking the herbal medicine. Furthermore, interactions between the Chinese herbs will also be discussed after the case reports.
Case report: Three cases, women aged between 40 and 55 years, had breast cancer and suffered from modified radical mastectomy with chemotherapy or hormone therapy. However, they complained of feelings of heaviness in the upper limbs. There was no fracture or trauma history before. They had tried self-administered massage and pain control, but in vain. After taking GanSui BanXia Tang, the feeling of heaviness and pain were improved after 1–2 weeks.

911
Fear of recurrence in early-stage lung cancer survivors

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Objectives: The purpose of this study was to examine the incidence, severity, and interference of fear of recurrence (FOR) and the relationships among FOR, symptoms, anxiety, self-efficacy, and quality of life in early-stage postoperative lung cancer patients.
Methods: A cross-correlational study was conducted to 122 eligible patients. Instruments used included:

1. Fear of Recurrence Subscale in "Patient Concern Inventory"
2. Anxiety Subscale from Hospital Anxiety and Depression Scale
3. Cancer Behavior Inventory (for measuring self-efficacy on coping with cancer)
4. EORTC—Core Quality of Life Questionnaire (QLQ-30)

Data were analyzed by descriptive statistics and Pearson's correlation analysis.
Results: The major results were:

1. The incidence of FOR was 66.4 %.

2. The top 3 concerns (severity) of FOR were: "I am afraid that my cancer may recur," "I am worried or anxious about the possibility of cancer recurrence," and "Frequency to worry about the possibility of getting cancer again?"
3. Patients reported to have mild to moderate levels of life interference by thinking of FOR.
4. Patients who had higher levels of FOR were reported to have higher levels of fatigue, pain, anxiety, and lower levels of self-efficacy and quality of life.

Conclusions: Fear of recurrence is an important issue in early-stage lung cancer survivors. Clinically, this concern (FOR) should be assessed and intervened to support lung cancer survivors. Skills to better coping with cancer should also be included in future intervention in helping patients deal with FOR and its interferences.

912
Greek cancer patients' related barriers to pain management: a pilot study

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Background and aims: About 70 % of cancer patients experience median or severe pain. Healthcare professionals, healthcare system, and patients are recognized as the main barriers in good cancer pain management. This pilot study explored Greek patients' barriers to cancer pain management and the factors associated with them.
Methods: The convenience sample consisted of 31 patients hospitalized in a metropolitan oncology hospital in Athens. Patients' inclusion criteria included cancer diagnosis, written informed consent, administration of systematic analgesic medications, and no surgery over the last month. Patients completed the following instruments: Patient Pain Questionnaire, Barriers Questionnaire—II, and two open-ended questions regarding factors promoting or impending pain relief. Demographics and clinical characteristics of disease, antineoplasmatic treatment, and analgesic medication were obtained from patients' files.
Results: Fear of addiction (2.6±0.2), tolerance (2.6±1.4), and "be good" patient (2.6±2.3) were the main patient-related barriers to pain management. On the contrary, fear of covering disease symptoms (1.6±1.6), distraction of doctor from the cure of disease (0.8±0.8), and fatalism (4.0±1.5) were the minor barriers. Patient-related barriers were not associated with any demographics, clinical characteristics, or analgesic medications ($p>0.050$). Almost half (51.6 %) of the patients reported that only analgesics could sufficiently alleviate cancer pain and 48.4 % that bad mood imbedded pain management. Patients' knowledge regarding pain management was positively related to pain management barriers ($\rho=0.42$, $p=0.018$).
Conclusions: Despite this study results being in agreement with those in the bibliography, further research is needed to clarify factors related with Greek cancer patients' related barriers to pain management.

913
Morbidity profile of childhood cancer survivors in India: a need for cancer survivor clinics

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Background: The increased survival of childhood cancer is at the cost of various long/late effects of cancer treatment. We report data from our cohort of childhood cancer survivors being followed at the pediatric cancer survivor clinic for long/late effects of cancer therapy.
Methodology: Treatment details are noted in detail. Investigations pertaining to the primary disease are done. Growth is monitored and transfusion-related hazards are assessed. A psychosocial and IQ assessment and systemic evaluation are done. Myocardial function and thyroid profile is done when required.
Results: This clinic is ongoing and the current data reflect those of 300 patients. The median age at evaluation was 9 years and of follow-up was 3.5 years. Male-to-female ratio was 4.6:1. Twenty-five percent of patients had height less than the third centile and 26 % patients had weights less than the third centile. Six had transaminitis; one died of liver failure. One hundred ten patients received blood component therapy, of which 22 patients were positive for hepatitis B antigen. Eleven patients relapsed on follow-up, of which five expired; 25 % had normal IQ. All were poor in arithmetic skills, memory, and comprehension. Behavioral problems were frequent. Myocardial dysfunction was identified in 4 %.
Conclusion: This clinic reflects a need for multimodal evaluation. Longer follow-up will highlight the morbidity profile, identify patients at risk, and develop programs for educating survivors on positive lifestyle patterns. This will also establish the trend of second malignancies in our population and define what constitutes optimal surveillance for these patients.

914
The efficacy of CT-guided percutaneous cryoablation in lung cancer

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Objective: Our objective was to evaluate the efficacy of computed tomography (CT)-guided cryoablation in the treatment of lung cancer.
Methods: From January 2002 to April 2006, 816 patients (568 men and 248 women) with primary or metastatic lung cancer were treated with cryoablation. A total of 1,139 cryoablations were done for 1,014 lesions. CT or PET/CT was rechecked and the Karnofsky Performance Status (KPS) reappraised every 1–3 months and followed up every 3 months.
Results: There were 1,006 lesions (68.3 %) which decreased in size, with mean size reduction from 4.7±0.3 to 3.5±0.4 cm in diameter (CR+PR+SD) in 91.2 %. Tumor activity of all lesions decreased or deactivated. Patients showed obvious improvement after treatment, with KPS increasing from 77.8±9.3 to 85.92±7.8 ($t=4.368$, $P=0.000$). Among 202 patients with peripheral lung cancer and chest wall invasion who complained chest pain pre-cryoablation, 40 patients (19.8 %) showed complete pain relief after cryoablation and 124 patients (61.4 %) showed partial pain relief, respectively. The overall survival rates were 70.2 % for 1 year and 54.1 % for 2 years. The 1-year survival rates were 100.0, 93.5, 84.1, 57.6, and 49.0 %; the 2-year survival rates were 100.00, 81.36, 71.27, 48.19, and 38.48 % for patients in stages I–IV of primary lung cancer and metastatic lung cancer, respectively.
Conclusions: CT-guided cryoablation showed some efficacy in controlling the progress of lung cancer and may contribute to pain relief and prolong survival for lung cancer patients.

915
Different oral mucosal microcirculatory response in two separate chemotherapy regimens

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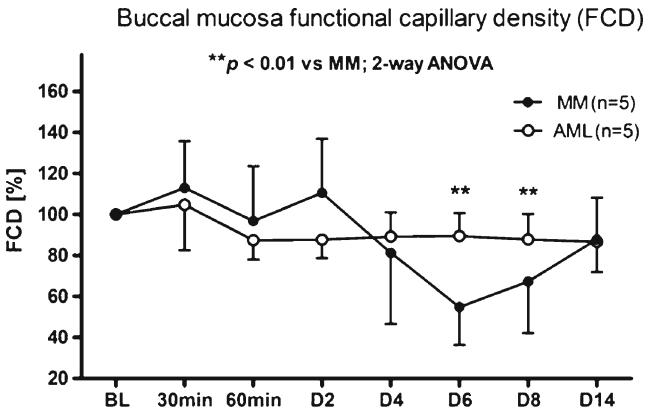
Objectives: It is believed that changes in the subepithelial microvascular endothelium precede epithelial damage and are conducive to dysfunctional mucosal perfusion, resulting in oral mucositis. The aim of this study was to compare microcirculatory changes associated with two different chemotherapy regimes.
Methods: Patients with acute myeloid leukemia (AML; $n=5$) and multiple myeloma (MM; $n=5$) who underwent first time chemotherapy treatment with cytarabine/idarubicin and melphalan, respectively, were included. Prior to drug infusion, baseline right buccal mucosa functional capillary density (FCD) and subsequent post-infusion repeated measurements were obtained at 30 and 60 min and on days 2, 4, 6, 8, and 14 with sidestream darkfield imaging. FCD data were converted into percentages, and a grouped two-way ANOVA for repeated measurements was used to compare measurements between the groups.
Results: Baseline and subsequent FCD measurements revealed no statistically significant differences between the groups for all time points up to day 4 and on day 14. On days 6 and 8, a statistically significant difference in FCD (34 %, $p<0.01$, and 21 %, $p<0.01$, respectively) was found between the MM versus AML groups (see figure).
Buccal mucosa functional capillary density (*FCD*)



Conclusions: Quantifying FCD revealed early alterations in tissue microcirculatory perfusion associated with two different cytostatic regimens in the buccal mucosa.

916
How women with breast cancer find, evaluate and use online health information

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Introduction: The Internet is a growing source of information, yet little is known about how women with breast cancer find, evaluate and use online health information.
Aim of study: The aim of this study was to investigate how women with breast cancer find, evaluate and use online health information.
Design: A quantitative, descriptive, correlational study was undertaken. A questionnaire package consisting of 17 questions was administered to a convenience sample of women having received a diagnosis of breast cancer ($n=174$).
Results: Both hospital doctors and nurses were rated highly as sources of information; over half of the participants (62.6 %) used the Internet to source health-related information. Patients scored a high mean score (mean=3.65, SD=1.337) in relation to a self-assessment of their online cancer information competence. Barriers to using the Internet for accessing health information included: difficulties in assessing the quality of information available online, searching online being time-consuming, the Internet being too impersonal, difficulties in assessing the quality of the information online, intruders may easily get access to private information, the price of the Internet, difficulties with accessibility, difficulties using information and communication technology, and difficulty in understanding the information accessed on the web.
Conclusion: A large proportion of patients used the Internet to source health-related information. Internet use improved patients' knowledge about breast cancer, and the majority of patients who used the Internet to access health-related information felt that they were competent at using the Internet to source online health information.

918
Gynaecological cancer survivors' experiences of a physical activity intervention: a focus group study

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Objective: The objective was to explore the experiences of gynaecological cancer survivors who experienced fatigue and participated in a randomized controlled trial testing the feasibility and efficacy of a physical activity behavioural change intervention ($n=33$).
Methods: Four focus groups were conducted with a total of 16 participants post-intervention (physical activity group, $n=9$; contact control group, $n=7$). A structured interview guide was followed by an independent moderator.
Results: Four key themes emerged: including

(a) A range of programme benefits
(b) Important programme features
(c) Ways to improve the programme
(d) Need for information

One of the most unanimously perceived benefits of taking part in the programme regarded participants' psychological well-being. Additional benefits included improved physical fitness and functioning, and body shape changes. Important programme features included the weekly telephone calls from a physiotherapist, the patient professional relationship, feedback and goal setting. Participants' own motivation and programme timing were also important factors. Suggestions for improvements include: opportunities for social interaction with other gynaecological cancer survivors within the home-based design as well as more general advice, greater exercise choice and abdominal strengthening exercises.
Conclusion: This qualitative study evaluated gynaecological cancer survivors' views of a physical activity intervention. The findings suggest that women with gynaecological cancer perceive participation in physical activity as highly important and report benefits in relation to their physical and psychological well-being. Support for continuation of many of the current features of the tested programme was provided. However, it could be improved by providing opportunities for peer support and multi-professional sources of information.

919

Palliative care in patients with recurrent vulvar carcinoma: consider the intrathecal catheter for pain relief

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Objective: Recurrent vulvar carcinoma tends to spread locally before widespread metastases occur, and like most incurable cancers, pain control is often the most difficult issue. An intrathecal catheter (ITC) for morphine and bupivacain application is an option for pain relief. We report a case series of patients who received an ITC as part of their palliative treatment for recurrent vulvar carcinoma.
Methods: This is a retrospective chart review of four patients of the Radboud University Medical Centre Nijmegen, the Netherlands. All patients underwent vulvectomy with groin node dissection and postoperative radiotherapy on the pelvis for inguinofemoral lymph node metastases. Unfortunately, all developed incurable locoregional recurrence of disease and received a tunneled ITC with bupivacain and morphine for refractory pain.
Results: Time of insertion of an ITC after the start of palliative care treatment varied from 1 to 8 months. On admission, the Numeric Rating Score (NRS) for pain varied from 7 to 10; after placement, NRS decreased to 1–3. Three patients were discharged 5–7 days after placement and one patient died 11 days after placement in the hospital. All patients used the ITC until they died (range, 11 days to 4 months). No serious adverse events occurred.
Conclusion: Pain control in locally advanced incurable vulvar carcinoma patients is a dominant issue in palliative care treatment. ITC seems to be a good option for pain relief in patients with refractory pain. Although patients receive an invasive method of pain treatment, they can be treated ambulatory at home or in a hospice.

920

The quest for a targeted and parsimonious measure of symptom benefit for clinical trials of patients with ovarian cancer

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Background and aims: The objective of chemotherapy for platinum-resistant/refractory recurrent ovarian cancer is palliation. Objective response rates are low, and it is unclear how many patients derive symptomatic benefit. There is now international consensus that response rates alone are an inadequate measure of palliation and that a validated measure of subjective improvement is required. The aim of the Gynecologic Cancer InterGroup Symptom Benefit Study (GCIG-SBS) was to determine an optimal measure of subjective benefit for this patient group.
Patients and methods: Data from stage 1 of GCIG-SBS identified symptoms that patients found most bothersome in the week before starting chemotherapy. These were mapped to the best available candidate measures of health-related quality of life for this patient group: the EORTC core QLQ-C30 and ovarian-specific QLQ-OV28, and the Functional Assessment of Cancer Therapy—Ovarian (FACT-O) and FACT—Ovarian Symptom Index (FOSI).
Result: While the two EORTC measures together provide comprehensive coverage of relevant symptoms, they split into numerous scales and so do not provide a parsimonious measure of symptom benefit. Conversely, the FACT-O and FOSI do not cover all relevant symptoms and contain other HRQOL-related items and treatment side effects, which dilute the ovarian cancer-specific symptoms when summed into total scales.
Conclusions: These findings motivated the development of the Measure of Ovarian Cancer Symptoms and Treatment Concerns (MOST), a new questionnaire which we hypothesize will provide targeted and parsimonious measurement of symptom benefit for clinical trials of treatment for ovarian cancer. The MOST will be validated in stage 2 of GCIG-SBS.

921

Symptoms clusters in patients with advanced cancer

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Introduction: Clusters approach may target multiple symptoms simultaneously, resulting in therapeutic benefit. This study describes the symptoms of patients undergoing palliative care (PC) and symptom clustering.
Method: This is a retrospective study. One hundred nine patients were referred for PC at our institution between January and May 2010. The Edmonton Symptom Assess Scale measures the frequency and severity of 11 symptoms, as described in our results. To evaluate the clusters in patients with advanced cancer, a confirmatory factor analysis was performed.
Results: The majority was men (58 %). The mean age was 63 years, ranging from 28 to 90 years. The prevalent diagnosis was: gastrointestinal (55 %) and head and neck (19 %). The most common symptoms were: pain (74 %), fatigue (73 %), depression (69 %), anxiety and somnolence (62 % each), anorexia (57 %), malaise (52 %), nausea (41 %), and shortness of breath (37 %). After analysis, symptoms were grouped into three factors: factor 1—pain, depression, anxiety, and poor well-being; factor 2—fatigue, nausea, and loss of appetite; factor 3—drowsiness and shortness of breath. For gastrointestinal tumors, the clusters have changed to: factor 1—fatigue, nausea, loss of appetite, and poor well-being; factor 2—pain and shortness of breath; factor 3—depression, anxiety, and drowsiness. For head and neck tumors, the clusters were: factor 1—pain, anxiety, loss of appetite, and poor well-being; factor 2—depression and shortness of breath; factor 3—fatigue, nausea, and drowsiness.
Conclusion: The treatment of one symptom may positively interfere in others included in the specific cluster, improving the overall QOL of the patient.

923

To study the early hematological effects of chemoradiation therapy in cancer patients and their pattern of recovery

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Objectives: Therapies targeted at cancer and cancer in itself lead to significant hematological deficiencies, affecting tumor control and patient

compliance. This prospective study was enabled to understand these hematological abnormalities and to ascertain their prognostic value.
Methods: Two hundred fifty-five diagnosed cancer patients planned for definitive treatment with radiation therapy alone or with chemotherapy were included in this 2-year prospective study. A complete blood count was done at baseline, weekly during the course of therapy, and thereafter, monthly for a period of 6 months. Clinical hematological toxicity was graded through the Common Toxicity Criteria, CTCAE v2.0. This study was statistically analyzed using SPSS v.15 software.
Results: Two hundred fifty-five patients were included in the study, where head and neck cancers comprised the major patient population (73, 28.6 %) followed by cervix (48, 18.8 %) and breast (40, 15.7 %). Twenty-seven patients (37 %) in the head and neck cancer subgroup and 27 (58.3 %) in cervix group had anemia at the start of treatment. Of patients with chemoradiation, 92.2 % developed anemia during treatment, while with radiation alone it was 95.5 %. This was statistically significant in patients with uterine cervix cancer ($p<0.01$). At the end of treatment, 65 % of patients with normal hemoglobin had complete response (CR), while 58.3 % with mild anemia and 33.3 % with moderate anemia had CR.
Conclusions: Severe anemia during treatment is a poor prognostic indicator and is usually a sign of advanced disease. Leucopenia and thrombocytopenia occur more commonly during chemoradiotherapy as against radiotherapy alone, but improves with supportive management.

924
Complementary and alternative medicines for intestinal mucositis: 'nutraceuticals' or 'neutralceuticals'?

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'Nutraceuticals' encompass a broad range of naturally occurring products with purported medicinal properties, including probiotics, prebiotics, elemental nutrients, plant/animal extracts and oils. Largely anecdotal evidence has suggested a raft of anti-inflammatory, antioxidant and general health-promoting effects for the prevention of intestinal mucositis. There is a distinct lack of a rigorous, scientific validation for efficacy or mechanism of 'nutraceuticals'. Recently, largely phenomenological, pre-clinical studies have investigated various 'nutraceuticals' for their capacity to ameliorate chemotherapy-induced mucositis.
In a preliminary study, we investigated the combined toxicity effects of 5-fluorouracil (5-FU) and a proposed functional food (sea snail extract) with reported anticancer properties. No combined toxicity effects were observed for the putative active extract. However, partial protection from 5-FU-induced intestinal mucositis was observed in the vehicle-control group, receiving sunflower oil (1 ml/day)+5-FU. Brush border enzyme activity, as indicated by sucrose breath test and sucrase enzyme assay, was significantly greater compared to 5-FU-only controls. Villus height and crypt depth were also significantly protected in the sunflower oil group compared to the control.
Previous rodent studies have reported intestinal growth-promoting effects of various oils, including canola, olive, peanut, lyprinol and, most recently, emu oil. The combined evidence suggests that 'oils' may have some protective effects against chemotherapy-induced mucositis. However, extremely high doses have been used in these studies (e.g. sunflower and emu oil 1 ml/rat, approximates 462 ml/70 kg human), which cannot be simply translated into clinical practice. The emphasis should now shift towards identifying the bioactive components and molecular mechanisms of oils to refine treatment regimes.

925
Oral potentially malignant disorders: a proposal for terminology and definition

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Introduction: Medical terminologies have always undergone refinements in the literature for the pursuance of correct, uniform, and unambiguous terminologies. This quest is necessary for the standardization of the terminology which must reflect the most advanced scientific understanding of the concept and adhere to the best available knowledge representation principle. In parallel, progress in eHealth applications has led to increased use of electronic health records which also require a standardized clinical terminology.
Objective: Our objective was to study the lexicographic aspect of oral precancer and related terminologies.
Method: Information was found by an electronic search of PubMed using the terms precancer, premalignant, preneoplastic, carcinoma prone, epithelial precursor, intra-epithelial neoplasia, and intra-epithelial carcinoma in the English medical literature.
Results: Oral potentially malignant disorders (OPMD) and related terminologies are discussed widely in the literature. Several attempts to produce internationally accepted terminologies and definitions have appeared in the literature. WHO in 1972 subdivided 'pre-cancer' into 'lesions' and 'conditions' with their definitions. Recent working group of the WHO is not in favor of such subdivision and recommended the use of the term 'OPMD'. This is attributed to the recent advancement in molecular and genetic aspects of 'oral pre-cancer'. But efforts to define OPMD are missing in the literature. OPMD and related terminologies are ultimately colligated to oral squamous cell carcinoma. With this semantics in mind, different terminologies related to OPMD are reviewed and lexicographically analyzed in the presentation.
Conclusion: An attempt has been made to propose a desirable terminology and definition so that it suits the recent concept of OPMD.

927
Sustained-release cytarabine in long-term use for symptomatic management and treatment of meningeosis neoplastica

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Background: Treatment of meningeosis neoplastica remains challenging due to advanced systematic disease and limited treatment options. Liposomal cytarabine (DepoCyte™) is a slow-release formulation of cytarabine maintaining cytotoxic concentrations in the cerebrospinal fluid (CSF) for >14 days following a single injection. Especially in palliative settings, this interval has potential benefit due to reduced interventions.
Methods: We reviewed patients treated with liposomal cytarabine (LC) between March 2004 and September 2011. Data included tumor type, ICF cell count, neurologic disorders and interval to progression or death. Assessment for diagnosis included neurological examination, CSF assessment and MR imaging. LC (50 mg) was administered intralumbar every 2 weeks until progression or severe side effects.
Results: Fifty-one patients eligible for safety evaluation (48 patients for efficacy evaluation; median age, 61 years; range, 23–81 y) were treated. Most (72.5 %) had lymphoma, 5.9 % had breast cancer, and

21.6 % had other malignancies. Systemic chemotherapy was given in 82 %. One hundred sixty doses were administered (mean=2.9, range=1–13). The most frequent side effects were mucositis (21.6 %), elevated body temperature (15.7 %), back pain (9.8 %) and nausea/vomiting (7.8/5.9 %). In two patients (13/4 applications), cauda equina syndromes appeared. A reduction of neurological symptoms could be achieved in 61.9 %; 53 % attained a cytological response in CSF. Median overall survival was 20 months.
Conclusions: These results are comparable to data on methotrexate given three times a week. The 14-day dosing interval of liposomal cytarabine is therefore effective to decrease the neurological symptoms of meningeosis neoplastica, with a favourable safety profile and is less burdensome due to reduced manipulation and treatment burden, respectively.

928
Serum concentration of leptin, neuropeptide Y, and tumor necrosis factor alpha in patients with oral squamous cell carcinoma before and after radio- and/or chemotherapy

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Background: Cachexia contributes significantly to mortality in oral squamous cell carcinoma (OSCC) patients. Its pathogenesis involves multiple factors such as cytokines, peptides, and therapies like radio- and chemotherapy.
Objectives: The aim of this study was to assess the relationship between body mass index (BMI), serum leptin, and NPY and TNF alpha concentrations in patients with OSCC.
Method: The study comprises 30 OSCC patients and 30 healthy individuals as the control group. In the control and study groups, body mass, serum leptin, and NPY and TNF alpha levels were assessed before and after radio- and/or chemotherapy.
Results: There was no significance difference between body weight and body mass index of OSCC patients before radio- and/or chemotherapy and healthy subjects. After treatment, reduced body weight and BMI were observed. Before treatment, lower serum leptin levels in comparison to high levels in the control group were found. NPY serum levels were similar in patients with OSCC and in control subjects. Serum concentration of TNF alpha was significantly higher in patients with OSCC as compared to healthy individuals. After treatment, serum leptin and NPY concentration did not change significantly, while serum TNF alpha levels decreased after the therapy.
Conclusion: In patients with OSCC, secretion of leptin is decreased in relation to body fat mass. It is unlikely that TNF alpha plays any role in the pathogenesis of dysregulation of leptin. After chemo- and/or radiotherapy, serum NPY concentrations did not change significantly, and the relationship between serum leptin concentration and body mass is no longer significant.

929
Incidence and outcome of neutropenic fever (NF) in one year and validation of MASCC score index: a single-center experience

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Objectives: The aims of this retrospective study were to analyse the incidence and outcome of neutropenic fever (NF) episodes admitted in our department during 1 year and to validate MASCC risk-index score.
Methods: We have reviewed, retrospectively, all neutropenic fever episodes in 2010. The MASCC risk index score was calculated in all patients within the first 48 h of hospital admission. We established two groups: complicated NF or non-complicated NF. We collected clinical and microbiological characteristics and antibiotics for each patient.
Results: From 1 January to 31 December, 117 episodes of NF were identified in 101 patients with solid tumours. Mean age was 60.4 years (range, 23–84 years); 23.76 % were >70 years, with 50.5 % females and 49.5 % males. Chemotherapy regimens include cyclophosphamide–doxorrubicin–5-fluorouracil (10 %), cisplatin–etoposide (10 %) and cisplatin–gemcitabine (9 %). Microbiological documentation was obtained in 18.8 % of patients: 57.14 % Gram-negative, 15.78 % *Staphylococcus* coagulase-negative. Applying the MASCC score, 27.78 % of patients were of high risk. In our series, there were 23.76 % complicated NF. The sensitivity, specificity, positive predictive value and negative predictive value were 50, 87, 54 and 84 %, respectively. There were three deaths because of infection; one of them was classified as low risk by MASCC score.
Conclusion: NF continues to be a potential lethal complication in patients treated with chemotherapy. In our setting, the MASCC score is useful to identify patients at low risk who can be treated at home with oral antibiotic. On the other hand, there are several patients at high risk who would be categorized as low risk with the MASCC score.

930
First week quality of life changes in breakthrough cancer pain patients treated with fentanyl pectin nasal spray

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Introduction: Breakthrough cancer pain (BTCP) affects 60–95 % of cancer pain patients. This kind of pain is very difficult to manage due to efficacy slowness of most drugs used. Because episodes of BTCP are associated with functional impairment and psychological distress, treatments that quickly relieve pain have the potential to improve patient's quality of life (QoL). Recently, a fentanyl pectin nasal spray (FPNS) has been developed to optimise the absorption profile of fentanyl through the rapid way of nasal mucosa.
Methods: Our study was designed to demonstrate how quickly BTCP relief could affect QoL, already during the first week of treatment. In order to assess their health status, on the first day of FPNS treatment, patients were evaluated with the EQ-5D questionnaire and reevaluated after a week. For each patient, the number of puffs taken was also recorded.
Results: Thirteen patients were enrolled. Mean age was 63 years (range, 56–76). FPNS was well tolerated, with a good compliance. Only G1 headache occurred, and there was no episode of nausea/vomiting. A mean of seven puffs was registered. After a week of therapy, there was an improvement in both QoL and VAS score. QoL score decreased 12.5 %, with total patient satisfaction. VAS score showed an increase of 10 % with better health state. No patient discontinued the treatment.
Conclusion: These preliminary data seem to demonstrate a good efficacy/toxicity ratio in the use of FPNS for cancer patients with breakthrough pain. The study is currently ongoing to increase the number of patients.

933
Health-related quality of life in head and neck cancer patients: a longitudinal study

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Objectives: The objective of this study was to examine changes in health-related quality of life (HRQOL) among oropharyngeal cancer patients at a centre where prospective HRQOL assessment is part of routine clinical practice.
Methods: All patients with oropharyngeal cancer treated with curative intent participated. The EORTC QLQ-C30 and H&N35 were administered at diagnosis and at 3, 6 and 12 months thereafter. Complete case analysis was used following assessment of missing data. The proportion of patients with clinically stable or significant deterioration or improvement (changes of ≥10 points) from baseline was calculated for each follow-up time point.
Results: Ninety-six patients participated and 60 completed the questionnaires at all time points. Most (62 %) participants had stage IV cancer and were treated with chemotherapy and radiotherapy (58 %). Four patterns of change in median HRQOL scores were observed: decline at 3 months and then return to baseline score; decline at 3 months without improvement; no change from baseline; steady improvement. Clinically significant decline was seen in all domains and was greatest at 3 months for most domains, with the proportion of patients reporting decline reducing by 12 months. A minority of patients still reported decline at 12 months for most domains (function, 13–28 %; symptoms, 0–62 %), with particularly high proportions for sexuality (38 %) and dry mouth (62 %).
Conclusions: Most patients experienced clinically significant decline at 3 months, with a minority still experiencing it at 12 months. Patients should be informed about the potential long-term impact on HRQOL, particularly sexuality and dry mouth.

934
Assessment of cancer pain in a community oncology setting

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Objectives: Pain remains one of the most difficult symptoms cancer patients face. This retrospective series sought to better define pain and pain management in patients presenting to our institution with one of the top five causes of cancer mortality: lung, breast, colorectal, prostate, and pancreatic cancers.
Methods: All newly diagnosed patients with stage IV disease seen at this community hospital-based cancer program between October 1, 2010 and September 30, 2011 were included in the study (n=79). The primary end point was to determine the initial self-reported level of pain. The secondary end point was to determine the change in pain score after 8 weeks of oncologic care.
Results: Breast cancer patients presented with the highest self-reported pain scores at initial presentation, with a mean pain score of 3 (p= 0.04). Pain scores for lung, prostate, and pancreatic cancers increased over the 8-week period, though none of the differences were significant at 8 weeks. Few patients received adjunct pain relievers (15 %); no patient underwent an anesthetic procedure.
Conclusion: This study provides an assessment of pain in a community practice setting over a period of oncologic care. These data provide a platform from which to focus efforts on improving pain assessment and control in a community setting.

Cancer type	Lung	Breast	Colorectal	Prostate	Pancreatic
Mean pain score at presentation[a]	1.6	3	1.3	1.5	1.6
P value[b]	0.30	0.04	0.22	0.48	0.47
Mean pain score at 8 weeks	1.7	2.6	0.94	1.6	2

[a]Patients' self-reported pain at initial visits and all subsequent visits using a 0–10 score. [b]One tailed Student's t test for comparison of individual cancer with the remainder of the study population

Table 1

936
Faced with death, it is the small things that positively impact on quality of life—pancreatic cancer and supportive care

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Objectives: Pancreatic cancer persists as one of the poorest prognosis cancers with a relative 5-year survival rate of <5 %. In Australia and the USA, it is the fourth leading cause of cancer death. Research into the unmet supportive care needs of people affected by pancreatic cancer highlighted that dietary issues and gastrointestinal symptoms severely impacted quality of life. Given the short survival time for people with pancreatic cancer, effective supportive care is imperative to enable the best quality of life.
Methods: A qualitative inquiry framework was used to explore participants' perspectives and experience. Three groups of participants (N=35) were recruited on an opt-in basis across Australia: patients diagnosed with pancreatic cancer (N=12), primary carers (N=18), and family (N=5). The carer/family group included a subgroup of bereaved participants (N=14). Sampling continued until saturation. Thematic content analysis was conducted utilizing NVivo9®.
Results: The findings revealed the major theme across all groups under quality of life as 'managing complex and rapid physical changes', especially relating to dietary issues. Issues related to lack of information about symptoms of exocrine insufficiency and malabsorption. This was compounded by clinician's reluctance to prescribe enzyme supplements, poor understanding of dose guidelines, and lack of routine dietary consultation.
Conclusion: Participants in all groups expressed distress relating to the effects of exocrine insufficiency. Pancreatic enzyme supplements associated with clear dosage guidelines and dietary advice resolved symptoms of malabsorption and markedly improved quality of life. For people affected by pancreatic cancer, this is essential supportive care.

938
Implementing a nurse-led smoking cessation program for head and neck cancer patients

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Objectives: As continued smoking in head and neck cancer patients is linked with increased morbidity associated with both radiotherapy and chemotherapeutic treatments, and potentially survival, this study sought to develop and pilot test a smoking cessation protocol and nurse-led program for head and neck cancer (HNC) patients.
Methods: All new HNC patients presenting to the multidisciplinary team (MDT) were invited to participate regardless of smoking status. A questionnaire, protocol, and cessation program protocol were developed in conjunction with a tobacco cessation expert. Tobacco

dependence was assessed using expired CO levels. Current smokers were invited to enroll in a nurse-led smoking cessation program. The protocol included twice weekly review for 2 weeks and then weekly review at weeks 3, 5, 8, and 12. Follow-up at each time point included repeating the CO level assessment and the questionnaire.
Results: One hundred seventy-five patients presented to the MDT during the study period and 92 (52.5 %) completed the questionnaires. Primary non-response reasons were refusal to complete (21/92, 23 %), language barriers (13/92, 14 %), lack of resources (12/92, 13 %), and palliative treatment (11/92, 12 %). Twenty-three patients (13 %) were smokers; none agreed to participate in a formal clinic due to not wanting to quit or wanting to quit themselves (15/23, 65 %), interest in receiving only brief advice (5/23, 22 %), and refusal to complete the questionnaire (3/23, 13 %).
Conclusions: Fewer smokers than anticipated presented, which may reflect the increase in HPV-associated cancers. Interest in attending a clinic was minimal, and timing was considered a key factor. Brief advice was more acceptable to this population than clinic attendance.

940
Epidemiology of late-onset anthracycline-induced myocardial dysfunction in childhood cancer survivors

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Aim: The aim was to characterize anthracycline-induced myocardial dysfunction in childhood cancer survivors.
Methodology: Records of all children attending the Pediatric Cancer Survivor Clinic (PCSC) were screened. Children treated with anthracycline-based chemotherapeutic regimes were eligible. Myocardial function was assessed by conventional echocardiography at baseline, at completion of chemotherapy, and at 6 months interval subsequently.
Results: Four hundred eighty-three records from PCSC were screened and 319 children were treated with anthracycline-based regimes. Details of echocardiography were available in 203 patients. Mean age was 7.8 years. All patients were asymptomatic on completion of chemotherapy. The cumulative dose of anthracycline received was calculated (ALL, 230 mg/m^2; AML, 450 mg/m^2; HL, 250 mg/m^2; neuroblastoma, 170 mg/m^2). Baseline myocardial function was normal in all. Twenty-seven survivors (13.3 %) had myocardial dysfunction. Of this, three occurred during chemotherapy and 24 cases after completion of chemotherapy. The highest prevalence of myocardial dysfunction was seen in children with AML (31.25 % of patients with LV dysfunction) who also received the highest cumulative dose of anthracycline. This was followed by ALL (15.8 %) and then HL (8.7 %). There was wide variation in the onset of myocardial dysfunction, with earliest onset in AML patients who also got the maximum cumulative dose.
Conclusions: With improved survival, focus is now on the long-term effects of cancer therapy. Myocardial dysfunction can be a late effect of cancer therapy and can manifest even after chemotherapy is over. There is a need for continued follow-up of children after completion of chemotherapy even if they are asymptomatic.

941
Nurse-led supportive care management: a six-month review of the role of a nurse practitioner in a chemotherapy unit

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Objectives: The objective of this study was to examine health service utilisation by patients seen by the cancer nurse practitioner (NP), a new role in Australia.
Methods: Over a 6-month period (July–December 2011), all patient presentations to the NP in the chemotherapy unit were recorded in a database. Data collection included presenting the problem and severity, investigations ordered, treatment initiated, whether or not medical review was required and whether the patient was admitted.
Results: Eighty-seven patients presented to the unit during the study period; a majority were females (54 %). Cancer types included breast (16.1 %), lung (18.4 %), ovarian (10.3 %), colorectal (11.5 %) and gastroesophageal (11.5 %). Predominant presenting problems were nausea/vomiting (19.5 %), pain (13.8 %), dehydration (12.6 %) and fevers (10.3 %). Most problems were moderate (CTCAE 2, 39 %) to severe (CTCAE 3, 45 %). The most common type of treatment the NP initiated was IV fluids (51.1 %). Most patients (53.4 %) did not require secondary treatment. Blood (44.8 %) was the primary type of investigation ordered; blood plus CT, ECG or X-ray was also frequently ordered (26.4 %). Though the NP sought medical advice for a majority (59.1 %) of cases, medical review was not required for most patients (52.3 %). Of the patients seen, 28.7 % required hospital admission and the majority (71.3 %) were discharged home after treatment.
Conclusion: The nurse practitioner in the Oncology Chemotherapy Unit is able to successfully manage presenting patients, order appropriate initial investigations and commence treatment without medical review or admission. The NP is a valuable asset to a busy department and can minimise hospital admissions and emergency department presentations.

942
Hope and breast cancer treatment

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Background: The experience of hope in patients with breast cancer may vary in different cultures. The objective of this qualitative research was to understand the meaning of hope and concerns of Iranian women with breast cancer.
Methods: This narrative study used in-depth interview at a breast cancer clinic in Tehran, Iran. The sample consisted of 34 women with breast cancer selected on availability and consent. The interview intended to motivate the participants to describe the effect of hope in their life since the cancer diagnosis. The interviews were tape-recorded and were transcribed to elucidate the major themes encountered in the interviews.
Results: The mean age of the participants was 49.2 years (19.2), 77 % were married, 24 % were widowed, and 73 % were housewives. Nineteen underwent radical mastectomy and 15 patients received breast-conserving surgery. Twenty-four patients (69 %) received surgery, chemotherapy, and radiotherapy. Overall, the two major themes found were (1) resources for hope and (2) agency for hope. Meaning of hope found four major themes emerging from the analysis. These were: (1) believing in God, (2) living a normal and dynamic life, (3) social support, specially family and physician supports, and (4) significant well-being.
Conclusions: The study results are consistent with most research findings on the topic and suggest that faith in God is very important in breast cancer hope. Breast cancer patients need their physicians' attention and support, and it seems that patients' spiritual beliefs might be considered as an extra resource to patients' hope and important to overcome their problems.

944

Aloe vera for prevention of radiation-induced dermatitis: a self-controlled clinical trial

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Objectives: Our objective was to evaluate *Aloe vera* lotion for the prevention of radiation-induced dermatitis.
Methods: All patients with a prescription of radiotherapy to a minimum dose of 4,000 cGy were eligible for this study, provided that their treatment area could be anatomically divided into two symmetrical halves. Patients were given a lotion of *A. vera* to use twice daily on one half of their radiation area, with no medication to use on the other half. The grade of dermatitis (I–IV) in each half was recorded weekly until 4 weeks after the end of radiotherapy.
Results: Sixty patients with a mean age of 52 years consented to entry into this trial. Primary tumors included 23 breast, 13 head and neck, 11 cervix and endometrium, 7 rectum, and 6 other cancers. Field size was 80–320 cm^2, with a mean of 177 cm^2, and the dose of radiotherapy was 4,000–7,000 cGy, with a mean of 5,391 cGy. At the fifth week of radiotherapy, there were three grade II and one grade III dermatitis on the *Aloe* side versus 17 and 1 on the other side, respectively. The mean grades of dermatitis from weeks 4 to 6 of radiotherapy and then the second and fourth weeks after radiotherapy with and without *A. vera* were 0.81 and 1.10 ($p<0.001$), 0.96 and 1.28 ($p<0.001$), 1.00 and 1.57 ($p=0.006$), 0.59 and 0.79 ($p=0.003$), and 0.05 and 0.21 ($p=0.002$), respectively. Field size had a significant effect in multifactorial analysis.
Conclusion: Prophylactic use of *A. vera* reduced the intensity of radiation-induced dermatitis.

945

Prediction of disturbances in dental development after pediatric stem cell transplantation

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Children treated with hematopoietic stem cell transplantation (HSCT) are at particular risk of developing disturbances in dental and craniofacial development. Busulfan (Bu) is an alkylating agent that can be combined with cyclophosphamide (Cy) in order to avoid use of total body irradiation (TBI) in children. The hypothesis to be tested in this study was that children conditioned with Bu/Cy have fewer disturbances in dental development compared to those conditioned with TBI/Cy. Patients and methods: The present study included 81 recipients of allogeneic HSCT and grafted between January 1980 and 2001. Fifty-two children were treated with TBI/Cy and 28 with Bu/Cy. Panoramic radiographs were examined for aplasia, microdontia and disturbances in root development of permanent teeth.
Results: When excluding third molars, 21 % (11/52) in the TBI/CY group and 18 % (5/28) in the BU/CY group exhibited one or more missing teeth ($p=0.7863$). In both groups, there was a statistically significant negative correlation between age at HSCT and the number of missing teeth ($p<0.001$). The mean number of teeth exhibiting disturbances in root development was 12.2±9.6 in the TBI/CY group and 10.3±8.6 in the BU/CY group ($p=0.5726$). The predicted number of teeth affected by disturbances in dental development if the child was conditioned with TBI at 1 year of age was 2.2, and 0.8 if conditioned with Bu.
Conclusion: The results show that busulfan is as toxic as TBI with regard to causing disturbances in dental development. Long-term survivors need careful dental follow-up to facilitate early diagnosis and planning of dental treatment.

946

Novel markers of bone metastatic process—use of multiplex assay

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Objectives: Our aim was to monitor the usefulness of a multiplex bone metabolism panel for tumour-induced bone disease by a serum test and to set up the normal levels for parameters in the multiplex panel.
Methods: Serum levels of osteoprotegerin, osteopontin, osteocalcin, parathormon and leptin were measured by multiplex xMAP technology with the use of Human Bone Panel A (Millipore Linco Corp., USA) in the control group and in 13 cancer patients with bone metastases and 11 cancer patients without bone metastases. Routine bone markers—PINP, PIIINP, ostase, ICTP and 25-hydroxyvitamin D—were assessed in cancer groups. We created a scoring system: value above normal is scored by 1 point and points for osteoprotegerin, osteopontin, PIIINP, ICTP and ostase were counted up.
Results: Higher levels of osteoprotegerin and osteopontin in cancer groups compared to the controls were found, and there were higher levels of PIIINP and ostase in group 1 compared to group 2.
Three of four patients with multiple bone metastases have values above the set normal value both for osteoprotegerin and osteopontin in comparison to other cancer patients, where only one of these markers was positive. Of the patients, 46 % of those in group 1 (6/13) in comparison to 9 % of those in group 2 had score 3 or higher positive; score 2 or higher positive was shown in 61.5 % patients in group 1 in comparison to 36 % in group 2.
Conclusions: The most promising are osteoprotegerin and osteopontin. Investigation on a larger cohort is necessary, but would be very useful to incorporate other bone markers, e.g. PIIINP or ostase, into the multiplex panel.
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947

Antiemetic prophylaxis with palonosetron in anthracycline-based adjuvant chemotherapy for breast cancer

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Objectives: To evaluate the efficacy of palonosetron (P) as antiemetic prophylaxis in two or three drug combinations after four cycles of anthracycline-containing chemotherapy in breast cancer (BC) patients, we have conducted a survey in 41 practices of the BNGO in Germany.
Methods: BC patients (1,299) who received P were recorded via online documentation and in a patient diary. Severity, frequency, duration and onset of nausea/vomiting (N/V) were assessed. Efficacy criteria include: complete control (CC: no V, no rescue, mild N); complete response (CR: no V, no rescue); and rescue. Patients who received P as a single agent or received additional medication were not included in this efficacy analysis.

Results: One hundred ninety-five patients had received P in combination with dexamethasone (PDex); 299 patients were treated with P plus Dex and NK1-RA (PNDex). The median age of patients was 55 years. Efficacy after four cycles of CT was as follows: (1) overall (5 days)—CC, 63.3 % of patients; CR, 73.7 %; (2) rescue medication was needed in 15.6 % of patients; (3) PDex—CC, 48.7 %; CR, 69.8 %; (4) PNDex—CC, 76.3 %; CR, 83.33 %. N was also very well controlled: overall (5 days)—56 % of patients had no nausea, 15 % with moderate N, and 3 % with severe N.
Conclusions: In this practice-based survey in German gyneco-oncologic practices, the three drug combinations of P plus Dex plus NK1-RA proved to be very effective to control nausea and vomiting in anthracycline-based adjuvant chemotherapy in young breast cancer patients after four cycles of chemotherapy.

948

Dietary supplementation with a combination of fish oil and selenium yeast improves immune function via elimination of immunosuppressive cell populations

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Background: Cancer cachexia that is characterized by loss of body masses as well as compromised immunity consequently lowers quality of life. Growing evidence has shown that regulatory T cells (Tregs) and myeloid-derived suppressor cells (MDSC) are abnormally elevated in cancer cachectic patients. Fish oil and selenium are known to inhibit tumor growth, may be thanks to their activities of anti-inflammation and anti-oxidation, respectively. How fish oil and/or selenium affects immunosuppressive cell populations in tumor-bearing hosts remains elusive.
Methods: To elucidate the rationale behind this, we studied fish oil- and/or selenium-mediated tumor suppression and immunity on lung carcinoma, whereby cachexia occurs on subcutaneous tumor growth in BALB/cByJ mice challenged with lung carcinoma cells.
Results: As expected, cachectic symptoms developed in a murine lung cancer model, including weight loss, chronic inflammation, and disturbed immune functions. The levels of Tregs and MDSC in spleens of tumor-bearing mice increased, both of which were positively correlated with tumor burdens. Supplementation of the diet with the combination of fish oil and selenium significantly reduced loss of body weight, muscle and fat mass and improved cachectic parameters. Moreover, treatment with fish oil plus selenium yeast significantly decreased the suppressive immune cells (Tregs and MDSC) in tumor-bearing mice.
Conclusion: Thus, the combination of fish oil and selenium as a dietary supplement can enhance antitumor immunity by means of modulating immunosuppressive cell populations.

949

Oncosexology: assessment and potential role of the major French cancer survivors association LLC (La Ligue Contre le Cancer)

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Background: To our knowledge, no survey has concerned the potential role of cancer survivor associations in the field of "oncosexology". Aim: Our aim was to analyse the specific needs/demands of the major French cancer survivor association LCC (League against Cancer).
Method: Methods used were: (a) dispatch to the 101 county committees of an approved questionnaire and (b) telephone interviews analyzing five parameters (patients, health professionals, voluntary helpers, care offer, league available strategies).
Results: Two years was necessary (five reminders) to obtain 70 % of responses due to: (a) heterogeneity of county committees, (b) finding the relevant speaker(s), and (c) reluctance to discuss this topic. If a strong majority is not or little confronted with this particular demand, this problem appears as very important (92 % yes/rather), reflecting a real hiatus. For 75 %, the appropriation of sexual health problems by the carers is still not realized. Sixty-five per cent consider that physicians are not or little aware and that the nurses appear as the best carers. The only organized response relies on useful written league documents. To know where to direct patients remains a real challenge (26 % without available addresses). The motivation is very strong for informing and directing patients.
Conclusions: This "audit" points to: (a) a low patient demand despite a high voluntary helper awareness/motivation, (b) the feeling of a disappointing response due to lack of both information and organized response, (c) the need of a better offer visibility and a more active committee response and (d) not a real lake of listening, but a double problem of validated process and know-how.

951

Xerostomia and taste change profiles according to conditioning regimens in cancer patients who underwent high-dose chemotherapy and stem cell transplantation

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Purpose: Patients who underwent high-dose chemotherapy (HDC) and autologous peripheral stem cell transplantation (APSCT) or allogeneic bone marrow transplantation (ABMT) experience xerostomia and taste changes frequently. This study was done to evaluate the frequency and severity of xerostomia and taste changes in the early post-transplantation days and the relation of conditioning regimens.
Methods: Patients who underwent APSCT or ABMT were asked to score xerostomia and taste change severity daily in the first 10 days after stem cell reinfusion. Scoring was performed according to a five-grade scale (0: no symptom; 1: mild; 2: moderate; 3: severe; 4: very severe). Total xerostomia score (TXS) and total taste change score (TTCS) were defined as the addition of symptom severities of xerostomia and taste changes in 10 days. A total of 127 patients, 89 men (70 %) and 38 women (30 %), were included into the study. BCNU, etoposide, cytarabine, and melphalan (BEAM; 38.6 %, $n=49$); ifosfamide, carboplatin, and etoposide (ICE; 23.6 %, $n=30$); melphelan 200 mg/m^2 (M200; 12.6 %, $n=16$); and total body irradiation+cyclophosphamide(TBI+C; 22 %, $n=28$) were used as conditioning regimens.
Results: All patients experienced xerostomia and taste changes at any grade. No difference was found according to gender and transplantation type. Mean TXS and TTCS in 10 days was similar in BEAM, ICE, M200, and TBI+C groups ($p>0.05$). According to the conditioning regimens, the mean TXS values were 0.90±0.74, 1.04±0.98, 1.34±1.14, and 1.32±0.87 and the mean TTCS values were 1.22±1.02, 1.26±0.92, 1.87±1.08, and 1.82±0.89, respectively. TXS in patients who received BEAM and TBI+C on the sixth day was higher when compared with the first day ($p<0.05$). TTCS in patients who received BEAM, M200, and TBI+C on the sixth day was higher when compared with the first day ($p<0.05$).
Conclusion: All patients who underwent HDC faced xerostomia and taste changes at any grade. TXS and TTCS on the sixth day were higher; palliative procedures may relieve patients' complaints.

952

Male cancers and specific requests for sexual care: lessons for daily practice based on 3 prospective surveys in an outpatient urology clinic in a public hospital

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Introduction: For better specifying our needs in oncosexology, three investigations were made among 983 successive cancer male outpatients, first non-selected cancers (NSC) then prostate cancer (PC).
Material and method: For NSC, exclusive patient requests for sexual problems among 615 successive outpatients were investigated. The five analyzed parameters were: age, sexual problems, cancers and concerned treatments, sexual treatments, and referral physician. For PC, proactive analysis of the following was done:

(a) Erectile capacity (Hardness Erectile Score, HES)
(b) Demand for treatment
(c) Survey well founded in successive 246 patients of all age groups then only in 122 ageing (>74 years) ones

Results: For NSC, sexual trouble treatment was done in 20.5 % of patients (114 mainly erectile dysfunction, ED), only 8 % with non-urological cancers, and with specific treatment mainly pharmacological; for referral physicians, 10 % were sent by other physicians. For PC:

(a) All ages, 82 % ED; treatment demand, 48 %; survey approval, 95 %
(b) Ageing, 93 % ED; treatment demand, 9 %, or already treated, 19 %; survey approval, 99 %

In our 368 unselected PC outpatients, 20 % have no ED and 40 % asked for or are treated, but 95 % agree to be informed.
Conclusion: These observational investigations show five facts:

1. A minority (20.5 %) of our NSC patients benefit from specific care concerning mainly ED (90 %), PC (79 %), and pharmacological treatments (89 %).
2. The low number of non-urological cancers (8 %) reflects an inequality of care access.
3. Eighty-two percent of the PC patients of all ages have ED, but only half are treated.
4. When proactively asked, 95 % wanted specific information or treatment, even the older ones.
5. There was an underestimation of sexual interest in the oldest ones.

953

The ROSA experience: lessons from a health professional network to reduce the inequality of access to oncosexological care

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Background: As cancer is increasingly a chronic disease, sexual health troubles should be cared for without problem of healthcare access. For this reason, the pilot plan ROSA has been set up.
Objective: Our objective was to analyze the problems observed during the setting up period.
Material and method: ROSA included:

(a) *Proximity* response whatever the cancer, thanks to a (patient/couple) consultation
(b) *Regional* response by structuring our cancer network
(c) *National* response by diffusing a guideline for caregivers

Results: In 2006–2008, three main points were emphasized:

1. Awareness of both health professional and institutions is not sufficient.
2. Demand for a better offer visibility necessitates structuring the onco-sexological healthcare chain.
3. Large gaps (knowledge and skills) require informing/educating caregivers.

In 2009–2010, six additional main points were pointed out:

1. Neither over- nor underestimated care demand
2. Both information and training must be adapted to different caregivers.
3. Demands often change according to time.
4. To structure the offer requires a transversal approach for identifying all the potential targets, i.e., institutional, all caregivers in contact with cancer patients, and "sexological" resources (directory/human/tools/teaching aids, etc.).
5. Nurses, GPs, and patients' associations are efficient and well-adapted relays.
6. Helpful (but difficult) role of partner

Conclusions: Our experience shows three main points:

1. The structuring must be progressive by creating local consultations, then informing/training the numerous involved caregivers/structures.
2. The approach must be pragmatic, multidisciplinary, and transversal.
3. The supportive health care plays a key role.

955

Getting your life back after cancer: a feasibility study of life coaching

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Objectives: The transition from 'cancer patient' to 'cancer survivor' is often accompanied by emotional and psychological problems that may have long-term consequences. Life coaching potentially offers an effective way to help address the most important social, personal and economic transition challenges patients encounter. The objectives of this study were to explore the acceptability, feasibility and potential impact of life coaching to support cancer survivors' transition to life after cancer treatment and to explore the feasibility of the study and outcome measures.
Methods: Ten participants will be recruited from local cancer support groups and offered life coaching as part of a one group pretest posttest study. The coaching intervention will consist of one face-to-face and five telephone sessions over 3 months. Measures of self-efficacy, psychological and social well-being, quality of life and the achievement of personal goals will be recorded pre- and post-intervention and coaching records maintained. One-to-one interviews will be conducted with participants following the intervention.
Results: The study commenced recruitment in December; results will be presented at the conference.
Conclusions: The data will inform the development of a larger randomised controlled trial on the benefits of life coaching as an intervention to support cancer survivors at the end of primary treatment.

957

Oncosexology and health care offer: a specific survey in 320 health care professionals in order to specify the perceived needs for information or training

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Background: Both perceptions and attitudes of caregivers remain badly known in oncosexology.

Objective: Our objective was to identify the needs of information and/or training in this topic.
Method: The study used a validated FSP questionnaire in 320 French caregivers all in contact with cancer patients:

(a) One hundred sixty-one various (private/public) hospital caregivers
(b) Seventy-six residents (urology, oncology, radiotherapy) and 83 urologists

Results: Values are the mean.
Frequency: *Personal awareness*—higher in urologists (1.7) and hospital (1.6) than residents (1); *professional confrontation*—usual for urologists (1.8) and less in hospital (1.4) and for residents (1.2); *attitude in case of patient demand*: urologists (1.7) and residents (1.3) are more reactive than in hospital (1.1). Urologists have more proactive attitude (1.7) than residents (0.8) or in hospital (0.5).
Seriousness: To be listening (1.9) and reactive (1.8) is very important for all in hospital and urologists, but less for residents (1.3).
Problems: *Theoretical knowledge*—insufficient in hospital, better for residents (1), and good for urologists (1.6); *technical skills*—very low (0.1) in hospital, better for residents (1.1), and good for urologists (1.6); *relational skills*—better in hospital (1.1), for residents (1.2), and for urologists (1.5). These insufficiencies explain the reported importance (1.8 in hospital, 1.7 for urologists, 1.1 for residents) to know how to inform and where to send.
Conclusion: The excellent survey acceptance shows high awareness and a usual confrontation of onco-sexological problems. Except for urologists, there is a strong demand for both information and offer visibility for all and for specific guidelines and training for the most concerned/motivated.

960
What are you busy for? The communication bridge: Taiwan's jigsaw puzzle experience

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Objective: It is hoped that patient's impatience from the long wait can be reduced and the conflict between patient and medical staff can also be reduced through the process of putting together jigsaw puzzle pieces. While patients do the jigsaw puzzle, interviews are conducted to understand the physical, psychosocial, and spiritual difficulties patients and relatives encounter.
Method: A qualitative research was applied, for which interview as the main method was conducted by trained interviewers. Jigsaw puzzles were placed on the counter in the outpatient therapy area of a medical center's radiation oncology department. When patients or relatives come in and wait to be treated every day, they do the jigsaw puzzle and interviews were conducted at the same time.
Result: During the interview, patients and relatives all said that, with the jigsaw puzzle, they felt they had something to look forward to every day. When they saw the jigsaw puzzle pieces were being put together, they felt their once broken life was restored to its original state with the help of relatives and medical staff.
Conclusion: During the process of putting together the jigsaw puzzle pieces, as they can do the jigsaw puzzle together with relatives, it gave the patients and relatives wonderful memories. The awkwardness of having nothing to say during the waiting time was also reduced. The patient–doctor relationship was improved and the patient's obedience during the therapy was enhanced.

961
Vitamin D and cancer diseases

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Objectives: Vitamin D plays a major role in the calcium and phosphorus homeostasis. But 40–75 % of the world's population is vitamin D-deficient. Vitamin D levels have been associated with many disorders, diseases, and related outcomes.
Aim: The aim of our pilot study was to determine the frequency of vitamin D hypovitaminosis in patients with different malignant cancers.
Methods: Serum levels of 25-OH vitamin D were measured using ECLIA immunoassay manufactured by Roche in 215 healthy individuals and in 170 patients with colorectal, lung, prostate, and breast cancers. The serum levels in cancer patients were compared to the healthy group and further correlated with disease stage.
Results: Vitamin D levels were found to be significantly lower in cancer patients compared to the healthy group. Thirty-nine percent of all cancer patients show values below 47.5 nmol/L—cutoffs set as the 5th percentile of the healthy group. Twenty-nine percent of patients with colorectal cancer, 35 % of patients with breast cancer, 64 % of patients with lung cancer, and 18 % of patients with prostate cancer had levels of D vitamin below the cutoff value. The authors have confirmed the correlation between disease stage and serum levels in patients with colorectal lung and premenopausal breast cancer. No correlation was found for postmenopausal breast cancer and for prostate cancer.
Conclusion: Authors found a high incidence rate of severe hypovitaminosis D in cancer patients among the Czech population. This rate is significantly higher when compared with literature data. Correlation with disease stage was found. Data of a larger group with breast cancer and benign breast diseases will be presented.
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965
Patient education program to reduce cancer-related fatigue following cancer treatment

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Objective: The objective of this study was to evaluate a patient education program that aims at reducing perceived fatigue in cancer survivors.
Methods: In ten German centers, 261 patients with cancer-related fatigue were randomly assigned to a patient education program consisting of six sessions of 90 min or standard care. Patients in the control group were put on a waiting list. The primary outcome measure was cancer-related fatigue. Data were analyzed using analysis of variance with repeated measures.
Results: Patients in the intervention group showed a statistically significant reduction in cancer-related fatigue compared to the control group. Secondary outcomes also showed significant improvements in all measures, including quality of life, general self-efficacy, exercise self-efficacy, physical activity, anxiety, depression, and fatigue knowledge.
Conclusion: The program was effective in reducing perceived fatigue as well as further outcomes. *Practice implications*: This newly developed education program has the potential to fill a gap in the care of cancer survivors. The program needs further evaluation in other countries employing a control group of patients receiving equal time and attention as the intervention group.

966
Clinical significance of thromboembolic event in pancreatic and biliary tract cancer

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Background: Thromboembolic disease is a common event in advanced cancer patients. This can interrupt active chemotherapy and make the patients worse. We analyzed the clinical characteristics of thromboembolism in pancreatic and biliary tract cancer.
Methods: Thirty-one patients who had thromboembolic event with advanced pancreatic cancer or biliary tract cancer between October 2008 and November 2011 at Seoul St. Mary's Hospital, Catholic University, were retrospectively reviewed. We investigated the correlation between the clinical course and the thromboembolic event, and the known risk factors.
Results: Of the 31 patients, 17 (54.8 %) were men; the median age was 65 years (range, 37–77 years). Seventeen patients had pancreatic cancer and 14 patients had biliary tract cancer. Thromboembolic event occurred during chemotherapy in 17 patients (54.8 %), terminal course in ten patients, and four patients showed recurrent symptoms after curative surgery. Of the 17 patients in the chemotherapy group, thromboembolic event was the sign of the progressive disease. Among the three patterns of thromboembolic event, deep vein thrombosis was found in 13 patients, pulmonary thromboembolism with dyspnea in 11 patients, and a combined pattern in 8 patients. The median overall survival time from the thromboembolic event was 62 days. There was no significant difference according to known risk factors. In the analysis of the clinical course, patients in chemotherapy showed similar survival time compared to terminal care (63 vs. 57 days).
Conclusion: In pancreatic and biliary tract cancer patients, thromboembolic event can be a dismal prognosis factor as well as an initial sign and symptom of recurrent disease after curative surgery.

967
Life in between gaps—the growth of wheatgrass and cancer patient's physical, psychosocial, and spiritual caring experiences

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Objective: Cancer patients often feel they have nothing to do in their life except receiving treatment. Most patients are weak and hopeless, and their faces are rigid with no expression. It is hoped that cancer patients will have something to do, something to look forward to, and that they would feel the wonderfulness of life and find the meaning of life and way out again through wheatgrass, which is easy to grow and fast-growing.
Method: Qualitative research was applied for which interview was the main method. They were visited regularly every day, and interviews were conducted while the patients watered the wheatgrass. Questions related to their physical, psychosocial, and spiritual issues were designed and asked to understand the sense of achievement patients gained and the feeling of being needed (by wheatgrass) patients had during the wheatgrass-growing process.
Result: Under such a hopeless situation, wheatgrass planting seems to bring hope and vitality to cancer patients who are suffering from physical, psychosocial, and spiritual impacts and the sense of loss when their treatment effect is not as expected.
Conclusion: All cancer patients who participated in the wheatgrass planting indicated that they saw life as they grew the wheatgrass. Moreover, they had a feeling of being needed again by the seemingly easy process of watering. What is more important is that all patients felt: although I am physically weak, there is at least one thing I can do. Furthermore, while the patients devoted themselves to the process, their self-efficacy also increased.

968
Sick leave among long-term cancer survivors

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Objectives: Our objectives were to observe the sick leave rates of 5-year cancer survivors following a first lifetime diagnosis of invasive cancer and to identify predictors of sick leave taken in the fifth year after diagnosis.
Methods: A registry study was performed, comprising 3,278 Norwegian individuals (18–61 years old) with their first lifetime diagnosis of invasive cancer in 1999 and alive in 2004 and a cancer-free control group (n=6,368) matched by sex, age, educational level and employment status in 1998. Sick leave was defined as at least one sick leave period >16 days within the year in question.
Results: Seventy-four per cent of long-term cancer survivors (LTCSs) took sick leave within the first 12 months after their diagnosis. The sick leave rate stabilized at a slightly higher level in the following 4 years compared to the year before diagnosis, with approximately one fourth of the LTCSs taking sick leave every year. Both high income and sick leave taken the year before diagnosis predicted the sick leave taken 5 years after diagnosis among both men and women. A low education level and an occupation in health or social work were significant predictors among female LTCSs. Compared to controls, male survivors with rectal and lymphogenic cancer and female survivors with breast cancer had a significantly higher incidence of sick leave 5 years after diagnosis.
Conclusion: Employed LTCSs struggle with their ability to work 5 years after diagnosis.

969
Strategies for prevention and treatment of head and neck radiotherapy complications

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Introduction: Oral complications of oral, head and neck cancer (OHNC) radiotherapy (RT) are responsible for increased morbidity, mortality and treatment costs as the oral mucosa, salivary glands and jaws are commonly included in the radiotherapy field. In Croatia, since recently, OHNC patients receive organized dental treatment for

improving compliance to RT, minimizing short-term and minimizing/preventing long-term RT-associated oral complications, including mucositis, xerostomia, radiation caries, osteoradionecrosis and trismus.
Objectives: We reflect on our experiences on oral treatment of OHNC patients and on the pilot results of an irradiation–caries prevention protocol.
Methods: We assessed 29 OHNC patients seen for dental treatment, the procedures performed, timing in relation to RT, compliance to follow-up, major oral complications and the obstacles perceived. Furthermore, we started strict a caries prevention protocol pilot on three patients using Fluor protector applied on a biweekly basis/first 3 months and monthly/second 3 months+use of Cervitec gel and Cervitec liquid at home on a daily basis. Mutans streptococci, lactobacilli and saliva buffering capacity were assessed at baseline and after the third and sixth months. Demineralising lesions were assessed by clinical inspection and Diagnodent during each visit. Quality of life (OHIP-14) and symptom check inventory supplemented the clinical findings.
Results: The results helped in identifying obstacles and shortcomings of medical care and pointed on weak spots that need reassessing. The pilot results showed good compliance and outcomes of strict anti-caries protocols.
Conclusions: Introduction of oral health management in OHNC patients is demanding and is a slowly developing process, but its impact on patients' well-being and treatment costs is great.

970

Balugrastim—a long-acting, once-per-cycle, fixed-dose filgrastim: pharmocokinetics and pharmacodynamics in patients with breast cancer

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Background: Long-acting filgrastim offers the advantage of fewer dosing intervals when used for the prevention of neutropenia and reduction in the incidence of febrile neutropenia in patients treated with cytotoxic chemotherapy for malignancy. Balugrastim is a once-per-cycle filgrastim with a fixed-dose administration that was developed using an albumin fusion platform technology by fusing r-metHuG-CSF to human serum albumin. We evaluated the pharmacokinetic and pharmacodynamic parameters and the safety of balugrastim in patients with breast cancer.
Materials and methods: Thirteen breast cancer patients received single, escalating, subcutaneous doses of balugrastim (50, 150, 300 and 450 μg/kg) 14 days prior to their doxorubicin+docetaxel chemotherapy. Blood samples were drawn for the measurement of balugrastim serum levels. Relevant pharmacokinetic parameters such as area under the curve, maximal serum concentration (C_{max}) and half-life were calculated. The mean change in absolute neutrophil count (ANC) was chosen as the pharmacodynamic parameter.
Results: A dose-dependent increase in bioavailability was observed and ANC increased relative to historical data for the comparator, pegfilgrastim. The pharmacokinetic parameters for balugrastim at the dose level of 450 μg/kg were comparable to 6 mg fixed-dose s.c. pegfilgrastim. Balugrastim was well tolerated in all patients treated.
Conclusions: Pharmacokinetic and pharmacodynamic data confirm that balugrastim is suitable for a once-per-cycle, fixed-dose use in this patient population. A dose-dependent increase in bioavailability and ANC was observed. The 450-μg/kg dose appears to be the optimal dose for further study.

971

Updates on integrative therapies for unwanted (side) effects of conventional treatment

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People around the world, when dealing with cancer, incorporate natural therapies. These are not fully recognized by the medical community, trained to respond to level 1 evidence. Yet off-label treatments abound. When large numbers of patients turn to natural—generally nontoxic—approaches, this should be granted serious attention.
Existing evidence has not been enough to persuade Cochrane, but a trend toward benefit has been noted, and more importantly, NO harms have been seen.
In 1993, this author was diagnosed with breast cancer. Yoga was considered a dangerous pursuit. Yet in 20 years, this has completely turned around. Annie Appleseed Project focuses on natural therapies/substances, lifestyle issues, and complementary and alternative treatments—many of which can be integrated into the conventional world. There is a preponderance of studies that are not level 1, but there are many with important and useful data. These include changes in nutrition, increased physical exercise/movement, hands-on therapies, yoga, dietary supplements, herbs, and much more.
Conventional treatment is extremely difficult to go through, and many with cancer cannot complete the required number. It is really in the best interest of a patient to consider the use of complementary/integrative approaches. Even without the support of the conventional medical community, a large number of people with cancer find their way to natural therapies. And there is a broad array of choices.
Attention must be paid to reduce harms—integrative cancer care is the answer.
Annie Appleseed Project represents the patient perspective on these/other issues.

972

Sleep quality in cancer patients: Dokuz Eylul University Faculty of Medicine experience with 314 patients

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Introduction: Sleep disruptions are important problems and are generally neglected by both the supervisor and cancer patient. Insomnia, which is a specific sleep disruption, is defined as a difficulty in the initiation, maintenance, and the duration or the quality of the sleep despite a suitable environment and conditions for sleeping. In the literature, its incidence in the cancer population is 23–61 %. We surveyed a group of cancer patients and insomnia in order to further understand their experience.

Methods: Cancer patients who planned and/or received chemotherapy were included in this study. The Pittsburgh Sleep Quality Index (PSQI) questionnaire was prospectively completed by the patients.
Results: Three hundred fourteen patients were surveyed. The mean age was 58±11 years, 147 men and 167 women. Thirty-four percent of patients had gastrointestinal cancer, 23 % breast, 22 % lung, and 21 % other cancer types. According to global PSQI scores, 40 % of patients had low (>5) scores, which was considered to be suggestive of significant sleep disturbance. There are no significant differences between PSQI and gender differences, marital status, stage, and chemotherapy regimens. Sleep quality in patients with bone, visceral metastases, and poor performance status was low (0.006 and 0.02). Sleep disturbances and daytime subscales in females were statistically significant according to gender differences (0.04 and 0.01).
Discussion: The prevalence of insomnia in cancer is not examined adequately in Turkey. The PSQI has been shown to be both valid and reliable, and a Turkish version has been validated. It is likely to be a clinically useful tool as a screening device or as a measure in insomnia treatment research.

973
Extravasation—what is the true incidence rate? Relative risk as an alternative approach

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Objective: Although the absolute number of extravasations reported to the National Extravasation Information Service has grown steadily, it is still impossible to answer the question of the incidence of extravasation injuries. This work approaches the problem from an alternative perspective and attempts to assign a relative risk of an extravasation occurring to the chemotherapy administration being undertaken.
Method: A 'random' sample of extravasations as received by the green card scheme was tallied up for the years 2004, 2006, 2008 and 2010. These data were corrected for the number of times these groups of drugs were given per 100 chemotherapy administrations. Relative risk=reported incidence (relative frequency of administration).
Results:

	2004	2006	2008	2010
Greatest relative risk	Etoposide	Etoposide	Etoposide	Platinums
	Vincas	Anthracyclines	Vincas	Anthracyclines
	Anthracyclines	Vincas	Anthracyclines	Etoposide
	5-FU	Taxanes	Taxanes	Vincas
	Platinums	Platinums	Platinums	Taxanes
	Taxanes	5-FU	Cyclo and Ifos	5-FU
Lowest relative risk	Cyclo and Ifos	Cyclo and Ifos	5-FU	Cyclo and Ifos

Relative risk of causing an extravasation
Conclusions: Despite 25 years and tens of thousands of reports of extravasation, we still have no true idea of its incidence or prevalence. This work provides an alternative approach using a 'risk league table' so that practitioners can develop appropriate administrative strategies to decrease as far as possible the risk to patients, themselves and their organisations.

974
Patient-level predictors of prognostic concordance between oncologists and patients with advanced cancer

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Background: Patients with advanced cancer are frequently more optimistic about prognosis than oncologists. Optimistic patient prognostic understanding is associated with aggressive and burdensome disease-directed treatments near the end of life. Thus, we proposed to identify patient-level predictors of concordance in prognostic understanding.
Methods: One hundred seventy patients from two similar studies of patients with advanced cancer (observed median overall survival= 13.2 months) and their oncologists estimated the likelihood of survival past 6 and 12 months from study entry. Actuarial survival, demographics, and levels of anxiety, depression, hope, and optimism were assessed. The primary outcome was prognostic concordance. Logistic regression was used to identify predictors of concordance.
Results: Only 36.4 and 22.2 % of oncologist–patient–pairs agreed on 6- and 12-month prognosis, respectively. As expected, patients reported a higher likelihood of survival than their oncologists. Univariate logistic regression models demonstrated that actuarial survival and patient anxiety significantly predicted oncologist–patient prognostic concordance. Multivariate logistic regression models were estimated to control for age, gender, current treatment, depression, hope, and optimism. These showed that patients who died during the study were more likely to agree with their oncologists about 6-month prognosis (adjusted OR=6.43, $p<0.001$) and that patients who had more anxiety were more likely to agree with oncologists about 12-month prognosis (adjusted OR=1.25, $p=0.02$).
Discussion: Actuarial survival and anxiety consistently predict prognostic concordance between oncologists and patients with advanced cancer. Anxiety may reflect accurate prognostic understanding. Thus, anxiety may be an indicator of effective prognostic communication rather than an undesirable outcome to avoid.

976
Dental toxicity in patients with breast cancer during chemotherapy

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Background: The impact of chemotherapy on cancer patients may affect the normal condition of the mouth cavity, which leads to changes in mucosa (mucositis) and salivary gland dysfunction.

Objective: Our objective was to study the effect of adjuvant chemotherapy in breast cancer patients on the condition of the oral cavity.
Methods: A prospective analysis of the frequency and nature of complaints in 26 breast cancer patients during chemotherapy was conducted.
Results: The most common complaints during the first cycle of chemotherapy were dry lips, mouth cavity dryness, and consequent thirst, which were detected in 59.1, 45.5, and 50.0 %, respectively, and remained prevalent throughout six cycles. The dryness in mouth cavity remains the same throughout the four cycles of chemotherapy, decreasing in five to six cycles to 36.3 %. The manifestations of mucositis, rash on the lips, were observed in 43.8 and 25.0 %, respectively. After the first cycle of chemotherapy, dental toxicity (mucositis, cheilitis) appeared in 84.6 %. With the increase of cycle number, the toxicity rate increased. The maximum value was in the fifth cycle, which was 96.2 %. The main sign of toxicity is cheilitis, which was most often diagnosed during cycles I and III of chemotherapy—77.3 and 75.0 %, respectively. The frequency of mucositis increases to 79.2 % during the second cycle, followed by a decrease to 40.9 % in cycle II.
Conclusions: Chemotherapy toxicity in breast cancer patients appears as a dryness of the oral mucosa already in the first cycle in 45.5–59.1 %; prophylactic remedies should be used in order to prevent mucositis and cheilitis, which were reported in 77–79 % during the second and third cycles of chemotherapy.

977
Opioid use among Nova Scotia (NS) cancer patients: methodology for a population-based observational study

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Objectives: Opioid analgesics are the mainstay of pharmacological management for moderate to severe cancer-related pain. Surveillance of medication use is essential to meet the needs of health professionals, healthcare organizations, and healthcare policy makers and to ensure safe, appropriate and cost-effective pharmacotherapy. However, the systematic analysis of population-level data on opioid use by cancer patients is limited in North America, mainly due to lack of complete and comprehensive data.
Methods: This project will describe opioid use by all Nova Scotia (NS) cancer patients by linking data from two provincial health data sets: the NS Cancer Registry (NSCR) and the Nova Scotia Prescription Monitoring Program (NSPMP) database. The NSCR includes data on all NS residents who are diagnosed with cancer in NS or received cancer center-based care in NS. The NSPMP maintains an electronic database containing information on all opioid prescriptions dispensed in NS community pharmacies. Probabilistic record linkage techniques were used to match records from both datasets using personal identifiers. The linkage process was designed to ensure the privacy and confidentiality of the sensitive data contained within the two databases while optimizing the validity and reliability of the linkage and the resulting analytic dataset.
Results: The linked datasets have resulted in a comprehensive analytic database of all cancer patients (27,700) who were prescribed opioids (217,600 prescriptions) from mid-2005 to the end of 2010.
Conclusions: The privacy of individual cancer patients and opioid users can be protected to produce an anonymous linked file suitable for population-level surveillance.

978
Impact of pain, insomnia, fatigue symptom cluster in patients undergoing cancer pain treatment: a secondary data analysis

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Objective: Cancer patients experience a variety of concurrent symptoms. These symptoms occur frequently in groups or clusters. The intention of this secondary data analysis was to examine patterns of symptom clusters over time and their impact on global health status and functionality.
Method: This analysis based on data from a cluster-randomized multicenter trial to improve patients' pain management (Jahn et al. 2010). The pain–insomnia–fatigue (PIF) cluster conditions were defined if a patient had each of pain, insomnia and fatigue intensity scores above the 30 out of 100 points threshold, indicating a moderate intensity level.
Results: Two hundred seven patients participated in this trial. One hundred sixty (77.3 %) participants showed a PIF cluster at baseline (t_0). In this subpopulation, 68 patients (42.5 %) showed stable PIF cluster until 28 days post-discharge. Thus, the PIF cluster is a frequent and fairly stable symptom cluster in cancer patients with pain. Evaluating the impact of the PIF cluster on global health status, our results reveal significant differences compared with patients showing stable PIF cluster (Fig. 1).

Figure 1: Impact of the PIF cluster on global health

Conclusion: Breaking apart a symptom cluster has a substantial impact on the patient's quality of life and functionality. Therefore, treatment strategies are needed to address clusters of symptoms more comprehensively.

979
Clinical laboratory testing has limited value in diagnosing the cause of fatigue in ambulatory cancer patients

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Background: A practical classification of cancer-associated fatigue is lacking; clinical and laboratory correlates require further evaluation in order to develop a classification useful in clinical care and research.
Methods: Cancer patients—newly diagnosed, receiving treatment, undergoing post-treatment surveillance, or with recurrent/persistent disease—consented and were screened with a visual aid; those reporting moderate or greater fatigue were asked to participate in a study assessing fatigue using the FACT-G and study-specific questionnaires, followed by fasting laboratory testing.
Results: thyroid-stimulating hormone (modestly), 9 %; ionized calcium, 11 %; fasting glucose, 40 %; Hgb A1c, 45 %; creatinine, 12 %; erythrocyte sedimentation rate, 49 %; and C-reactive protein, 32 %; low vitamin D, 30.6 %. Electrolyte abnormalities were uncommon, minor, and did not require correction. No statistical differences in fatigue ratings or FACT-G total or physical scale scores were found between patients with normal or abnormal tests for any laboratory parameter. Patients with cancer present had higher incidences of low hemoglobin and high glucose; elevated calcium levels occurred predominantly in NED patients. No abnormal laboratory value was felt to require urgent treatment.
Conclusions: In this cohort of ambulatory cancer patients, unselected aside from moderate/greater fatigue, no common laboratory test was associated with fatigue level or FACT-G scores. Laboratory testing in fatigued ambulatory cancer patients without other symptoms uncommonly yield a treatable cause.

980
Use of single-dose IV dexamethasone as a pre-med to docetaxel therapy

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Objective: Due to human frailty or an issue of poor concordance in our patient population, elderly, migrant, low social depravation index, we had a number of patients (estimated at around 20 %) present for chemotherapy who had not taken their dexamethasone pre-med.
Method: Patients deemed fit to proceed this cycle of docetaxel BUT who had forgotten to take their dexamethasone proceed according to one of the following treatments: (1) *non-diabetic patients*—20 mg IV 1 h before and 4 mg bid the day after and (2) *diet- or oral anti-hypoglycemic-controlled diabetic patients*—12 mg IV 1 h before, 2 mg the evening of chemotherapy and 2 mg bid the day after chemotherapy
Results: Reported here are the results of the first 60 patients treated up to December 2010. Failure of the IV pre-med regimen was deemed to be: any patient presenting with any clinical signs or symptom of fluid retention, including X-ray changes or hospitalization where fluid retention may be thought to be part of the cause.

Fifty-seven (95 %) patients had no clinical sequel from the alternative dexamethasone regimen. Of the three 'failed' patients:

1. Ca lung increased pleural effusion on X-ray
2. Ca lung increased SoB and swollen ankles
3. Ca prostate increased SoB

Whilst all three of these could be due to underlying diseased, they were labelled as failure for the evaluation.
Conclusion: The use of a single high-dose IV dexamethasone and low oral dose appears to be a highly effective and equally safe alternative pre-med for docetaxel patients.

981
Dexamethasone and symptom distress: results of a placebo-controlled, double-blind randomized controlled trial in patients with advanced cancer

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Aims: The aims of this prospective, randomized, double-blind, placebo-controlled study was to compare the effect of dexamethasone (DM) vs. placebo (PL) on cancer-related fatigue (CRF) and symptom distress scores (SDS).
Methods: Advanced cancer patients with fatigue and at least two other symptoms (pain, nausea, appetite, depression, anxiety, or sleep disturbance≥4/10) on the Edmonton Symptom Assessment Scale (ESAS), normal cognition, and hemoglobin≥9 g/L were eligible. Patients were randomized to either receive DM 4 mg orally twice a day for 15 days or matching PL. Changes in the Functional Assessment of Chronic Illness-Fatigue subscale (FACIT-F, primary outcome) and ESAS scores were calculated. Differences in the group means (normal distribution) were analyzed using the two-sample *t* test.
Results: In 83 evaluable patients (43 DM and 40 P), median age was 60 years, 61 % were white, and 53 % were women. The mean (SD) FACIT-F at baseline and at day 15 for DM were 18 (11) and 27 (11, $p<0.001$) and for PL were 21 (9) and 24 (12, $p=0.06$), respectively. Mean improvement in the FACIT-F subscale was significantly higher in the DM compared to PL, 9.6 (11) vs. 3.1 (9.7, $p=0.005$). We found a significant improvement in ESAS physical distress score ($p=0.02$), but no differences in ESAS overall SDS ($p=0.11$) and ESAS psychological distress score ($p=0.88$) between DM and PL. There were insignificantly higher numbers of grade ≥3 toxicities in patients who received DM than in patients who received PL (20/42 vs. 18/47, $p=0.37$).
Conclusions: Dexamethasone was more effective than placebo in reducing CRF. Dexamethasone also significantly improved physical distress scores.

983
A randomized, non-inferiority study of balugrastim and pegfilgrastim in breast cancer patients receiving myelosuppressive therapy

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Background: Balugrastim is a long-acting, recombinant human albumin–human granulocyte-colony stimulating factor under development to prevent chemotherapy-induced neutropenia. The objective of this study was to evaluate the safety and efficacy of balugrastim versus pegfilgrastim in breast cancer patients receiving myelosuppressive therapy.
Methods: In this randomized, multicenter, active-controlled trial, patients who were receiving doxorubicin/docetaxel chemotherapy for breast cancer were assigned to treatment. The study included a pilot dose escalation phase to identify two balugrastim doses with similar effects to pegfilgrastim (6 mg) and a main phase powered for efficacy (non-inferiority). During the pilot phase, patients were randomized to receive balugrastim 30 mg or pegfilgrastim 1 day after chemotherapy, with subsequent cohorts receiving balugrastim 40 and 50 mg. In the main phase of the study, a randomized, three-arm, parallel design was used to compare two doses of balugrastim and pegfilgrastim following chemotherapy. The primary end point was the duration of severe neutropenia (DSN) during cycle 1.
Results: In the pilot phase (n=78), DSN, secondary efficacy parameters, and safety were similar across all treatments. Balugrastim 40- and 50-mg doses were selected for further investigation. In the main phase (n=256), no statistically significant differences in mean DSN were observed between balugrastim 40 mg (1.0 days), balugrastim 50 mg (1.3 days), and pegfilgrastim (1.2 days) in cycle 1. The type and frequency of treatment-emergent adverse effects were similar across treatment groups.
Conclusions: These results support the conclusion that balugrastim is non-inferior to pegfilgrastim in patients with breast cancer receiving myelosuppressive therapy. The overall safety profiles of balugrastim and pegfilgrastim were similar.

984
Client resilience in post-transplantation hematopoietic stem cells

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Resilience, the ability to overcome adversity, presents itself as a relevant topic for study in the transplantation of hematopoietic stem cells (TCTH). The TCTH is a therapeutic procedure that aims to restore normal bone marrow function. To investigate, resilience is justified by the way each patient experiences this time of post-transplant. The research aimed to map the clients' level of resilience in post-TCTH and analyze the risk factors and protective presents in the daily post-TCTH. This is a qualitative study conducted with 15 patients after TCH in a Unit of Bone Marrow Transplantation in a university hospital in Rio de Janeiro. As instruments to information collection, the Resilience Scale and a semi-structured interview were used. From the scores of this scale, clients in post-TCTH showed moderate resilience. Through thematic analysis of the interview setup, a thematic unit composed of three subunits: (I) treatment of one as sick and that makes them lose power—the paradox; (II) the internal and external supports—strengthening the coping strategies; and (III) overcoming such a process—one day at a time. It is concluded that the risk factors and the protection found, as well as expectations in post-TCTH, make it possible to understand the process of building the resilience of these patients as well as promote the need for further research.

985
Place of biosimilars in the management of anaemia secondary to chemotherapy in haematology and oncology: results of the ORHEO

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Objectives: Our objective was to evaluate the efficacy and safety of biosimilar epoetin alpha (EA) for the treatment of chemotherapy-induced anaemia in onco-haematology.
Methods: ORHEO is a French observational, longitudinal, multicentric study. Patients >18 years with anaemia [haemoglobin (Hb) <11 g/dL] secondary to chemotherapy for solid tumours, lymphoma or myeloma and eligible for treatment with EA biosimilar were included. Baseline patient characteristics, target Hb, brand and the dose of EA biosimilar prescribed were recorded. Patients were followed at 3 and 6 months. Analyses included Hb response (achievement of target Hb without blood transfusions in the preceding 3 weeks and during treatment *or* Hb≥10 g/dL *or* Hb increase ≥1 g/dL since inclusion) and evaluation of adverse events.
Results: A total of 2,311 patients (mean age, 66.5 years) from 235 centres were included in the study: 79.6 % had solid tumours, 13.0 % lymphoma and 7.4 % myeloma. Mean baseline Hb was 9.6 g/dL and target Hb level was between 12 and 13 g/dL for 51 % of patients. Almost all patients received the biosimilar Retacrit (epoetin zeta; median dose, 30,000 UI/week). Two thousand fifty-six and 1,664 patients had at least one Hb value at 3 and 6 months. Where transfusion data were available, the transfusion rates were 9.4 and 5.8 % at 3 and 6 months, respectively. Of the patients, 81.6 and 86.5 % achieved an Hb response at 3 and 6 months, respectively. EA biosimilar was well tolerated: the rates of thromboembolic events were 2.4 and 1.5 %, respectively, at these time points.
Conclusions: The EA biosimilar Retacrit was effective and well tolerated in the management of chemotherapy-induced anaemia.

986
Efficacy and safety of balugrastim compared with pegfilgrastim in patients with breast cancer who are receiving chemotherapy

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Background: Recombinant granulocyte colony-stimulating factors (G-CSFs) stimulate the proliferation and differentiation of neutrophils. Balugrastim is a long-acting G-CSF composed of a genetic fusion between recombinant human serum albumin and G-CSF. The objective of this study was to compare the efficacy and safety of balugrastim and pegfilgrastim in patients with histologically or cytologically confirmed breast cancer who were scheduled to receive doxorubicin and docetaxel.
Methods: In this double-blind, randomized, active-comparator, non-inferiority trial, patients with $\geq 1.5 \times 10^9$ neutrophils per liter, and $\geq 100 \times 10^9$ platelets per liter were randomly assigned to subcutaneous injections of balugrastim 40 mg (n=153) or pegfilgrastim 6 mg (n=151). The primary efficacy end point was the duration of severe neutropenia during cycle 1 for the population of patients who did not have major protocol violations.

Results: The mean duration of severe neutropenia in cycle 1 was 1.1 days in the balugrastim group and 1.0 days in the pegfilgrastim group (95% CI for difference between groups, −0.13 to 0.37). Fifty-eight percent of patients in the balugrastim group and 59 % in the pegfilgrastim group had severe neutropenia during cycle 1 (95% CI for difference between groups, −11.98 to 10.41 %). Twenty percent of patients in the balugrastim group and 19 % in the pegfilgrastim group had adverse events that the investigator considered to be related to study medication. Six and seven patients, respectively, had serious adverse events.
Conclusions: The results of this study support the non-inferiority of balugrastim versus pegfilgrastim, demonstrating that both compounds have comparable efficacy. There were no unexpected safety events.

987
Opioid analgesic use among Nova Scotia (NS) cancer patients: results from a population-based observational study

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Objectives: The systematic analysis of population-level data on opioid use by cancer patients is limited in North America; however, the Canadian province of Nova Scotia (population about 940,000) has datasets that can support such analysis.
Methods: Opioid use by Nova Scotia (NS) cancer patients was studied by linking data from two provincial health datasets: the NS Cancer Registry (NSCR) and the NS Prescription Monitoring Program (NSPMP) database. Drug use patterns were analyzed for the entire group and in subpopulations (at diagnosis and at end of life). Usage was also examined by age, sex, place of residence (urban or rural), and cancer type.
Results: Eligible cases from the NSCR (54,000) and the NSPMP (290,000) were linked, resulting in 27,700 cancer patients who received 217,600 opioid prescriptions between mid-2005 and the end of 2010. Opioid use included both short-term (<30 days' supply) and chronic use prescriptions. More than half (57 %) of all prescriptions were for strong opioids (e.g., morphine, hydromorphone, fentanyl); 36.5 % for weak opioids (e.g., acetaminophen combinations with codeine or oxycodone); and 6.5 % for other opioids (e.g., meperidine and methadone). A trend toward higher use, expressed as morphine equivalents/day, was seen in younger patients and those with poorer prognosis cancer types. No differences were apparent by sex or place of residence.
Conclusions: Strong opioids comprised the majority of prescriptions, and usage differences were noted by several demographics examined.

988
Dacomitinib (PF-00299804): a comprehensive approach to toxicity evaluation and management in clinical development

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Objectives: Clinical trials are ongoing in lung cancer with dacomitinib, an irreversible, oral pan-HER tyrosine kinase inhibitor. Comprehensive evaluation of treatment-related toxicities from investigator and patient perspectives, complemented by supportive care best practices, were used to develop patient care strategies to optimally manage common adverse events associated with dacomitinib.
Methods: In global phase I/II trials of dacomitinib, dermatologic class effect toxicity was profiled by a customized case report tool characterizing type and location of skin events (including comparison to an approved agent). Health-related quality of life measures (EORTC, DLQI) were used to assess the severity and time course of impact of skin and gastrointestinal toxicity from the patient's perspective. Global nurse/nurse provider advisory boards allowed insight into best practice and the impact of side effect management on clinical staff. Adverse events were assessed by race, disease setting, time to initial onset, worst grade, and required dose modifications.
Results: Data derived from these measures (to be presented) led to the implementation of additional clinic visits coinciding with the potential onset of toxicity; incorporation of evidence-based guidance in phase III trials linking prescriptive intervention to type/grade of events; and a phase II trial (NCT01465802) with the primary objective of defining preventative measures to reduce incidence and severity of common dacomitinib toxicities.
Conclusions: Comprehensive assessment using detailed AE reporting tools, PRO instruments, impact assessment from provider advisory boards, and supportive care experts' input may optimize treatment-related toxicity management in late-stage trials. Specifically designed clinical trials may define and validate evidence-based toxicity prevention measures and improve benefit–risk balance of emerging therapies.

991
Thyroid function (TF) following treatment for childhood acute lymphoblastic leukemia (ALL)

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Objectives: The objective was to identify the long-term effects of childhood lymphoblastic leukemia (ALL) treatment on thyroid function (TF).
Methods: This is a retrospective analysis of a pediatric ALL patient population treated according to the BFM-90/95 Protocols (1994–2010). Evaluation time points were set at (1) diagnosis, (2) end of treatment, (3) 1 year, and (4) more than 3 years following treatment cessation. Patients who underwent transplantation were censored at that time point.
Results: Out of the 168 eligible patients (78 men), 141 had one or more TF evaluation following treatment. At ALL diagnosis, 19 of 27 patients had results within normal limits (WNL), 6 of 27 euthyroid sick syndromes and 2 of 27 compensated hypothyroidisms. At cessation of maintenance chemotherapy, 26 of 38 patients (68.4 %) had results WNL, 2 of 38 compensated and 10 of 38 with evidence of hidden central hypothyroidism. At 1–2 years following chemotherapy cessation, 31 of 38 (81.6 %) had results WNL, 3 of 38 with compensated and 4 of 38 with evidence of hidden central hypothyroidism. At ≥3 years following chemotherapy cessation, 68 of 77 patients (88.3 %) had results WNL, 6 of 77 with central hypothyroidism, 2 of 77 with Hashimoto's thyroiditis, and 1 of 77 patients had elevated TSH due to IFN-γ treatment for hepatitis C. Among the group of patients with long-term follow-up, 12 % was found to have thyroid dysfunction of variable etiologies. No TF abnormality was identified in 25 high-risk patients who received 12 Gy of cranial irradiation. No case of thyroid cancer was reported.
Conclusions: We have identified TF abnormalities in more than 10 % of ALL survivors. This is higher than that reported in other ALL cohorts, like the Finnish (Madanat et al. 2007). ALL patients should

be screened for TF throughout treatment and for long-term sequelae following treatment.

992
Caregivers' communication with terminal cancer patients about illness and death: the importance of ethnicity

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Objectives: Numerous studies document that caregivers face severe difficulties in communicating with their loved ones about both illness and death. It is widely known that culture has a substantial impact on this communication. This study compares the communication level of caregivers from two ethnic groups and examines the contribution of different caregiver characteristics and situational variables to the explanation of communication level within these groups.
Methods: Seventy-seven spouses—who were caregivers of terminal cancer patients—comprising 41 Jews of Sephardic origin and 36 Jews of Ashkenazic origin, participated in the study. The questionnaire included measures of caregiver communication, caregiver characteristics (i.e., age, gender, education level, optimism, self-efficacy) and situational variables (i.e., duration and intensity of care).
Results: Ashkenazic spouses communicated more with their loved ones about the illness and death compared to their Sephardic counterparts. Ethnic origin accounted for 16.6 % of the explained variance, caregiver characteristics added 20.3 %, and situation variables lent a modest contribution of 3.5 %. Four variables emerged as significant predictors of caregivers' level of communication: self-efficacy (β=0.33, p<0.05), gender (β=0.32, p<0.01), ethnic origin (β=0.25, p<0.05), and duration of care (β=0.20, p<0.05).
Conclusion: This study demonstrates the importance of ethnic origin to caregivers' level of communication with terminal cancer patients about illness and death. Furthermore, communication level with patients is mostly explained by the caregivers' characteristics. These traits should be considered by professionals when developing intervention programs for increasing caregivers' level of communication with dying patients.

993
Sperm cryoperservation in young adolescents following cancer diagnosis

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Objectives: Our objective was to establish practices in securing future fertility for young adolescent males diagnosed with cancer.
Methods: Since 1997, sperm cryopreservation has been proposed to newly diagnosed cancer patients. As we are allowed to admit patients <16 years old (<14 until 2007), our patient pool was limited. All male patients in good general condition, (excluding leukemias), demonstrating Tanner stage ≥III, and adequate testicular volume were eligible, provided that a few days of treatment initiation delay was not jeopardizing their cure prospective. All sperm collections were done without preceding, evaluation only; spermogram and all products were preserved.
Results: In total, 17 boys were proposed for sperm cryopreservation, at a median age of 14.7 years (12.2–17.1) diagnosed with: Hodgkin's lymphoma (8), non-Hodgkin's lymphoma (2), and sarcomas (7). Four families denied our proposal due to religious conflicts, and one patient did not produce sperm due to paternal attitude. For the remaining ten patients, there was successful sperm donation one to three times. One Hodgkin's lymphoma patient was azoospermic, and the remaining 11 patients had normal spermogram or oligospermia. None of the products has been requested for fertilization yet.
Conclusions: With proper approach, explanations, and guidance, usually with support from older siblings, our young patients proved mature and competent in handling such complex issues, like the concept of future fertility preservation, while being presented with the diagnosis of malignancy. The procedure was fast and effective. Our proposal also indicated to them our expectation for long-term survival while being an integral part of our manifold approach to cancer treatment.

995
Client resilience in oncological treatment

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Introduction: This is an exploratory descriptive study with a qualitative approach whose objective was to examine the coping strategies used by clients during cancer chemotherapy in an outpatient setting. The study had the following questions: What are the hardships experienced by patients in an outpatient chemotherapy? What are the coping strategies used by patients in an outpatient chemotherapy?
Methodology: Data collection was performed in 2011 through recorded interviews with the subjects in this study, 16 clients with cancer undergoing chemotherapy outpatient clinic of a hospital in Rio de Janeiro.
Results and discussion: From the analysis of these interviews, eight subcategories were revealed—anxiety, ineffective therapeutic regimen, body image disturbance, ineffective coping, powerlessness, increased willingness to confront, increased provision for religious, and social isolation—which were correlated with predetermined categories, namely, difficulties and the strategies and coping. We conclude that although cancer is a chronic illness surrounded by stigma and prejudice, the relationship between adversity and coping strategies was expressed through resilience, which is developed by these individuals as a process of positive building about the situation of falling ill from cancer associated with chemotherapy.

996
The supportive care needs of survivors of head and neck cancer in Ireland: are needs being met?

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Objectives: There is increasing evidence that cancer survivors can have significant supportive care needs. We used qualitative methods

to explore the support needs of head and neck cancer survivors and whether these are being met.
Methods: Two sets of face-to-face, semi-structured interviews were conducted with

1. Health professionals involved in head and neck cancer care (consultants, clinical nurse specialists, and allied health professionals)
2. Head and neck cancer survivors who were at least 1 year post-diagnosis.

Health professionals were asked about survivors' support needs post-treatment, if needs were being met, any barriers to meeting needs and additional supports/services needed. Survivors were asked about their experiences post-treatment, support offered and provided, by whom and where, support(s) used and any additional supports/services needed. Interviews were audio-recorded and transcribed verbatim. The two sets were analysed separately using a content analysis approach.
Results: Thirty-one health professionals and 17 survivors were interviewed. Similar themes emerged from the two interview sets. Support needs were identified in a range of areas, including: information, emotional and psychological issues, medical matters, and financial and social issues. Support needs can arise across the full survivorship trajectory, long after initial treatment ends. Gaps in existing services were identified, particularly post-treatment. Survivors felt that supportive care should be available post-treatment for those who need it.
Conclusions: The findings shed light on survivors' experiences and support needs, revealing that these often go unmet, especially post-treatment. Recommendations and suggestions from health professionals and survivors could help improve existing supportive care services.

997
Lipegfilgrastim—a long-acting, once-per-cycle filgrastim: pharmacokinetics and pharmacodynamics in healthy volunteers

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Background: Long-acting filgrastim offers the advantage of less dosing intervals when used for the reduction of neutropenia and incidence of febrile neutropenia in patients treated with cytotoxic chemotherapy for malignancy. Lipegfilgrastim (XM22) is a once-per-cycle filgrastim that was evaluated in two pharmacokinetic and pharmacodynamic studies of healthy volunteers.
Materials and methods: The first study was a single dose, dose-escalating study using a body weight-adjusted dosing (25, 50, and 100 μg/kg). In the second study, a single, fixed-dose (6 mg) lipegfilgrastim was compared with a single fixed-dose pegfilgrastim (6 mg) using a parallel-group design. Pharmacokinetic and pharmacodynamic parameters and safety were studied after all subcutaneous administrations.
Results: A dose-dependent increase in bioavailability was observed and absolute neutrophil count (ANC) increased in subjects receiving lipegfilgrastim in a manner similar to that of pegfilgrastim. The pharmacokinetic parameters for lipegfilgrastim at the 100-μg/kg and 6-mg doses showed a greater bioavailability of lipegfilgrastim compared with an equivalent dose of pegfilgrastim (about 60 % greater AUC). Furthermore, a greater pharmacodynamic effect of lipegfilgrastim was found compared with an equivalent dose of pegfilgrastim (about 30 % higher ANC response). Lipegfilgrastim was well tolerated by the subjects in this study.
Conclusions: Clinical pharmacokinetic and pharmacodynamic data demonstrate a dose-dependent increase of the bioavailability of lipegfilgrastim and, consequently, a dose-dependent increase of the ANC. The dose of 100 μg/kg lipegfilgrastim appears to be the optimal dose; further study is warranted.

998
Association between conformance to supportive and palliative care quality measures and patient quality of life

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Objectives: Quality assessment by oncology is an escalating expectation, but evidence linking regular quality monitoring and improvements in clinical outcomes remains immature. Is conformance with quality measures associated with higher quality of life (QOL) among cancer patients receiving palliative care?
Methods: All cancer patients seen between June 2008 and October 2011 in a four-site community-based palliative care consortium were included for analyses. Conformance to 18 evaluable supportive or palliative care quality measures derived from the ASCO QOPI, Hospice PEACE, and Cancer-ASSIST quality metrics sets was calculated. Demographic variables, performance status (measured by palliative performance scale, PPS), and provider estimation of prognosis were included in univariate and multivariate regression analyses as potential predictors of higher QOL. Patient-reported QOL was assessed during each visit using a four-level categorical scale; change by at least one level on the scale was considered meaningful.
Results: Four hundred sixty patients met the analysis inclusion criteria. Median PPS was 40 %; 60 % of patients had weeks to 6 months expected prognosis. Conformance to five quality measures was significantly associated with higher QOL: constipation assessment at the time of narcotic prescription, emotional well-being assessment, screening of symptoms at first visit, timely treatment for uncontrolled dyspnea, and assessment of fatigue (all $p \leq 0.05$). In a multivariate model including demographics, PPS, life expectancy, quality measures, and referral reason, measures involving emotional well-being assessment (OR=1.60, $p=0.026$) and screening of symptoms (OR=1.74, $p=0.008$) remained significant.
Conclusions: Quality measurement and conformance focused on cancer symptom and emotional assessment were significantly associated with better patient experiences.

999
A prospective study of family conferences (FCs) in a palliative care unit (PCU) at a comprehensive cancer center

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Purpose: The purpose of our study was to determine the characteristics of family conferences (FCs) and the effect of patient participation on emotional expression by family members during a FC.
Methods: A prospective study was conducted during an 18-month period with 140 consecutive FCs. The data collected included demographics, discharge disposition, number of participants, caregiver characteristics, expressions of emotional distress, conflict with healthcare providers, and topics discussed.
Results: Seventy patients (50 %) were women, 64 (46 %) white, 127 (91 %) had solid tumors, and the median age was 59 years. In 68 of 140

family meetings (49 %), patients actively participated. The primary caregivers were predominantly female (66 %), white (49 %), and either the spouse or partner (59 %). A median number of four family members and four healthcare providers attended the FCs with median duration of 1 h and median of 2 days prior to discharge. Questions concerning advanced directives, symptoms anticipated at death, and caregiver well-being were infrequent. Patients verbalized distress frequently (73.1 %). Primary caregivers' emotional expressions of verbal distress were high, but not significantly affected by patient presence (82 vs. 82 %, P=NS); however, verbal expressions of emotional distress by family were more common when patients were absent (87 %) than when present (73 %, p=0.037).
Conclusions: There was a high frequency of expression of emotional distress by patients and family members. Patient participation was associated with decreased verbal emotional expression by family members, but not the primary caregiver. Further studies are needed on the benefits of allocating additional time to meet with family members without patient presence during a FC.

1001
Survival after chemoradiation and correlation with nutritional status in patients with locally advanced pancreatic cancer

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Background: Cancer patients commonly suffer from weight loss since rapid tumour growth can lead to a catabolic metabolism with depletion of energy storages such as abdominal fat. In locally advanced pancreatic cancer, this is even pronounced due to nausea and vomiting or pancreas-associated malnutrition. Here, we quantify the clinical frequently observed weight loss and assess its impact on survival.
Methods: Of the last 100 patients with locally advanced pancreatic cancer treated with neoadjuvant gemcitabine-based chemoradiation, data on height, weight, pre- and post-treatment CT information, and long-term survival were collected retrospectively. Subcutaneous fat area (SFA) of transversal CT slices at umbilicus level was measured at the beginning of treatment and at first follow-up.
Results: After neoadjuvant chemoradiation, patients had an absolute and relative weight loss of 2.6 kg and 3.5 %, respectively (p<0.0001). During treatment, SFA decreased by 2,853 mm² (p<0.0001), which was strongly correlated to patients' BMI (Pearson r=0.78). By categorizing patients according to the WHO BMI classification as slender (BMI<20 kg/m²), normal, overweight, and obese (BMI≥30 kg/m²), we found an improved long-term survival with increasing BMI (p< 0.0001). However, the relative extent of weight loss only showed a trend that patients who did not lose much weight (<2.5 % with 10.9 months vs. ≥10 % with 8.5 months) survive longer.
Conclusion: Obese patients had an improved outcome after treatment possibly due to more energy reserves. Although the extent of weight loss showed no significant survival benefit, these data demand future focus on nutrition during chemoradiation.

1002
Laboratory profile of cancer patients expiring at an acute palliative care unit in Qatar

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Background: Cancer patients are prone to developing electrolyte imbalance and elevation in liver function tests in response to the disease process and treatment. This study outlines some of the abnormalities in the laboratory profile of cancer patients dying in an acute palliative care unit (APCU) at the National Center for Cancer Care and Research in Qatar.
Methods: We retrospectively reviewed the records of cancer patients who expired in the APCU over a period of 3 years. The most extreme electrolyte values and liver function tests for these patients, during the 14 days prior to their expiration, were recorded and classified according to the Common Terminology Criteria for Adverse Events.
Results: Out of the 133 patients who expired in the unit, 50 % were men and 42 % were Qatari nationals. Gastrointestinal malignancies were the most common (30 %), and most patients (85 %) had metastatic disease: 24.8 % had liver metastasis and 33.8 % had bone metastasis.

Abnormality	Prevalence (%)	% Severe (Grade 3-4)
Hypoalbunemia	94.7	25.8
Alkaline Phophatase	78.4	20.0
Elevated AST	70.5	23.0
Hyponatremia	65.2	34.8
Elevated ALT	57.4	13.2
Hyperbilirubinemia	40.5	23.7
Hyperkalemia	34.8	9.8
Hypokalemia	32.6	12.9
High aPTT	30.2	3.1
Hypomagnesemia	25.6	0
Hypocalcemia	22.7	0.8
Hypermagnesemia	22.5	5.43
Hypercalcemia	21.2	4.5
Hypernatremia	15.9	4.5
Hypoglycemia	14.5	3.1

Laboratory abnormalities and severity

Conclusions: Electrolytes imbalance and other laboratory abnormalities were prevalent in the last 2 weeks of life of dying cancer patients. In this study, hyponatremia, hypoalbunemia, hyperbilirubinemia, elevated AST, and high alkaline phosphatase were the most common abnormalities noted.

1003
Symptoms in chronic myeloid leukemia survivors on tyrosine kinase inhibitor therapy at two cancer centers

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Objectives: Patients with chronic myeloid leukemia (CML) frequently receive long-term tyrosine kinase inhibitor (TKI) therapy to successfully manage their disease. Little is known about patient-reported symptoms of this therapy. We compared symptoms reported by patients from two major cancer centers to understand the symptom experience of this population of survivors.
Methods: Symptoms were collected in institutionally approved clinical trials from patients with CML receiving TKIs at MD Anderson Cancer Center (MDACC, n=130) using the MD Anderson Symptom Inventory for CML and at Moffitt Cancer Center (MCC, n=62) using the Memorial Symptom Assessment Scale—Short Form. Characteristics and symptom profiles were compared between patient groups using chi-square and analysis of variance tests.
Results: MDACC patients were significantly younger than MCC patients (p=0.03) and more likely to be working rather than retired (p=0.009). The most common TKI at both centers was imatinib, while dasatinib was more frequently prescribed at MDACC and nilotinib (p=0.04) at MCC. Significantly fewer MDACC patients reported pain (p=0.001) and nausea (p=0.027) than MCC patients. MDACC patients reported more swelling (p=0.002) than MCC patients. Of patients reporting 15 common symptoms, comparing low and high severity (MDACC) versus low and high distress/bother (MCC), only loss of appetite was significantly different (more MCC patients in the high group, p=0.017).
Conclusions: Survivors with CML on TKI therapy at two cancer centers report similar symptoms using different symptom assessment scales. Symptoms can impact function and may affect therapy compliance. Research is needed to understand the impact of symptoms on therapy compliance.

1004
A randomized, double-blind, active control, multicenter, dose finding study of lipegfilgrastim in breast cancer patients receiving myelosuppressive therapy

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Background: Lipegfilgrastim is a glyco-PEGylated r-metHuG-CSF that is being developed for the reduction of duration of severe neutropenia and incidence of febrile neutropenia in cancer patients undergoing chemotherapy. The primary objective of this study was to identify the optimal fixed dose of lipegfilgrastim compared with pegfilgrastim in breast cancer patients receiving chemotherapy.
Methods: This was a multinational, multicenter, randomized, double-blind, active-controlled study evaluating the efficacy and safety of fixed doses of lipegfilgrastim compared with 6 mg of pegfilgrastim in breast cancer patients receiving four cycles of doxorubicin 60 mg/m^2 and docetaxel 75 mg/m^2. Lipegfilgrastim (3, 4.5, or 6 mg) or pegfilgrastim (6 mg) was administered subcutaneously approximately 24 h after chemotherapy on each of the four cycles. The primary end point was the duration of severe neutropenia (DSN) in cycle 1.
Results: Two hundred eight patients were randomized to lipegfilgrastim 3 mg (n=53), 4.5 mg (n=51), or 6 mg (n=50), or to pegfilgrastim 6 mg (n=54). Six patients did not complete the study. Demographic and baseline characteristics were comparable across the treatment groups. DSN durations in cycle 1 were 1.1, 0.8, 0.8, and 0.9 days in the lipegfilgrastim 3, 4.5, and 6 mg and pegfilgrastim groups, respectively. Using multivariate Poisson regression for the primary end point, greater efficacy was seen with higher lipegfilgrastim doses. Treatment-emergent adverse events were similar between the treatment groups.
Conclusions: DSN in cycle 1 was similar for all treatment groups; however, there was a clear trend to shorter DSN with higher lipegfilgrastim doses. The study supported the use of lipegfilgrastim 6 mg in future clinical studies.

1005
Treatment results of oral antibiotic prolonged-administration therapy for patients with early stage of bisphosphonate-related osteonecrosis of the jaw

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Introduction: Various treatment results for bisphosphonate-related osteonecrosis of the jaw (BRONJ) were reported so far. However, an explicit method of treatment is not established. Some symptoms caused by osteomyelitis seemed to be a prodrome to the development of BRONJ. This clinical condition was categorized as stage 0 by recent clinical staging system.
Objective: The purpose of this study was to clarify the treatment results of early-stage BRONJ by the oral antibiotic prolonged-administration therapy.
Methods: We performed an investigation retrospectively about the treatment elapse and the treatment results of the 18 patients diagnosed as BRONJ after the administration of intravenous bisphosphonates, according to the diagnostic BRONJ criteria by AAOMS from 2002 to 2010.
Results: We identified 18 cases of intravenous BRONJ (median age, 66 years; 14 women), of whom 11 patients had breast cancer, five patients had multiple myeloma, and the remainder had malignant lymphoma and lung cancer. Seventeen (94.4 %) patients had stage 0 and one patient had stage 1. Using the Kaplan–Meier method, we analyzed the elapsed time from the administration of intravenous bisphosphonates to onset. Of more than half of the cases, BRONJ occurred within the 24 months of bisphosphonate administration. The average duration of antibiotic therapy was 16.8 months. Seven (39 %) patients were cured and 11 (61 %) had remission. We could not find any cases of exacerbation.
Conclusion: Detection of early stage of BRONJ and oral antibiotic prolonged-administration therapy may contribute to the improvement of quality of life patients suffering from refractory osteomyelitis or osteonecrosis of the jaw.

1006

A murine model of anemia-independent chemotherapy-related fatigue (CRF)

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Introduction: Fatigue is among the most prevalent and distressing symptoms reported by cancer patients. Its lingering impact impedes recovery and quality of life, even among survivors. Despite the prevalence and impact of chemotherapy-related fatigue (CRF), there are no effective interventions. Development of pharmaceutical therapies has been stymied by the lack of an animal model of CRF.
Objective: The purpose of this study was to establish an animal model of CRF.
Methods: Various mouse strains, chemotherapy agents, and doses were tested in preliminary studies. The optimized protocol examined female HSD:ICR mice following two cycles of doxorubicin. Following dosing, mice were individually housed in cages equipped with running wheels. Wheel running activity was automatically recorded for 2 weeks. Mice were then tested for activity using an open-field apparatus. Following testing, mice were killed and blood samples collected.
Results: Wheel running was significantly reduced in doxorubicin-treated animals. Consistent with clinical observations, this effect was greatest during the second half of the active phase. Open-field activity was similarly reduced and correlated with wheel running. Blood analysis demonstrated that CRF was unrelated to anemia or leukopenia. Consistent with human data, significantly higher levels of IL-6 and TNF-α were associated with CRF.
Conclusions: The current results demonstrate a CRF animal model in which activity and biomarkers are similar to those reported in humans. Reductions in voluntary wheel running as well as open-field activity demonstrate face validity for a measure of physical fatigue.

1007

A complex care: communication of bad news in oncology

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Objectives: The main objectives of this paper were to analyze the scientific production that addresses the issue of bad news in oncology and discuss the communication of bad news in oncology.
Methodology: The methodology consists of a literature review of qualitative approach.
Results: As a result, three thematic units were developed: the first about the lack of professional training in communicating bad news, the second thematic unit about the difficulty of the professional in communication of bad news, and the third unit about the Spikes protocol and its contribution to professional practice.
Conclusion: Articles related to communicating bad news and nursing professionals are still scarce, although there are studies on this topic. Hence, considering that the nurse is a healthcare professional whose action is focused on customer needs and responses of the individual/family and community, more research in this area is necessary.

1008

Cancer patients preferences for information in Cyprus

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Objectives: In our oncology practice in Cyprus, there are often requests for collusion from relatives, whilst there are no data as to patients' preferences for information. We therefore undertook this survey to inform our practice.
Methods: The Cassileth questionnaire, enriched with questions relating to the control of information and collusion, was given to 100 consecutive new patients attending the BOC Oncology Centre.
Results: Seventy-nine per cent said that they want as much information as possible, 7 % wanting additional information only if it is good news, and 6 % did not want to know any details. Sixty-two per cent of patients wanted to know everything and for themselves to decide how much their family would know, whilst 19 % wanted their family to know everything and the family to decide how much the patient would know.
Conclusion: The majority of cancer patients in Cyprus would like to have information about their illness and to control the information that their family receives. Health professionals in Cyprus need to take these findings into consideration in their consultations with cancer patients and relatives.

	Absolutely need this info (%)	Would like this info (%)	No views (%)	Would not like this info (%)	Do not want this info (%)	Not completed (%)
Exact name of disease	76	13	1	1	1	8
Whether it is cancer	75	10	1	2	4	8
Weekly progress	71	15	2	2	2	8
Cure Possibilities	78	13	1	0	0	8
Prognosis	72	12	2	2	4	8
Possible treatments	77	13	1	0	1	8
Side effects	78	10	2	1	1	8

Patients' answers

1010

Efficacy and safety of lipegfilgrastim compared with pegfilgrastim in patients with breast cancer who are receiving chemotherapy

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Background: Cancer chemotherapy frequently causes neutropenia, leading to an increased risk of infections and delays in subsequent chemotherapy treatments. Lipegfilgrastim is a glycosylated and pegylated granulocyte colony-stimulating factor (G-CSF) that extends the half-life and requires less frequent dosing than non-pegylated G-CSF. The objective of this study was to compare the efficacy and safety of lipegfilgrastim and pegfilgrastim in chemotherapy-naive patients with breast cancer who are candidates to receive docetaxel/doxorubicin.
Methods: In this double-blind, randomized, active-controlled, non-inferiority trial, patients with breast cancer and an absolute neutrophil count $\geq 1.5 \times 10^9$ cells per liter were randomly assigned to lipegfilgrastim 6 mg (n=101) or pegfilgrastim 6 mg (n=101). Study medication was injected subcutaneously on day 2 of the chemotherapy cycle (four cycles maximum). The primary efficacy end point was the duration of severe neutropenia during cycle 1. The efficacy analysis population included patients who were randomized but did not have major protocol violations.
Results: The mean duration of severe neutropenia in cycle 1 was 0.7 days in the lipegfilgrastim group and 0.8 days in the pegfilgrastim group [Poisson regression least squares mean (95% CI), −0.218 (−0.498 to 0.062)]. Fifty-six percent and 49 %, respectively, did not experience severe neutropenia in cycle 1. Twenty-eight percent of patients in the lipegfilgrastim group and 26 % in the pegfilgrastim group had adverse events that the investigator considered to be related to study medication. Three and seven patients, respectively, had serious adverse events.
Conclusions: The results of this study confirm that the efficacy of lipegfilgrastim is comparable with pegfilgrastim. No unexpected safety events were observed.

1011

Effect of ethyl acetate extract of the shaggy ink cap medicinal mushroom, *Coprinus comatus* on proliferation and induction of apoptosis in human ovarian cancer cells

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Objectives: This study investigates the effect of the ethyl acetate extract of *Coprinus comatus* fruit bodies (CCFB) on the viability and induction of apoptosis in human ovarian cancer cells and clarifies the apoptotic pathway.
Methods: Powdered CCFB was extracted by ethyl acetate (1 g/30 mL) at room temperature and vacuum-concentrated. Next, it was eluted through a silica gel column by a rising gradient of ethyl acetate in *n*-hexane. Six fractions were collected, vacuum-dried, and resolved in dimethyl sulfoxide (100 mg/mL). The effects of ethyl acetate extract of CCFB and its fractions on the viability of ovarian cancer cells were examined by XTT assay. The effect of the most active fraction (CCFB-AF) on the cell cycle was examined by FACS analysis. The induction of apoptosis was examined by TUNEL and annexin assays. The apoptotic pathways were investigated by determining caspase activation (caspase-3, caspase-8, and caspase-9) using Western blot analysis.
Results: The ethyl acetate extract of CCFB significantly reduced the viability of ovarian cancer cells. The IC_{50} values of CCFB-AF were 50 μg/mL for ES-2 and SW-626 cells and 75 μg/mL for SKOV-3 cells. Treatment of cells with sub-lethal concentrations of CCFB-A, for 48 or 72 h, resulted in an induction of apoptosis in all investigated cell lines. Demonstrations were established on the evidences of an increase in the number of cells at sub-G1, number of cells stained by annexin, and the number of cells stained by TUNEL. Activation of caspase-3, caspase-8, and caspase-9 was demonstrated.
Conclusions: CCFB-AF induced apoptosis in human ovarian cancer cells by both intrinsic and extrinsic pathways.

1012

Association of health-related quality of life with gender of patients with chronic lymphocytic leukemia

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Objectives: Because patients' responses to disease may vary by gender, this analysis characterizes the health-related quality of life (HRQOL) of patients with chronic lymphocytic leukemia (CLL) in the USA by gender.
Methods: Baseline data were collected as part of Connect® CLL, a prospective observational registry initiated in 2010. Patient demographics and clinical characteristics were provided by clinicians. Patients reported HRQOL using the Brief Fatigue Inventory (BFI), EQ-5D, and Functional Assessment of Cancer Therapy—Leukemia (FACT-Leu). Mean reported BFI, EQ-5D, and FACT-Leu scores were assessed. Statistical significance of differences was assessed by ANOVA (SAS 9.1).
Results: HRQOL data were reported by 567 (63 %) men and 332 (37 %) women from 161 centers. Patients were mostly white (90 %), with mean age of 70 (SD=11)years. On the BFI, women reported worse average global fatigue (p=0.0003), fatigue severity (p<0.0001), and fatigue-related interference (p=0.0016). The mean overall quality of life, measured by the EQ-5D Visual Analogue Scale (p=0.6775), and the FACT-LEU overall score (p=0.1467) did not differ by gender. Two of five EQ-5D domains were statistically different as women reported worse pain/disability (p=0.0071) and anxiety/depression (p=0.0265). EQ-5D domains of mobility, self-care, and usual activities were not different. While the average FACT-Leu physical (p=0.0097) and CLL-specific (p=0.0016) scores were better among men, the average social/family score was better among women (p=0.0248).
Conclusions: Initial Connect® CLL Registry data indicate that overall HRQOL is generally of comparable overall magnitude in female and male patients with CLL. However, differences between the two groups did exist in certain domains.

1013

Results from the prospective, multi-institutional, double-blind, sham-controlled clinical trial of MuGard™ for symptom control due to mucositis in chemoradiation-treated head and neck cancer patients

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Objectives: Oral mucositis (OM) is a frequent and significant toxicity of regimens used for the treatment of cancer. Pain associated with OM

is of such severity that opioids are commonly used for palliation. MuGard™ Oral Wound Rinse has FDA marketing allowance for the management of OM. The results of a previous clinical study of MuGard™ in which the device was compared to a historical control suggested an OM benefit in chemoradiation (CRT)-treated head and neck cancer patients. It was determined that a multicenter, prospective, double-blind, sham-controlled study would be needed to provide definitive evidence of efficacy.

Methods: A US multicenter, randomized, double-blind, sham-controlled two-arm study is being conducted in subjects receiving standard regimens of CRT for the treatment of HNC to assess the efficacy of MuGard. The primary outcome measure is the evaluation of the efficacy of MuGard on reducing OM symptoms as measured by the validated patient-reported instrument, the Oral Mucositis Daily Questionnaire. Additional study end points include snapshot clinician assessment of WHO scored OM at approximately 40 and 70 Gy of cumulative radiation, delay to the onset of OM symptoms, and reduction of health and resource outcomes. Further details can be found at: http://clinicaltrial.gov/ct2/show/NCT01283906.

Results: To date (February 2012), 61 patients have been enrolled in the study. An interim analysis was conducted which strongly supported study continuation. Results and statistical analysis of completed subjects will be presented at the symposium.

Conclusions: This study represents the first multi-institutional, blinded, controlled study of a device designed for OM intervention.

1014
Efficacy and safety of lipegfilgrastim in patients with lung cancer who are receiving chemotherapy

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Background: Recombinant granulocyte colony-stimulating factors (G-CSFs) promote the proliferation and differentiation of neutrophils in patients receiving chemotherapy who are at risk of neutropenia. We evaluated lipegfilgrastim, a glycosylated and pegylated G-CSF, in patients receiving cisplatin/etoposide for stage IIIb/IV non-small cell lung cancer.

Methods: In this double-blind, randomized, placebo-controlled study, patients with $\geq 1.5\times10^9$ neutrophils per liter and $\geq 100\times10^9$ platelets per liter were randomly assigned to lipegfilgrastim 6 mg ($n=250$) or placebo ($n=125$). Study medication was injected subcutaneously on day 4 of the chemotherapy cycle. The primary efficacy end point was the incidence of febrile neutropenia during cycle 1. Secondary end points included the duration of severe neutropenia.

Results: Of the patients, 2.4 % of those in the lipegfilgrastim group and 5.6 % of those in the placebo group had febrile neutropenia during cycle 1 [odds ratio (95% CI)=0.390 (0.121–1.260), $p=0.1151$]. Mean durations of severe neutropenia in cycle 1 were 0.6 and 2.3 days, respectively [least squares mean difference (95% CI)=−1.661 (−2.089 to −1.232), $p<0.0001$]. Thirty-two percent and 59 %, respectively, experienced severe neutropenia in cycle 1 [odds ratio (95% CI)=0.325 (0.206–0.512), $p<0.0001$]. Fourteen percent and 10 %, respectively, had adverse events that the investigator considered to be related to study medication. Twenty-three percent and 18 %, respectively, had serious adverse events.

Conclusions: Odds ratio for the incidence of febrile neutropenia in the lipegfilgrastim group is in line with the published results for filgrastim and pegfilgrastim. The incidence and duration of severe neutropenia was significantly reduced in patients who received lipegfilgrastim. No unexpected safety events were observed.

1017
Interregional guideline of fertility preservation in cancer

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Introduction: An overall improvement of the prognosis of cancer and a better consideration of post-cancer have been observed during the last decade; changes in the methods and indications for fertility preservation, very "technical," often remain little known by professionals in oncology, and unequal access to a specific management.

Objectives: Our objective was to elaborate a guideline for professionals to better inform patient and decision makers in the management of fertility preservation in cancer.

Method: In accordance with the procedure of the AFSOS, the study involved constitution of an interregional working group including physician specialized in oncofertility for women and men, oncologists, surgeons, supportive care specialists, and other professionals.

- Analysis of the published literature
- Several phone meetings allowing circumscribing the question, defining the methodology, and elaborating a work plan
- Presentation and debate during the national supportive care guideline sharing days, organized by AFSOS on December 2nd and 3rd, 2011
- Integration of modifications
- Validation by consensus in plenary session

Result and conclusion: A shared interregional and multidisciplinary guideline is a very useful tool to help teams choose the most appropriate method: a decision was to be taken by the physician specializing in oncofertility, in consultation with the oncologist (medical or surgeon) who must give the necessary information about the patient (pathology, treatment provided). With this guideline, the oncologist has a knowledge base that will enable him to better identify opportunities for his (her) patient(s) in order to propose a referral to a specific treatment. The same group formalizes some recommendations about contraception for cancer patients.

1018
A randomized phase II study to assess the effectiveness of fluid therapy or intensive nutritional support on survival in patients with advanced cancer who cannot be nourished via enteral route

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Objectives: Experts advise not to use parenteral nutrition (PN) for advanced cancer patient at the end of life. But in real practice in Korea, many patients and families fear starving to death. Thus, many physicians administer PN to the patients with advanced cancer. We designed this study to investigate the effect of PN in the end of life.

Methods: This study was conducted in Seoul Medical Center in June 2011–December 2011. The institutional review board approved this study. We prospectively enrolled patients with life expectancy <3 months due to progressive cancer. Patients with functioning bowels were

excluded. Patients were randomized to receive either fluid or PN. Statistical analysis was done using PASW Statistics v18.
Results: The study was closed early because patients and families were repulsed by this study due to concerns of starving to death. A total of 31 patients were enrolled (M/F=19/12). Median age is 59 years (range, 40–83 years) and median survival was 9 (95% CI=3.7–14.3)days. Sixteen patients were assigned to the PN group. Baseline characteristics were not significantly different between the two groups, including nutritional parameters. The mean administered calorie was 374.7 (±71.7)kcal/day for the fluid group and 1,286.8 (±108.3)kcal/day for the PN group ($p<0.001$ by t test). Median survival rates were 8 (95% CI=5.7–10.3)days and 13 (95% CI=3.1–22.9)days; this difference was not statistically significant ($p=0.982$ by log-rank test).
Conclusions: This study is not conclusive to determine the role of PN for advanced cancer patients. But PN failed prolonging survival. Further study is warranted to give us more information.

1019
Dental extractions in oncology patients receiving bisphosphonates

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Objectives: Bisphosphonates have been associated with jaw bone osteonecrosis. Dental extraction is considered as the main risk factor. Dental extraction is recommended in cases of already established osteonecrosis. We present the outcomes of dental extractions performed in patients receiving bisphosphonates.
Case presentation: Dental extractions were performed on eight patients. The underlying diagnoses were breast cancer in three patients, multiple myeloma in four patients, and osteoporosis in one patient. The mean time of bisphosphonate administration was 46 months. In three cases, dental extraction was performed at a site of exposed bone. The extractions were decided after failure of conservative treatment. The patients were receiving antibiotic schemes for 4 months on average; in terms of conservative treatment and 2 days before the procedure, amoxicillin with clavoulanic acid 625 mg×3 was administered. The patients continued antibiotic treatment with regular follow-ups until complete healing of the extraction sockets was achieved. Complete healing was seen in all cases with a mean time of 15 weeks. In three cases, in addition to antibiotics, local applications of ozone oil at the site of extraction were performed, with healing in 7 weeks mean time. In cases of already developed osteonecrosis, the lesion remains stable, with no signs of infection.
Conclusion: Dental extraction may be the treatment of choice in patients receiving bisphosphonates, when it is performed under appropriate antibiotic treatment, since complete post-extraction healing may be achieved.

1021
4 years after: the AFSOS [1] project of interregional and shared guidelines in supportive care

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Context: In France, access to care support is a right of cancer patients. It is enshrined in the health regulations. But equity in this access is still evolving. In this context, AFSOS and the French oncology networks desired to support professionals by organizing the sharing and exchanges on the decision support tools.
Objectives: Our objectives were to gradually enlist all French regional cancer networks and all French experts in selecting the priority thematic, methodological support in the working groups and to involve the maximum of professionals in rereading and validation of shared guidelines.
Method:

- Establishment of an AFSOS committee dedicated to supporting methodological and organizational project
- Needs analysis and choice of themes by regional cancer networks
- Recruitment of experts by both the networks and the learned societies
- Establishment of an interdisciplinary working group
- Organization of a rereading solicitant learned society and cancer networks
- National Day (J2R) with dedicated workshops and plenary sessions to confirm or update the guidelines

Results and conclusion: After 4 years, AFSOS with regional networks has 30 different guidelines and attended by professionals of all French regions (oncologists, surgeons, supportive care specialists, nurses, etc.).
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1022
The effectiveness of ^{153}Sm-EDTMP for palliative therapy of patients with painful multiple bone metastases

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Objectives: The aim of this study was the evaluation of palliative effect and myelotoxicity of ^{153}Sm-EDTMP treatment in painful bone metastases.
Methods: Sixteen cases (nine men, seven women; mean age, 57.25±16.74 years) with refractory painful bone metastases entered in a before–after study. A standard questionnaire for numeric rating of pain severity, quality of life (QL), and analgesic dose was applied and scores before and after the second, fourth, and eighth weeks after treatment were recorded. Cell blood count was monitored up to 4 weeks after treatment. A standard common toxicity criteria (CTC) was defined for scoring the degree of myelotoxicity. Repeated measures analysis of variances was applied to analyze within-subject effects of treatment on the scores over different time points of the study.
Results: A significant pain relief was found in 68.7 % of patients by the second week after treatment. The rate of significant pain relief at the end of the eighth week was 75 %. The average total pain scores in repeated measures significantly reduced from 5.68± 1.97 to 4.42±2.44 ($p=0.048$) and 4.12±1.61 ($p=0.032$) by the second and fourth weeks after treatment, respectively. The QL scores were also improved over three time points of the study ($p=0.002$). Although the average cell blood counts after treatment were diminished compared to baseline, all patients were in grade 1 or 2 of myelotoxicity based on the CTC scores.
Conclusions: This study reveals significant analgesic effect for ^{153}Sm-EDTMP in refractory metastasis-related bone pain. This treatment also improves quality of life and reduces needed analgesic dose with trivial adverse effects.

1023
Effect of topical phenytoin on radiotherapy- and chemotherapy-induced mucositis

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Objectives: Oral mucositis is one of the most common side effects of chemotherapy and radiotherapy determined by inflammation ulcer, pseudomembrane, pain, and burning sensation of the oral mucosa. Despite numerous investigations, no definite treatment exists yet. Phenytoin via multiple mechanisms has positive effects on healing of mucosal and dermal ulcers. In this study, the efficacy of 1 % phenytoin mouthwash on the severity of mucositis, pain relief, and promotion of the patients' quality of life has been evaluated.
Methods and material: In a triple-blind, randomized clinical trial, eight patients in the study group were given 1 % phenytoin mouthwash three times a day, each time 10 ml for 1 min. Eight patients in the control group underwent the current routine protocol of radiotherapy centers, which is normal saline. The severity of mucositis (on the basis of national cancer institute), severity of pain (on the basis of visual analogue test), and patient's quality of life (on the basis of standard questionnaire) were evaluated at the beginning of the study and on the first, second, and third weeks afterwards. Data analysis was performed using Mann–Whitney and repeated measure ANOVA tests.
Findings: A reduction of the severity of mucositis was observed in some patients, but the difference was not significant. On the other hand, pain relief and promotion in the quality of life were significant ($p<0.005$).
Conclusion: Phenytoin mouthwash (1 %) caused significant pain relief and promotion of quality of life in patients, but it did not cause a reduction in the severity of mucositis.

1024
Hospitalization of patients dying of cancer at the end of life in a Saudi tertiary care hospital

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Objectives: Frequent and lengthy hospitalization near the end of life (EOL) is an indicator of aggressive EOL care. Our aims were to describe the frequency and duration of hospitalization in patients dying of cancer in a Saudi tertiary care hospital and to identify possible predictors.
Methods: This is a retrospective review of the medical records of patients who died of advanced cancer and managed by a palliative care service over 1-year duration.
Results: A total of 220 admissions for 149 patients were reviewed. Almost half (43 %) of patients were admitted more than once during the last month of life. The total durations of hospitalization during the last month of life were 30 days in 20 (13 %) patients, ≥14 to <30 days in 58 (39 %) and <14 days in 71 (48 %) patients; the average total was 16 days. The only factor associated with significantly more frequent admissions (more than once) during the last month of life was late or no transfer of care to palliative care ($p=0.002$). The mean duration of hospitalization during the last month of life was significantly longer in patients <60 years of age ($p=0.002$) and those with haematological malignancies ($p=0.013$).
Conclusions: Dying cancer patients in our setting are at risk of receiving aggressive EOL care. Some factors like younger age and haematological malignancies may predict a more aggressive EOL care, and earlier transfer to palliative care may decrease it. Further research is needed to find effective methods for overcoming such aggressiveness.

1025
Relatives preferences for disclosure of information to cancer patients in Cyprus

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Objectives: In our oncology practice in Cyprus, there are often requests for collusion from relatives of cancer patients as in other Southern European countries. We therefore undertook this survey to examine this in more depth.
Methods: A questionnaire was given to the relative(s) accompanying 100 consecutive new patients attending the BOC Oncology Centre in Nicosia.
Results: Sixty-eight per cent of relatives agreed that the patients should have all the information regarding their disease whilst 14 % disagreed (14 % of patients attended alone, hence the questionnaire could not be filled out; 4 % refused to fill in). Only 6 % thought that the true diagnosis should be kept from the patient, whilst 76 % did not agree that it was right to withhold the diagnosis. Regarding collusion, 36 % of relatives felt that the family should decide on what the patient should know, whilst 46 % did not think that this was appropriate.
Conclusions: Whilst the majority of relatives of cancer patients in Cyprus believe that their cancer patients' relatives should be informed about their disease, a sizeable minority (a little over a third) still feel that the family should filter what information the patient is going to receive. Health professionals in Cyprus need to take these findings, as well as the results of the patients' survey, into consideration in their consultations with cancer patients and relatives.

1026
Development of a tool to discuss fertility preservation with adolescent females

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Teens affected with cancer and their families have many decisions to make about their course of treatment. Lifesaving cancer treatments often affect fertility and damage reproductive organs and processes. Despite recommendations from experts, discussions about fertility preservation often occur too late, if at all. Another barrier to fertility preservation in pediatric cancer patients is difficulty beginning conversations about such a sensitive subject. A Values Clarification Tool (VCT) provides a resource to aid in communication on the topic of fertility preservation. In this study, teen girls with cancer and their parents were interviewed to design a VCT instrument to aid in identifying values that affect the fertility preservation decision-making process. The ten-item VCT was piloted with psychologists, social workers, and a child life specialist. The VCT, along with other educational materials, provides a means for teens and their parents to identify values, allows professionals to gauge whether or not teens and their families understand the potential risks to reproductive health, allows doctors to identify families interested in fertility preservation, and allows for documentation of a conversation about reproductive health risks

and fertility preservation options that occurred.

1027
Development and characterization of docetaxel-loaded emulsomes for targeted therapy of breast cancer

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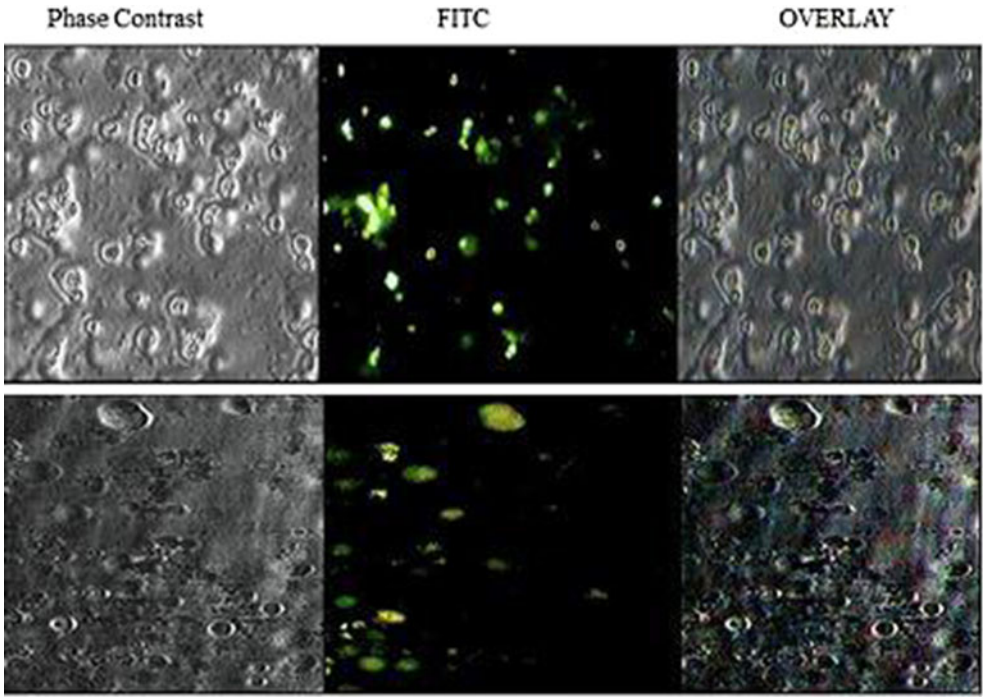
Objectives: To enhance the anticancer potency of docetaxel, a novel excipient, folate-PEG-cholesterol, was synthesized and used for the formulation of a solid lipid (tristearin)-based nanosize lipid particles (folate-conjugated PEG emulsomes) for targeting folate receptors in breast cancer.
Methods: Emulsomes were prepared by a cast film technique, followed by sonication, and further coated with a folate receptor-specific ligand (folate–PEG–cholesterol). The developed emulsomes were characterized for size, shape, lamellarity, zeta potential, and entrapment efficiency using scanning electron microscopy, zetasizer, and minicolumn centrifugation. Cell uptake studies were further performed using fluorescein isothiocyanate-loaded formulations over HeLa cells.
Results: The TEM photograph showed the homogenous and spherical nature of the particles. The mean diameters of folate-conjugated PEG emulsomes and plain emulsomes were found to be 230±2.3 and 182.7±3.63 nm, with polydispersity indices of 0.287±0.034 and 0.234±0.14; entrapment efficiencies were found to be 81.42±2.52 and 83.26±3.12 %, respectively. The IC_{50} values of docetaxel solution, plain emulsomes, and folate-conjugated PEG emulsomes were found to be 14.2, 64.9, and 28.8 μM/ml, respectively. Strong fluorescence was observed in the HeLa cells treated with folate-conjugated PEG emulsomes, whereas the fluorescence developed by plain emulsomes was noticeably much weaker (figure), which showed the higher cellular uptake of ligand-appended emulsomes compared with plain emulsomes.



Fluorescent images of emulsome-treated HeLa cells
Conclusions: The folate receptor-targeted formulation of anticancer drugs might be potentially useful for the treatment of folate receptor-positive tumors such as breast cancer. This opens the new possibility for non-immunogenic, site-specific delivery of bioactive(s).

1028
Effects of cold sterile normal saline (CSNS) mouth care in head and neck cancer (HNC) patients undergoing concurrent chemoradiotherapy (CCRT)

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Objectives: Treatment of head and neck cancer (HNC) incorporates chemotherapy with radiation, resulting in mucositis that causes pain, interferes with eating and communicating, and adversely affects treatment and quality of life. Effective management is important; thus, the purpose of this study was to determine the effects of CSNS mouthwash on oral dryness, oral comfort, and severity of oral mucositis (OM) in HNC patients undergoing concurrent chemoradiotherapy (CCRT).
Methods: Forty-two HNC patients undergoing CCRT between February and May 2010 at a university hospital in Seoul, South Korea, were randomly assigned to a control group receiving routine mouth care (n=22) or an experimental group (EG, n=20) receiving routine mouth care plus CSNS mouthwash. All patients performed routine mouth care four times daily for 6 weeks beginning 1 week before CCRT, with the addition of CSNS in the EG group. Oral dryness, comfort level, and the severity of OM were assessed at baseline and every 2 weeks.
Results: Patients were homogeneous with respect to demographic characteristics, type of HNC, and baseline oral status. Repeated measures ANOVA demonstrated that oral dryness and severity of OM were significantly lower in the EG ($p<0.05$) and that oral comfort level was significantly higher in the EG ($p<0.05$).

Conclusions: Routine mouth care with the addition of CSNS may help reduce oral dryness, oral discomfort, and severity of OM. Because it is inexpensive and well tolerated, nurses could consider using it routinely to improve oral comfort of HNC patients undergoing CCRT. Additional research is needed to confirm these findings.

1029

The effect of melatonin on appetite and other symptoms in patients with advanced cancer and cachexia: a double-blind placebo-controlled trial

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Objective: Our objective was to compare melatonin to placebo for appetite and other symptoms in patients with cancer cachexia. Prior studies have suggested that melatonin may attenuate weight loss, anorexia, fatigue, and depression.
Method: This is a randomized, double-blind, 28-day trial of melatonin 20 mg vs. placebo in patients with advanced lung or gastrointestinal cancer, appetite scores >3 on a 0–10 scale (10= worst appetite), and a history of weight loss ≥5 % within 6 months. Patients unable to maintain oral intake, thyroid or adrenal dysfunction, or with a Karnofsky<40 were excluded from the study. The assessments included weight, Edmonton Symptom Assessment Scale (ESAS), and quality of life by the Functional Assessment of Anorexia/Cachexia Therapy (FAACT). Differences between groups from baseline to day 28 were analyzed using one-sided, two-sample *t* tests (appetite, pain, and well-being) or Wilcoxon two-sample tests for the other variables. Interim analysis at half point had a Lan-DeMets monitoring boundary with an O'Brien–Fleming stopping rule.
Results: After interim analysis of 48 patients, the study was closed by the Data Safety Monitoring Board for futility. There were no significant differences between groups in appetite (p=0.78), weight (p=0.17), FAACT score (p=0.95), insomnia (p=0.62), or other symptoms measured by the ESAS from baseline to day 28. No significant toxicities were observed.
Conclusions: In cachectic patients with advanced cancer, 20 mg oral melatonin at night does not improve appetite, weight, or quality of life compared to placebo.

1030

Impact of 5-HT$_3$ receptor antagonist step therapy on chemotherapy-induced nausea and vomiting

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Introduction: The 5-hydroxytryptamine$_3$ receptor antagonists (5-HT$_3$-RAs) are used to prevent chemotherapy (CT)-induced nausea and vomiting (CINV). Step therapy in the CINV prophylaxis advocates the initial use of a generic antiemetic, reserving treatment with palonosetron as a second-line therapy to contain costs. This study examined the impact of such policies on the risk of CINV managed in hospitals or emergency departments.
Methods: Claims (PharMetrics, 2005–2009) were used to identify patients with breast cancer (BC) initiated on cyclophosphamide-based CT or with lung cancer (LC) initiated on carboplatin (Carbo-LC) or cisplatin-based (Cis-LC) CT. Patients were stratified by antiemetic, those initiated and maintained on palonosetron vs. those initiated on another 5-HT$_3$-RA, then switched to palonosetron (Switched). The incidence of CINV (ICD-9-CM) was calculated during a 6-month follow-up. Regression models controlled for age, gender, comorbidity, and CT days.
Results: A total of 2,407 in BC (86 %), 1,685 in Carbo-LC (80 %), and 299 in Cis-LC (59 %) were treated with palonosetron. Compared to Switched, those treated with palonosetron had a lower incidence of CINV (4.1 vs. 9.8 % in BC, 9.8 vs. 16.4 % in Carbo-LC, 11.7 vs. 21.9 % in Carbo-LC, p<0.05). Adjusted results found that the palonosetron group had a lower risk of CINV: 60 % less in BC, 44 % less in Carbo-LC, and 56 % less in Cis-LC (odds ratios=0.389 in BC, 0.556 in Carbo-LC, 0.441 in Cis-LC, p<0.05).
Conclusions: LC and BC patients initiated and maintained on palonosetron were at a significantly lower risk of CINV compared to those initiated on a generic 5-HT$_3$-RA and then switched to palonosetron.

1032

Does upfront bevacizumab (B) add toxicity in the treatment of community-dwelling elderly colorectal cancer (CRC) patients with mild comorbidities? Results from a large Italian observational study

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Background: Data on bevacizumab (B) for elderly patients with advanced CRC are limited, although recent analyses demonstrated safety for its use.
Methods: In this observational cohort study, 213 patients who received first-line B combined with CT were enrolled and split into two cohorts: completely fit (no comorbidity, n=66) and mild unfit (one to three comorbidities, n=147). Demographics and comorbidities were captured, along with the efficacy and toxicity results. Survival curves were generated with Kaplan–Maier methodology; Fisher's exact test was used to search for differences in toxicity between the cohorts.
Results: Median age was 72 years; PS was 0–1 in 96 %. Comorbidities at study entry were cardiovascular (including hypertension), 107; diabetes, 32; respiratory, 15; endocrine, 10; neurological, 10; renal, 7; other diseases, 51. Main toxicities were neutropenia (44 %), anaemia (37.5 %), diarrhoea (40.8 %), mucositis (25.8 %) and HFS (14.1 %). Sensorial neurotoxicity was frequent among patients receiving oxaliplatin. Specific B-induced toxicities were induced or worsened hypertension in 48 patients (22.5 %), proteinuria in 24 (11 %) and venous or arterial thromboembolism in 16 (7.5 %).
Among fit vs. mild unfit elderly patients, no differences in haematological toxicity were noted. Systemic and gastrointestinal disturbances were also similar, except for mucositis (p=0.003). Specific anti-angiogenic side effects were slightly more frequent among those with comorbidities, with a higher rate of hypertension (p=0.045) and proteinuria (p=0.005), but not venous or arterial thromboembolism or cardiac events.
Conclusions: Treating elderly CRC patients with B and chemotherapy is overall safe, even if mild unfit elderly patients may suffer higher grade of specific toxicities, particularly hypertension and proteinuria.

1033
Topical Yunnan Baiyao administration as an adjunctive therapy for bleeding complications in adolescents with advanced cancer

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Objectives: *Yunnan Baiyao* (white medicine from Yunnan) is a Chinese herbal medicinal powder used to stop bleeding and improve circulation in traumatic injuries. We describe the use of *Yunnan Baiyao* (*YNB*) in adolescents with cancer as an adjunct to uncontrolled bleeding in the palliative care setting.
Methods: Through a retrospective chart review of all patients receiving integrative medicine consultations at the Integrative Therapies Program at Columbia University from 2007 to 2012, we describe the outcome of patients treated with *YNB* for the management of uncontrolled bleeding.
Results: Four patients were identified who received topical *YNB* for uncontrolled bleeding; patients included two males and two females diagnoses with solid tumors (3) and Burkitt's lymphoma (1). Mean age was 15.5 years (range, 15–17 years). Fifty percent had life-threatening bleeding from the tumor site and 50 % experienced uncontrollable epistaxis. All patients received preceding therapy with packed red blood cells and platelet transfusions, topical thrombin, and oral aminocaproic acid. Two patients used *YNB* in the inpatient setting and all four patients used *YNB* as outpatients. In all patients, bleeding control improved with the addition of *YNB* to conventional hemostatic interventions. Two patients using *YNB* in the home reported control of bleeding episodes. All patients expressed satisfaction with *YNB*. There were no adverse events reported.
Conclusions: *YNB* may be an efficacious agent for uncontrolled bleeding in conjunction with conventional hemostatic agents in adolescents with advanced cancer. It is well accepted by patients. *YNB* may be especially valuable in the outpatient setting to prevent the recurrence of hemorrhage.

1034
A cohort study of pain in women with primary breast cancer—baseline data

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Objectives: Nearly two thirds of women diagnosed with breast cancer are now likely to survive for over 20 years, with many experiencing long-term effects on their health. A survey of joint and muscle aches, pains and stiffness conducted by us found that 61.9 % of women after breast cancer complained of pain compared to 49.4 % of a control group without breast cancer. This study was set up to explore the natural history of these symptoms, their relationship to adjuvant treatments and their impact on women over time.
Methods: Women with breast cancer were recruited after primary surgery and followed for a period of 1 year. They completed self-report measures of pain (Nordic questionnaire, Brief Pain Inventory), demographic details and quality of life (SF36, FACT-ES) at baseline and at 3, 6, 9 and 12 months after surgery, as well as providing medical and treatment details.
Results: Five hundred seventy-seven women were recruited from 15 centres in England and Wales. Of the first 402, 158 were treated with hormone therapy, 65 chemotherapy only, 127 hormone plus chemotherapy and 52 surgery only. Baseline data will be reported. This will give us a picture of pain in women immediately post-breast cancer surgery and its impact on quality of life.
Conclusions: These baseline data will give new insight into pain reported by women immediately post-breast cancer surgery. The study will go on to explore changes in pain, particularly joint pain, in the year following breast cancer surgery and identify the relationship of pain to different systemic cancer treatments.

1035
Feasibility and applicability of MASCC Oral Agent Teaching Tool (MOATT©) for patients with lung cancer on erlotinib

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Objective: This nursing evidence-based practice (EBP) project focused on adult patients with non-small cell lung cancer (NSCLC) who received erlotinib in the Dana-Farber Cancer Institute ambulatory clinic setting. An objective of this EBP project examined the feasibility, use, and applicability of the MOATT©.
Methods: The MOATT© was part of an EBP pilot study of 30 patients receiving erlotinib oral therapy for the first time. Three educational sessions by a direct care nurse, with each participant, included the administration of the MOATT within 72 h of starting erlotinib, follow-up by phone to assess learning/monitor symptoms, and additional evaluation in the first clinic visit after starting erlotinib.
Results: The findings indicated that the MOATT© was very useful and applicable for the educating and monitoring of NSCLC patients on erlotinib therapy. The tool was adaptable for drug-specific application, provided guidance in nurse-led teaching tailored to individual needs, and facilitated ease in encounter documentation. Key feasibility elements included: initiating the MASCC tool within 72 h after actual drug procurement, evaluating understanding of instructions utilizing a teach-back method, and monitoring for side effects. Simplicity, ease of use, lack of redundancy, and prompts for follow-up were useful.
Conclusions: Practice implications include further adaptation with other oral anticancer agents while monitoring knowledge, side effects, and follow-up care by nurses with these patients.

1036
Myofascial pain syndrome in breast cancer survivors: double-blind, randomized, clinical trial of the efficacy of physical therapy

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Background: Pain after breast cancer therapy is a recognized complication found to have an adverse impact on patient's quality of life, increasing psychosocial distress. Myofascial pain syndrome (MPS) is a common source of pain in women undergoing breast cancer surgery, at least during the first year after surgery. MPS is a regional pain syndrome characterized by myofascial trigger points (MTrP) in palpable taut bands of skeletal muscle. MTrPs can refer pain to a distance and can cause distant motor and autonomic effects.

Objective: Our objective was to know the efficacy of physical therapy (PT) in reducing myofascial pain due to MTrPs.
Subjects and methods: MPS after unilateral surgery for breast cancer were included in the study. Twenty-six patients served as the PT group (PT program included longitudinal stroke of every active MTrP, passive stretching of every involved muscle, and holding-relax shoulder exercises); 24 served as the control group (sham ultrasound therapy). The subjective pain intensity and joint range of motion were recorded pre- and post-intervention and at 3 months follow-up using visual analogue scale and a digital goniometer.
Results: Pain (<0.00001) and range of shoulder flexion (0.003) showed better results for the physical therapy group after intervention. At 3 months of follow-up, pain (<0.00001) was still better for the physical therapy group.
Conclusion: The results show that PT is an effective therapy for MPS in breast cancer survivors.

1037
Pain management as a part of rehabilitation care in gynaecological cancer patients

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Introduction: A well-organized rehabilitation program for cancer patients has a key role in the treatment process. Pain management is a part of rehabilitation and a very actual problem, which all the time is under discussion. Adequacy of pain management is an indicator of health care quality and patients' satisfaction.
Purpose: The purpose of this study was to assess the quality of pain management in postoperative period in patients who underwent treatment in an oncogynaecological department by examining their pain experience and pain management.
Methods: We have developed a patients' outcome questionnaire which, together with informed consent, was given to oncogynaecological patients before surgery.
Results: Analysing the questionnaire's data, we have detected that uncontrolled pain was in 42.5 % of patients. These patients reported moderate intensity pain 24 h after surgery, when analgesics were prescribed to be administered at fixed intervals. On the other hand, 83.5 % of patients overall stated that they were satisfied with pain treatment 72 h after surgery. Patients who experienced severe pain have additionally received strong opioids (100 % of the cohort). One hundred per cent of patients were prescribed non-steroidal anti-inflammatory medicines 24 h post-operation.
Conclusions: A number of patients have experienced significant pain post-operation. Although multimodal analgesics were available, its administration was performed after pain appearance. Despite this, patients were satisfied with pain care only in 75 %. In order to increase rehabilitation quality, there should be more precise administration of analgesic therapy.

1038
Effects of psychosocial factors and gender on cortisol levels in colorectal cancer patients

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Objectives: Stressful stimuli associated with cancer diagnosis trigger psychoneuroendocrine pathways that may affect the patient's well-being and the outcome of the disease. Cortisol levels may indicate the degree of stress and the effect of defense mechanisms deriving from a supportive environment, spirituality, and personal characteristics such as gender and educational level. The aim of this pilot study was to investigate the effect of these features on cortisol's total and circadian levels in colorectal cancer patients prior to chemotherapy.
Methods: A 24-h urine and five salivary samples were collected from nine men and nine women with stage C colorectal cancer 1 day prior to the first cycle. The salivary samples were collected with Sallivettes tubes, at 6 AM, 10 AM, 2 PM, 6 PM, and 10 PM. Patient's spirituality was assessed with the previously validated Greek version of System of Belief Inventory (SBI-15R). Total urinary cortisol and circadian cortisol secretion patterns were determined by electrochemiluminescence.
Results: Our study found no association between cortisol levels and spirituality. A statistically significant difference was found in urinary cortisol levels between male and female patients, with male patients exhibiting lower levels ($p=0.003$). Patients who did not have children or had a university degree had a statistically significantly higher urinary cortisol levels ($p=0.01$ and $p=0.008$, respectively). No significant differences were found regarding salivary cortisol levels and circadian patterns of secretion.
Conclusions: Although our study was small and safe conclusions cannot be drawn, it supports the need of further investigating the association of 24-h urinary cortisol levels with patients' psychosocial factors.

1039
KRAS mutation status is predictive biomarker for targeted therapies in metastatic colorectal cancer: an Algerian clinical study

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Introduction: Colorectal cancer is the second cause of cancer in Algeria. The benefit of cetuximab or panitumimab (anti-EGFR) was shown in several studies. However, this benefit was limited to patients with wild-type Kirsten ras (KRAS) gene only. Mutated KRAS gene was associated with anti-EGFR resistance.
Patients and methods: Sixty-four patients with a CCRm (stage IV, TNM/UICC) were included: mean age, 52 years; performance status, 0–2 OMS; hematologic assessment, hepatic and renal correct (CTC/NCI); treated with FOLFOX/Bevacizumab and evaluated (WHO) for complete response (CR), partial response (PR), stable disease (MS), and progressive disease. Determination of KRAS status was performed for patients in disease progression. Tumor DNA obtained from tissue blocks were fixed and included in paraffin, at codons 12 and 13, by HRM. Patients with wild-type KRAS gene only were treated with cetuximab/folfox
Results: Responses to the first-line treatment, FOLFOX/Bevacizumab, were 6.4 % RC, 59.6 % PR, 10.6 % MS, and 23.4 % MP. The evaluation of KRAS status is a prerequisite to the administration of the second line of treatment (FOLFOX/cetuximab), showing a mutation in 36.4 %. Also, 63.6 % of the patients in our series would potentially be responsive to this treatment.
Discussion and conclusion: The use of antibodies in combination with chemotherapy has increased the overall survival of metastatic colorectal cancer. With the determination of KRAS mutational status, the subgroup population by monoclonal antibodies can be identified.

1040
Testosterone replacement for fatigue in male hypogonadic patients with advanced cancer: a preliminary double-blind, placebo-controlled trial

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Background and aim: Uncontrolled studies show that fatigue, anorexia, depression, and insomnia are associated with low testosterone in men. The aim of the study was to evaluate the effect of testosterone replacement on fatigue in hypogonadal males with advanced cancer using the Functional Assessment of Chronic Illness Therapy—Fatigue (FACIT-F) at day 29.
Methods: This is a randomized, double-blinded, placebo-controlled study at two centers. Clinic outpatients with advanced cancer, bioavailable testosterone (BT)<70 ng/dL, hemoglobin>9 g/dL, and moderate to severe fatigue assessed by a score >3/10 on the Edmonton Symptom Assessment Scale (ESAS) were eligible. Contraindications to testosterone therapy or other causes of fatigue such as hypothyroidism, hypercalcemia, or chronic kidney disease excluded subjects. Weight-based intramuscular testosterone or a sesame seed oil placebo was administered every 14 days to achieve a BT level 70–270 ng/dL. One-sided *t* test was used to analyze differences in FACIT scores between arms.
Results: A total of 43 eligible men were randomized to testosterone (19) or placebo (24). Neither age nor site was significant (<0.05) between arms. Fourteen placebo- and 12 testosterone-treated patients were evaluable for the primary outcome. No statistically significant difference was found for FACIT-F total scores between arms, with a trend for testosterone to improve scores (−5.5±19 for placebo and 3.9± 14 for testosterone, $p=0.09$) using a one-sided *t* test. Adverse events were similar between groups. There were no significant differences in the secondary outcomes of ESAS scores, Hospital Anxiety and Depression Scale, hand grip, or 6-min walk.
Conclusion: Testosterone replacement in hypogonadal male patients with advanced cancer had a trend to improve fatigue and quality of life in this preliminary trial.

1041
Characteristics of breakthrough cancer pain in patients treated with fentanyl sublingual tablets: an analysis of 2 phase III trials

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Objectives: Breakthrough cancer pain (BTcP) is a transient exacerbation of pain occurring in cancer patients with otherwise stable persistent pain. Typical episodes are severe, have rapid onset of action peaking within 3–5 min, and last an average of 30 min. We investigated the frequency of BTcP episodes by demographics and over time in patients treated with fentanyl sublingual tablets (Abstral®).
Methods: Data from two long-term phase III trials of fentanyl sublingual tablets in opioid-tolerant patients ($n=265$) with BTcP were pooled for post hoc analyses. Individual BTcP episodes were recorded during initial 2-week titration phases of each trial and the ten-episode double-blind phase of one trial; daily episodes were self-reported during the 1-year open-label extension phase of each trial. BTcP episode time of day was evaluated in the placebo-controlled trial ($n=127$). Statistical analyses included nonparametric tests (Kruskal–Wallis or paired Wilcoxon tests) and generalized linear mixed modeling.
Results: Mean (±SD) BTcP episode frequency was higher in women than men (2.9±1.3 vs. 2.6±1.3 episodes/day, $P=0.034$). The mean frequency was greater in younger vs. older patients ($P=0.001$); no racial differences occurred (white vs. non-white). Daily BTcP episode frequency increased over the treatment course ($P<0.0001$); however, the rate of increase diminished. More BTcP episodes occurred during the day vs. night ($P<0.0001$); episode rate progressively increased between 8 AM and 8 PM.
Conclusions: BTcP episode frequency varied significantly by age, sex, treatment duration, and time of day in patients treated with fentanyl sublingual tablets. These data may help better predict episodes of BTcP and optimize treatment.

1042
Axillary web syndrome after axillary dissection in breast cancer: simple blind, randomized, clinical trial of the efficacy of physical therapy

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Background: The axillary web syndrome (AWS) is a self-limiting and frequently overlooked cause of significant morbidity in the early post-operative period after breast cancer axillary surgery, which is characterized by axillary pain that runs down the medial arm, limited shoulder range of motion, and cords of subcutaneous tissue extending from the axilla into the medial arm, made visible or palpable and painful by shoulder abduction.
Aim: We evaluated the efficacy of physical therapy (PT) in the resolution of AWS signs and symptoms.
Methods: Sixty women diagnosed with AWS after breast cancer unilateral surgery with axillary lymph node dissection were included in the study. Thirty patients served as the PT group and 30 served as the control group. The PT group included manual lymph drainage technique in thorax, breast, axilla, and arm taut cords, in conjunction with progressive active and action-assisted shoulder exercises. The intervention in the control group was only the same progressive active exercise as in the PT group.
Results: For each outcome variable of interest (pain, abduction, flexion, and volume), we calculated the difference between the two visits (visit 2−visit 1), creating thus four continuous "outcome change" variables. We then compared each of these four outcome change variables between the two study groups. Range of shoulder abduction (<0.00001) and flexion (<0.00001), pain (<0.00001), and volume (0.00051) showed better results for the PT group.
Conclusion: PT could be an effective measure shortening the duration of the signs and symptoms and changing the self-limited course of the AWS.

1043
Life-threatening dermatologic adverse events to anticancer agents as evidenced by the literature and MedWatch database

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Objectives: The incidence of life-threatening toxicities such as Stevens–Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) is

inconsistently reported. The potential association of cancer agents with SJS/TEN has not been systematically investigated.
Methods: We searched Ovid (1950–December 2009), PubMed (1948–December 2009), and Litt's Drug Eruption Reference Manual (1980–October 2007) using search terms relevant for SJS/TEN and anticancer agents. Primary case reports, case series, and clinical trials were included in the results. The MedWatch database was also searched for cases of SJS/TEN reported in association with anticancer agents. Proportional reporting ratios (PRR>2, N>3) and empirical Bayes geometric mean (EBGM>2, N>3) were used to constitute a data mining signal.
Results: There were 41 SJS and 36 TEN cases associated with 17 and 21 anticancer drugs in peer-reviewed literature, respectively. Similarly, 8 SJS and 112 TEN cases in association with one and six chemotherapies, respectively, were identified in the MedWatch database. PRR and EBGM signals were identified for SJS (bendamustine) and TEN (bendamustine, busulfan, chlorambucil, fludarabine, lomustine, and procarbazine).
Conclusions: We identified several agents reported to be associated with SJS/TEN. In addition, several drugs (imatinib and docetaxel) that have been reported in the published literature to be associated with SJS or TEN were not verified by the FDA Adverse Event Reporting System data. Whereas case reports and data mining algorithms should not be used to establish causality, these approaches may be used to direct active pharmacovigilance efforts toward agents that warrant further investigation.

1044
'Back on Track': a multi-professional rehabilitation clinic for managing cancer-related fatigue and weight loss. Translating research into practice: a service development experience

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Background: The evidence base for exercise in cancer-related fatigue management is growing. Supportive care must address cancer survivors' needs and optimise interventions to deliver rehabilitation, advice and guidance.
Objective: The objective of this study was to evaluate the feasibility of providing a multi-professional clinic, 'Back on Track', to assess fatigue and develop an individually tailored intervention (home-based walking and exercise, with telephone support) in the management of cancer-related fatigue.
Design: A pilot service based in a university setting was funded by a translational research award. Cancer survivors who were experiencing ongoing fatigue were recruited from the membership of a charitable organisation. Multi-professional assessments (medical, psychological, dietetic and physiotherapeutic) included screening, baseline and outcome evaluation for physical and psychological outcomes. A focus group study was conducted to evaluate opinions regarding a 'Back on Track' service for cancer survivors.
Results: Eighteen individuals participated in the program (February–May 2012), adherence to individualised exercise goals was high, and 17 completed final outcome assessment. There were significant improvements in fatigue (VAS and FACT-F), depression (Beck), and 6-min walk test and a reduction in perceived exertion (BORG). Thirteen participants took part in an end-of-programme focus group discussion. Themes included the perceived benefits of healthcare professional input, especially the multi-professional nature of the intervention; the individual benefits were physical, psychological, supportive guidance and weekly telephone contact. Barriers included distance to travel and questionnaire overload.
Conclusions: Multi-professional clinics with follow-up telephone support are a feasible and effective method of delivering exercise interventions to cancer survivors.

1045
Do cancer patients value past patient cancer narratives?

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Cancer narratives have become increasingly available in the last decade especially via online sources. These personal histories are more common with some malignancies such as breast cancer and uncommon with others such as head and neck cancer, which may reflect levels of education, ability for narrative construction and socioeconomic factors.
Developing cancer narratives is seen as a positive empowering tool, but there is no body of work in the medical literature looking at how useful cancer patients have found previous patient experiences as described in cancer narratives.
In this pilot study within our head and neck cancer service, we developed a semi-structured questionnaire and asked a cohort of patients and their carers how much they valued access to other patients published cancer experiences.
We used narratives dealing with both head and neck cancer and other tumours to ask whether patients and their carers derive a generic benefit from viewing cancer narratives or whether patients are almost exclusively interested in narratives dealing with their own tumour type.
The narratives used were also drawn from healthcare professionals who had themselves developed malignancies and from other patients with other backgrounds to assess any increased benefit from the healthcare providers' stories.
The cohort was asked when was the best time during the cancer journey to introduce these narratives and how usefully they would add to the patient's knowledge of treatment morbidity and treatment process.
Although narratives are generally considered beneficial, our cohort were also asked to comment on what negative attributes they perceived.

1046
Effects of dermatologic adverse events on quality of life: a look at targeted versus non-targeted therapies

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Objectives: Anticancer therapies, including conventional chemotherapy and novel targeted agents, lead to multiple dermatologic adverse events (dAE). Although the frequency and severity of these events have been described, their effects on health-related quality of life (QoL) remain poorly understood. We examined the affect of dAEs on QoL in cancer patients on conventional versus targeted therapies using a dermatologic-specific questionnaire.
Methods: Two hundred eighty-three patients completed the Skindex-16, a QoL questionnaire measuring effects on three domains:

symptoms, emotions, and function. Patients were grouped according to the types of oncology treatments received into two categories: (1) targeted therapies and (2) non-targeted therapies. The overall and sub-domain Skindex scores were evaluated. Correlations of Skindex scores with the type of anticancer therapy, number of dAEs, and specific dAEs were investigated.
Results: A significant difference between patients receiving targeted versus non-targeted therapy with regards to emotion (p=0.02) and overall (p=0.02) Skindex scores was observed. EGFRI rash (p=0.009, p<0.001, p=0.01, p=0.001) and pruritus (p<0.001, p=0.004, p=0.04, p<0.001) had greater impacts on the symptoms, emotions, and function domain scores, and overall Skindex scores, as compared to patients without these dAEs. Additionally, two therapy groups had a significant difference in the number of dAEs experienced (p<0.001, greater in targeted therapy group).
Conclusions: DAEs are associated with a diminished QoL, with EGFRI rash and pruritus having the greatest negative impact. Targeted therapies are associated with worse emotion and overall Skindex scores compared to non-targeted therapies. To minimize reduced QoL in cancer patients with dAEs, emphasis should be placed on conducting randomized controlled trials to establish effective management strategies.

1047
A synopsis of common oral complications of cancer therapies

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Objectives: Our objective was the development of consensus statements related to common oral complications of cancer therapies. Statements are to be used in resident training program of the University of British Columbia and the cancer care manual of the British Columbia Cancer Agency. In addition, specific parameters are to be selected for inclusion in a head and neck database, which will serve as a reference for clinicians and researchers to gain access to evidence-based information. The database will also provide a foundation from which future prospective and retrospective research can be sourced.
Methods: Summary statements were formulated based on systematic reviews and guidelines for oral complication of cancer therapies published in Supportive Care in Cancer 2010; 18 (8).
Results: Nine clinical consensus statements were developed for commonly reported oral complications of cancer therapies. Topics include oral fungal and viral infections, dysguesia, trismus, osteoradionecrosis, bisphosphonate osteonecrosis, orofacial pain (excluding oral mucositis), xerostomia, and dental disease.
Conclusions: Evidence-based recommendations for the tracking, management, and follow-up directives of these oral complications were summarized. Relevant criteria were identified for educational purposes and inclusion in a database that aims to facilitate future research.

1048
Double-blind randomized prospective trial of bethanechol in the prevention of radiation-induced salivary gland dysfunction in cancer patients

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Objective: Our objective was to determine whether prophylactic bethanechol during radiotherapy may be used to prevent salivary gland dysfunction.
Methods and materials: From January 2007 to March 2009, 97 patients with head and neck cancer were randomized in a double-blind setting before three-dimensional conformal radiotherapy (RTC3D) or intensity-modulated radiation therapy (IMRT) and allocated into two groups: bethanechol (n=48) or placebo (n=49). The patients took either bethanechol or placebo (25-mg tablets) twice a day from the beginning of radiotherapy to 1 month after the end of treatment. Bethanechol toxicity was assessed using the National Cancer Institute Criteria for Adverse Events. Xerostomia was evaluated weekly from baseline to 3 months after completion of treatment. Unstimulated whole saliva (UWS), stimulated whole saliva (SWS), and salivary gland scintigraphy were performed in all patients at baseline, during, and 2 months after radiotherapy.
Results: Bethanechol therapy was well tolerated. In both groups, 2 months after irradiation, over 90 % of all patients developed xerostomia to some degree. However, the bethanechol group presented significantly lower xerostomia scores when compared with the placebo group (p<0.001). Bethanechol therapy also increased the UWS, the SWS, and the mean uptake/excretion rates of the salivary glands (p<0.050). Interestingly, patients who received bethanechol and underwent IMRT showed significantly better results compared with patients who underwent the RTC3D.
Conclusion: This study suggests that prophylactic use of bethanechol, especially during IMRT, seems to be useful in decreasing the salivary gland damage and may have an important impact on the complaint of xerostomia.

1049
Effectiveness of physical therapy together with an educational program in the quality of life of breast cancer survivors

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Background: Breast cancer (BC) treatments may decrease patient's quality of life.
Objective: We evaluated the efficacy of physical therapy (PT) together with a therapeutic education program (TEP) in quality of life (QL) improvement.
Methods: A randomized, controlled, single-blinded clinical trial was developed. One hundred fifty-three women treated for BC surgery including axillary lymph node dissection were randomly assigned into two groups: 76 patients for the EPT group and 77 patients for the control group (CG). PT assessments took place before surgery, after surgery, after intervention, and 3, 6, and 12 months; the EORTC QLQ-C30 and the EORTC QLQ-BR23 were administrated. Patients assigned to EPT were treated with PT. In addition, they also received a TEP. The intervention in the CG consisted of the same TEP performed in the EPT.
Results: In QLQ-C30, the evolution of the average values in the global QL and physical function was better in the EPT than for the CG (five and seven points better for the EPT). EPT was effective (p<0.005) for all dimensions and for the pain. As for the physical functioning dimension in the post-intervention assessment, p=0.041; for 12 months, p=0.001. For QLQ BR-23, the average values of arm symptoms declined more rapidly in the EPT. EPT was effective in

arm symptoms in post-surgery assessment (p=0.018) and in breast symptoms at 12 months (p=0.063).
Conclusions: Both EPT together with TEP and TEP could improve the QL in women with BC surgery. EPT could accelerate the reduction of morbidity, improving significantly the QL after BC surgery.

1052
Endoscopic evaluation in rodent models of acute and fractionated radiation-induced proctitis

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Introduction: Radiation-induced proctitis is a painful and potentially chronic complication associated with radiation therapy in the treatment of rectal, prostate, or cervical malignancies. Rodent models are essential in the preclinical development pathway of novel pharmaceutical therapies for the management of proctitis.
Objective: The objective of this study was to develop clinically relevant rat and mouse models of radiation-induced proctitis utilizing video endoscopy to visually assess proctitis severity and progression over time. Acute and fractionated regimens of radiation were used to induce disease and to closely model clinical radiation therapy regimens.
Methods: Male C57BL/6 mice and Wistar rats were irradiated using either a single acute dose of 20 Gy or eight fractionated radiation doses of 4–6 Gy each (36–48 Gy total). Radiation was directed to the rectum and the remainder of the animal protected using lead shielding.
Results: Endoscopic evaluation indicated that both acute and fractionated doses of radiation result in robust proctitis, characterized by changes in colon vascular pattern, friability, and active bleeding. In both mice and rats, proctitis was noted within 3 days of a single dose of radiation and upon the final dose of radiation in the fractionated model. In all models, disease severity peaks approximately 1 week following the final dose of radiation and can persist for at least two additional weeks.
Conclusions: Proctitis can be successfully induced using acute or fractionated radiation regimens in rodents. Video endoscopy allows for the repeated assessment of proctitis and provides a clinically relevant end point to assess disease severity and the effects of potential therapies.

1053
An assessment of racial differences in toxicities and supportive care in patients with metastatic breast cancer (MBC)

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Background: Racial disparities in clinical outcomes between Caucasian and African American (AA) metastatic breast cancer (MBC) patients have been identified. Part of these disparities may be attributed to differences in toxicities and access to supportive care interventions. In this study, treatment toxicities and use of supportive care were compared between Caucasian and AA MBC patients treated in 15 community oncology practices across the USA.
Methods: Between 2009 and 2010, 264 MBC patients (198 Caucasians, 66 AAs) met the inclusion criteria. Data collection included baseline patient and disease characteristics, biochemistry, type of cytotoxic therapy by lines of treatment (first three lines), use of supportive care drugs, and incidence of dose-limiting toxicities.
Results: AA patients had significantly lower hemoglobin levels at baseline; the levels remained lower throughout the first three lines of therapy, which resulted in a significantly higher use of erythropoiesis stimulating agents and blood products. In contrast, neutropenia and diarrhea were more common in Caucasian patients. Antiemetic use was similar between Caucasian and AA patients (77.3 vs. 78.8 % in first-line treatment). Chemotherapy dose reductions and delays due to toxicity were higher in Caucasian patients than AA patients during first-line and third-line treatments (32.8 vs. 21.2 % and 43.2 vs. 28.1 %, respectively); correspondingly, more medical interventions to treat toxicities were observed in Caucasian patients.
Conclusions: In this exploratory analysis, differences in the incidence of dose-limiting toxicities and supportive care were identified between groups. Research in larger populations is warranted to better understand cancer treatment toxicities and outcomes across racial groups.

1054
An automated telephone remote monitoring system with nurse practitioner follow-up improves relief of individual symptoms after chemotherapy

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Objectives: A computer-based automated telephone symptom monitoring system was tested with a nurse practitioner (NP) follow-up for unrelieved symptoms using a guideline-based case management system.
Methods: Prospectively, 336 patients beginning chemotherapy were randomized to telephone care-NP (TC; n=174) or usual care (UC; n=162). Eleven symptoms were monitored daily for presence, severity, and distress (0–10 scale). The TC group also received automated tailored symptom self-care messages and, based on TC-generated alerts, NP follow-up using national guidelines for moderate to severe symptoms.
Results: With no differences between groups on demographics, 84 % were White, 56 average age, and mostly female (77 %) with breast (45 %) or lung (17 %) cancer. Mean study days were 73, with 87 % daily call completion. Fatigue, nausea, pain, diarrhea, sore mouth, numbness, depressed mood, anxiety, trouble thinking, trouble sleeping, and appearance concern were monitored. Mixed modeling indicated that TC mean scores were significantly lower for each symptom, except diarrhea. At moderate to severe levels, fatigue was most prevalent (86 %), then pain (80 %), trouble sleeping (78 %), and nausea (60 %). Negative binomial regression examined treatment effect on the amount of moderate–severe days and symptom-free days. TC had more symptom-free days for pain (59.05 vs. 48.32), fatigue (52.48/42.32), and trouble sleeping (66.39/58.65, all p<0.001) while trending for nausea (64.53/56.20, p=0.059). TC had less moderate–severe days for pain (6.26/13.00), fatigue (9.42/17.17), trouble sleeping (4.22/7.09), and nausea (2.30/5.79, all p<0.001.)
Conclusions: Remote telephone monitoring with NP follow-up of symptoms results in decreased symptom severity, distress, fewer moderate–severe symptom days, and more symptom-free days.

1055
Survival after surgical resection of symptomatic brain metastases from colorectal cancer: does mutational status matter?

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Background: Surgical resection of symptomatic brain metastasis (BM) may benefit patients with advanced colorectal cancer (CRC) with otherwise controlled systemic disease. It is unclear whether postsurgical survival may differ depending on the disease mutational status.
Methods: We identified a cohort of 46 consecutive patients with CRC who underwent resection of BM. Medical history and therapy were reviewed. A total of 39 tissue specimens were retrieved, macrodissected, and tested by pyrosequencing for KRAS, BRAF, PIK3CA, and NRAS. KRAS has been tested for codons 12, 13, 61, and 146; BRAF for exon 15; PIK3CA for exons 9 and 20; and NRAS for codons 12, 13, and 61. Survival curves were calculated with the Kaplan-Meier method.
Results: Median age at time of BM resection was 65 years (range, 35–82 years). Median survival following craniotomy was 163 days (range, 4–1,976 days). In BM from CRC, any KRAS mutation was detected in 22 patients (56.4 %) on codons 12 (15 patients), 13 (five patients), or 146 (two patients). Among patients with wild-type status for KRAS, three (7.7 %) harbored V600E BRAF mutation. PIK3CA was mutated in five (12.8 %) patients. PIK3CA/KRAS mutations were concomitant in three cases. No NRAS mutations were detected. All wild-type patients were 12 (30.8 %). Median survival was similar between patients with all wild-type tumors and patients harboring any mutation in the EGFR pathway.
Conclusion: KRAS mutation rate (56.4 %) in BM was higher than expected in primary CRC, as previously reported in the literature. Survival following resection does not seem to be influenced by the mutational status of the tumor.

1057
Characters of cancer patients in a hospice care unit: factors that bring the choice of a hospice center by analysis on the attribute of cancer patients

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Introduction: The life span of patients in the terminal stage of their malignant disease is relatively short. Some patients who have decided to cease their active treatments among them look for hospice care programs. Various personal factors of patients can be considered in choosing a hospice care centre for their satisfactory terminal care. This study is on the characteristics of cancer patients to evaluate the factors affecting choice of a hospice care centre.
Method: We conducted a retrospective review of medical records and volunteers' reports of patients admitted to our hospice care centre.
Results: Our hospice care centre makes up a specialized ward of the cancer centre of the general hospital which is affiliated with the Catholic University of Korea. We analysed 553 cancer patients in this centre between January 2009 and December 2011. Median age was 64 years, and the main diseases were hepatobiliary cancer (20.4 %), lung cancer (18.6 %), stomach cancer (16 %) and colorectal cancer (12 %). The median duration of admission was 12 days and the duration from terminal announcement to death was 40.5 days. Regarding the spiritual aspect of patients, some were Roman Catholic (29 %), Protestant (29 %), Buddhist (11 %) and Atheist (29 %). This ratio is somewhat different from the statistics on religion of South Korea. There was no significant difference of duration between the active treatment and non-treatment groups.
Conclusion: Among various factors, spiritual beliefs and socioeconomic status are major considering factors. The duration of admission was shorter than expected.

1058
Feedback from cancer survivors utilizing an Internet-based survivorship care plan (SCP)

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Introduction: The IOM recommends that cancer survivors be provided with a survivorship care plan (SCP), an onerous task for individual healthcare providers (HCPs). Here, we present user feedback from cancer survivors using an Internet-based SCP.
Methods: We created an Internet tool for the creation of SCP in 2007. Available at www.livestrongcareplan.com and through the *OncoLink* web site, it provides customized guidelines for survivorship care. Users are asked to provide feedback immediately after completing the plan and sent a follow-up survey 1 month later.
Results: From May 2009 to October 2011, 3,865 cancer survivors used the SCP tool. Users were 74 % female and 89 % Caucasian, with median current age of 51 years. The most common diagnoses were breast (43 %), hematologic (12 %), and gastrointestinal cancers (11 %). Median time for completion of an SCP was 7 h and 6 min. An immediate feedback survey was completed by 37 % (n=1,435). Information and satisfaction were rated as "good–excellent" (95 and 93 %, respectively), and 73 % planned to share the SCP with their HCPs. One hundred sixty-three responded to a 1-month follow-up survey; information was rated as "good–excellent" (96 %), "new" (70 %), and "useful" (76 %). Two percent felt confused or overwhelmed by the SCP. The SCP prompted users to change their healthcare participation (63 %) and lifestyle behaviors (52 %). Of 25 % who shared the plan with an HCP, 80 % reported that it was helpful.
Conclusions: Cancer survivors appear satisfied with this Internet-based tool and its product. Its use results in lifestyle and behavioral changes and assists survivors with communication with their HCPs. Future efforts will include further individualization of plans and tailoring for use by various HCPs.

1060
Patient self-appraisal of change and minimal clinical important difference on the EORTC QLQ-C30 before and during cancer therapy

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Objectives: Clinical application of quality of life (QOL) scores is often challenging. Our purpose was to interpret score changes and identify the minimal clinical important difference (MCID) on the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30 (QLQ-C30) before (T1) and during (T2) cancer treatment.
Methods: Six hundred twenty-seven patients in stem cell transplant (SCT) and medical (MED) or radiation (RAD) oncology at a comprehensive cancer center enrolled in the Electronic Self-Report Assessment—Cancer Study and completed the QLQ-C30 at T1 and T2. Perceived changes in five QOL domains were reported using the Subject Significance Questionnaire (SSQ) at T2. Anchored on the SSQ, ratings indicating improvement, the same or deterioration, means, and effect sizes were calculated for QLQ-C30 change scores. A two-piece linear regression model was used to identify the MCID for each QLQ-C30 domain.
Results: A majority of SCT patients (99/191 vs. 32/191) perceived deteriorating QOL, while MED/RAD patients perceived

improvement (109/436) as well as deterioration (115/436). Overall QOL decreased by 14.2 (SCT) and 2.0 (MED/RAD)units among patients who responded "the same" in the SSQ. The MCID for overall QOL for deterioration were 11.8 and 7.3 among MED/RAD and SCT patients, respectively; the MCID was only 3.3 among MED/RAD and 6.9 among SCT patients reporting improvement.
Conclusions: Cancer treatment has a greater impact on QOL among SCT patients than MED/RAD patients. The MCID for QLQ-C30 change score differed for perceived improvement and deterioration, suggesting different standards for self-evaluating changes in QOL during cancer treatment.

1061
Can patient experience with service quality predict survival in colorectal cancer?

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Objectives: We evaluated the relationship between patient-reported experience with service quality and survival in colorectal cancer.
Methods: Seven hundred two returning colorectal cancer patients were treated at Cancer Treatment Centers of America[â] between July 2007 and December 2010. Overall patient experience "considering everything, how satisfied are you with your overall experience with CTCA?" was measured on a seven-point Likert scale ranging from "completely dissatisfied" to "completely satisfied." It was dichotomized into two categories: top box response (7) versus all others (1–6). Cox regression was used to evaluate the association between patient experience and survival.
Results: Two hundred fifty-eight patients were newly diagnosed while 444 were previously treated. Fifty-seven, 99, 227, and 319 patients had stage I, II, III, and IV disease, respectively. Three hundred sixty-two were men and 340 women. Mean age was 55.6 years. Five hundred six patients were "completely satisfied," while 196 were not. Median overall survival was 20.9 months (95% CI=18.2–23.7 months). On univariate analysis, "completely satisfied" patients had a significantly lower risk of mortality compared to those "not completely satisfied" (HR=0.78, 95% CI=0.61–0.98, p=0.04). Similarly, on multivariate analysis controlling for stage at diagnosis, treatment history, age, and gender, "completely satisfied" patients demonstrated a significantly lower mortality (HR=0.74, 95% CI=0.58–0.95, p=0.02).
Conclusions: Patient experience with service quality was an independent predictor of survival in colorectal cancer, a novel finding in the literature. Patients who evaluate their care experience more favorably may in turn have more positive attitudes toward their treatment outcomes and may engage in other health behaviors that could potentially increase survival.

1062
Palliative venting gastrostomy in patients with malignant bowel obstruction and ascites

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Background: Fluoroscopic-guided placement of a percutaneous decompression gastrostomy tube (PDGT) is used to palliate patients with malignant bowel obstruction (MBO). We report our clinical experience in patients with MBO and ascites who are known to be technically difficult cases and at increased risk of complications following PDGT placement.
Methods: Between October 2005 and April 2010, 89 consecutive oncology patients with MBO and ascites underwent at least one attempt at PDGT placement. We retrospectively reviewed the electronic medical record to collect demographic details, procedure information, and morbidity and mortality data. Kaplan–Meier curves were used to calculate median survival following PDGT.
Results: Ninety-three new gastrostomy encounters occurred in 89 patients. The primary and secondary technical success rates were 72 % (67/93) and 77.4 % (72/93), respectively. Inadequate gastric distention was the reason for failure in 84.6 % (22/26) of the cases in which the initial PDGT attempt was unsuccessful. For ascites management, 13 patients underwent paracentesis and 78 patients underwent placement of an intraperitoneal (IP) catheter. The overall complication rate in successful placements was 13.9 %, with a major complication rate of 9.7 %. Following PDGT, the median overall survival rate was 28.5 days (95% CI=20–42).
Conclusion: PDGT is a safe and effective procedure for the palliation of symptoms related to MBO in the majority of patients. In patients with ascites, IP catheter drainage can be used to manage ascites and facilitate PDGT placement without increased risk of infection.

1065
Developing an e-health portal targeting survivorship cancer care: a user-centred design approach

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Objectives: To ensure adequate uptake of e-health, end-users and other stakeholders should be involved in the development. We aimed to develop an e-health portal targeting survivorship cancer care, OncoCompass, through an incremental user-centred design approach.
Methods: We conducted a qualitative needs assessment among cancer survivors (N=30) and care professionals (N=11). Consequently, usability (system quality) of a prototype of OncoCompass was tested by end-users (cancer survivors, N=9). Based on the results of these studies, OncoCompass was developed with a team of experts (patients and care professionals). Currently, cancer survivors (N=11) participate in a second usability study (content and service quality) and care professionals (N=20) participate in a cognitive walkthrough.
Results: The needs assessment revealed that an e-health portal targeting survivorship cancer care was appealing to most cancer survivors. Respondents requested that the portal would provide tailored personal support and information. Requirements for usage were: easy to use, non-obligatory, and an addition to traditional health care instead of a substitute. Care professionals expected that an e-health portal could optimize survivorship cancer care by providing them better insight into a patient's well-being. The information provided should be concise and easily accessible. The usability tests identified some weaknesses in the user interface that resulted in adjustments, such as an easier registration procedure and clearer user instructions.
Conclusions: The study results give insight into the characteristics needed to design and build a useful e-health portal. Based on the current study results, OncoCompass will be refined, after which a multicentre pilot study will be conducted to assess feasibility.

1067
The effect of the use of oral glutamine on the side effect of mucositis in patients with head–neck cancer who receive chemoradiotherapy: retrospective evaluation with clinical and immunological parameters

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In this study, we aimed to investigate the effect of glutamine supplementation on the intensity and duration of oral mucositis related to therapy and on pro-inflammatory cytokines in patients with head–neck cancer who were treated with chemoradiotherapy. A total of 28 outpatients with HNC who were admitted to the Gazi University, Department of Radiation Oncology, were retrospectively evaluated. During RT, changes in the weight of the patients were routinely evaluated and oral mucositis scoring was done each week. Serum IL-1 beta, IL-6, and TNF-alpha levels were measured, in addition to routine blood tests. When the changes of serum TNF alpha, IL-1 beta, and IL-6 levels were compared at the beginning and at the end of the treatment, the groups that received and did not receive glutamine supplementation did not show any significant difference .The day of onset of mucositis was the 18th day of the therapy in the group that received glutamine supplementation and the 14th day of the therapy in the group that did not receive glutamine. This was statistically significant (p=0.007). Similarly, the dose in which mucositis was started was median 36 Gy in the group that received supplementation and median 28 Gy in the group that did not receive supplementation (p=0.006). Glutamine is a well-tolerated supplementation product with proven effects on oral mucositis, which is the side effect occurring during the therapy of head–neck cancers. The effect of glutamine on inflammation leading to mucositis development in patients with head–neck cancer should be investigated in larger patient populations.

1069
An international healthcare provider (HCP) survey of venous thromboembolism (VTE) guideline awareness in cancer

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Introduction: Venous thromboembolism (VTE) is a leading cause of morbidity and mortality in cancer. Major European and North American Oncology Societies have VTE guidelines. However, heterogeneity in VTE management persists in practice. Only half of candidate patients receive adequate anticoagulation. Reasons for the apparent lack of guideline adherence remain to be clearly defined.
Aims: Our aims were to:

1. Evaluate awareness and adherence to VTE guidelines
2. Identify barriers in guideline implementation

Methods: A nine-question survey, available on the MASCC web site from May to July 2010, was sent via e-mail to MASCC members.
Results: One hundred forty of 640 (21.8 %) varied HCPs from 34 countries responded. Sixty-six of 140 (47 %) frequently treated VTE: 56/66 (84.8 %) were aware of the guidelines and 10/66(15.2 %) were unaware of the guidelines. Nineteen of 66 (28.8 %) always, 32 (48.5 %) frequently, 8 (12.1 %) sometimes, and 7 (10.6 %) never followed guidelines. The seven who never followed guidelines identified cost of low-molecular-weight heparin (LMWH) and patient injection burden as barriers. Twenty-seven of 66 (40.9 %) described five main clinical situations in which guidelines were inadequate:

1. Bleeding risk due to cancer
2. Concomitant antiplatelet therapy
3. Transition from active chemotherapy to comfort/hospice care
4. VTE progression despite use of LMWH
5. Platelets <50 K/mcL

Conclusions: In this MASCC survey, VTE is a frequent problem (47 %) faced by providers who demonstrated high (84 %) awareness of VTE guidelines. Guidelines do not adequately address anticoagulation when bleeding risk is high. VTE management at care transition is an important supportive care issue that remains unaddressed by guidelines. These issues require further study in order to optimize supportive care for cancer patients.

1070
Axillary web syndrome could be a risk factor for developing lymphedema after breast cancer surgery

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Background: Secondary lymphedema (SLE) is a common injuring complication of breast cancer (BC) treatment. Once established, SLE cannot be cured; therefore, it is essential to prevent or minimize this condition and to know factors associated with reporting SLE.
Objective: Our objective was to know the impact of the axillary web syndrome (AWS) on the onset of SLE after BC.
Methods: We conducted a prospective and longitudinal study. One hundred sixty women with BC surgery including axillary lymph node dissection were included. Each participant was assessed preoperatively, and then postoperatively, on hospital discharge, 4 weeks, and 3, 6 and 12, 24, and 36 months. The diagnostic criteria for AWS were pain and restriction of shoulder ROM, with associated visible or palpable taut cords of tissue in the axilla in maximal shoulder abduction. Absence of erythema, warmth, or any other inflammatory sign ruled out superficial thrombophlebitis in all of our patients. Palpable taut cords (like guitar strings) were found in all patients diagnosed of AWS in our sample. Clinically significant SLE, which increased by 2 cm, was confirmed by a >2-cm increase in two adjacent arm circumferences between the corresponding contralateral measurements.
Results: Three-year follow-up was completed by 160 women. Out of these, 43 women developed SLE (27 %). AWS was found in 76 patients, meaning an incidence of 47.5 %.Women diagnosed with AWS manifested SLE 2.2 times (95% CI=1.3–3.6) than those who did not show AWS (p=0.003).
Conclusion: AWS could be a risk factor in the development of SLE in women undergoing BC surgery.

1071
The role of oral candidiasis and the oral care protocol in the dental oncology department

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Objectives: The objective of this study was to assess the role of oral candidiasis and oral care protocol in patients undergoing head and neck cancer therapy.
Methods: The trial group comprised 121 patients who were treated for head–neck cancer. Patients were assessed of their status of candidal presence, and those with *Candida* ++++ counts were given antifungal therapy both systemically and local application in the form of troches and lozenges and compared with the mucosal injury, trismus,

hyposalivation, radiation caries, periodontics, etc. Oral care before and after cancer therapy was given to the patients. Evaluations of body weight, food intake, pain, and grading of mucositis were also made during the post-radiation treatment period.
Result: Patients who have undergone candidal evaluation and treatment along with oral care before and after cancer therapy have shown reduction in pain due to mucositis, no weight loss, and no patient had gone to grade 3 mucositis. Invariably, the numbers of trismus cases were less, which may be due to the reduction in the severity of mucositis when compared to the groups (ulcerative stage of oral mucosa can lead to restricted mouth opening). Patients affected with radiation caries showed no change in the colony count after the evaluation and treatment.
Conclusion: Oral candidiasis and oral hygiene may play a crucial role in the severity of oral complications. Further studies are necessary to evaluate the role of candidiasis in mucositis, trismus, and other subgroups.

1072
A longitudinal study of chemotherapy and disability in prostate and male bladder cancer patients

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Objective: Our objective was to describe changes in functional limitations and disability, and the longitudinal relationship between functional limitations and disability, in male bladder and prostate cancer patients during the first six cycles of chemotherapy.
Methods: Using a longitudinal design, adult, male English-speaking bladder and prostate cancer patients scheduled to undergo chemotherapy were recruited from senior adult and genitourinary clinics at a comprehensive cancer center. Baseline data were collected before chemotherapy initiation and consisted of measures of self-reported functional limitations [Nagi Physical Performance Scale (NPPS)], disability [activities of daily living (ADL), instrumental activities of daily living (IADL)], depression [Center for Epidemiologic Studies—Depression (CES-D)], frailty, and social support [Krause and Borawski-Clark Social Support Scale (SSS)]. Three follow-up telephone interviews were conducted 7–9 days after the second, fourth, and sixth chemotherapy infusions assessing functional limitations, disability, and depression.
Results: Sixty-five participants (mean age, 68.5 years; mean years education, 14.1) participated (30 prostate and 35 bladder cancers). Fifty-four participants completed at least one follow-up interview. Most participants were Caucasian (93.8 %), non-Hispanic (92.3 %), and married (70.8 %). At baseline, participants reported low social support (average SSS, 1.54), and 18 (27.7 %) met the criteria for frailty. They reported moderate baseline functional limitations (mean NPPS=4.3), which decreased during chemotherapy. Disability was minimal at baseline (mean ADL=0.35; mean IADL=0.78) and did not change during chemotherapy. Participants reported high depression at baseline (mean CES-D=18.5), which increased during chemotherapy.
Conclusion: Interventions to reduce functional limitations and depression are needed for male bladder and prostate cancer patients undergoing chemotherapy.
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1073
Jamar hydraulic hand dynamometers require more frequent recalibration regardless of use

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Objectives: Change in grip strength is a common measure of muscle weakness or fatigue. The Jamar hydraulic hand dynamometer is a commonly used tool for measurement. Recalibration is recommended at least every year. No publically available data support the recommendation. We therefore assessed performance during a clinical trial in patients with advanced cancer.
Methods: As a part of a clinical study, 28 new Jamar model 5030J1 dynamometers were tracked by serial number as these underwent routine calibration and recalibration at an authorized calibration shop.
Results: The devices were often out of specification prior to use or prior to recalibration. Prospectively, ten dynamometers were sent for recalibration 6 months after calibration. All of the out-of-specification devices provided readings that were higher than the accepted limit. The increases occurred at all pressures, but created greater variability at lower forces. Summary results are provided below.

Test force (lbs)	0	20	60	100	160	200
No. of out of specification	0/10	2/10	3/10	6/10	6/10	6/10
Mean force read	0	27	67	110	173	214
% change	0	35	12	10	8	7

Out-of-specification rate by force
Conclusion: Jamar model 5030J1 hydraulic hand dynamomometers require more frequent recalibration than currently recommended. Even without use, dynamometers may go out of specification. Inaccurate readings may bias assessments of fatigue or muscle function, which include grip strength.

1074
Perceived best practices of a lifestyle intervention program in adjuvant breast cancer treatment: implications for future interventions

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Objectives: According to the World Health Organization (2011), cancer is the leading cause of death worldwide. Approximately 30 % of those deaths are related to risk factors such as high body mass index, poor diet and lack of physical activity, factors also known to contribute to the development of breast cancer (BC) and poor overall survival. In early-stage BC, undergoing adjuvant therapies has also been linked to decreased exercise and weight gain (Abrahamson 2006). The Diabetes Prevention Research Group (2002) demonstrated that a lifestyle intervention program, incorporating both diet and exercise, decreased the incidence of new-onset diabetes by 58 %. As such, the integration of lifestyle interventions into cancer recovery programs could potentially have positive impacts on recurrence and BC-related deaths. The present study aimed to qualitatively analyse an existing lifestyle intervention program, the LISA Trial, which provided a 2-year telephone-based weight loss intervention to postmenopausal women receiving adjuvant BC treatment.
Methods: A focus group comprised lifestyle coaches (n=4), a facilitator (lead coach) and an oncologist involved with the trial reflected on the intervention's perceived best practices. These components were triangulated with participants' responses to an exit questionnaire using a content analysis.
Results: Triangulating data from the focus group and content analysis revealed both deductive (i.e. observations on intervention content, logistics, process and training) and inductive (e.g. reinforcement, accountability) themes.

Conclusions: Highlighting coaches' and participants' perspectives allowed for unique themes to emerge; discussing these results, in relation to previous research, could help inform future lifestyle interventions through more effective knowledge transfer.

1075

Mouse models of acute and fractionated radiation-induced dermatitis

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Radiation-induced dermatitis is a painful and potentially dose-limiting complication associated with radiation therapy in the treatment of cutaneous neoplasms, head and neck, and breast cancer. Clinically relevant rodent models are essential in the preclinical development pathway of novel pharmaceutical therapies for the management of dermatitis.
Objective: Our objective was to develop clinically relevant mouse models of acute and fractionated radiation-induced dermatitis to visually assess disease severity and progression. Acute and fractionated regimens of radiation were used to induce disease and to closely model clinical radiation therapy regimens.
Methods: Male BALB/c mice were irradiated using either a single acute dose of 30 Gy or six daily fractionated radiation doses of 6–9 Gy each. Radiation was directed to a small area of the skin, and the remainder of the animal was protected using lead shielding.
Results: Both acute and fractionated doses of radiation result in robust onset of dermatitis, characterized by erythema, desquamation, and ulceration of the skin. A 0–5 scoring scale was utilized to assess disease severity and progression. Dermatitis was noted within 8 days of a single dose of radiation and within 2 days of the final dose in the fractionated model. In both models, disease severity peaks 10–14 days following the final dose of radiation and can persist for at least two additional weeks.
Conclusions: Dermatitis can be successfully induced using acute or fractionated radiation regimens in mice. Utilizing a visual disease severity scoring scale, we were able to provide a clinically relevant end point to assess disease progression and the effects of potential therapies.

1076

Handgrip predicts sarcopenia, lower extremity strength and quality of life in advanced cancer patients

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Objective: Our objective was to determine whether handgrip (HG) is associated with sarcopenia, lower extremity strength, and quality of life in advanced cancer patients (ACP).
Methods: Two hundred and three ACPs were categorized into three HG percentiles (HG≥50, HG 30, and HG 10). Using multiple regression analyses, we compared selected characteristics across patients with different HG percentiles.
Results:

		Handgrip 30th Percentile (vs ≥50 percentile)		Handgrip 10th Percentile (vs ≥50 percentile)	
		B	95% CI	B	95% CI
ESAS (0-10; 10 worst)	Strength Score	0.3	-0.8 to 1.5	1.5 †	0.5 to 2.4
ECOG PS (0-4; 4 worst)	Functional Score	0.04	0.4 to 0.5	0.7 ‡	0.3 to 1.0
BFI (0-90; 90 worst)	Total Score	8.8	-5.9 to 23.6	18.2 †	5.9 to 30.6
MQoL (10-0, 0 worst)	Physical Score	0.1	-1.7 to 1.9	-1.6 *	-3.1 to -0.2
	Total Score	-0.2	-1.2 to 0.8	-1.1 *	-1.9 to -0.2
Quadriceps strength	Isokinetic Peak Torque (60°/s; Nm)	-49.9 ‡	-74.7 to -29.2	-48.3 ‡	-69.0 to -27.7
	Isokinetic Peak Torque (120°/s; Nm)	-31.8 †	-52.1 to -11.5	-37.3 ‡	-54.3 to -20.4
		OR	95% CI	OR	95% CI
Sarcopenia (by DXA)	Yes/no	9.8 *	1.6 to 58.6	19.0 †	3.5 to 103.1

* p < 0.05; † p <0.01; ‡ p < 0.001. Controlling for age, gender, cancer diagnosis, treatment (radio/chemo), survival (in weeks), medications, and time from diagnosis to assessment. B is the unstandardized regression coefficient for linear regression models; OR: odds ratio from multivariate logistic regression; 95% CI=confidence interval. ESAS: Edmonton Symptom Assessment System. ECOG PS: Eastern Cooperative Oncology Group Performance Status. BFI: Brief Fatigue Inventory MQoL: McGill Quality of Life Questionnaire DXA: Dual energy X-ray absorptiometry. Nm: Newton-meters

Table of results

Conclusion: HG≤30 percentile appears to be a surrogate marker of sarcopenia and decreased muscle strength in ACP. Only HG≤10 percentile can predict lower quality of life in this patient population.

1077

A pilot study to evaluate urinary cytokines/chemokines as markers of pain flare in patients undergoing external beam radiotherapy for the treatment of painful bone metastases

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Objectives: Our objectives were to explore the use of urine sampling for measuring the presence of cytokines/chemokines in patients receiving external beam irradiation for painful bone metastases and to gain insight into the pathophysiology of pain flare through assessment of changes in urinary cytokines/chemokines.
Methods: Urine of patients receiving a single 8-Gy fraction for painful bone metastases was collected pre-radiation, 1 day, and on an additional day between days 2 and 5 post-radiation. A daily diary was used to assess pain and analgesic use. The Millipore Milliplex 42-Plex Cytokine/Chemokine Kit™ was used to measure for cytokines/chemokines.
Results: Forty-six patients were entered, of which 28 were evaluable (complete urine and diary data). Pain flare was experienced by 11 patients. Eighty-three of 84 urine samples were available for analysis. Of the 42 possible cytokines/chemokines measured, at least 50 % of the patients had measurable EGF, fractalkine, GRO, IL-4, IL-8, IP-10, MCP-1, MDC, PDGF-AA, sIL-2Ra, TGF-alpha, and VEGF. Comparing patients with or without pain flare, EGF, fractalkine, GRO, IL-8, IP-10, MCP-1, MDC, sIL-2Ra, and TGF-alpha increased following radiation. There was a decrease in PDGF-AA and no change in IL-4 and VEGF.
Conclusions: Urine collection for cytokine/chemokine determination is feasible in palliative bone metastases patients. Measurable changes in urinary cytokine/chemokine levels occur following radiation for painful bone metastases. Patients who experience pain flare appear to have a different pattern in urinary cytokine/chemokine levels. A larger study is required to evaluate the possible role of cytokines/chemokines in predisposition and/or cause of pain flare following radiation to painful bone metastases.

1078

Phase 1B study assessing safety, tolerability and efficacy of AG013 in subjects with head and neck cancer receiving induction chemotherapy

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Objectives: The objective of this study was to evaluate the safety, tolerability, PK profile, and efficacy of AG013 in induction chemotherapy (ICT)-associated oral mucositis (OM). AG013 is a mouth rinse composed of recombinant *Lactococcus lactis* (sAGX0085) engineered to secrete human Trefoil Factor 1 (hTFF1). TFFs have wound-healing properties and are protective of mucosal tissues.
Methods: Twenty-five of 52 patients with locally advanced HNC developed symptomatic mucositis during cycle 1 of ICT. During the first 14 days of cycle 2, this enriched cohort was randomized to AG013 or placebo. Three dose frequencies of AG013 were tested: once/day, three times/day, and six times/day rinse. Each group consisted of at least seven patients (five AG013 and two placebo). Patients were assessed on days 1–14 for OM using the WHO criteria.
Results: sAGX0085 was not detectable in blood. Recovered oral live bacterial levels were high immediately after dosing, decreased by 90 min, and were undetectable at study end. Patients who received placebo had ulcerative OM on nearly 60 % of the days versus 35–40 % days in the AG013 group. Twenty-nine percent of patients who received AG013 had 0 or 1 day of UOM versus at least 2 days of ulcerative OM in the placebo group. Patients who received AG013 had a lower percentage of days with OM and fewer unplanned office and emergency room visits compared to placebo. No differences were noted in mouth and throat soreness, opioid use, or gastrostomy tube placement.
Conclusions: AG013 was proven safe and was well tolerated. The preliminary efficacy data are promising; thus, further studies with this agent are warranted.

1079

The nursing team's knowledge on chemotherapeutic drug administration as a patient safety strategy

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Objectives: Chemotherapy represents an advancement in cancer cure and control as it increases patients' life span. This study aimed at evaluating the nursing team's knowledge with regards to the preparation, administration, and monitoring of chemotherapeutic drugs.
Methods: This is a cross-sectional descriptive study. Twenty-seven nursing professionals working at a unit for high-complexity oncology care at a university hospital in Rio Branco, Acre, Brazil, were interviewed. A questionnaire consisting of data on socio-demographics, education, and knowledge on the administration and monitoring of chemotherapeutic drugs was used.
Results: The main results obtained were that the majority of professionals were women (81.4 %) and that their mean number of weekly working hours was 63. With regards to oncology training during their undergraduate education, 29.6 % reported that they had the oncology course in their curricula. When asked whether their institution provided specific training and continuing education in oncology, only 3.7 % answered positively. Of the 27 participants, 26 % did not consider themselves to be sufficiently trained to provide this type of care.
Conclusions: This study showed the need to improve the nursing team's knowledge on oncology and chemotherapy, which can be achieved by means of updating, continuing, and permanent education. It is noteworthy that the lack of knowledge by nursing professionals may produce errors in care provision and not ensure care provision safety.

1080

Involvement of the maxillary sinus and the nasal septum in bisphosphonate-related osteonecrosis of the jaw

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Introduction: The use of bisphosphonates is very common among patients with multiple myeloma or patients with bone metastases of various malignancies. Its benefits are well recognized, but in the last 8 years, it became evident that it portends a major side effect—bisphosphonate-related osteonecrosis of the jaw (BRONJ).
Objectives: Our objective was to evaluate the effect of BRONJ of the maxilla on the adjacent structures: maxillary sinus and the nasal septum.
Methods: We reviewed the records of 163 patients diagnosed with BRONJ. For those who had involvement of the maxilla and available imaging studies, analysis of head and neck CT was performed.
Results: Sixty-six patients (40 %) had involvement of the maxilla, 82 patients (51 %) had involvement of the mandible, and 15 patients (9 %) had involvement of both the maxilla and the mandible. We analyzed the CT studies of 21 patients with involvement of the maxilla. Fourteen patients (66 %) had evidence of maxillary sinus opacification; 13 patients (62 %) had nasal septum deviation.
Conclusions: In addition to its well-established effects on the mandible and maxilla, BRONJ affects also the adjacent structures such as maxillary sinus and nasal septum. CT study is recommended for all patients with BRONJ involving the maxilla in order to assess the extent of the damage to the maxilla and adjacent structures.

1082
Improving neurocognitive functioning measurement tool for adult survivors of childhood cancer: the Childhood Cancer Survivor Study—Neurocognitive Questionnaire (CCSS-NCQ)

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Objective: Childhood cancer survivors are at increased risk of neurocognitive impairments due to their cancer diagnosis and treatment. Traditional clinical assessments for neurocognitive impairment are burdensome and do not account for subjects' perspectives of daily functioning. We aimed to refine and validate the Childhood Cancer Survivor Study Neurocognitive Questionnaire (CCSS-NCQ) by linking items from both CCSS-NCQ and Behavior Rating Inventory of Executive Functioning—Adult Version (BRIEF-A) using expert panel opinions and item response theory (IRT) methodology.
Method: Data were collected from adult survivors of childhood cancer of the St. Jude Life Cohort (n=833) who completed both CCSS-NCQ and BRIEF-A and received professionally administered clinical neurocognitive assessment. Steps included:

1. Establishing content validity by mapping items of both instruments to common domains (memory, task efficiency, organization, emotional tolerance)
2. Assessing construct of the revised CCSS-NCQ
3. Equating and selecting items within domains using IRT methodology

We evaluated known group validities of the revised CCSS-NCQ based on clinical assessments. We identified clinical and demographic variables associated with each domain using multiple linear regression.
Results: Based on item properties and content, 32 out of 100 were retained. The results suggest that items in each domain of the revised CCSS-NCQ captured lower to middle levels of neurocognitive functioning. Memory and task efficiency domains demonstrated the highest known group validities with memory clinical assessment. Cranial radiation and female gender were associated with lower functioning.
Conclusion: The use of different items from both CCSS-NCQ and BRIEF-A improves measurement properties for assessing neurocognitive functioning rated by childhood cancer survivors.

1083
Symptom burden and existential distress—understanding the association between physical problems, demoralization and loss of dignity

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Objectives: Demoralization and loss of dignity are expressions of existential distress particularly salient in the setting of cancer diagnosis and treatment. This study examines

(a) The association between physical problems and loss of dignity
(b) Whether loss of dignity mediates the association between physical problems and demoralization found in earlier studies

Methods: Patients (N=112) were studied during inpatient treatment (36 % hematological disease, 11 % prostate cancer, 10 % lung, and 10 % gynecologic). Thirty percent were in palliative treatment. The following validated self-report questionnaires were administered: NCCN Distress Thermometer (Physical Problem List), Demoralization Scale, Patient Dignity Inventory, and Illness-Specific Social Support Scale.
Results: Patients reported on average M=5.6 (SD=3.8) physical problems, most frequently mobility constraints (58 %) and sleep disturbances (55 %). Nine percent of the patients were demoralized. The correlation between demoralization and loss of dignity was r=0.67 (p<0.001). Multiple regression analyses controlling for age, gender, curative vs. palliative treatment, and social support showed that the number of physical problems was closely related to both demoralization (β=0.46, p<0.001) and loss of dignity (β=0.55, p<0.001). Furthermore, loss of dignity mediated the association between the number of physical problems and demoralization (Sobel test, p<0.001).
Conclusions: The results reinforce the significance of physical symptom burden for existential distress in cancer patients. The mediator effect found suggests that physical problems may violate the sense of dignity, which may increase the risk for demoralization. The importance of adequate symptom management and psychosocial interventions fostering the sense of meaning and dignity to prevent existential distress is underscored.

1084
The relationship between bowel function and quality of life in patients treated with pelvic radiation therapy: an ancillary study of North Central Cancer Treatment Group Study N00CA

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Objectives: Pelvic radiation therapy (PRT) is known to adversely affect bowel function (BF) and patient well-being. This study evaluated the relationship between BF symptoms and quality of life (QOL) after PRT.
Methods: The BF Questionnaire (BFQ) measured symptoms of nocturnal bowel movements, incontinence, clustering, need for protective clothing, inability to differentiate stool/gas, liquid bowel movements, urgency, cramping, and bleeding at 4 weeks (PRT completion) and 12 and 24 months. The total BFQ score at each time point was calculated by adding the number of reported symptoms. Overall QOL was measured using a numeric analog scale. Chi-square, Wilcoxon, and Pearson correlation methodologies compared the BFQ and QOL results.

Results: One hundred twenty-five patients participated. At 4 weeks, QOL was significantly worse for patients experiencing any BF symptoms ($p<0.01$), except the need for protective clothing, and total BFQ score was significantly worse for patients having clinically deficient QOL ($p<0.01$). At 12 months, all symptoms were associated with worse QOL (p value range, <0.01 to 0.03), except rectal bleeding, cramping, and urgency. At 24 months, only clustering and urgency were associated with worse QOL ($p<0.01$ and $p=0.02$, respectively). Total BFQ score was moderately correlated with worse QOL ($r=0.40$, $p<0.01$).
Conclusion: The strongest associations of symptoms and QOL were observed at 4 weeks and 12 months. Since bowel function affects QOL, symptom alleviation measures are recommended in this patient population.

1085
Implementation and monitoring of palliative sedation (PS) utilizing midazolam: development of a guideline

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Objective: Clinicians responsible for patient care can encounter significant difficulties if the severe distress of a patient requiring palliative sedation (PS) is not managed rapidly and safely. Worldwide, midazolam is the most frequently utilized agent for this. Although much has been published to indicate for which situations PS is appropriate and basic starting points for drug administration, little information is available to guide clinicians through dose escalation and the monitoring of PS.
Methods: Utilizing information on the pharmacokinetics of midazolam together with empiric observation, a group of palliative care physicians and nurses developed an algorithm and monitoring practice to assist with dose adjustment and nursing assessment strategies.
Results: This presentation will outline the algorithm that was developed by consensus as a guideline for bolus dosing and adjustment to the continuous infusion rate of midazolam administered either intravenously or subcutaneously. Suggested target "goals of care" for PS of delirium, dyspnea, and other indications will be outlined. A stepwise approach to assessing control of dyspnea, depending on the level of communication possible, is suggested. Strategies for diligent nursing monitoring and care of the PS patient will be presented together with the use of the Richmond agitation sedation scale for assessment of agitated delirium. To date, this approach has been used without incident in our Acute Palliative Care Unit.
Conclusion: Timely and safe administration of midazolam is important for many patients requiring PS. Further assessment of this approach is required to determine the optimum strategy for implementing and monitoring PS.

1086
Parotid gland and oral cavity sparing vs. salivary function following intensity-modulated radiation therapy for head and neck cancer

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Objectives: Salivary gland hypofunction and xerostomia are common and debilitating adverse effects of head and neck radiation therapy. Intensity-modulated radiation therapy (IMRT) permits the concave sculpting of the dose distribution near the parotid gland borders, thereby reducing the mean parotid doses while permitting the delivery of an adequate target dose. To test a published model (Blanco et al., Int J Rad Onc Biol Phys 62:1055–1069, 2005) that predicts salivary flow after RT, salivary function was examined in a cohort of 23 patients treated with IMRT for head and neck cancer.
Methods: Whole unstimulated and stimulated saliva were measured prior to and after completion of RT in 112 patients. Post-RT measurements between 4 and 8 months were used, resulting in 23 analyzable patients. Dose–volume metrics for parotid glands and the oral cavity were extracted (e.g., the mean doses) from treatment planning CT images and our institution's radiation oncology treatment planning software. Statistical correlation was used to examine the association between:

1. Unstimulated and stimulated salivary flow rates (Spearman's coefficient)
2. The model predictions and observed salivary ratios (Pearson's coefficient)

Results: Unstimulated measurements were highly correlated with stimulated measurements (Pearson's $r=0.75$, $p=0.0001$). Spearman's rank correlation between model predictions and observed salivary ratios were obtained for the stimulated ($R_s=0.57$, $p=0.0056$) and unstimulated ratios ($R_s=0.66$, $p=0.0011$).
Conclusions: Our clinical observations are consistent with the Blanco model. Plan is underway to include additional patients and examine the role of the submandibular glands in post-RT salivary function.

1087
Palliative care needs for veterans newly diagnosed with lung cancer

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Objective: Lung cancer is the leading cause of cancer-related death among veterans. Despite studies suggesting that initiation of early palliative care services leads to significant improvements in quality of life and prolonged survival, there has been little focus on targeting palliative care principles during curative treatments. We sought to assess the palliative care needs of veterans with newly diagnosed lung cancer.
Methods: We conducted a survey-based, cross-sectional pilot study on veterans ($n=20$) recently diagnosed with lung cancer, any stage. We assessed patients' symptoms using the Symptom Distress Scale and functional impairment using the Karnofsky scale. We reviewed medical records to assess whether treatments had been initiated for pain and dyspnea within 2 months after diagnosis.
Results: Among the patients, 35 % had stage III or worse disease. Symptom assessment found: 45 % ($n=9$) rated their overall symptoms severe; 65 % ($n=13$) reported having pain several times a week; 40 % ($n=8$) reported frequent or constant trouble breathing; 55 % ($n=11$) reported feeling tired or exhausted most of time. The mean Karnofsky score was 73.5 (SD=15.3; 10=moribund–100=normal). Pain was only addressed 75 % and dyspnea 60 % of the time. Patterns of symptom assessment and management varied by subspecialty service.
Conclusions: Our findings suggest that veterans with newly diagnosed lung cancer have significant symptom burden and that symptoms are addressed in a fragmented fashion. Future directions include testing an intervention on the effect of integrating palliative care early after the diagnosis of lung cancer on quality of life, symptom burden, and satisfaction with care.

1088
Evaluation of satisfaction about nursing care provision at a university hospital in the view of oncologic patients in the Western Amazon, Brazil

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Objectives: This study aimed at evaluating the level of satisfaction about nursing care provision in the views of patients undergoing oncologic therapy.
Methods: Seventeen patients attended to at a unit for high-complexity oncology care at a university hospital in Rio Branco, Acre, Brazil, were interviewed between January and February 2011. A semi-structured questionnaire containing questions on socio-demographics, tumor location, therapeutic modality, facilities, and nursing care in oncologic therapy was used.
Results: The main results obtained were that more than 60 % of the respondents were women; cervical cancer and prostate cancer were the most frequent types, with percentages of 30 and 15 %, respectively. Radiotherapy was the most frequently applied therapeutic modality (35 %), followed by conjoint therapy using radiotherapy and chemotherapy. The patient's mean treatment period was 10 months, with 18 sessions on average. Approximately 19.1 % of the participants reported not receiving any type of orientation concerning the procedures during chemotherapy and/or radiotherapy sessions, and 92.4 % of the respondents were satisfied about the nursing care provided.
Conclusions: This study showed that the patients were satisfied about the nursing care provided; however, most of them were not able to answer how the treatment was performed or which medicines were used. It is essential that the nursing team provides clear and understandable information about drug therapy as well as about therapeutic modalities, thus allowing patients to participate in their treatment more effectively.

1090
Cancer patients' experiences with yoga: perceived beneficial effects on physical and psychosocial outcomes

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Objectives: Yoga is a 'mind–body' exercise, a combination of physical poses with breathing and meditation, and may have beneficial effects on physical and psychosocial symptoms. We aimed to explore cancer patients' experiences practicing yoga and to learn more about their perceived physical and psychological effects.
Methods: Participants (N=45) of four yoga classes for cancer patients were asked to participate in focus groups, of whom 29 participated. The focus groups (N=5) were audio-taped with prior consent and transcribed verbatim. Data were analyzed by two coders using inductive analysis to identify emerging themes.
Results: The mean age of the participants was 54 years (SD=11), of whom 25 were women and 18 were diagnosed with breast cancer. Participants' perceived physical benefits of practising yoga included regained body flexibility and balance, and reduced pain. Participants saw yoga as a way of getting in shape and improving blood circulation and respiration. The majority indicated that they gained more energy by practising yoga. Most participants felt that yoga was also helpful in dealing with cancer in a psychological way. Yoga helped in focusing on the here and now rather than worrying about the future. Yoga contributed to feelings of relaxation and inner peace. Other psychological benefits were: greater awareness, enhanced self-esteem, mental strength and resilience, better coping with anxiety, improved stress management and more positive feelings.
Conclusions: Cancer patients perceive various physical and psychological benefits of yoga, improving quality of life. More studies are needed to gain insight in processes contributing to these benefits.

1091
Methylphenidate (MP) and nursing telephone intervention (NTI) for cancer-related fatigue (CRF) in advanced cancer patients: a double-blind randomized phase II trial

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Aims: Preliminary studies support methylphenidate (MP) and nursing telephone intervention (NTI) for cancer-related fatigue (CRF) (Bruera et al., JCO, 2006). Our primary objective was to determine the effect of MP as compared to placebo (P).
Methods: Patients with fatigue ≥4/10 on the Edmonton Symptom Assessment Scale (ESAS), normal cognition, and hemoglobin ≥8 were eligible. Patients were randomized to four groups in a 2×2 factorial design (MP+NTI, P+NTI, MP+CTI, and P+CTI). The primary end point was Functional Assessment of Chronic Illness—Fatigue (FACIT-F) subscale scores at day 15. The dose of methylphenidate was 5 mg every 2 h, as needed, up to 20 mg/day. We tested the median difference in FACIT-F subscale scores between the groups using the Kruskal–Wallis test and Wilcoxon signed-rank test.
Results: Total accrual was 197. Mean (SD) age was 58 (12)years, 67 % (N=148) women, 72 % (N=136) white. Baseline FACIT-F was similar among the four groups. The median FACIT-F showed significant improvement between day 15 and baseline for all four groups, except for P+CTI: MP+NTI (4.5, P=0.004), P+NTI (8, P<0.001), MP +CTI (7, P<0.001), and P+CTI (5, P=0.06), with no statistically significant difference between MP and P (6 vs. 6, P=0.89). Longitudinal regression analysis showed a time effect (P<0.001) and group differences for NTI vs. CTI with FACIT-F (P=0.13) and ESAS (P= 0.03). Grade 3 toxicities were similar between the MP and P arms (34/ 93 vs. 24/97, P=0.09).
Conclusions: MP was not effective compared to P for CRF. NTI may be effective and should be further studied.

1093
Effects of aprepitant on drug metabolism in patients receiving chemotherapy of cyclophosphamide, doxorubicin, vincristine, prednisone, rituxan (R/CHOP): randomized, crossover study

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Objective: Chemotherapy (CT)-induced nausea/vomiting (CINV) is a common toxicity. Aprepitant, substance P/neurokinin (NK)-1 receptor antagonist, combined with 5-HT3 RA and dexa, prevents acute/ delayed CINV. However, aprepitant is a moderate inhibitor of

cytochrome p-450, primarily CYP 3A4. This study evaluated the effect of aprepitant on drug metabolism in lymphoma patients receiving (R) CHOP.

Method: Patients were randomized into group 1 (aprepitant in cycle 1) and group 2 (aprepitant in cycle 2). All patients received standard antiemetics: ondansetron and steroids (as in R/CHOP). Blood samples were drawn at multiple time points during/post-CT and analyzed for CP, vincristine, prednisone, and their active metabolites.

Results: Eighteen of 23 patients completed two cycles and were evaluable for PK. There was some increase in the parent CP and a decrease in toxic metabolite (2-deCl-CP). The area under the curve (AUC) for the active metabolite (4-OH-CP) and PR were within the predefined range; the blood sugar levels were not significantly different. Although there was no significant difference between the treatment and control in cycle 1, in cycle 2, the control group had significantly lower AUC of CP and higher OHCP.

	Geometric mean AUC 0–24 h (μg/mL h)		Ratio of geometric mean AUC 0–24 h treatment to control (90% CI)
	Aprepitant	Control	
Cyclophosphamide (CP)	300.0	250.5	1.2 (1.08–1.33)
2-Dechloro-cyclophosphamide (2-deCl-CP)	4.5	6	0.75 (0.65–0.86)
4-Hydroxy-cyclophosphamide (4-OH-CP)	3.9	4	0.97 (0.83–1.13)
Prednisone (PR, ng/mL h)	287	265	1.08 (1.02–1.15)
Prednisolone (PL, ng/mL h)	4,416	3,817	1.16 (1.01–1.32)

Table 1

Conclusions: Overall, minor changes observed in the levels of parent drug and/or metabolites are unlikely to have significant clinical impact. The cycle-specific effects of aprepitant can be further investigated.

1094
Comparison of quality of life in patients with bone metastases depending on response to palliative radiotherapy

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Objectives: Our objective was to compare quality of life (QOL) in patients that responded differently to palliative radiotherapy for symptomatic bone metastases.

Methods: Patients receiving palliative radiotherapy for symptomatic bone metastases were enrolled into a trial to field test the EORTC QLQ-BM22 and QLQ-C30 instruments for the evaluation of QOL in this population. Pain scores and medications were recorded. Both tools were completed at baseline and 1 month of follow-up. Response to radiotherapy was defined according to the latest definitions published by the International Bone Metastases Working Party. Differences in QOL domains between baseline and follow-up were calculated for all groups and 95% confidence intervals were calculated.

Results: Seventy-nine patients were included from six countries. Median age and KPS were 65 years and 70, respectively. No patient had a complete response; 28, 13, and 38 patients had a partial response, pain progression, and indeterminate response, respectively. Significant differences between baseline and follow-up QOL were observed only in patients who had a partial response in three of four QLQ-BM22 scales and 6 of 15 QLQ-C30 scales. In these patients, functional ability significantly improved along with some symptom scales. Patients who had pain progression or an intermediate response did not demonstrate significant changes (either improvement or deterioration) in QOL.

Conclusions: Patients that achieve some degree of pain relief after palliative radiotherapy for bone metastases also exhibit improvements in QOL. Significant improvements in both function and symptoms are observed. QOL should continue to be assessed in trials involving patients with advanced cancer.

1095
Dancing with broken bones: portraits of death and dying among inner-city poor

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This presentation will describe the dismal reality of health care for people with terminal conditions in the urban environment. Drawing on original community-based participatory research, real-life oral and photographic narratives will illustrate how inept health care arrangements lead to indignity and inequity in care for this vulnerable population. This narrative approach will also be used to describe what gives patients and loved ones strength during terminal illness and will also be used to present a case exemplar of the power of mindful presence.

A portrait of the "invisible world" of the dying poor will be crafted and describe the following components:

- Indignities of living in poverty
- Indignities of dying in poverty
- Relationship between patients and providers
- Sources of social support
- Presence and power of faith

The presentation will emphasize how the osteopathic philosophy of care of the whole person must be applied to effectively serve patients and loved ones. It will stress that cultural competency is a sine qua non of compassionate care of marginalized populations near the end of life. Overall objectives include:

- To promote understanding of how race and class intersect with the experience of dying in the inner city
- To develop understandings of the specific characteristics that shape the end-of-life experience for patients and loved ones
- Deepen understandings about the need for cultural awareness for physicians
- Present an innovative home-based learning curriculum designed to enhance skill in empathic caring for diverse populations among those who practice ocological medicine

1096
Validation of the patient-generated part of the PG-SGA against the Malnutrition Screening Tool (MST)

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Background: It is important to identify cancer patients at risk of malnutrition as many experience an array of nutritional problems impacting upon their treatment plan and quality of life. This requires using an easy and reliable screening tool such as the Malnutrition Screening Tool (MSTMST) or the scored Patient-Generated Subjective Global Assessment (PG-SGA). We hypothesized that the PG-SGA's patient-generated part alone could be a comparable screening tool to the MST.
Methods: A prospective analysis was performed in an outpatient pulmonary oncology clinic between July 1, 2010 and January 1, 2012 on non-small cell lung cancer (NSCLC) patients. Patients were asked the MST's questions and completed the patient-generated part of the PG-SGA. Cutoff points of ≥2 for MST and ≥4 for PG-SGA (patient-generated part alone) were used to identify patients at risk of malnutrition.
Results: One hundred forty-four patients with NSCLC (72 men, 72 women, aged 67±11 years) completed the questionnaires. Fifty-six percent (81/144) of patients had a score ≥2 on MST and 70 % (101/144) had a score ≥4 on PG-SGA (patient-generated part). In 114 cases, the MST and PG-SGA scores were congruent: 76 true positives and 38 true negatives. In 30 cases, the scores were discordant: 25 false positives and 5 false negatives. PG-SGA had a sensitivity of 94 % and specificity of 60 % compared to MST.
Conclusion: PG-SGA's patient-generated part alone had a sensitivity of 94 % compared to MST. This tool could be used to screen for malnutrition risk in NSCLC patients attending an outpatient oncology clinic.

1098
Evaluating effectiveness of Fatigue Clinic goals in managing breast cancer-related fatigue

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Objectives: The objectives of this study were to evaluate the effectiveness of Fatigue Clinic goals—empower patients through education, decrease fatigue-related anxiety and assist in the adoption of healthy behaviours—by breast cancer patients experiencing moderate to severe cancer-related fatigue (CRF) and to assess perceived helpfulness of and improvement to clinic.
Methods: This is a retrospective study with a convenient sample of 55 breast cancer patients who had initial assessments at the Fatigue Clinic within the past 3–12 months. Recruitment period was from January 2009 to March 2011. Mixed methods were used for data collection and analysis. During semi-structured, audio-recorded telephone interviews, patients completed the Brief Fatigue Inventory (BFI) and answered open-ended questions about social support and satisfaction with clinic; demographic characteristics were collected. BFI score at time of interview was compared to the score calculated at initial assessment. All interview transcripts were coded using NVivo 9® software and the data classified into parent and sub-themes.
Results: Of 55 eligible patients, 16 declined participation and 12 were unreachable by telephone after three calls, yielding a 65 % response rate. BFI scores at time of survey were significantly lower ($p<0.05$) than the BFI scores at initial assessment. All patients felt that attending the clinic resulted in learning new information, changed behaviours, decreased fatigue-related anxiety and empowered them in fatigue self-management. All patients were satisfied with the clinic staff and found the clinic helpful; most had no recommendations for improvement.
Conclusion: The Fatigue Clinic achieved its goals empowering patients to take an active role in self-management of CRF. Overall, patients were satisfied with the clinic and found it to be helpful.

1100
Antibiotic resistance is associated with longer bacteremic episodes and worse outcome in febrile neutropenic children with cancer

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Purpose: With the increasing emergence of multiresistant pathogens, better understanding of these infections is necessary. The aims of the present study were to evaluate the risk factors associated with isolating a multiresistant organism (MRO) from a positive blood culture in pediatric cancer patients with febrile neutropenia and to study its impact on the clinical course and outcome of febrile episodes.
Patients and methods: The association between MRO with underlying malignancy, age, disease status, hospitalization during episode, absolute neutrophil count, absolute monocyte count, clinical foci of infection, and pathogen isolated was assessed in bacteremic pediatric cancer patients. The MRO phenotype was defined as diminished susceptibility to three of the broad-spectrum antibody classes.
Results: Among 239 episodes of blood stream infections (BSI), Gram-positive and Gram-negative organisms were detected in 180 (75 %) and 59 (25 %) episodes, respectively, with 38 % of isolates showing multiresistance ($n=92$). Significant risk factors ($P<0.05$) for MRO were hospitalization, Gram-negative organisms, presence of clinical focus of infection, reduced ANC, prolonged duration of neutropenia, and previous intake of antibiotics. Of the episodes with prolonged duration of fever extending for more than 7 days, 62 % (6/93) were associated with a multiresistant phenotype, while it accompanied 72 % (18/25) of the cases with an unfavorable outcome ($P<0.001$).
Conclusion: Isolation of MRO is more likely to be associated with a prolonged course and an unfavorable outcome. Continuous multidisciplinary surveillance of BSI is warranted to develop strategies for antimicrobial resistance control.

1103
Variation of health-related quality of life by gender among patients newly diagnosed with multiple myeloma

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Objectives: This analysis evaluated whether the health-related quality of life (HRQOL) of patients in the USA newly diagnosed with active, symptomatic multiple myeloma (MM) varies by gender at initiation of their anti-myeloma therapy.
Methods: Data were collected in Connect® MM, a prospective observational registry which began in 2009. Clinicians reported patient demographics and clinical characteristics. Patients reported HRQOL at enrollment by completing the Brief Pain Inventory (BPI), the EQ-5D, and the Functional Assessment of Cancer Therapy—Multiple Myeloma (FACT-MM). Mean BPI, EQ-5D, and FACT-MM scores were assessed by gender.
Results: Baseline HRQOL data were reported by 1,189 patients in 228 centers (57 % men, 43 % women). Both genders were statistically similar in MM stage (International Staging System, Durie and Salmon) and ECOG status. BPI average pain scores were worse among women (males/females (m/f)=3.2/3.5, p=0.0422). Male patients fared better in the EQ-5D domains of pain/discomfort (m/f=1.7/1.8, p=0.0241) and anxiety/depression (m/f=1.4/1.5, p=0.0148); both were similar in mobility, self-care, and usual activities. As assessed with the FACT-MM, men had better physical well-being (m/f=20.2/19.8, p=0.0364), emotional well-being (m/f=18.5/17.8, p=0.0047), and MM effects (m/f=37.7/36.3, p=0.0298). Overall FACT-MM and FACT-G scores were not statistically different.
Conclusions: Initial Connect® MM Registry results suggest that baseline HRQOL may vary by gender in certain physical and emotional domains. As patients undergo therapy, analyses should be conducted by gender to determine whether it is associated with clinical outcomes and HRQOL over time and to identify opportunities for targeted support activities.

1105
Effects of aprepitant prophylaxis (APP) on treatment delivery, toxicity, and survival in patients with locally advanced head and neck cancer (HNSCC) treated with high-dose cisplatin (HDC) and radiotherapy

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Background: Chemoradiotherapy (CRT) increases the treatment toxicity and survival of HNSCC patients. Aprepitant prophylaxis (APP) reduces nausea and vomiting due to high-dose cisplatin (HDC). We examined the effect introduction of APP had on clinical outcomes in head and neck squamous cell carcinoma (HNSCC) patients at our centre.
Patients and methods: Consecutive eligible HNSCC patients treated in 2006–2008 with curative intent CRT were identified and data retrospectively extracted. HDC was defined as 100 mg/m^2 IV q21 days. Standard emesis prophylaxis was used in all patients. APP 125/80/80 mg, p.o., d1-3 became routinely available in September 2007. Two time cohorts were defined by this (group 1: January 2006–September 2007; group 2: October 2007–December 2008) and the outcomes compared.
Results: One hundred forty-eight eligible patients were identified, 74 in each time cohort. Group 2 patients were older, more had stage IVB, and more received TPF induction chemotherapy. In groups 1 and 2, 7.5 and 84.7 % received APP and 68.9 and 56.8 % received HDC CRT, respectively. More group 2 HDC patients received three cycles of treatment, and their cumulative cisplatin dose was higher. Group 2 rates of toxicity were lower, except febrile neutropenia. Two-year survival favored group 2 (62.2 versus 77.0 %, p=0.049); more group 1 patients died of non-cancer-related deaths (21.6 versus 6.8 %, p=0.031). Multivariable analysis confirmed APP as an independent prognostic factor for survival.
Conclusions: The cohort of HNSCC patients with routine APP had improved treatment delivery and overall survival compared to an immediately preceding cohort of patients. APP improves the safety and, possibly, the efficacy of HDC given with radiotherapy and should be a component of standard therapy.

1106
Quality of life of oral cancer patients who have undergone maxillofacial prosthetic rehabilitation, 1 year after treatment: a qualitative study

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Objective: The aim of this study was to examine the quality of life of oral cancer patients after maxillofacial prosthetic rehabilitation.
Methods: The study was conducted in the department of oral medicine and radiology. Thirty-six patients, who were treated for oral cancer (namely, oral squamous cell carcinoma, ameloblastoma, and keratocystic odontogenic tumor), who had 1 year previously received either total mandibulectomy, partial mandibulectomy, or marginal mandibular resection treatments were included. Those who underwent a maxillofacial prosthesis, namely, immediate obturator, training flange, interim prosthesis, and definite prosthesis, were asked to answer an open question: "Would you like to share your thoughts and experiences related to your cancer diagnosis, treatments or anything else?" By being open, broad and nonspecific, the question was intended to stimulate subjective information, not included in the original quantitative study.
Results: Most of the patients were affected by two or more side effects due to the dentomaxillofacial defect, negatively affecting their life quality. Symptoms included trismus, jaw deviation, swallowing difficulties, psychosocial impact, joint pain, depression, difficulty in speech (difficulty in Malayalam language speaking ability), sleep problems, muscle and joint pain, facial disfigurement, hyposalivation, bacterial and fungal infection, increased incidence of caries, and recurrence. A significant difference on symptoms was found when correlating and comparing the maxillary and mandibular defects (p<0.01). A statistically significant result was obtained with the different maxillofacial prostheses (p<0.01).
Conclusion: Maxillofacial prosthesis itself had a significant improvement on the symptoms and effects of the treatment and had affected the quality of life of patients.

1109
Patient satisfaction with control of emesis following chemotherapy: comparison of APF530, a subcutaneous extended-release formulation of granisetron versus intravenous palonosetron

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Objectives: Our objective was to compare the effectiveness of subcutaneous (SC) APF530 vs. intravenous (IV) palonosetron (Palo) on patient satisfaction for 5 days following chemotherapy. Nausea control

was specifically assessed given its importance in antiemetic research/therapy.
Methods: A phase 3 trial of 1,341 patients demonstrated the non-inferiority of APF530 vs. Palo using complete response (no emetic episodes/rescue medication) as the primary end point. APF530 SC (containing granisetron 10 mg) and Palo IV 0.25 mg were administered 30 min before chemotherapy. Patients kept dairies for 5 days to measure satisfaction of nausea/vomiting control on each day and the overall 5-day period. This post hoc analysis of these data includes subgroup analysis of chemotherapy naive and non-naive patients.
Results: Overall, 70.1 and 74.8 % of APF530 and Palo patients, respectively, were "satisfied" or "very satisfied" with nausea/vomiting control. Chemotherapy non-naive patients reported similar satisfaction to naive patients. No significant differences in satisfaction were observed between treatments in the entire population or in subgroups (all $P>0.2$). Moreover, 69–71 % of patients reported none to mild nausea with either treatment over all 5 days. By day 5, moderate to severe nausea was reduced to 12.9 % (APF530) and 10.4 % (Palo) of patients. Chemotherapy non-naive patients treated with APF530 tended to report less moderate to severe nausea on all days. There were no significant differences in satisfaction or nausea severity in either arm at any time in patient subgroups or the entire population (all $P>0.02$).
Conclusions: APF530 (SC) and palonosetron (IV) provided comparable results in patient satisfaction and nausea following chemotherapy regardless of previous patient exposure to chemotherapy.

1110
Decision-making preferences of advanced cancer Hispanic patients from the United States and Latin America

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Background: Understanding patients' specificities of preference in decision making is of importance to provide quality care and ensure patient satisfaction. Our primary aim was to compare the frequency of passive decision-making preferences of advanced cancer Hispanic patients in the USA (HA) and Hispanics in Latin America (HLA).
Methods: We conducted a prospective survey of advanced cancer Hispanic patients referred to outpatient palliative care clinics in the USA, Chile, Argentina, and Guatemala. Information on socio-demographic variables, performance status, and Marin Acculturation Assessment Tool was collected. Decision-making preference was evaluated by the decision-making assessment tool.
Results: A total of 387 patients were surveyed: 91 (24 %) in the USA, 100 (26 %) in Chile, 94 (25 %) in Guatemala, and 99 (26 %) in Argentina. Median age was 59 years; 61 % were women. HLA preferred passive decision-making strategies significantly more frequently than HA with regard to involvement of the family (24 versus 10 %, $p=0.009$) or the physician (35 versus 26 %, $p<0.001$) even after controlling for age and education. Seventy-six of 91 HA (83.5 %) and 242/293 HLA (82 %) preferred family involvement in decision making (p=NS). No differences were found in decision-making preferences between low and highly acculturated HA.
Conclusions: HA prefer more active decision making as compared to HLA. Among HA, acculturation did not seem to play a role in decision-making preference determination. Our findings in this study confirm the importance of family participation in decision making in both HA and HLA. However, HA patients were much less likely to want family members or physicians to make decisions on their behalf.

1112
Portraits of the invisible: faces of urban dying poor

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For most people, the lives and illness experiences of the urban poor and homeless remain invisible and unfathomable. The words of Mr. Wheeler, a 55-year-old man living with advanced stomach cancer, go directly to the point. When asked what it was like to be poor and sick in urban America, he replied, "*We have been cast aside, disregarded, and forgotten about*." In a culture that emphasizes physical beauty and well-being, the facts of dying—pain, weakness, bodily devolution, emotional turmoil, etc., are frightening, even disgusting, to modern sensibilities. Dying persons consequently are often left in a state of isolation and inattention. The world of the inner-city poor is similarly hidden in a culture that embraces lavish materialistic display. When viewed from the perspective of mainstream USA, a generalized perception is that the lives led in "those" neighborhoods are like the physical environ itself—forlorn, dismal, and frightening. For this reason, when terminal illness comingles with poverty, the result is a "double invisibility": the poor being shunned because they are seen as moral and economic failures, the dying because of the profound unpleasantness that surrounds them. This poster session will provide a face to the faceless. Drawing on photographic narratives derived from original community-based research, it will present a portrait of the invisible world of the dying poor: hardships of poverty, needs of the sick, urgency for cultural competence in caregivers, and hidden strengths of patients and loved ones.

1113
Longitudinal symptom burden of patients with gastrointestinal stromal tumors

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Objectives: The aim of this study was to provide a preliminary description of the longitudinal symptom burden of patients with gastrointestinal stromal tumors (GISTs). Symptom burden is the combined impact of symptoms and treatment on daily functioning.
Methods: Fifty-seven patients with GIST completed the pilot version of the M.D. Anderson Symptom Inventory for GIST (MDASI-GIST) weekly for up to 3 months. The MDASI-GIST assesses the severity of 22 symptoms (0—not present to 10—as bad as can be imagined) and interference of symptoms (0—no interference to 10—complete interference) in six functional areas. Demographic and disease information were collected from patients and medical records. Descriptive statistics were used to describe the symptom burden.
Results: Mean patient age was 56 years, and patients were mostly women, Caucasian, and employed full time. The mean time since diagnosis was 47 months, 60 % had received previous tyrosine kinase inhibitor (TKI) therapy, 72 % had previous surgery, and 91 % were currently receiving TKIs. The five most severe symptoms were fatigue (3.26±2.88), malaise (2.65±2.78), drowsiness (2.62±2.59), weakness (2.58±2.67), and abdominal discomfort (2.36±2.65). Most interference occurred with working (2.62±2.96) and general activity (2.47±2.81). Symptoms and interference worsened during the first 4 weeks, declined at week 8, and rose slightly by week 12.
Conclusions: The symptom burden of GIST during TKI therapy is largely due to fatigue-related symptoms and interferes with work. More research is needed to understand the pattern of these symptoms and how to manage them to maintain patient functionality.

1114
Managing change: the process of caregiving for informal caregivers of head and neck cancer (HNC)

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Objectives: The process through which informal caregivers of people with head and neck cancer (HNC) learn to become caregivers is largely unknown; thus, the objective of this qualitative inquiry was to better understand this process with a focus on developing a theoretical framework.
Methods: This study used grounded theory methods and was conducted at a large urban NCI-designated cancer center in the Mid-Atlantic region of the USA. Constant comparative analysis and theoretical sampling were used to gather data from seven caregivers of HNC patients in 14 interviews. Audio-recorded and transcribed, raw data were analyzed using Atlas.ti Software™.
Results: The caregiving process was described in terms that yielded a core category entitled Managing Change. A theoretical model was developed describing this category and its related subcategories and their dimensions. The subcategories of Managing Change included the phases of change, types of change, and amount of change. Interrelationships were identified among these categories and their various dimensions. The types and amount of change were related to stress during the treatment trajectory, which appeared to be mitigated by the quality of patient/caregiver relationship. Strategies used by caregivers to manage change included managing support, managing control, and managing to get away.
Conclusions: The data from this study can inform the development of tailored interventions, meeting caregivers' needs and concerns as they undergo the dynamic process of becoming caregivers and better enabling them to support patients.

1115
Differences in disease, patient and healthcare system characteristics and symptoms between metastatic and non-metastatic gastric cancer patients

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Objectives: The majority of gastric cancer patients in North America and Europe present with metastatic disease and have <10 % 5-year survival. We compared disease, physician and healthcare system characteristics and symptoms between metastatic and non-metastatic patients.
Methods: In a retrospective cohort study of gastric adenocarcinoma patients registered in the Ontario Cancer Registry between April 1, 2005 and March 31, 2008, we linked data obtained through a primary chart review and administrative healthcare data to study factors associated with metastatic disease. Chi-square tests and Cochran–Armitage tests for trend were performed. Kaplan–Meier methods and Wilcoxon tests were used to compare survival curves.
Results: In our cohort of 2,414 patients, 59 % were metastatic. Median survival was 6.6 months for M1 patients and 26.6 months for M0 patients ($p<0.0001$). Metastatic patients were more likely to have proximal tumours or involvement of the entire stomach, to be older ($p<0.0001$), and to receive chemotherapy ($p=0.046$) or radiotherapy ($p=0.002$) and less likely to be managed with gastrectomy ($p<0.001$). Categories of symptoms at presentation included bleeding (58.2 %), malnutrition (56 %), pain (55 %), major obstruction (47 %), fatigue (24 %) and minor obstruction (23.16 %). Metastatic patients were more likely to present with any symptom category, except for bleeding and minor obstruction ($p<0.0001$), and more likely to have a larger number of symptoms ($p<0.0001$).
Conclusions: Disease, patient and healthcare system characteristics vary between M1 and M0 patients. Metastatic patients are more likely to present with symptoms. The impact of symptoms on treatment strategy and survival requires further research.

1116
Symptom profiles associated with health-related quality of life in adult survivors of childhood cancer: a report from the St. Jude Lifetime Cohort Study

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Objective: We aimed to investigate symptom profiles and their association with health-related quality of life (HRQOL) among long-term adult survivors of childhood cancer (ASCC) enrolled in the St. Jude Lifetime Cohort Study.
Methods: Eligibility criteria include diagnosis of childhood malignancy treated at St. Jude, survival >10 years from diagnosis, and current age ≥18 years. Symptoms were self-reported by a health assessment questionnaire. We categorized symptoms into 14 areas: body image, sensation, motor/movement, cardiac symptoms, pulmonary symptoms, pain in head, back/neck, and other areas, learning/memory problems, somatization, anxiety, depressive symptoms, stress, and self-efficacy. HRQOL was measured using the SF-36, and physical/mental component scores (PCS/MCS) were generated. Multivariate regression analysis was performed to investigate associations between symptoms and HRQOL. Cumulative incidence of symptoms for time since diagnosis was estimated.
Results: The most prevalent symptoms were pain in other areas (58.7 %), followed by body image (56.3 %) and pain in back/neck (48.5 %). Greater symptoms were associated with impaired HRQOL across all domains. In multivariate regression analysis, the inclusion of symptoms alone accounted for 61 and 63 % of the variance in SF-36's PCS and MCS, respectively, whereas demographic (age, gender, race/ethnicity, and education) and clinical (treatment, second cancer, and year since diagnosis) variables only accounted for 2 and 1 % of the variance, respectively. The 30-year cumulative incidence was 40 % for pain in other areas and 40 % for body imagine.
Conclusion: A great proportion of ASCC suffered from different symptoms, which was associated with impaired HRQOL. Interventions targeting specific symptoms may improve ASCC's HRQOL.

1117
Effects of vandetanib on body composition in patients with advanced medullary thyroid carcinomas: results from a placebo-controlled study

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Objectives: Muscle (MT) and adipose tissue (AT) share common intracellular pathways with tumor, and thus metabolic consequences

are observed with targeted therapies. We assessed the effects of vandetanib, an efficient tyrosine kinase inhibitor (TKI), for the treatment of medullary thyroid carcinoma (MTC) on MT and AT.

Methods: Thirty-three patients (25 men and 8 women, mean age of 54 years) with metastatic MTC received vandetanib 300 mg/day (n=23) or placebo (n=10) in the setting of the ZETA Study. Cross-sectional areas (in square centimeters) of visceral adipose tissue (VAT), subcutaneous adipose tissue (SAT) and MT were assessed by computed tomography imaging. Comparisons between treatment and placebo were made at 3 months, and long-term evolution was evaluated over 12 months.

Results: At 3 months, compared to placebo, patients treated with vandetanib gained 1.5 kg (p=0.02), 1.3 cm^2/m^2 of MT (p=0.009), 5.1 cm^2/m^2 of VAT (p=0.02) and 4.5 cm^2/m^2 of SAT (p=0.004). At 12 months, compared to baseline, patients treated with vandetanib gained 2 kg (NS), lost 0.3 cm^2/m^2 MT (NS), and gained 3.4 cm^2/m^2 of VAT (NS) and 8.7 cm^2/m^2 of SAT (95% CI=1.1–16.2). A significant decrease of calcitonin (≤50 % compared to baseline) was associated with higher weight (p=0.01), VAT (p=0.01) and total adipose tissue (p=0.02).

Conclusions: Vandetanib is the only studied TKI to preserve MT and to restore AT. Further research is needed to explore whether the relationship between changes of VAT and vandetanib treatment results from a direct metabolic action of vandetanib or is a consequence of biochemical tumour control.

1118

First-line weekly *NAB*®-paclitaxel+carboplatin in patients with advanced non-small cell lung cancer: analysis of patient-reported neuropathy and taxane-associated symptoms

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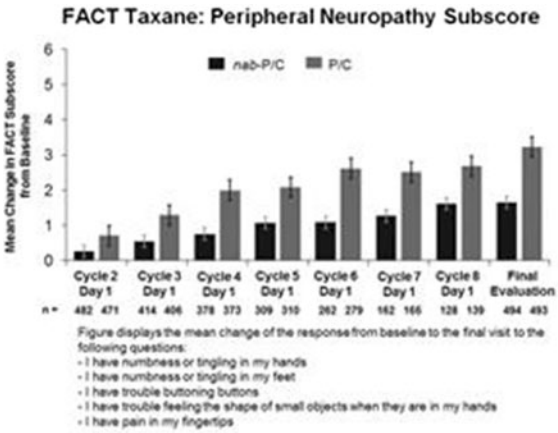
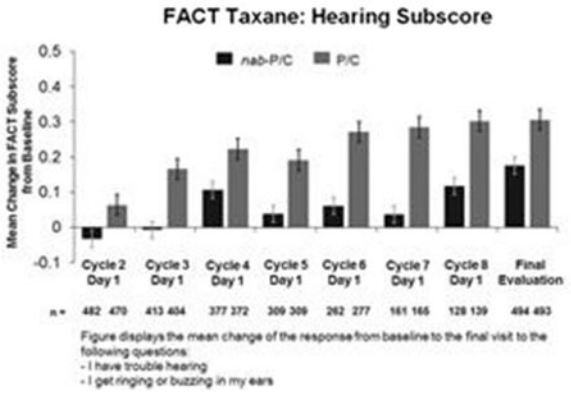
Objectives: Dose-limiting neuropathy is a common complication of taxane treatment. Measuring neuropathy-associated symptoms has significant utility for maintaining the benefit/risk balance of treatments. Here, we report patient-assessed neuropathy and taxane-associated symptoms from a phase III trial of *nab*-paclitaxel (*nab*-P)+carboplatin (C) vs. solvent-based paclitaxel (sb-P)+C.

Methods: Patients with untreated stage IIIB/IV non-small cell lung cancer were randomized to C AUC6 on day 1 and either *nab*-P 100 mg/m^2 on days 1, 8, and 15 (n=521) or sb-P 200 mg/m^2 on day 1 (n=531) every 21 days. Mean change from baseline to day 1 of each cycle for each subscale of the Functional Assessment of Cancer Therapy (FACT)-Taxane v4.0 was assessed.

Results: Ninety-eight percent of patients completed FACT-Taxane at baseline and 94 % during follow-up or at treatment completion. Baseline scores for neuropathy and pain were well balanced. A statistically significant treatment effect favoring *nab*-P/C was noted for patient-reported peripheral neuropathy (P<0.001), neuropathic pain in the hands/feet (P<0.001), and hearing loss (P=0.002; Figure). Patient-reported outcomes for neuropathy were consistent with physician assessment.

Conclusions: *nab*-P/C was associated with statistically and clinically significant reductions in patient-reported neuropathy symptoms, neuropathic pain in the hands/feet, and hearing loss compared with sb-P/C.





nab-paclitaxel image

1119
Upper gastrointestinal tract problems in patients with fresh hypopharyngeal cancer

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Background: Upper gastrointestinal (UGI) tract non-neoplastic disorders have an adverse impact on cancer treatment. This study aims to provide the prevalence of UGI tract non-neoplastic disorders in patients with fresh hypopharyngeal cancer.
Methods: All patients with newly diagnosed hypopharyngeal cancer between 2007 and 2010 were enrolled in this study. An endoscope (GIF-XP260N; Olympus Optical Co., Ltd., Tokyo, Japan) with no conscious sedation was used to evaluate the pharynx, esophagus, stomach, and duodenum. Biopsy was obtained randomly from the antrum for the presence of *Helicobacter pylori*.
Results: A total of 102 patients were enrolled, including 98 men and 4 women, with mean age of 57 years (range, 36–85 years). There were 65 patients with at least one UGI disorder, among whom 21 patients had erosive esophagitis, including Los Angeles classification grade A (eight patients), grade B (ten patients), grade C (one patient), and grade D (one patient); 32 patients had gastric/duodenal ulcers, including gastric ulcer alone (15 patients), duodenal ulcer alone (15 patients), and simultaneous gastric and duodenal ulcers (2 patients); and 36 patients had active *H. pylori* infection. Regarding the combination of these disorders, 45 patients had only one of them, 17 patients had two, and three patients had all. None of age, sex, location, and T classification of the hypopharyngeal tumor was associated with the presence of UGI disorders.
Conclusion: About two thirds of patients with fresh hypopharyngeal cancer had at least one of erosive esophagitis, active *H. pylori* infection, and gastric/duodenal ulcers.

1120
Can we identify patients with pancreatic cancer (PC) at high risk for cachexia? A prospective study

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Background: Identifying pancreatic cancer (PC) patients at high risk of cachexia may allow for early intervention to prevention. We evaluated the ability of symptoms and cytokines to predict weight loss in newly diagnosed PC patients.
Methods: Using the M.D. Anderson Symptom Inventory, we assessed baseline symptoms in untreated advanced or metastatic PC patients on a 0–10 scale. Baseline serum was drawn for cytokine analysis. Using STATA (version 12), we generated multivariable logistic regression models with a backward selection procedure. This allowed us to create a multivariate model containing variables of $p<0.05$. Student's t test was used to compare the mean values of cytokines across different strata.
Results: We evaluated 72 patients. Weight loss of >5 % or death was observed in 44 patients (62 %) and >10 % or death in 24 (34 %). Sixty-one patients survived 60 days after the start of treatment, with 5 and 10 % weight loss seen in 33 (54 %) and 13 (21 %), respectively. Loss of appetite was most strongly associated with weight loss, as were nausea and shortness of breath. Neither diarrhea nor vomiting correlated with weight loss, nor did age, tumor markers, or chemotherapy regimen. Baseline cytokine levels were available for 23 patients. Mean CXCL-16 ($p=0.05$) and IL-6 ($p=0.045$) levels were greater in patients with weight loss. We are currently evaluating the remaining patients plus an additional cohort from parallel studies.
Conclusions: Both patient symptoms and baseline cytokines may predict the development of cachexia. We will present an updated analysis of multiple cytokines currently in progress.

1121
Being nurse and/or human being: duality in the nursing care of terminal clients

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Objectives: Our aims were to identify, in nurses speeches, their ways of dealing with caring for the terminal client and analyze the speeches of nurses regarding their ways of dealing with the care of the terminal client.
Methods: This study is classified as a qualitative research, descriptive/exploratory, developed in a specialized institution in Rio de Janeiro. Twenty-three nurses who care for clients at the terminal stage were the subjects of this study. We used the technique of semi-structured interview. Analysis of the subjects' speeches was conducted in three stages: pre-analysis, exploration of the material, and interpretation of results. From this, we seek to categorize similar words.
Results: Our training as nurses is primarily to prepare for the promotion and preservation of life, and we consider death as something contrary and not as a part of it.
Conclusion: This study shows that there are a turbulence of emotions when nurses are taking care of a client in a state of terminal illness and the importance of overcoming them to provide quality care, giving dignity to the dying.

1122
Incorporation of web-based symptom reporting and management in follow-up (FU) care for early-stage breast cancer

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Introduction: There is a need to improve efficiency and quality of follow-up (FU) care in cancer survivors. We conducted a trial to determine whether integration of remote electronic questionnaire FU provides timely symptom reporting and management.
Methods: Patients were randomized to usual care (UC) or to SIS.NET care, in which patients were scheduled for three oncology-related visits over 18 months and offered online questionnaires every 3 months. Questionnaires were reviewed by a nurse practitioner (NP) with phone contact for symptoms requiring urgent attention.
Results: One hundred patients were enrolled, 75 completed the 18-month study, and 25 patients remain in FU. The average numbers of new/changed symptoms reported by SIS.NET vs. UC patients over the 18 months were 6.5 vs. 3.4, respectively ($p=0.0023$). Psychiatric, musculoskeletal, and neurologic symptoms were the most commonly reported by both groups. Seventy-five percent of symptoms reported by the questionnaire for SIS.NET patients were reviewed by a NP in <3 days. Among SIS.NET patients, there was a significant correlation between the number of symptoms and total number of doctor's appointments ($p=0.0014$, Spearman rank test) and the number of non-oncology-related appointments ($p=0.0004$), but no association with the number of oncology-related clinic appointments ($p=0.698$). There was no significant difference between

SIS.NET and UC FU for oncology-related appointments, total number of physician visits, or number of medical tests.
Conclusions: Use of regular online health and symptom surveys increases symptom reporting. Remote NP contact provided prompt review and management of these symptoms, but did not reduce clinic visits or medical testing.

1123
Developing an international palliative care scholarship program for clinicians from low- and middle-income countries

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Introduction: Doctors and nurses from low- and middle-income countries (LMICs) who are interested in developing palliative care in their own countries face a challenging task trying to find adequate financial resources to do.
Aim: Our aims were to develop an international scholarship program to fund clinicians from developing countries to travel to appropriate regional centres and to obtain hands-on clinical experience, mentoring and formal qualifications in palliative care.
Method: The Australian Palliative Link International (APLI), which is a not-for-profit voluntary organisation in Australia comprising experienced doctors and nurses from the field of palliative care, is planning to develop an international scholarship program to fund clinicians from LMICs to travel and learn at regional centres. Funding for the program will be obtained from and not limited to charitable government and non-governmental sources and donations/pledges from expatriates of LMICs living in Australia and other high-income countries. Initially, we are planning to fund a doctor and a nurse team from a region in Sri Lanka to travel to India for a 6-week course. On their return, they will use their newfound knowledge to develop palliative care services in their region. They will also submit a comprehensive report about their visit to APLI. The funding will include course fees, board and lodging, and travel expenses.
Conclusion: A comprehensive international scholarship program will enhance the development and propagation of palliative care in low- and middle-income countries on an ongoing basis.

1124
Nursing care of patients with Hodgkin's lymphoma: an experience report

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Objectives: Our objective was to describe the experience of nurse residents taking care of patients with Hodgkin's lymphoma.
Methods: This is an experience report which has as its scene an oncology ward at a general hospital located in the city of Rio de Janeiro.
Results: In the presence of complications, the treatments of these patients are given at the hospital. Care in order to give priority to customer needs and their susceptibility includes: infection—wash hands before and after contact with the client; install thermal curve 4 in 4 h; monitor signs and symptoms of infection through rigorous physical examination; monitor white blood cell count when requested by the physician; thrombocytopenia—monitor signs of bleeding; monitor platelet count; avoid invasive procedures; guide the use of soft toothbrush; fatigue—encourage alternating periods of rest and activity as physical ability; provide recreational activities to promote and facilitate relaxation; nausea and vomiting—administer prescribed antiemetics before starting chemotherapy and as a prescription; oral mucosa—explain the importance of hydration and good nutrition; apply lip lubricant for dryness; examine the oral cavity in search of damage and inflammation; advise patients to avoid hot foods, spicy or acidic and flossing if there is excessive gingival bleeding.
Conclusion: These customers are immunocompromised and are therefore susceptible to anemia, leukopenia, and thrombocytopenia that can aggravate your condition, extending the length of hospitalization and contributing to social isolation, as well as psychological harm brought by the health disease. Therefore, nurses should provide assistance in order to minimize the damage caused by the disease itself.

1126
Patient satisfaction with participation, adverse events and hospitalizations in phase II/III NCCTG clinical trials: was it worth it? (N0392)

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Objectives: Patient satisfaction with the clinical trial experience may give insight to quality of life (QOL) factors affecting accrual, retention, and outcome. This trial examined patients' opinions of their experiences.
Methods: Patients enrolled on designated North Central Cancer Treatment Group phase II or III treatment trials completed the Was It Worth It satisfaction assessment after cycle 1 and treatment completion. This secondary analysis focused on the relationship between patient satisfaction and adverse event (AE) incidence. Chi-square tests compared patients' opinions across subgroups.
Results: As of 02 January 2012, 271 patients were enrolled on 25 protocols and treated at 79 sites. Ninety-seven percent of patients were in phase II studies and 89 % had stage IV disease. Patient satisfaction was no different when comparing patients with/without AEs at 1 month and at the end of treatment ($p=0.99$ and $p=0.43$, respectively). Patients with an AE were more likely to report a worsening of QOL during the study (19 vs. 9 %, $p=0.026$). Patients with hospitalizations were more likely to report worsened QOL (35 vs. 20 %, $p=0.01$) and a worse than expected study experience (24 vs. 11 %, $p=0.01$). Patients hospitalized during cycle 1 were more likely to report a detrimental effect on overall QOL (OR=3.32, $p=0.005$).
Conclusions: Contrary to popular beliefs, experiencing adverse events did not influence patient satisfaction with trial participation. Hospitalizations reduced patient satisfaction and overall QOL. Assessing patient satisfaction will inform future study design that can potentially improve patient accrual and retention.

1127
Attitudes toward, coping with death, perception and performance regarding end of life (EOL) among Korean nurses

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The objectives of this study were to:

1. Explore nurses' attitudes toward coping with death, perception, and performance regarding EOL
2. Describe their correlations
3. Determine the factors affecting nurses' performance in EOL care

This study used a descriptive design. The participants were 187 nurses working in medical–surgical care, oncology, intensive care (ICU), and

emergency departments (EDs), units where the majority of patients die in Korea. The data came from three urban university-affiliated hospitals. The study used "a multidimensional measure of attitude toward death," "coping with death scale," and "perception and performance regarding end-of-life care" as instruments. The study analyzed the data with descriptive statistics, correlation, and multiple regression.
Results showed the following: First, death attitudes were significantly correlated with age ($F=10.510$, $p<0.001$), working experience ($F=5.980$, $p<0.001$), and working positions ($t=-2.462$, $p=0.015$). The Perception of EOL care was lower in younger age groups. Also, the nurses' perception of EOL care in ED was lowest compared to oncology and ICU nurses.
Second, coping with death showed positive correlation with death attitude ($r=0.448$, $p<0.001$), perception of EOL care ($r=0.282$, $p<0.001$), and the performance of EOL care ($r=0.265$, $p<0.001$).
Third, nurses' performance regarding EOL care was linked 13.7 % with religion, working at ED, and perception of EOL care.
Because nurses' performance was affected by their attitudes toward, coping with death, and perception of EOL care, nurses' education should focus on changing attitudes, improving coping strategies, and sensitive perception regarding death and EOL care.

1128
The ways of dealing analyzed by nurses: their anxieties and achievements

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Objectives: Our objectives were to identify, in nurses speeches, their ways of dealing with caring for the terminal client and analyze the speeches of nurses regarding their ways of dealing with the care for the terminal client.
Methods: This study is classified as a qualitative research, descriptive/exploratory, and developed in a specialized institution in Rio de Janeiro. Twenty-three nurses who care for clients at the terminal stage were the subject of this study. We used the technique of semi-structured interview. The analysis of the subjects was conducted in three stages: pre-analysis, exploration of the material, and interpretation of the results. From this, we seek to categorize the words.
Results: The profession that is more in touch with the patient, nursing is charged with responsibility about the basic needs of this client, more subjectivity, being responsible for providing emotional comfort that clients and family need, which gives a high level of stress and recovery as well as a professional person, in addition to seeking, always for fighting so that the process of dying occurs in a dignified manner for a client.
Conclusion: The nurse's role is of great importance for the client in a situation of terminal illness; however, there is a need for greater support/psychological preparation for these professionals. They originated from the institution where they work and the universities, either during or after graduation, through continuing education.

1130
Physical activity, functional performance, and fatigue levels between fatigued and non-fatigued healthy volunteers

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Aim: Our aim was to describe the relationships between physical activity, functional performance, and fatigue levels of healthy volunteers.
Background: Fatigue is a common debilitating symptom that is known to impact an individual's functional status and quality of life. It has been proposed that fatigue may be related to fitness level, functional status, and psychological distress. Fatigue has been studied in several conditions; its etiologic causes remain elusive.
Method: This is an NIH-approved protocol enrolling healthy volunteers. PROMIS-fatigue seven-item short form was administered to calculate fatigue. Participants were categorized into two groups (high-fatigue group, >50; low fatigue group, <50) based on the PROMIS-fatigue T scores. Physical activity was measured by an activity monitor; functional performance by handgrip dynamometry and the 6-min walk test (6MWT); and skeletal muscle mass was estimated using a DEXA scan. T tests were applied to compare the means of outcome measures between groups.
Findings: Thirty healthy volunteers participated in the study (fatigue=15; non-fatigue=15). The fatigue and non-fatigue groups were similar in age ($p=0.44$), body mass index ($p=0.10$), lean body mass ($p=0.36$), and depressive symptom scores ($p=0.12$). Fatigue volunteers scored higher using the PROMIS-Fatigue short form ($p<0.001$) compared to the non-fatigue group. Fatigue healthy volunteers were more dyspneic ($p=0.04$) and fatigued ($p=0.02$) post-6MWT using the Borg Scale compared with the non-fatigue group.
Conclusions: Fatigued healthy individuals are observed with dyspnea and fatigue during functional performance. The 6MWT may be a sensitive measure to determine fatigue in healthy individuals.

1131
Palliative sedation for existential suffering: a controversy

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Objective: Palliative sedation (PS) is recognized as an ethical treatment of last resort for uncontrolled symptoms especially delirium and dypnea. However, possibly the greatest controversy in PS for the palliative care practitioner relates to utilizing PS to treat patients in profound existential distress.
Methods: A literature search was performed collecting papers discussing PS in relation to existential suffering.
Results: The opinions expressed in the literature related to the pros and cons of using PS to treat existential suffering are presented. The experiences of those who have utilized PS for this indication will be highlighted. Mention will be made of guidelines that have been developed that are open to this practice in a guarded fashion.
Conclusion: At present, the use of PS for existential distress remains uncertain as to its benefits, its hazards, and its ethical implications. This is an area that requires further elucidation.

1132
Persistent fatigue in post-treatment survivors: are fatigue perceptions important

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Background: Cancer-related fatigue (CRF) is a highly prevalent and distressing side effect of treatment that can impact on all aspects of quality of life. CRF can persist in the post-treatment survivorship period for some individuals, but this is not fully explained by diagnosis or treatment variables. Qualitative data show that patients hold specific beliefs or representations about fatigue. The representation or the beliefs, thoughts, and emotions that patients hold about CRF may play an important role in the

persistence of fatigue, but this has not been previously examined. The specific research questions addressed were:

1. What beliefs do cancer patients hold about CRF?
2. What is the influence of beliefs on intensity of fatigue and relationships to psychological distress?

Methods: Population cohorts of non-metastatic breast, prostate, and colorectal cancer survivors (6–18 months, 2–3 years, and 5–6 years) post-treatment were identified through the Princess Margaret Hospital cancer registry and sent a questionnaire package that included: Fatigue Symptom Perception Questionnaire, CES-D short form, STAI-S, MSAS-SF, Charlson Comorbidity Index, and WHO Disability Assessment Schedule. Demographic and clinical variables were abstracted from charts.
Results: Analyses were conducted on those patients who met the cutoffs for CRF. Overall, patients reported fatigue as cyclical and low perceived consequences of fatigue and treatment control. Breast cancer and colorectal patients reported higher emotional representations for fatigue than prostate cancer survivors.
Significance: Understanding of patients' perceptions of CRF and their role in predicting intensity of CRF in cancer survivors is critical in order to tailor clinical interventions.

1133
Quality of life among older patients (age 65+) with cancer in a university hospital in India

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Background: In cancer in older cancer patients, additional end points such as quality of survival and daily functioning might be considered equally relevant as the overall or disease-free survival. However, these factors have been understudied. Therefore, this study will focus on the impact of cancer, aging, and their interaction on the long-term well-being of older cancer patients.
Methods: This is a prospective study. We recruited 45 cancer patients above 65 years with a new diagnosis of breast, prostate, lung, or gastrointestinal cancer between November 2011 and January 2012. Data were collected through personal interviews and self-administered questionnaire (consisting of socio-demographic information, general health information, a comprehensive geriatric assessment, quality of life, Mini Mental Status Examination, Barthel Index, Geriatric Depressive Scale, ECOG Performance status, and Mini Nutritional Scale), and assessment of medical records.
Results: The four most prevalent problems identified were fatigue, financial difficulties, reduced role function, and reduced social function. The geriatric depressive scale showed that 33.3 % were normal and 53.3 % had mild depression. In the Barthel index, 28.8 % had scores in the range 60–80 and 51.1 % patients in the range 80–100. For the Mini Mental status, a majority had scores ranging from 10 to 30. ECOG Performance status was 0–2 in 70.9 %. Mini Nutritional status revealed risk of malnutrition in 71.1 %
Discussion: These data provide light on the psychological adjustment of patients affected by cancer (diagnosis and treatment) and their interaction with aging in a developing country. Results may provide new insights, which might contribute to the improvement of care for older cancer patients.

1134
Treatment efficacy for the symptom cluster of fatigue, sleep disturbance and depression: a systematic review

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Purpose: While fatigue, sleep disturbance, and depression often co-occur in breast cancer, treatment efficacy for this symptom cluster is unknown. We conducted a systematic review to determine whether interventions (pharmacological, behavioral, psychological, complementary medicine, and multimodal approaches) were effective in mitigating fatigue, sleep disturbance, and depression in breast cancer patients.
Methods: Studies were searched across PubMed, Embase, CINAHL and PsycInfo from inception to October 2011. Inclusion criteria included

1. Randomized controlled trial
2. Breast cancer patients
3. At least two of the three cluster components of fatigue, sleep disturbance, and depression

Bias was assessed using the modified SIGN 50 checklist. Confidence in the effect size and assessment of safety will be evaluated via the GRADE and reported at the meeting.
Results: The initial search yielded 529 citations, with 38 studies meeting inclusion. There were 16 psychosocial, 9 pharmacological, 6 behavioral, 5 complementary, and 2 multimodal studies. Thirty-six reported fatigue outcomes, 24 reported sleep, and 30 reported depression. Half of the studies had low bias risk. Twenty-seven percent reported significant reductions in fatigue, 33 % reported significant reductions in sleep disturbance, and 36 % reported significant reductions in depression. There were no differences between metastatic and non-metastatic patients in terms of impact on symptoms. Results by treatment type will be reported at the meeting.
Conclusion: More high-quality studies are needed to determine the impact of varied treatments in mitigating fatigue, sleep disturbance, and depression in breast cancer patients. Evidence suggests that fatigue, sleep disturbance, and depression in breast cancer patients are continued problems warranting more effective treatments.

1135
Physical and psychosocial symptoms in survivors of breast cancer

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Objective: Our objectives were to determine the frequency and severity of physical and psychosocial symptoms in the year following completion of treatment for breast cancer and to assess factors predicting moderate to severe symptoms.
Methods: Findings from qualitative research with breast cancer survivors were used to develop a survey, which was then validated and administered to female, English-speaking patients with non-metastatic breast cancer who were 9–18 months post-completion of active treatment (patients could still be on endocrine therapy). The survey collected demographic information and information about the physical and psychosocial effects in the year following completion of treatment. Responses were linked to breast cancer and treatment information. Descriptive statistics are used to summarize responses. Univariate and multivariate analyses to assess factors predicting for moderate–severe symptoms will be reported.
Results: Of 2,389 surveys sent, 1,065 responses were received (response rate, 44.6 %). The mean age of respondents was 60 years (range, 25–

98 years). Physical symptoms in the first year following completion of active treatment rated most commonly as moderate–severe included fatigue (56.2 %), hot flashes (51.0 %), muscle/joint aches (43.7 %), difficulty sleeping (43.3 %), and impaired concentration/memory (38.9 %). Psychosocial effects rated most commonly as moderate–severe included fear of recurrence (35.5 %) and fear/worry about health (33.5 %).
Conclusions: Moderate–severe physical and psychosocial symptoms, as reported by patients, are common after treatment for breast cancer. Effective survivorship programs are needed to support this population.

1137
Measuring lymphedema symptom burdens: a psychometric study

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Objectives: The purpose of the study was to test the reliability and validity of the Breast Cancer Related Lymphedema Symptom Experience Index (BCSEI). With the enhanced realization that post-breast cancer lymphedema is a syndrome of abnormal swelling and multiple related symptoms, more researchers have made efforts to evaluate symptom burdens in terms of symptom prevalence and occurrence. Lack of specialized instruments to capture the unique impact of lymphedema symptoms may be one of the most important factors contributing to conflicting and insufficient data in quantitative research.
Methods: BCSEI is a 34-item self-report instrument assessing symptom burdens in terms of symptom occurrence and distress. The sample consisted of 352 breast cancer survivors who were enrolled in a web-based study on the symptom experience of breast cancer-related lymphedema. Among the 352 participants, 243 were survivors with lymphedema and 109 without lymphedema. Descriptive analysis, Cronbach's alpha, Pearson's *r*, and Student's *t* test were used for data analysis.
Results: BCSEI demonstrated high internal consistency with a Cronbach's alpha coefficient of 0.92. Convergent validity was demonstrated by a significant correlation with dimensions of symptom distress (r= 0.35–0.93), including temporal, functional and sexual, emotional, psychosocial, and attributive. The BCSEI was able to distinguish breast cancer survivors with and without lymphedema in terms of symptom occurrence and distress ($p<0.05$).
Conclusion: Findings provided the evidence to support acceptable psychometric properties of BCSEI. BCSEI might be a useful instrument to evaluate lymphedema symptom burdens after breast cancer treatment in terms of symptom occurrence and distress.

1139
The study of family function of children with cancer in Taiwan

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Cancer has been the leading cause of death since 1990. The incidence of childhood cancer is about 1/100,000 in Taiwan. There are about 600 new cases each year in Taiwan. Family support is very important for children with cancer. The purpose of this study was to explore the family function of children with cancer. Forty-five families participated in the study. Family Adaptation and Cohesion Evaluation Scale IV Package (FACES IV Package) in Chinese version was used for data collection, which includes FACES IV (42 items), family communication (10 items), and family satisfaction (10 items). FACES IV consisted of six dimensions. Each dimension includes seven items. The result revealed the significant relationship of family function between children with cancer and their mothers. The communication of mothers was significantly correlated with family cohesion. The result of the study emphasized the importance of a mother as a caregiver in taking care of children with cancer.

1140
Cancer-related fatigue in colorectal, breast and prostate cancer survivors

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Background: The prevalence of cancer-related fatigue (CRF) and the factors that explain its occurrence and severity in the post-treatment survivorship period have seldom been examined in populations other than breast cancer. The objectives of the study were to:

1. Describe the prevalence of significant CRF and associated levels of disability in a mixed cancer population sample at three time points in the post-treatment survivorship trajectory
2. Examine the factors that predict CRF severity

Methods: A self-administered mail-based questionnaire was sent to three cohorts of disease-free cancer survivors (6–18 months, 2–3 years, and 5–6 years post-treatment) previously treated for non-metastatic breast, prostate, or colorectal cancer. The package included the FACT-F, MSAS-SF, STAI-S, CES-D, Charleston Comorbidity Index, and WHO-DAS. Clinical information was extracted from a chart review.
Results: One thousand two hundred ninety-four questionnaires were completed (response rate, 63 %). The mean FACT-F score was 39.1+ 10.9; 29 % reported significant fatigue (FACT-F$\leq$34), which was associated with higher levels of disability ($p<0.0001$). Breast (40 %) and colorectal (33 %) survivors had higher rates of significant fatigue ($\leq$34) compared to the prostate group (17 %, $p<0.0001$). Fatigue levels remained stable across the three time points. Older age, cancer type, treatment received (chemotherapy plus radiation), higher symptom burden and depression, and comorbidity were associated with higher levels of CRF.
Conclusions: CRF was a significant and debilitating symptom for a substantial minority of the respondents. Targeted management strategies are needed and may significantly reduce morbidity associated with CRF and improve quality of life for the growing population of cancer survivors.

1142
Sundry difficulties and uncertainties in palliative sedation

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Objective: Implementing palliative sedation (PS) continues to remain a concern and challenge for many in the field of palliative care. This complicated process presents possible difficulties and uncertainties that the palliative practitioner may not have considered.
Methods: This study includes empiric observation and literature review.

Results: Various viewpoints on the following topics of concern will be discussed: when to present PS with patients and families and possible problems from early discussion, how to document discussions of PS, the insidious evolution of the treatment of delirium into PS, managing medications as PS starts and evolves, issues related to nutrition and hydration, changes in respiratory pattern, and concerns for respiratory sedation. The question of treating uncontrolled pain with PS will be explored as well as the question of whether PS reduces survival duration.
Conclusion: Weighing these issues in advance may better prepare the practitioner for the challenges that PS presents.

1143
Laser-induced thermal therapy for advanced/recurrent head and neck cancer

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Introduction: Laser interstitial thermal therapy (LITT) has been used and accepted as a palliative method for cancer in many different sites of the head and neck, breast, colon, gastrointestinal, and superficial tumors. Our group in UCLA has pioneered and developed the methodology of intraoperative ultrasound as a monitoring technique for LITT in patients with advanced and recurrent head and neck carcinoma. A phase II clinical trial at our institution determined that laser energy densities of 2,200–3,300 J/cm^2 was safe and feasible. LITT provides tumor decompression, coagulation, hygienic removal of necrotic and infected tissue, and brings hope to many patients, although extended survival has yet to be demonstrated.
Objective: Our objective was to report on 81 patients with advanced/recurrent head and neck cancer who were thought to have a life expectancy lower than 6 months. Treatment goal was to promote symptom alleviation and extend survival.
Methods: Patient outcomes were assessed for disease-free survival, and quality of life (QOL), using a cancer questionnaire (FACT-G) and the Performance Status Scale specific for head and neck cancer patients.
Results: The main symptom for these patients was pain (n=52, 64 %). A total of 93 tumors received laser treatment and had a median follow-up of 11 months (range=2–73 months). Preliminary analysis of QOL questionnaires revealed problems with eating, speaking, socializing, and shoulder function and significant deficits in speech and deglutition.
Conclusion: The overall responses demonstrated that these patients have adjusted to their deficits and had a relatively good QOL when tested after LITT.

1145
Impact of patient characteristics and behaviors on healthcare resource use (HCRU) in squamous cell cancer of the head and neck (SCCHN)

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Objectives: Our objective was to explore the relationship between patient characteristics and healthcare resource use (HCRU) in those with squamous cell cancer of the head and neck (SCCHN) treated in the USA in or before 2011.
Methods: A nationally representative, retrospective, multicenter medical chart review study was conducted, with 139 oncologists abstracting charts of randomly sampled SCCHN patients diagnosed between 2005 and 2009. Patients were identified using predefined criteria with a first diagnosis of either local/regional advanced disease (LRD, n=785) or recurrent/metastatic disease (RMD, n=752). Associations between baseline characteristics and HCRU were explored with univariate/bivariate analyses. Significant differences in HCRU were tested at the $p<0.05$ level.
Results: Patients had a mean age of 64 years, 77.5 % were men, and 70.4 % Caucasian. In LRD and RMD patients, 83.9 and 89.2 % were current/former tobacco users and 12.3 and 16.6 % were at risk of alcohol use/abuse/dependence, respectively. Most patients (96.6 and 95.2 %) had medical insurance, Medicare being the primary form (38.9 and 48.2 %). In LRD, patients at risk of alcohol use/abuse/dependence (vs. none/moderate) had significantly higher nursing home (NH) admissions (skilled NH, 6.6 vs. 2.4 %) and home healthcare use (17.4 vs. 9.8 %). Any NH admission was elevated in Medicaid (vs. HMO) insured patients (9.6 vs. 1.4 %). In RMD, both current/former tobacco users (vs. never) had significantly more NH admissions (20.1/21.3 % vs. 5.0 %), as did Medicaid (vs. Medicare, HMO) patients (13.7 vs. 5.7 % and 3.8 %). Former tobacco users (vs. never) had more hospitalizations (18.3 vs. 8.7 %) and referrals (29.9 vs. 21.1 %).
Conclusions: In SCCHN, alcohol/tobacco use and insurance type may be associated with increased HCRU. These results can inform future research that explores these associations and identifies early interventions that may reduce HCRU.

1147
Dental status and management of patients undergoing hematopoietic stem cell transplant at Memorial Sloan-Kettering Cancer Center

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Objectives: Pre-hematopoietic stem cell transplant (HSCT) dental evaluation plays a vital role in identifying and treating infections that might be life-threatening for patients undergoing transplant. The purpose of this study was to describe the dental status and management of patients undergoing pre-HSCT examination at Memorial Sloan-Kettering Cancer Center.
Methods: Patients were referred to the Dental Service for pre-HSCT dental evaluation. Caries and periodontal disease were assessed by clinical examination and by panoramic, intraoral periapical, and bitewing radiographs, as indicated. Treatment was provided when necessary and if time permitted. The patients were followed and their medical records were reviewed for oral complications during the transplant course.
Results: Of the 328 patients evaluated, 241 patients underwent HSCT (allogeneic=39 %, autologous=61 %). The distribution of primary cancer diagnosis is as follows: multiple myeloma, 32 %; leukemia, 24 %; Hodgkin's lymphoma, n=8 %; non-Hodgkin's lymphoma, n=24 %; and other malignant/non-malignant conditions, 12 %. The median time from dental evaluation to transplant was 28 days. The median DMFT was 17. The median Community Periodontal Index was 1. Thirty-one percent of the patients required dental treatment prior to HSCT (extraction, restoration, endodontics), and 24 % completed treatment at MSKCC or was

referred to a local dentist. Two percent of the patients had odontogenic-related complications.
Conclusions: Even with conservative treatment and referral to the local dentist as needed, optimal dental care in preparation for HSCT was provided and a low odontogenic-related complication rate was observed.

1148
Handgrip predicts survival and hospitalization in advanced cancer patients

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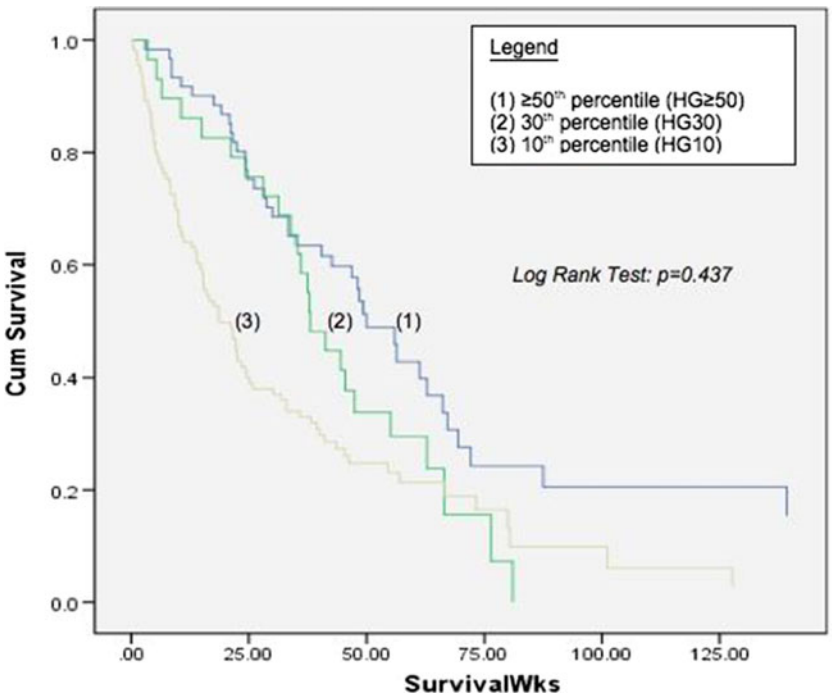
Objective: Our objective was to determine whether handgrip (HG) predicts survival and hospitalization rates in advanced cancer patients (ACP).
Methods: Two hundred and three ACPs with non-small cell lung or gastrointestinal primaries were categorized according to established HG percentiles (≥50th, 30th, and 10th). We used multivariate regression to examine the association among HG percentiles with survival and hospitalization rate (no. of days admitted/follow-up days), adjusting for age, sex, cancer diagnosis, treatment (radio/chemo), medications, and time from diagnosis to assessment.
Results: Patients with HG in the 10th percentile (n=110, 54 %) were older (68.6±12.8 years) and had a lower BMI (23.5±5.2 kg/m^2) than those in the HG≥50th percentile. They also presented with higher mortality (HR=2.24, 95%CI=1.48–3.40) and hospitalization rates (B=9.4 %, 0.3–18.5).
Conclusion: HG≤10th percentile appears to be a simple and useful prognostic indicator for survival and hospitalization in ACPs.



Survival functions

1149
The morality of phase 1 oncology trials

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The goal of this presentation was to answer questions raised in the literature regarding the ethics of phase 1 oncology trials. Can one consider the design of phase 1 studies ethically appropriate taking into consideration the unfavorable ratio of risks and benefits? Is it true that most of the patients enrolled in these studies were misinformed or coerced? The study opens with a retrospective look in the history of oncology studies. A comparative review of literature from the fields of palliative medicine and bioethics contributed to the consolidation of the proposed ethical framework that focuses on the issues of therapeutic misconception and vulnerability. The definition of vulnerability in the context of oncology trials will be offered along with the possible safeguards for protecting it. The definition of therapeutic misconception together with its limits and implications will be discussed.
Objections to phase 1 trials can be divided into two categories—those based on the unfavorable risk–benefit ratio and arguments based on the issues in informed consent. The dangers associated with the enrollment in phase 1 trials will be presented as well as the absence of alternative choices, treatment-specific optimism, and vagueness in factual presentation during the informed consent. On the other hand, some possible benefits, including disease stabilization, decrease in tumor size, and psychological benefits, will be discussed. The notion of therapeutic misconception will be contrasted with optimism despite realism. The presentation will end with recommendations for the ways to avoid misconception and to protect vulnerability.

1151
Palliative care for patients with head and neck cancer: a review of the main signs and symptoms and treatment under the concept of palliative care

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Head and neck cancer is one of the ten most frequent cancers in worldwide. When diagnosed in advanced stage, they have a <50 % survival rate in 5 years. Treatment of cancer with curative intent brings many symptoms which cause a decrease in the quality of life. Symptom control and palliative care, with the objective of offering relief not just for physical suffering but also psychological, social, and spiritual, are capable of promoting better quality of life for patients and their caregivers.

1153
Non-digestible carbohydrates in the diet modulate toxicity of CPT-11/5 fluorouracil chemotherapy in rats bearing Ward colon tumor

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Objectives: Gastrointestinal toxicity is a major dose-limiting factor for CPT-11 chemotherapy. Selective fermentation of dietary fibers by gastrointestinal microbiota may alter intestinal physiology and response to injury. We aimed to comparatively assess the effects of various non-digestible carbohydrates (NDCHO) on the pathobiology of mucosal injury after CPT-11-based chemotherapy.
Methods: Female Fisher rats bearing Ward colon tumor were treated with two cycles of CPT-11/5-fluorouracil (FU). Animals (n=6/dietary treatment) were fed six different diets varying in their fibre components, i.e. 10 % (*w*/*w*) fibre as cellulose, inulin, oligofructose (OligoF); 50:50 (*w*/*w*) inulin and oligoF (Synergy®), isomalto-oligosaccharide (IMO), type IV resistant starch (RS4); and one further low-fibre diet containing 2 % (*w*/*w*) cellulose.
Results: Animals fed RS4 or Synergy® were least ill based on the following criteria: body weight, food intake, acute phase response (haptoglobin, α-1 acid glycoprotein) and immune cell phenotype in MLN (levels of T ($CD3^+$) and cytotoxic T ($CD3^+CD8^+$) lymphocytes, T cell inhibitory marker CD152, T cell activation marker CD71 and MHC II antigen-presenting cells (OX6)). By these same criteria, animals fed IMO or 2 % cellulose were the most ill, with animals fed inulin, 10 % cellulose and OligoF showing intermediate values. Consistently, the RS4 group has a significantly higher colonic mucosal tight junction claudin-1 expression, suggesting a better preserved gut barrier integrity associated with these two NDCHO treatments.
Conclusions: This is the first controlled comparative trial of multiple NDCHOs in the context of chemotherapy-induced gut injury. As compared to other fibres, RS4 and Synergy® demonstrate the therapeutic promise as adjunct to CPT-11 chemotherapy.

1154
29 Years experience with ketamine in a cancer ICU

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Introduction: Ketamine is an NMDA receptor antagonist that, in small doses, has analgesic effects while having minimal effects on respiration and hemodynamics. For the last 29 years at the Norris Cancer Hospital ICU, we have used ketamine in the vast majority of our postsurgical cases. We attribute to ketamine our improved outcome relating to pain relief, early extubation, and stable hemodynamics.
Methods: We retrospectively studied data from the Urology Department data bank. Eighty-five percent of the patients underwent extensive urologic resections; others underwent major surgical and gynecological oncologic procedures. An intravenous combination infusion of ketamine (500 mg) and fentanyl (1,250 mcg) in 250 cc normal saline was used. Clinical parameters of pain and sedation were evaluated and the infusions titrated accordingly.
Results: Patients were extubated an average of 1–2 days postoperatively. The average dose was 3–7 cc/h, ranging from 2 to 10 cc/h. Hemodynamics and respirations were unaffected. Less than 1 % of patients complained of visual dreams. There were no cases of prolonged ileus attributable to the combination and a very low incidence of depression, both immediate and delayed. The incidence rates of PTSD and anxiety states were negligible.
Discussion: Ketamine has many beneficial effects in addition to analgesia and amnesia. It is a bronchodilator and has minimal effects on respiration, making it easier to wean patients off respirators. Its cholinergic agonist properties have a positive effect on postoperative ileus. Ketamine minimizes opioid-induced hyperalgesia and has anti-inflammatory properties. Ketamine in low doses also appears to have minimal effect on cognitive function.

1157
Health service utilization by Indigenous cancer patients in Queensland, Australia

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Aims: Indigenous Australians have lower cancer survival than other Australians. To date, Indigenous cancer patients' use of support services whilst undergoing treatment is unknown. We aim to describe the use of existing health services by Indigenous cancer patients.
Methods: Indigenous cancer patients receiving treatment were recruited at three major Queensland public hospitals. Patients were interviewed face-to-face about their cancer and use of health services.
Results: Of the 100 patients interviewed, most were women (60.0 %), of Aboriginal descent (82 %), lived in accessible/highly accessible areas (60.0 %), and had a median age of 51 years. The most frequent cancer types were breast (18.0 %), gynecological (14.0 %), gastroenterological (14.0 %), blood-related (14.0 %), and lung (13.0 %) cancers. Over half of the participants reported using indigenous health workers/services (e.g., indigenous health liaison officer, 64.0 %), other health workers/services (e.g., dietician, 64.0 %), and information sources (Internet/brochures, 56.0 %). Women (61.3 %) used more health services than men (38.7 %). Participants aged 40–59 years (49.8 %) were more likely to use all health services; younger participants 19–39 years (21.6 %) mostly used information sources, while older participants mainly used community services (37.8 %). Breast cancer patients were the highest users of health services (e.g., 77.8 % information sources and 72.2 % indigenous health workers/services).
Conclusions: Indigenous health workers/services and other health workers/services were the most commonly used services. Breast cancer patients used more health services than other cancer groups. Service utilization is affected by cancer type, age, and availability of such services. The health services utilization by Indigenous cancer patients should be further investigated.

1158
Toxicity of zoledronic acid in accordance with age, type of therapy and characteristics of primary tumour in metastatic prostate cancer

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For the treatment of skeletal-related events (SRE) in hormonally refractory prostate cancer, intravenous administration of zoledronic acid (ZA) is recommended.
In our presented file, a total of 101 patients with prostate cancer with metastases to the skeleton were treated using ZA. Median age was 68 years. ZA was administrated for a median of 17 months. All patients were primarily treated with hormonal blockade, which was the administration of a luteinizing hormone–releasing hormone (LHRH) analogue in 79 patients; 22 patients underwent bilateral orchiectomy (OE). Of the patients, 20.8 % with application of a LHRH analogue and 1.0 % after OE were, due to hormonally refractory prostate carcinoma (HRCP), treated only with one line of chemotherapy (docetaxel, DX). In our followed file, we evaluated the occurrence and degree of renal toxicity, osteonecrosis of the jaw, consumption of opiates, and also the occurrence and type of SRE after the administration ZA in relation to the type of hormonal therapy and type and line of chemotherapy. In patients after previous OE, we recorded a higher percentage of renal toxicity (36.4 %) and osteonecrosis of the jaw (4.5 %) in comparison with patients treated the LHRH analogue (15.2 and 2.5 %). The incidence of SRE was similar in both groups (9.1 % OE and 10.1 % LHRH).
In patients with HRCP, renal toxicity was administered in 22.5 % and osteonecrosis of the jaw in 3.7 %. During the overall evaluation of our selected entry, factors for toxicity of ZA such as age of patients, hormonal therapy, chemotherapy, entry PSA values, and Gleason score, no statistically significant effect on toxicity was reported in any of those.

1159
Drugs administered in initial palliative care

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Background: Drugs were administered in initial palliative care.
Objective: Our objective was to study the drugs administered to patients under initial palliative care.
Methods: Our study included 40 oncologic patients with mean age of 69±14.12 years under palliative care.
Results: Non-steroidal anti-inflammatory drugs (NSAID), corticosteroids, opioids, benzodiazepines, and neuroleptics had been prescribed in initial palliative care. NSAID administered to these patients were dipyrone 3.7 mg kg^{-1} day^{-1} (90.00 %), ketoprofen 2.7 mg kg^{-1} day^{-1} (6.70 %), and tenoxicam 0.79 mg kg^{-1} day^{-1} (3.30 %). Dexamethasone 0.11 mg kg^{-1} day^{-1} was given to 53.40 % of the patients. Opioids such as fentanyl 0.007 mg kg^{-1} day^{-1} (3.30 %), meperidine 0.64 mg kg^{-1} day^{-1} (3.30 %), tramadol 7.4 mg kg^{-1} day^{-1} (3.30 %), methadone 0.2 mg kg^{-1} day^{-1} (6.70 %), and morphine 0.05 mg kg^{-1} day^{-1} (70.00 %) were used for pain control. Bromazepam 0.092 mg kg^{-1} day^{-1} (3.30 %), diazepam 0.31 mg kg^{-1} day^{-1} (3.30 %), lorazepam 0.012 mg kg^{-1} day^{-1} (6.70 %), alprazolam 0.006 mg kg^{-1} day^{-1} (6.70 %), midazolam 0.014 mg kg^{-1} day^{-1} (13.00 %), and clonazepam 0.67 mg kg^{-1} day^{-1} (20.00 %) were used for their anxiolytic and sedative effects. Levomepromazine 0.65 mg kg^{-1} day^{-1} (6.70 %), quetiapine 0.25 mg kg^{-1} day^{-1} (6.70 %), haloperidol 0.06 mg kg^{-1} day^{-1} (26.70 %), and chlorpromazine 0.13 mg kg^{-1} day^{-1} (26.70 %) were the neuroleptics used for delirium/hallucination and nausea control.
Conclusions: In gastric mucosal injury with NSAID, hypotension with dypirone, acute adrenal insufficiency with dexametasone, respiratory depression related to opioids or association of opioids, and benzodiazepine administration and acatisia as neuroleptics extrapyramidal, side effects should be carefully controlled.

1160
The effect of oral glutamine in prevention of acute radiation-induced esophagitis in patients with lung cancer

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Background: The purposes of this study were to assess the usefulness of oral glutamine (GLN) in the prevention of acute radiation-induced esophagitis in patients with lung cancer and to determine the predictive role of clinical (such as serum immunological parameters and esophageal transit time) and dosimetric parameters.
Methods and materials: Thirty-two patients diagnosed with lung cancer were studied prospectively. Sixteen patients (50 %) received prophylactic powdered GLN in doses of 10 g/8 h. Patients were treated 2 Gy per fraction daily, 5 days a week. We evaluate the grading of esophagitis daily fraction per day of treatment until 50 Gy. The primary end point was to prospectively evaluate the efficacy of oral GLN use in the prevention of radiation-induced esophagitis
Results: All patients tolerated GLN well. The group receiving GLN and the group not receiving GLN were compared regarding toxicity grade, weight loss, serum cytokine levels, and esophageal transit time. All of these parameters showed a statistically significant improvement in the group which received GLN. Glutamine suppresses the inflammation related to the disease and treatment and reduces toxicity with statistical significance.
Conclusion: This study suggests a beneficial role of oral GLN use in the prevention and/or delay of radiation-induced esophagitis incidence and severity, as well as weight loss, serum esophageal transit time, and serum immunological parameters.

1161
Training need for nurses on palliative care (developing a national curriculum)

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Purpose: Nurses spend more time with patients and families facing the end of life than other members of the healthcare team. Yet studies have shown that many nurses are inadequately prepared to provide comprehensive care so important for patients suffering from life-limiting illnesses and their families. Palliative care is an expert care which has the potential to greatly reduce the burden and distress of those facing life's end and the ability to offer support for the many physical, psychological, social, and spiritual needs of patients and their families, hence improving quality of life. WHO estimates that there are 85,000 new cases of cancer every year in Kenya, 90 % of which die within 1 year of diagnosis due to late diagnosis and poor or inadequate supportive care. About 30,000 cancer and AIDS patients are getting palliative care through the ten existing hospices and 15 palliative care units greatly understaffed.
Practical observation: Having worked at a hospice for 6 years, I have learned that there are a limited number of healthcare providers who have undergone adequate training on palliative care and can

competently provide palliative care services to patients with life-limiting illnesses in Kenya. About 3 % of doctors are trained on palliative/oncology medicine, 4 % of nurses have done the diploma in palliative care, and about 9 % have done the 1-week introductory course; other healthcare providers, about 1 %.
Conclusion: It is clear that there is a need to develop a national curriculum to strengthen nursing education to improve end-of-life care.

1162
Working with parents to develop an orientation DVD for newly diagnosed oncology families

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In the last 30 years, improvements in the treatment and supportive care of children and adolescents with cancer have increased their overall survival to 80 %. However, this diagnosis of cancer still has a devastating impact on most children and their families, with significant physical, emotional and social challenges.
In partnership with parents, we looked at educational and supportive resources that could potentially impact on families' coping at diagnosis. Our Parent Advisory Council reviewed resources currently used at our institution and other centres in Australia. Recognising that our unit treated a diversity of families with different literacy levels, cultural differences, language barriers and access to technology, they considered these factors as potential barriers that could affect the family's understanding and ability to cope with the diagnosis of childhood cancer. Also, admissions can occur after-hours and weekends, and access to specialist oncology staff may not be immediately available.
These issues supported the need to develop a standardised way to provide information that was useful to families. The parent council decided to make a DVD that included general information about the hospital and Oncology Unit, information from health professionals, but most importantly included parent comments and discussion.
This poster describes the process of consultation and collaboration used to produce the DVD, including script writing, family selection, ethics approval and the production process. It also describes the proposed launch of the DVD and the Satisfaction Survey, which will provide feedback on the effectiveness of the orientation DVD as an educational and supportive care tool.

1164
Burdens, needs, and satisfaction of terminal cancer patients and their caregivers

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Background and aims: Terminal cancer patients and their caregivers often feel big trouble and need many types of assistance. We interviewed terminally ill cancer patients and their caregivers to describe how much burden terminal cancer patients and their caregivers had experienced and to find out what factor is most important in their satisfaction.
Methods: We constructed a questionnaire including overall care burden and needs experienced and administered it to 659 terminal cancer patients and 659 of their important caregivers at 11 university hospitals and one national cancer center in Korea.
Results: Finally, 481 terminal cancer patients and 381 caregivers completed the questionnaire. Care burden was not low in both of groups; the caregiver group felt more burden than the patient group ($P<0.001$). While the patient group needed financial support most (39.0 %), the caregiver group needed discussion about further treatment plan most (44.8 %). Stepwise multiple logistic regression analyses showed that in the patient group, patient's health status (OR=2.03, 95% CI=1.16–3.56) and burden (OR=2.82, 95% CI=1.76–4.50) influenced satisfaction about overall care, while in the caregiver group, high education level (OR=1.84, 95% CI=1.76–4.50), burden (OR=2.94, 95% CI=1.75–4.93), and good family function (OR=1.94, 95% CI=1.24–3.04) did.
Conclusions: Our study showed that burden was high in both terminal cancer patients and their caregivers, and perceived burden of caregivers was more severe. Our study also showed that burden was the factor most predicting satisfaction about overall care in both groups.

1165
Pilot phase II trial of formoterol fumarate combined with megestrol acetate in patients with advanced malignancy

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Objectives: We investigated the effect of a combination of a $beta_2$-agonist and a progestagen on muscle size and function in advanced cancer patients with cachexia.
Methods: Thirteen patients (M/F=5/8) with advanced solid tumours and involuntary weight loss (≥5 % in prior 6 months) received oral formoterol (80 μg/day) and megestrol (480 mg/day) for up to 8 weeks. We measured quadriceps size (MRI), quadriceps and hand grip strength (dynamometry), leg extensor power (Nottingham Power Rig), physical activity (ActivPAL accelerometer) and quality of life (EORTC QLQ-C30). Response criteria were defined pre-trial, with a major response defined as an increase in muscle size ≥4 % or function ≥10 %.
Results: Seven patients completed the 8-week course, six (86 %) achieving a major response for muscle size and/or function. Left hand grip strength increased significantly between baseline and 8 weeks (mean= 25.6 versus 28.9 N, $p=0.025$). Increases in right hand grip strength and knee extension strength on both sides did not achieve statistical significance. There was also a significant improvement in self-reported lack of appetite ($p=0.01$). In the six responders, mean quadriceps volume increased significantly (left leg, 0.99 vs. 1.05 L, $p=0.012$; right leg, 1.02 vs. 1.06 L, $p=0.004$). Physical activity markedly improved (increase in average daily step count, >1,000) in three patients. Six patients withdrew, mostly due to disease progression. Adverse reactions were infrequent, the commonest being tremor (eight reports), peripheral oedema (three), tachycardia (two) and heartburn/indigestion (two).
Conclusions: In this frail cohort, megestrol and formoterol in combination were well tolerated, and an 8-week course had a positive effect on muscle size, strength and appetite.

1166
Autologous stem cells for the treatment of post-mastectomy lymphedema: a pilot study

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Background aims: Lymphedema is a common complication with breast cancer treatment that does not have a definite cure. Our objective

was to determine the efficacy of autologous stem cells (ASC) in the treatment of lymphedema secondary to mastectomy and axillary lymphadenectomy in comparison with traditional decongestive treatment with compression sleeves.
Methods: A prospective study including 20 women with lymphedema secondary to breast cancer surgery with axillary lymphadenectomy was conducted. Women were assigned at random to one of two groups. One group of ten women was injected with ASC in the affected arm, whereas the other ten women comprised the control group and received traditional compression sleeve therapy (CST). The follow-up for both groups was 12 weeks. Pain, sensitivity, and mobility were assessed before and after therapy.
Results: There was improvement in the volume of lymphedema in both groups, with no significant difference. In the ASC group, there was an overall volume reduction during the follow-up, whereas in the CST group lymphedema recurred after the compression sleeve was removed.
Conclusions: Our findings suggest that ASC injection for patients with lymphedema can be an effective treatment. It reduces arm volume and associated comorbidities of pain and decreased sensitivity. Traditional CST was also effective for lymphedema reduction, but it was dependent on continuous use of the treatment.

1168
Neoplastic spinal cord injuries

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Background: Hospitalization in the physical medicine and rehabilitation (PMR) unit for neoplastic spinal cord injury (SCI) is uncommon. Therapeutic goals and rehabilitation care are different from that in traumatic SCI, and the benefit is difficult to assess.
Methods: This is a retrospective study of patients admitted in PMR hospitalization for neoplastic paraplegia since 10 years at Nantes. Data collected included: demographics, clinical (cancer ASIA impairment scale (AIS), survey, functional independence measure (FIM)), and therapeutics.
Results: Twenty paraplegias were reviewed. Prostate cancer was the most frequent (35 %). The patients were treated by surgery (75 %) and by radiotherapy (70 %). AIS grade patient status was as follows: AIS A, 6; AIS B, 2; C, 7; and D, 5. At discharge, the number of ambulatory patients changed from 3 to 6; eight patients were urinary independent and eight showed an increase in the FIM Scale. For 35 % of patients, a pressure ulcer was present. Sixty-six percent of them came from oncology units or following care units. The length of stay was 4 months. The survival rate was 13 months.
Discussion: The mortality rate is high. The functional advances stay low, restricted by pain and weakness. Bladder function evaluation shows PMR specificity. The number of patients becoming urinary independent remains modest. PMR care management criteria of metastatic paraplegia progressively appear: well-defined goals with contract and 1 month length of stay. For our cohort, the duration of stay is too long, increased by ulcer pressure complications. This fact underlines the need to create a network of competence to optimize patients' care from acute units to PMR unit discharge.

1170
Perception of family support given to parents of children with cancer and its impact on their quality of life

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Objective: Our objectives were to identify the characteristics of parents of children with cancer that need more psychological, physical, and social environmental support in order to promote quality of life (QOL); to examine aspects of QOL and family support perception (FSP) of parents of children with cancer; and to explore the connections between family FSP and QOL of these parents.
Methods: This is a prospective case–control study in a pediatric hematology–oncology ward at Saphra Children's Hospital, Israel. The sample comprised 69 parents of children with cancer and 69 control group—parents drawn from the general population. QOL questionnaire (WHO-QOL-BEEF) and a perceived family support questionnaire (FAMILY APGAR) were used. A MANOVA analysis was conducted to find differences between the two study groups.
Results: Significant differences ($p<0.01$) were found between the two groups in physical, social, environmental, and psychological QOL. Significant differences were also found between two groups in relation to health evaluation ($p<0.001$). Differences in perceived QOL between religious and non-religious parents were found in the study group ($p<0.05$). Strength of relationship between FSP and QOL among parents of children with cancer is higher than that found among parents from the general population.
Conclusions: Parents of children with cancer have more physical, psychological, social, and environmental difficulties. Assessing parents' demographic status will help oncology nurses to improve parents' QOL and, correspondingly, to improve quality of treatment for pediatric cancer patients. The need of professional psychological support for these parents is more than the other parameters of QOL. If parents of children with cancer will know how to use their family resources, they will improve their QOL.

1171
Impact on quality of life due to therapy-related oral complications in pediatric cancer patients—a scoping review

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Objectives: Our objective was to systematically review the research literature on the relationship between quality of life (QoL) and cancer therapy-related oral side effects in a pediatric population.
Methods: A scoping review was conducted using 16 databases (research and grey literature), web sites, reference lists, and key journals. The inclusion criteria included: studies pertaining to children 0–20 years, in English or French, published from 2000 to 2011. Exclusion criteria included: mixed population, non-discrete disease categories, animal studies, audits, expert opinions, reviews, and letters to the editor. Data were charted by two reviewers independently.
Results: A total of 1,270 articles were identified through the initial search. A rigorous review of abstracts and full text reduced the sample to 82 articles, all of which were categorized through a data extraction process. Data analysis resulted in the following findings: major contributors were Brazil (11 studies) and USA (10 studies). Leukemia studies were predominant; the most common side effect being mucositis; however, side effects mostly co-occurred. Twenty-seven articles dealt directly with the effect on QoL, citing impacts such as: changes in taste, eating, drinking, sleep habits, voice, and weight loss. Twenty-five articles examined the long-term effect of treatment on pediatric dentition, showing that resultant caries and malformed teeth can affect eating and speech. Only two studies recommended oral exams and follow-up care for this vulnerable population.
Conclusions: Preventative oral care before, during, and after cancer therapy can decrease the oral side effects and improve the QoL of pediatric patients; however, few studies to date advance recommendations for QoL improvement.

1173
Ketamine as an antidepressant in palliative care in the cancer ICU

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Introduction: In cancer ICU settings, it is not uncommon for care to be changed from curative to palliative. Intensivists must understand palliative care issues, including management of depression and pain control.
Case report: A 21-year-old with testicular cancer admitted to the ICU for respiratory distress was intubated and successfully extubated, but a few days later developed dyspnea. Further testing revealed pulmonary metastases; his status was changed to "do not resuscitate." His pain was initially controlled with morphine, but soon became resistant. He remained dyspneic and severely depressed. A supplemental ketamine/fentanyl (2 and 5 mcg/cc, respectively) infusion and low-dose (25 mg) desipramine were initiated. Despite worsening respiratory conditions and tachypnea, his mood improved within 24 h, he could sleep through the night, and he denied anxiety. He remained comfortable with improved mood until he died 2 weeks later.
Discussion: Patients often suffer from depression and severe insomnia in the terminal stages of illness. Most antidepressant medications require weeks to relieve symptoms of depression. Ketamine has analgesic and mild sedative effects without depressing respiration. Its NMDA blocking activity provides pain relief while minimizing narcotic requirements and helps prevent narcotic-induced hyperalgesia. It has been shown to work as a rapid antidepressant in small doses. Ketamine decreases TNF levels and causes bronchodilation. Desipramine is a tricyclic antidepressant with minimal anticholinergic side effects compared to other antidepressants. We find small doses adequate for optimal effect and that symptoms begin to improve in 2 to 3 days. It also has analgesic effects (neuropathic pain).

1174
The role of droperidol in the perioperative period and cancer ICU

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Droperidol is a neuroleptic agent that is shorter-acting than haloperidol. It is useful in patients who suffer from ICU psychosis due to illness or drugs. It has antiemetic properties, anti-shock effects (via peripheral alpha blockade), and anti-psychotic effects, and is also a useful adjunct sedative for patients on respirators. We report our experience with droperidol at Norris Cancer ICU over the last 25 years.
We have used droperidol in doses ranging from 0.5 to 20 mg. For ICU psychosis, the dose varies from 2.5 to 20 mg/day. As an adjunct sedative with narcotics, we find that patients require 2.5 mg boluses up to a dose of 30 mg/day. The other patient group requiring droperidol is that on chronic medications such as narcotics and benzodiazepines. We have observed many beneficial effects of droperidol in addition to its calming and sedating effects. It minimizes the requirements of narcotics and benzodiazepines; the use of benzodiazepines in the ICU can result in PTSD and depression. Our patients did not suffer any major mood disorders. Droperidol has no effect on the respiratory center, making it a useful choice for sedation while attempting early weaning of patient from ventilators. We see a low incidence of ileus due to its anti-dopaminergic properties. We have not found the associated alpha blockade to be an issue. In the last 25 years, we managed over 4,000 cases in the ICU and have not seen any case of arrhythmia or significant QT prolongation. No patient had any extra-pyramidal effects or developed neuroleptic malignant syndrome.

1179
Erythropoietin alpha vs. biosimilar erythropoietin alpha plus lipofer, B12 and folates in patients with refractory anemia: two-center prospective study

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Objectives: The aim of this study was to verify whether in MDS patients with refractory anemia biosimilar erythropoietin alpha is not inferior to erythropoietin alpha in terms of safety, efficacy, and costs.
Methods: Eighty-six patients affected by refractory anemia were studied. Patients were randomized 1:1 to receive, in group A, erythropoietin alpha 40,000 IU (s.c.) weekly. In group B, patients received biosimilar erythropoietin alpha 40,000 IU (s.c.) weekly. In both arms, patients received two lipofer 14-mg tablets orally/day and calcium levofolinate 7.5 mg/day orally+vitamin B12: 400 mg/day orally. In group A, the median age was 70 years (range, 63–73 years), M/F=15/28. In group B, the median age was 64 years (range, 60–70 years), M/F=24/19. IPSS was low in 30 patients and int-1 in 12 patients in group A; low in 32 patients and int-1 in 10 patients in group B. The median level of hemoglobin was 9 g/dl (range, 8–11) in group A and 8.7 g/dl (range, 8.5–10.5) in group B. The cost of monthly erythropoietic therapy was calculated, dividing for each patient the sum of complete erythropoietic therapy for each month of follow-up; then in each group of patients, the median cost of erythropoietic therapy was calculated.
Results: Group A patients increased the Hb level of 1 g/dl after a median time of 5 weeks (range, 4–9) and after a median time of 3.5 weeks (range, 3–8) in group B. No relevant side effects were observed in both groups. Median cost of erythropoietic therapy was 1,536€/month (range, 1,240–1,850) in group A and 1,354€/month (range, 954–1,550) in group B.
Conclusion: Biosimilar erythropoietin alpha seems to be safe, feasible, probably equally cost-effective, and substantially not inferior to classical erythropoietin alpha support in patients affected by refractory anemia.

1180
Oral seaweed calcium (lithothamnion) is safe, effective, well tolerated as oral lactate–gluconate+carbonate calcium in tumor lysis syndrome with renal failure

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Objectives: Tumor lysis syndrome is a frequent complication in chemotherapy, characterized by hyperkalemia, hypercalcemia, renal failure, and hyperuricemia. Frequently, patients need calcium support.
Aim: The aim of this study was to verify whether in patients with iron overload and with limited intravenous calcium support, oral seaweed calcium derived from lithothamnion is safe and effective as oral lactate–gluconate and carbonate calcium.
Methods: Four patients—two with acute myeloid leukemia, one Burkitt lymphoma, and one acute lymphoblastic leukemia—presented a tumor lysis syndrome after chemotherapy. All patients were men. The two patients with acute myeloid leukemia were 45 and 52 years old, respectively. The patient with acute lymphoblastic leukemia was 21 years old and the patient with Burkitt lymphoma 32 years old. All

patients showed renal failure (CrCl<30 cc/h) and severe hypocalcemia (Ca++<3.5 mEq/l). All patients received intravenous support with calcium chloride. The two patients with acute myeloid leukemia received oral lactate–gluconate and carbonate calcium 1 g, t.i.d., but the two patients with Burkitt lymphoma and acute lymphoblastic leukemia received oral seaweed calcium derived from lithothamnion 5 g, t.i.d.
Results: All patients restored a normal seric calcium level within 9 days. Patients receiving oral lactate–gluconate and carbonate calcium showed abdominal and gastric pain (VAS=7/10) and nausea and vomiting G3 and G4. Patients receiving oral seaweed calcium derived from lithothamnion showed no abdominal and gastric pain and nausea and vomiting G1.
Conclusions: Oral seaweed calcium derived from lithothamnion seems to be safe and effective and well tolerated as oral lactate–gluconate and carbonate calcium in tumor lysis syndrome with renal failure and water overload. These data need confirmation on a larger cohort of patients.

1181
Cancer vaccine therapy and patients' quality of life: camouflage makeup for unsightly skin reactions

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Background: The cancer vaccine therapy causes unsightly skin reaction scars with redness and blisters inevitable in patients. Hence, in our previous study, we interviewed patients, "How do you feel about your skin reactions?" The results of this interview survey revealed that patients might not willingly accept vaccination scars and that the activities of daily living are limited by the scars. Hence, it was necessary to develop some kind of cover makeup for the scars; we conducted a study to determine whether camouflage makeup could improve the patients' quality of life (QOL).
Method: We selected a "skin camouflage technique" developed by British Red Cross for covering the scars; the technique was applied to the patients at the injection site. The QOL surveys were performed before and 2 months after the application.
Results: The vaccination scars were completely covered with the makeup in the 14 participants. Although the QOL scores did not improve after the use of the camouflage technique, almost all patients were satisfied with the technique. "*I can wear sleeveless tops*!" However, a few patients were not satisfied with it: "Troublesome to use" and "The cream clung to clothes."
Conclusion: Vaccination scars could be covered by the skin camouflage technique. We believe that the makeup could improve the QOL of patients receiving vaccine therapy. Although a few patients were not satisfied with the material, we have already developed a novel cream to overcome these problems. The new cream would be useful also for skin reactions caused by other cancer therapies.

1183
Supportive care needs and symptom burden in breast cancer survivors

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Aims: The current paper describes the prevalence and intensity of supportive care needs as well as the relationship between their unmet needs and symptoms of breast cancer survivors.
Methods: Subjects with stage 0–III breast cancer (n=25) who completed cancer treatment to 2 years were recruited from the National University Cancer Institute in Singapore to complete the Supportive Care Needs Survey-SF34 and Memorial Symptom Assessment Scale (MSAS).
Results: Subjects reported the greatest need in health system and informational needs (32.81±22.4; score range, 0–100, with higher scores representing high levels of unmet needs), followed by patient care support needs (26±17.5), psychological needs (24.9±21.7), and physical and daily living needs (15.4±17.9). The items with the highest frequency of moderate to high needs for help are to have one member of the hospital staff with whom you can talk to about all aspects of your condition, treatment, and follow-up (32 %), uncertainty about the future (28 %), and feelings about death and dying (28 %). The most prevalent reported symptoms were fatigue (68 %), feeling sad (40 %), and worrying (40 %). The psychological and physical subscales, and total scores of MSAS, were 2.16±0.6 (score range, 0–4, with higher scores representing high symptom scores), 1.09±0.6, and 1.01±0.5, respectively. Those reporting high levels of psychological MSAS score reported greater unmet health system and informational needs (r=0.43, p<0.05) and high levels of total MSAS score and greater unmet physical and daily living needs (r=0.48, p<0.05).
Conclusion: Breast cancer survivors have many unmet needs. Symptoms impact significantly on perceived unmet need.

1184
Can research on assessing spiritual well-being also be a supportive intervention?

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Introduction: Spiritual care is often defined as accompanying people searching for meaning in their experiences. Assessing spiritual needs may therefore simultaneously initiate an intervention for those needs.
Objective: Our objective was to explore this hypothesis whilst developing a spiritual well-being measure for palliative cancer patients: the EORTC QLQ-SWB36.
Methods: The EORTC Quality of Life Group has completed phases I–III of developing the EORTC QLQ-SWB36. Phases I and II of development identified and operationalised items, which phase III pilot-tested. Phase III pilot testing interviews in the UK were tape-recorded, transcribed and qualitatively analysed.
Results: Participants understood that the study was pilot testing the measure, but also used the interviews as an opportunity to discuss the issues raised. One stated that completing the measure was contemplative, meaning: "Having to think consciously about things which are anyway at the back of my mind." Other participants showed signs of distress, and some became tearful. All were asked whether they wished the interviews to stop, but all chose to continue and expressed gratitude at the end of the interviews. One said: "Being referred here [*the hospice*] is the best thing that's ever happened to me; the socialising and the support. Thank you for listening to me."
Conclusion: Data suggest that research participants, including those who show distress, may experience discussing spiritual issues as supportive. It is likely that people facing the ends of their lives are already distressed, and discussion of these matters enables them to express and thereby, perhaps in some way, address the distress they are already feeling.

1186
Support of cancer patients with cognitive disorders: interests of a "memory consultation"

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Purpose: Cancer and chemotherapy can have adverse effects on cognitive functions and quality of life. To date, no specific prevention or treatments have been developed despite a large number of patients who report subjective cognitive changes related to cancer and its treatment. We proposed the creation of a "memory consultation" in the supportive care service in order to assess and deal with patients' cognitive impairments.
Consultations implementation: First, we have developed informative documents distributed to the medical staff and in the hospitals waiting rooms. At their request, patients can meet a neuropsychologist to conduct an assessment of fatigue, emotional disorders, and cognitive functions.
Results since the opening: Fifty-seven patients were consulted for cognitive function complaints; 70 % were treated for breast cancer, 15 % for ovarian cancer, 10 % for lung cancer, and 5 % for a brain tumor. The majority of these patients were consulted at the end of chemotherapy (80 %). The assessments show that 25 % of patients had mild cognitive impairments, 50 % had subtle disorders, and 25 % did not have cognitive problems. Concerning the orientation of these patients, approximately 35 % were referred to psycho-oncologists, 15 % to a pain support, 5 % to neurologists, and 45 % to neuropsychological support (25 % to "Memory workshops"). We will present at the conference all the data of the "Memory workshops" support.
Conclusions: The "Memory consultation" implementation seems to have become a necessary supportive care and responds to a growing demand from patients receiving chemotherapy. The support proposed would improve cognitive function and, hopefully, patient's quality of life.

1187

Innovative nutritional algorithms and rehabilitation techniques, used as a perioperative element of the fast track conception in patients after colorectal cancer elective surgery—a systematic review

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Objectives: The fast-track conception is nowadays a well-known procedure directly affecting the shortening of hospital stay and has a significant influence on patients' quality of live and contributes to the reduction of postoperative complications. In recent years, a significant increase of modern multidisciplinary methods and algorithms used by the assumptions of fast-track conception is noted. The aim of our work was to present modern, innovative nutritional algorithms and rehabilitation techniques used as perioperative elements of the fast-track conception in patients after colorectal cancer elective surgery.
Methods: In our work, we have analyzed a group of scientific publications, guidelines, and recommendations, selected from international nutritional, dietary, physical medicine, and rehabilitation literature, published after 2005. As search tools, we have used popular scientific bibliographic databases, such as Medline, EBSCO, Springer, and Ovid.
Results: In our systemic analysis of 152 scientific publications, we have created descriptions of five separated supportive care programs in the field of clinical nutrition and rehabilitation according to the fast-track conception. In the created therapeutic programs, we have presented modern and innovative perioperative algorithms and rehabilitation techniques used according to evidence-based medicine rules.
Conclusions: Innovative nutritional algorithms and rehabilitation techniques presented in our work could have a potential influence onto further development of specific therapeutic fast-track conception programs, and probably can significantly contribute to reducing the phenomenon of protein and calorie malnutrition and improve the quality of life in groups of patients after colorectal cancer elective surgery.

1188

Non-pharmacological management of pain related to invasive procedures in children with cancer: systematic review

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Introduction: The appropriate management of pain is an indicator of the quality of life and health care. The hardships that the child suffers during invasive procedures, such as lack of parents, the comfort and coziness of home, and the change in routine, can bring major trauma and aggravate stress and fear of the child. Psychological support and the use of non-pharmacological interventions to reduce physical or emotional pain should be valued by professionals.
Objective: Our objective was to identify evidences related to non-pharmacological management of pain in children with cancer undergoing invasive procedures.
Design: This is a systematic review. The PICO question "which non-pharmacological interventions are used for relief and pain control in children with cancer undergoing invasive procedures" was used. The search strategy has used the following descriptors—pain, neoplasms, child care, and complementary therapies—in the electronic databases PubMed/Medline, CINAHL, Cochrane Library, and Lilacs. Inclusion criteria were all randomized controlled trials in Portuguese, English, and Spanish which had been published in the last 10 years.
Results: Eleven studies were identified, most of whom (n=9) with distraction as an intervention to intravenous, intramuscular, and subcutaneous punctures.
Conclusion: Although there are factors that will inevitably trigger painful processes, it is possible to use actions in order to relieve and control pain using pharmacological or non-pharmacological interventions. With regard to pediatric cancer pain, it is essential that the team can deal with different approaches, both for pain assessment and for identifying behavioral indicators of children.

1189

Drugs used for restoring the patency of long-term central venous catheter in cancer patients: a systematic review

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Introduction: Long-term central venous catheters guarantee vascular access and the possibility of safe infusion of medication, chemotherapy, blood products, parenteral nutrition, and withdrawal of blood samples for laboratory tests. Some complications are inherent in the

use of the device, with obstruction being the most frequent in the cancer setting.
Objective: Our objective was to identify evidence related to drugs used for clearing long-term central venous catheter and their effective doses.
Design: This is a systematic review. The PICO question "what are the drugs, and their effective doses, used internationally for the treatment of thrombotic obstruction of central venous catheter indwelling in cancer patients" was used. The search strategy has used controlled—catheterization, central venous, tissue plasminogen activator—and uncontrolled descriptors—occluded, alteplase, reteplase, urokinase, and streptokinase—in the electronic databases PubMed/Medline, CINAHL, Cochrane Library, and Lilacs. Inclusion criteria were all randomized controlled trials in Portuguese, English, and Spanish.
Results: Fourteen articles were analyzed and four types of drugs have been identified. The results showed that urokinase is able to clear 50 % of the treated catheters, whereas alteplase was superior in relation to urokinase. Reteplase, in a dose of 0.2 IU/ml, is capable of clearing 60 % of treated catheters. However, alfimeprase was superior in drug versus time for clearing, 50 % in 15 min.
Conclusion: Given the significant number focused on the quantitative assessment of tissue plasminogen activators, it is suggested that the use of these drugs has been shown the most for urokinase.

1190
The importance of the identification and early intervention of subclinical lymphedema

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Introduction: Lymphedema (LE) is a chronic and progressive condition that causes swelling in the limbs, increasing a patient's risk of infection and cost of health care and affecting the patient's quality of life. Our goal was to identify subclinical LE in patients with axillary lymph node dissection (ALND) and sentinel lymph node biopsy (SLNB) with radiation therapy using contemporary and accurate technology and the initiation of early intervention.
Methods: All breast cancer patients scheduled to have surgery were assessed to determine their likelihood of developing secondary LE. The variables examined were SLNB with radiation therapy, ALND, or non/SLNB (three or more nodes). The measurements with the L-DEX U400 are obtained pre/postoperatively every 3 months and yearly for 5 years, coordinating this with the follow-up clinic. The use of over-the-counter compression sleeve, physical therapy, daily exercise, and reducing the use of the affected arm define early intervention.
Results: Our baseline data consisted of a total of 446 patients. A total of 108 patients were followed up. At the end of the first year, a total of 23 % (n=25) of patients had stage 0 LE and received early intervention for LE. All 25 patients still have subclinical LE.
Conclusion: Early detection and timely intervention demonstrate the greatest promise of reducing incidence of late-stage LE. With extended period of follow-up, we anticipate a delay or elimination of more advanced LE in the future. This is important for women who already face general health-related issues and financially live on a limited budget.

1191
AN open-ended, randomized, phase II clinical trial to determine the safe dosage of ascorbic acid used for restoring occluded totally implanted catheter

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Introduction: The occlusion of totally implanted central venous catheter is one of the most common catheter-related complications; restoring the patency is fast and less expensive.
Objective: Our objective was to determine the safe dosage of ascorbic acid for the treatment of occluded totally implanted central venous catheter.
Design: This is a phase II clinical trial, open-ended, randomized into three treatment groups (50, 100, and 200 mg ascorbic acid, AA) and conducted at four Brazilian hospitals.
Results: There were 21 subjects (mean age, 53 years). Six catheters had been cleared after the AA administration. Among them, four were given a dose of 50 mg and had complete or partial obstruction. Three catheters were cleared in <60 min and three in 60 min, including two who had received a dose of 50 mg. Among the catheters that were not cleared, it was observed that the time between diagnosis and treatment of the occlusion was greater and identified 355 days against 112 days in those who had the catheter cleared. The variable safety analysis demonstrated that ascorbic acid did not induce hypersensitivity reactions in these subjects.
Conclusion: The results of this study led us to suggest that the dose of 50 mg can be tested in a phase III clinical trial with a larger sample in order to validate the use of ascorbic acid as a possible effective agent in the treatment of totally implanted catheter obstruction.

1194
Salivary flow rate and oral *Candida* carriage in Brazilian head and neck cancer patients undergoing radiotherapy

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Objectives: Radiotherapy (RT) for head and neck cancer (HNC) patients leads to hyposalivation and consequent increase of *Candida* carriage and oral candidiasis. The aim of this study was to determine the association between RT, salivary flow, and *Candida* carriage in Brazilian HNC patients.
Methods: Forty-four sequentially patients were evaluated for whole saliva flow and *Candida* cultures before, during (between 15th and 22th sessions), and after RT. Microbiological procedures were performed to determine *Candida albicans* genotypes and screening for *Candida dubliniensis*.
Results: There was a reduction of salivary flow (p<0.0001) and an increase of heavy counts (≥500 CFU/mL) in colonized patients during the study (p=0.0227). However, no correlation among both was noted. Eighty-four percent of patients were positive for *Candida* carriage in some stage of the study; 13.6 % of them developed oral infection. *C. albicans* was the most frequent species and represented 50 % of all the samples identified. Genotypes A, B, and C were identified in percentages of 66.1, 23.1, and 10.8 of *C. albicans*, respectively. A wide spectrum of non-*albicans Candida* was identified, mainly *Candida tropicalis*, *Candida parapsilosis*, *Candida krusei*, *Candida glabrata*, and *Candida guilliermondii*. *C. dubliniensis* was not detected.
Conclusions: RT in HNC patients causes salivary impairment and an increase of heavy *Candida* counts. *C. albicans* remains as mainly a colonizing and infection agent, but a wide range of non-*albicans* species were found, some of which with intrinsic resistance.