Index

Acid–base disorders
- alkalosis, metabolic (see Metabolic alkaloses)
- alkalosis and acidosis, 50
- arterial blood gas values, 49
- chemical buffering systems, 41–42
- description and classification, 48
- excretion, acid, 43–46
- gastrointestinal (GI) tract, 44–45
- homeostasis, 48
- intestinal lumen, 200
- kidney–liver interaction, 43–44
- metabolic acidoses (see Metabolic acidoses)
- physiologic basis, 41
- renal system, 42
- respiratory regulation, CO₂, 46, 47
- subtypes, 49
- tubular bicarbonate reabsorption, 42, 44

Acute kidney injury (AKI)
- and AKIN, 228
- biomarkers, 234
- interventional trials, 27
- MODS/MOF patients, 234

Acute phase, intestinal failure
- fluid and electrolytes, 189
- nutrition, acute management, 189–191
- pharmacology, 191

Acute renal failure (ARF), 234

Acute respiratory distress syndrome (ARDS)
- and ALI, 12
- classification, 233
- definition, 12
- obese and patients, 129
- sepsis-induced, 230
- treatment, 238

ADA. See American Diabetes Association (ADA)

Adenosine triphosphate (ATP), 150–151

Adrenal disorders
- cushing syndrome, 258–259
- HPA, CRH and ACTH, 254
- hyperkalemia, 255
- ICU assessment, 255–256
- management, ICU, 256–257
- pheochromocytoma, 257–258
- primary and secondary causes, 254

Aging
- anabolic hormones, 89
- ATP concentrations, 89
- BMR and TBW, 273
- gastrointestinal tract, 274
- muscle mass loss, 138
- renal system, 274

AKI. See Acute kidney injury (AKI)

Albumin
- administration, 27
- C-reactive protein, 275–276
- leakage, 25
- serum, 275

Alcohols
- AKA, 55
- chronic, 90
- hypocalcemia, 267
- metabolic acidoses, 56
- serum osmolality, 56

American Diabetes Association (ADA), 250

American Society of Parenteral and Enteral Nutrition (ASPEN), 216

Anion gap (AG) acidoses
- citrate, 51
- dehydration, 51
- determination, 50–51
- diabetes, 51
- DKA, 250, 251
- lactic acidosis, 52–54
- metabolic acidosis, 62
- parenteral nutrition formulations, 51
- patient-specific normal range, 52
- strong ion gap, 52

Anorexia nervosa
- carbohydrate metabolism, 87
- energy expenditure, 88
- hormonal responses, 86–87
- lipid metabolism, 88
- megestrol acetate and dexamethasone, 281
- reversible causes, 281
- serotonin, 152
- starvation, chronic, 87
- TNF in-vivo, 152

ANS. See Autonomic nervous system (ANS)
Aquaporins
- ADH physiology, 25
- AQP₂, 25
- AQP₃, 25
- AQP₄, 25
  integral membrane pore proteins, 25
types, 25
ARDS. See Acute respiratory distress syndrome
(ARDS)
ARF. See Acute renal failure (ARF)
Arginine repletion, 239
Arterial pH
- acidemia, 46
- DKA, 250
- metabolic acidosis/alkalosis, 63
- physiologic perturbations, 41, 42
Artificial nutrition, 281–282
ASPEN. See American Society of Parenteral and Enteral
Nutrition (ASPEN)
ATP. See Adenosine triphosphate (ATP)
Autonomic nervous system (ANS), 230, 274

B
Bi-level positive airway pressure (BiPAP)
system, 65
Biometric Study of Basal Metabolism in Man, 2–3
Bisphosphonate therapy, 36, 267
Body composition, NB
- hypocaloric nutrition therapy, 133–135
- isotope amino acids, 134
- macronutrients, 133
- muscle proteolysis, 134
- nitrogen equilibrium, 133
- PN, 134
- protein anabolism, 134, 135
Body metabolism, 4–5
Buffering solutions
- acid–base derangement, 48
- ammonia, 43
- chemical systems (see Chemical buffering systems)
- THAM, 63
Burn injury
- body’s response, 111
- calories, 114
- catabolism, 112
- children, 119–120
- cumulative energy deficits, 112
- elderly, 120
- enteral nutrition, 113
- gastroparesis, 113
- gut-associated lymphoid tissue, 113
- macronutrients, 113–115
- morbidly obese, 120–121
- nutritional support, 112, 118–119
- protein, 113–114
- stressed state metabolism, 15
- stress response modulation, 115–118
- TPN vs. enteral nutrition, 113
- vitamins and minerals, 113–115

C
Cachexia
- cancer (see Cancer cachexia)
- definitions, 72
- elderly, 88–89
- protein and energy wasting, 281
- psychosocial aspects, 280
- and sarcopenia, 88–89
- vs. starvation, 281
- terminal illness, 281
- TNF, 151, 152
- weight loss, frailty, 88
Calcium disorders
- hypercalcemia (see Hypercalcemia)
- hypocalcemia, 267–268
- serum, 263–264
cAMP-responsive element binding protein (CREB), 73
Cancer cachexia
- adipocytic lipolysis, 150
- ATP, 150–151
- cellular metabolism, 150
- cytokine milieu, 151–153
- energetics, 149–150
- glycolysis, 150
- insulin resistance, 151
- metabolic churning, 151
- neoplasm, 149
- NF-κB, 150
- PIF, 150
- polyunsaturated fatty acids, 150
- tumor growth, 148–149
- weight loss, 148, 149
Carbohydrate metabolism
- β-adrenergic stimulation, 72
- anorexia nervosa, 87
- blood glucose concentration, 72
- cAMP, 72
- CREB, 73
- glucagon, 72
- gluconeogenic gene expression, 73–74
- glycogenolysis, 72, 73
- insulin receptor activation, 72
- liver glycogen, 72
- marasmus, 85–86
- PDK2 activity, 74
- postabsorptive state, 71, 72
CARS. See Compensatory anti-inflammatory response
syndrome (CARS)
Catabolism
- hypercatabolism, 98
- stressed state, 8
- sulfuric acid, 42
- surgical patient, 15
- triglyceride-rich lipoproteins, 88
CCDS. See Computerized clinical decision support
(CCCDS)
CCI. See Chronic critical illness (CCI)
Cellular metabolism
- enzyme function, 4
- intracellular calcium, 154
- mitochondria, 4
Chaperone-mediated autophagy, 78–79
Chemical buffering systems
disease process, 42
intracellular and extracellular mechanisms, 41, 42
nonvolatile acids, 42
Chronic critical illness (CCI)
CCDS, 171
MOF, 171
organ dysfunctions, 171
PEG, 172
skeletal muscle, 172
tissue proteolysis, 172
Chronic phase, intestinal failure
dietary restriction, 192
EN, 191–192
home PN, 192
pharmacology, 192–193
Colloids
parenteral solution, 26
resuscitation fluid, 29
synthetic, 27, 29
Compensatory anti-inflammatory response syndrome (CARS), 169–170
Computerized clinical decision support (CCDS), 171
Crystalloids
vs. colloid, 28, 29
intravascular volume, 27
isotonic resuscitation, 170
Lactated Ringer’s (LR) solution, 26
normal saline solution (NSS), 27
pro-inflammatory effects, 28
resuscitative fluid, 28
salt solutions, isotonic, 28
shock reversal, 29
Cushing syndrome
ACTH-dependent and-independent etiologies, 258–259
eucortisolemic state, 259
hypercortisolism control, 259
metabolic alkalemia causes, 61
Cytokines
adipose tissue, 82
genomic considerations, 17
hormones and neuropeptides, 152
IL-1 and IL-6, 152
interferon (INF)-γ, 152
MOF, 10
PIF, 152
serotonin, 152
serum concentrations, 152
skeletal muscle, 151
tachyphylaxis, 151
TNF, 151
Diabetes mellitus
insulin infusions, 248
meta-analysis, 248
NICE SUGAR study, 247–248
patient discharge, 249–250
subcutaneous insulin regimens, 248–249
obesity, 131
Diabetic ketoacidosis (DKA)
and AKA, 55
clinical presentation, 251
complications, 254
definition, 250–251
epidemiology, 250
evaluation, 252
management, 252–254
pathophysiology, 251
treatment, 55
DIC. See Disseminated intravascular coagulation (DIC)
Dicholoroacetate, 62–63
Disseminated intravascular coagulation (DIC), 116, 237
DKA. See Diabetic ketoacidosis (DKA)

D

Early Goal Directed Therapy in the Treatment of Severe Sepsis and Septic Shock, 3

E

Electrolyte physiology
baseline water, 26
calcium metabolism disorders, 32–34
magnesium metabolism disorders, 34–35
maintenance fluid therapy, 27–28
parenteral solutions, 26–27
phosphorous metabolism disorders, 35–36
potassium metabolism disorders, 31–32
resuscitative fluid therapy, 28–29
sodium metabolism disorders, 29–31
TBW, 23–25
volume control mechanisms, 25–26
water and sodium balance, 29
Electromagnetically guided placement devices (EMPD), 202
EMPD. See Electromagnetically guided placement devices (EMPD)
EN. See Enteral nutrition (EN)
Energetics, cancer cachexia
hypometabolic, 149
LBM, 149, 150
lung and gastric, 149
REE, 149
Energy expenditure
anorexia nervosa, 88
carbohydrates, 7–8
direct calorimetry, 5
fats, 9
IC, 6
intake, protein, 133
lipid metabolism, 74
metabolism, protein, 80–81
nonprotein calories, 137
obesity, 132
predictive equations, 6–7
proteins, 8–9
trace elements/minerals, 9–10
Enteral access, 202
Enteral nutrition (EN)
  acute pancreatitis, 205
  amino acids and fats, 191
  bacterial flora, 200
  cytokines and programmed cell death, 171
  diarrhea, 208–209
  enterocutaneous fistula, 205–206
  feeding
    EMPD, 202
    enterostomy, 202
    gastrojejunostomy tube, 203
    nasogastric/nasojejunal tubes, 202
  postoperative care, 202
GALT, 170
  gastric dysmotility/gastroparesis, 203–204
  geriatric considerations, 278–279
  glutamine, 170, 192, 205
  gut-blood barrier, 200
  gut failure, 191
  hypocaloric vs. eucaloric, 137
  intestinal mucosa atrophies, 200
  intolerance, 208
  lumen, bowel, 191
MALT, 170
  mucosal hypoperfusion, 170
  nitrogen balance, 132
  nutritional assessment, 199–200
  obesity paradox, 130
  pneumonia, 208
  sepsis, 206, 208
  small bowel, 200
  surgical anastomosis, 201
  TPN, 205
  trophic feeding, 201
Ethylene glycol
  antifreeze ingestion, 56
  metabolic acidoses, 56
  methanol, 56

F
Familial hypocalciuric hypercalcemia (FHH)
  malignancy-associated, 266
  primary and tertiary, 265
FHH. See Familial hypocalciuric hypercalcemia (FHH)
Fluid compartments
  caloric and protein intake, 134
  and TBW, 23–25
Free water deficit
  hyponatremia, 30, 31
  osmotic diuresis, 251
  resuscitation, starch solutions, 27

G
GALT. See Gut-associated lymphoid tissue (GALT)
Gastric dysmotility/gastroparesis
  catecholamines, 203
  erythromycin, 203
  nutrition protocol, 204
  PN, 204
  small bowel, 203
Gastrointestinal tract (GIT)
  acid–base disorders
    gastric secretions, 45
    intraluminal fluid, 45
    mesenteric blood flow, 45
    systemic acidosis, 45
    hypokalemia, 31
  malabsorption, 4, 217
  metabolic acidoses, 50
Genomics, 17, 232–233
Geriatric nutrition
  calcium, 277
  carbohydrates, 276
  fluids, 277
  glutamine, 277–278
  lipids, 277
  nutritional support, 278
  palliative care, 280–281
  proteins, 277
  vitamins and minerals, 277
Geriatrics
  ADLs, 273
  aging (see Aging)
  metabolism definition, 273
  patients, 30
GIT failure, 235–236
Glucocorticoid therapy, 255, 267
Glucose control
  diabetic emergencies, 250–254
  management, diabetes, 247–250
  traumatic brain-injured patients, 100
Glutamine
  and and arginine, 228
  energy substrate, 98
  enterocytes, 98
  immunonutrition, 176
  metabolism modulators, 103
  MODS/MOF treatment, 239
  modulators, metabolism, 103
  nutritional requirements, 277–278
  production, urea, 44
Glycogenolysis
  carbohydrate metabolism, 72, 73
  DKA, 251
hepatic glucose production, 74
weight loss, 81
Gut-associated lymphoid tissue (GALT), 170
Gut failure
CT, 189
entero-enterostulae, 189
fistulagrams, 189

H
HCMA. *See* Hyperchloremic metabolic acidosis (HCMA)
Hepatic protein synthesis
acute phase reactants, 98
starvation, 79
HHM. *See* Humoral hypercalcemia of malignancy (HHM)
Humoral hypercalcemia of malignancy (HHM), 266
Hydration
and forced diuresis, 35
hypercalcemia, 266
saline, 266
starvation, 81
systemic circulation, 99
urinary excretion, 36
volume status and weight, 189
Hydroxyethyl starch (HES), 27–29, 238
Hypercalcemia
causes, 265–266
description, 264
laboratory studies, 264–265
physical examination, 264
serum calcium level, 33
treatment, 266–267
Hypercapnia
BiPAP system, 65
caloric intake, 135
chronic, 65
mechanical ventilation, 260
permissive, 65
treatment, 65
Hyperchloremic metabolic acidosis (HCMA)
non-anion gap acidosis, 58
normal saline solution (NSS), 27
renal failure, 56
Hyperglycemic state (HHS). *See* Diabetic ketoacidosis (DKA)
Hypermetabolism
inflammatory states, 6
nutrition, trauma patient, 102
post-burn, 112, 116, 118
renal failure, 56
thermal injury, 112
Hypertonic saline (HTS) solutions, 27
Hypocalcemia
autoimmune destruction, 268
cause, 267
parasthesias and seizures, 33
physical examination, 267
psychiatric symptoms, 33
treatment, 268
Hypocapnia
BiPAP system, 65
caloric intake, 135
chronic, 65
mechanical ventilation, 260
permissive, 65
treatment, 65
Hyperchloremic metabolic acidosis (HCMA)
non-anion gap acidosis, 58
normal saline solution (NSS), 27
renal failure, 56
Hyperglycemic state (HHS). *See* Diabetic ketoacidosis (DKA)
Hypermetabolism
inflammatory states, 6
nutrition, trauma patient, 102
post-burn, 112, 116, 118
renal failure, 56
thermal injury, 112
Hypertonic saline (HTS) solutions, 27
Hypocalcemia
autoimmune destruction, 268
cause, 267
parasthesias and seizures, 33
physical examination, 267
psychiatric symptoms, 33
treatment, 268

Hypocalcemia
anabolic resistance, 139
tumor lysis syndrome, 138
fatty acid deficiency, 139
hyperglycemia, 139
hypermetabolism, 139
lipolysis, 139
liquid protein, 141
macronutrient, 141
muscle mass, 138
REE, 138
regression analysis, 138
serum creatinine concentration, 138
SUN, 138–139
Hyperparathyroidism
causes, 30
cellular dehydration, 31
cerebral edema, 29
classification, 30
definition, 29
free water deficit, 31
hypovolemic, 30
inpatient mortality, 29
multi-organ failure, 29
osmotic pontine demyelination, 30
SIADH, 30
symptoms, 31
Hypothyroidism
cardiac catheterization, 261
definition, 259–261
epidemiology, 259
levothyroxine supplementation, 260
myxedema coma, 260
physical examination, 260
I
Iatrogenic acidosis, 50, 59–60
ICUs. *See* Intensive care units (ICUs)
IEF. *See* Immune-enhancing formula (IEF)
Immune-enhancing formula (IEF), 158
Immune function, malignancy
arginine, 154
glutamine, 153
IL-6, 153
meta-analysis, 155
nucleic acids, 154
parenteral and enteral administration, 153
PUFAs, 154
Immunonutrition
antioxidant vitamins, 177
arginine, 175–176
glutamine, 176
host’s immune response, 174–175
omega-3 fatty acids, 177
Infection, sepsis
cell-to-cell communication, 168
dysfunction, 168
host immune response, 169
LPS, 168
Inflammation
arachidonic acid metabolism, 11
and host defenses, 154
and immune response, 9
pancreatic, 205
SIRS, 114
Insulin
diabetes mellitus, 131
hypocaloric feeding, 142
infusions, 131, 142, 248
substantial hyperglycemia, 131
Insulin therapy
ICU, 247
IIT, 115
lipolysis and ketoacid production, 253
serum potassium level, 253
Intensive care units (ICUs)
EN vs. PN, 173–174
GALTs, 173
GI tract, 172
gut mucosal integrity, 173
hypoperfusion, 173
malnutrition, 172
mesenteric ischemia, 172
MOF, 173
nutritional adequacy, 174
small bowel feedings, 173
Intensive Insulin Therapy in Critically Ill Patients, 3–4
Intestinal failure
acute phase, 189–191
chronic phase, 191–193
citrulline, 188
EN, 188
gastrostomy tube, 188
gut failure, 183, 186, 189
home PN, 183
ileocecal valve, 187
ileum, 187
jejunum, 187
microbiome, 193–194
muscular hypertrophy, 188
nutrients, 184–185
oral intake, 188
PEG, 194
PN, 194–195
PPI, 188
SBS, 183, 184
small intestine, 185
surgical resection, 186
vascular catastrophe, 184
voluminous diarrhea, 187
Isopropyl alcohol, metabolic acidoses, 56
K
Ketoacidosis
lactic, 55
metabolic, 54–55
THAM, 63
Kidney, MODS/MOF, 234

Kwashiorkor
hypoglycemia, 86
lower disaccharidase activity, 86
PEM, 84
protein breakdown, 86
protein-energy malnutrition, 85
symptoms, 85

L
Lactic acidosis
acidemia, 53
acid generation, 53
anaerobic metabolism, 54
animal studies and human studies, 52
hyperlactatemia, 53
mesenteric metabolism, 52
PDH inhibition, 53
sepsis, 54
tissue hypoxia, 52
treatment, 54
LBM. See Lean body mass (LBM)
LE. See Lipid emulsions (LE)
Lean body mass (LBM), 149, 150
Life expectancy, 160, 221, 273
Lipid emulsions (LE), 219
Lipid metabolism
β2-adrenergic receptors, 74–75
anorexia nervosa, 88
carnitine-palmitoyl-transferase 2 (CPT2), 77
energy production, 74
hepatocyte fatty acid β-oxidation, 76
β-hydroxybutyrate, 77
hyperketonemia, 77
ketogenesis, 76
lipolysis, 75
marasmus, 86
reesterification cycles, 75
stored triglycerides, 74
Liver dysfunction, MODS, 236
Lung, MODS/MOF, 233
Lysosomal proteolysis pathways, 78
M
Malignancy
associated hypercalcemia, 266, 267
cancer cachexia, 148–153
colon cancer, 160
esophageal cancer, 158
gastric cancer, 158
liver and gallbladder cancer, 159–160
nutrition assessment (see Nutritional assessment in cancer)
pancreatic cancer, 159
small bowel resection, 159
surgery, cancer patients, 155
Malnutrition
diagnosis, 276
and metabolic derangements, 3
NAFLD. See Nonalcoholic fatty liver disease (NAFLD)
NB. See Nitrogen balance (NB)
Neurological dysfunction, MODS/MOF, 234–235
Nitrogen balance (NB)
   body composition, 133–135
   equilibrium, 132
   metabolic complications, 132
   protein anabolism, 132
   total urinary nitrogen, 133
Nonalcoholic fatty liver disease (NAFLD), 131
Nonthyroidal illness syndrome (NTIS), 263
Norepinephrine
   abdominal adipose tissue, 86
   dobutamine, 53
   and glycerol concentrations, 88
NTIS. See Nonthyroidal illness syndrome (NTIS)
Nutrition
   acute management, 189–191
   assessment formulas, 155
   bariatric surgery, 121
   cancer, 147, 156–158
   glutamine supplementation, 114
   gut-associated lymphoid tissue, 113
   hypocaloric high-protein therapy, 135–138, 140–141
   international support guidelines, 112
   monitoring, 206, 275, 278
   obesity, 130–132
   palliative care patients, 282
   perioperative support, 157–158
   preoperative support, 157
   quality of life (QoL), 148
   screening, 160
   total parenteral vs. enteral, 113
Nutritional adequacy
   calories and protein, 105
   diagnostic tests, 174
   injured elderly patients (critically), 106
   international database, 105
   malnourished patients, 105
   serum proteins, 174
Nutritional assessment in cancer
   acute hepatic dysfunction, 215
   albumin and prealbumin, 214
   amino acids, 216
   body weight, 215
   cancer cachexia, 148
   colonocytes, 185
   dietary factors, 147
   duodenum, 184
   EN (see Enteral nutrition (EN))
   enterectomy, 189
   fat soluble vitamin deficiency, 191
   gastric empty, 185
   GI tract, 200
   hospitalized surgical patients, 214, 215
   immune function, 153–155
   jejunum, 184
   malnutrition and weight loss, 147
   mnemonics, 200
obesity, 148
   protein digestion process, 184
   QoL, 148
   REE, 215
   SBS, 184, 185
   sepsis (see Sepsis)
   serum albumin level, 214
   SGA, 215
   small bowel bacteria, 185
   thiamine deficiency, 190
Nutrition support and surgery in cancer
   GI surgery, 156
   glycemic management, 157
   IEF, 158
   jejunostomy feeding tube, 156
   laparotomy/noncardiac thoracotomy, 157
   malnutrition, 155
   morbidity and mortality, 155
   PG-SGA, 155, 156
   TPN, 157
Nutrition therapy
   comorbidities, 130
   hypertriglyceridemia, 131
   hypoventilation syndrome, 131
   liver and hepatic dysfunction, 131
   metabolic and physiologic effects, 130
   NAFLD, 131
   substantial hyperglycemia, 131
Obesity
   bariatric surgery, 140
   calorie and protein requirements, 132–135
   chronic disease, 128
   hospitalized surgical patients, 135–138
   hyperglycemia, 127–128
   hypocaloric and high-protein nutrition, 138–139
   mortality, 128
   nutrition therapy, 130–132
   paradox, 130
   sarcopenia, 128
   trauma patients, 128, 129
Observations on Respiration and the Use of the Blood, 2
Omega 3 oils
   acute lung injury, 11
   bioavailability, 12
   EPA and DHA, 10–11
   gamma-linolenic acid, 12
   neuroprotectin, 12
   n-3 PUFAs, 11
   proinflammatory, 12
Omega-6 polyunsaturated fatty acids (ω-6 PUFA), 240
Open abdomen
   after trauma, 104
   laparotomy, 104
Organ failure
   description, 238
   MODS/MOF (see Multiple-organ dysfunction syndrome (MODS))
Osmosis, 24, 25
Oxandrolone
anabolic steroid, 114, 121
androgen receptor, 116
burn patients, anabolism, 114
children, 119
REE, 116–117
synthetic analog, testosterone, 116

Palliative care
anorexia, 281
cachexia, 281
psychosocial aspects, 280–281

Parenteral nutrition (PN)
amino acid concentration, 218
ASPEN, 216
blood glucose control, 214, 221
calorie and protein, 214
cardiac arrhythmia, 280
catheter-relation, 194
dextrose concentrations, 218
electrolyte administration, 220
vs. enteral nutrition, 113, 173–174
formulations, 15
GI surgery, 217
glutamine, 218
hepatic complications, 194
hydration fluid rate, 218
hyperlimentation, 219–220
hyperglycemia, 139, 220
hyperinsulinemia, 220–221
hypocaloric alimentation, 280
LE, 219
liver dysfunction, 221
malnutrition, 217
metabolic bone disease, 195
microbial contamination, 219
micronutrients, 213
nitrogen balance, 132, 279–280
nosocomial infection, 217
nutritional assessment, 214–216
obesity paradox, 130
oral intake, 216
pathophysiologic factors, 213, 214
PCM, 213
peripheral/central vein, 218–220
PICC, 218
protein anabolism, 133
RCTs, 214
refeeding syndromes, 220
renal dysfunction, 195
soybean oil, 219
thrombosis, 221
triglyceride levels, 219
Patient-Generated Subjective Global Assessment (PG-SGA), 155, 156
PCM. See Protein-calorie malnutrition (PCM)
PEG. See Percutaneous endoscopic gastrostomy (PEG)

Percutaneous endoscopic gastrostomy (PEG), 172, 194
Percutaneous non-tunneled central venous catheter (PICC), 218
PG-SGA. See Patient-Generated Subjective Global Assessment (PG-SGA)

Pheochromocytoma
postoperative management, 258
preoperative preparation, 257–258
PICC. See Percutaneous non-tunneled central venous catheter (PICC)

PIF. See Proteolysis-inducing factor (PIF)
PN. See Parenteral nutrition (PN)

Polyunsaturated fatty acids (PUFAs), 154, 240

Prealbumin
C-reactive protein, 119
liver, 276
serum concentrations, 137

Propranolol
fatty infiltration, liver, 116
lipolysis, 116
NTIS, 263
nutritional support, 119

Protein
hypocalorics (See Hypocalorics)
obesity (See Surgical patients, obesity)

Protein-calorie malnutrition (PCM), 213, 217

Proteolysis
adipose tissue, 78
bone formation, 80
CCI, 172
chaperone-mediated autophagy, 78–79
cortisol level, 251
energy expenditure, 80–81
hepatic protein synthesis, 79
insulin deficiency, 251
lipolysis, 78
lysosomal proteolysis pathways, 78
macroautophagy, 79
marasmus, 86
myocytes, 78
nitrogen balance, 78
post-burn hypermetabolism, 112, 118–119
ubiquitin-proteasome system, 79

Proteolysis-inducing factor (PIF), 150
Proton pump inhibitor (PPI), 188
Pseudorespiratory alkalosis, 66

PUFAs. See Polyunsaturated fatty acids (PUFAs)

QoL. See Quality of life (QoL)
Quality of life (QoL), 148

QoL. See Quality of life (QoL)
Quality of life (QoL), 148

Randomized control trials (RCTs), 214
RCTs. See Randomized control trials (RCTs)
REE. See Resting energy expenditure (REE)
Refeeding syndrome
- carbohydrate-dependent metabolic pathways, 90
- clinical deterioration, 90
- description, 89
- hypophosphatemia, 90
- intravenous dextrose, 220
- metabolic and clinical consequences, 219
- peripheral edema and fluid overload, 90
- prevention, 221
- serum electrolyte deficiencies, 90

Renal tubular acidosis (RTA), 43, 50, 59

Requirements, calorie and protein
- body composition, 132
- nitrogen balance, 132–135
- REE, 132

Respiratory acidosis
- homeostasis, 48
- hypoxemia control, 64–65
- mechanism, 63–64
- pathophysiology, 63–65
- permissive hypercapnia, 65
- pseudorespiratory alkalosis, 66
- ventilatory impairment, 64

Respiratory alkalosis, 55, 66

Resting energy expenditure (REE), 138, 149, 215

Resuscitative fluid therapy
- capillary endothelium, 28
- colloids vs. crystalloids, 29
- HES, 29
- microvascular permeability, 28
- synthetic plasma expanders, 28

Rhabdomyolysis, 36, 57, 267

RTA. See Renal tubular acidosis (RTA)

S
- Salicylates, metabolic acidoses, 55–56, 66
- Saline hydration, 266
- Sarcopenia
  - elderly, 88–89
  - injured elderly population, 106
  - low muscle mass, 106
- SBS. See Short bowel syndrome (SBS)
- SCCM. See Society for Critical Care Medicine (SCCM)
- Semistarvation
  - detrimental long-term effects, 84
  - metabolic and hormonal changes, 83–84
  - substrate metabolism, 84
- Sepsis
  - animal model, 230
  - evidence-based care, 167
  - ICU, 172–174
  - immunonutrition, 174–177
  - iNOS pathway, 14
  - insulin resistance and hyperglycemia, 4
  - pathophysiology
    - CARS, 169–170
    - CCI, 171–172
    - cytokines and chemokines, 167
- Stress response modulation, burns
  - non-pharmacologic
    - early excision and grafting, 115
    - temperature regulation, 115–116
  - pharmacologic
    - beta-blockade, 116
    - erythropoietin, 118
    - glutamine, 117–118
    - insulin, 117
    - iron, 118
    - oxandrolone, 116–117
- Subjective global assessment (SGA), 215
- SUN. See Serum urea nitrogen (SUN)
- Surgical patients, obesity
  - caloric intake, 135
  - eucaloric enteral feeding, 137
  - fatty liver disease, 142
  - fat weight loss, 142
  - hypocaloric and high-protein therapy, 135, 136
  - nitrogen balance, 142
  - nonprotein energy expenditure, 136
  - protein intake, 135
  - serum prealbumin, 137, 142
- Synthetic colloids, 27
Systemic inflammatory response syndrome (SIRS)
GI tract, 170
MOF, 167–168
sepsis syndrome, 168

T
THAM. See Tris-hydroxymethyl aminomethane (THAM)
Third space loss, 24
Thyroid disorders
hypothyroidism, 259–261
NTIS, 262
thyrotoxicosis, 261–262
Thyrotoxicosis
ALT and AP levels, 262
categorization, 262–263
definition, 261–263
epidemiology, 261
propylthiouracil, 262
TSH receptors, 261
TLC. See Total lymphocyte count (TLC)
TNF. See Tumor necrosis factor (TNF)
Total body water (TBW)
cardiac arrest, 24
definition, 23
fat content and the chronological age, 23
lean body mass, 273
osmolarity, 25
osmosis, 25
shock and operative trauma, 24
Total energy expenditure (TEE), 5, 83–84
Total lymphocyte count (TLC), 276
Total parental nutrition (TPN)
catheter-related sepsis, 205
vs. enteral nutrition, 113

hyperglycemia, 102
nutrition status, 157
Toxin ingestion
alcohols, 56
ethylene glycol, 56
isopropyl alcohol, 56
methanol, 56
salicylates, 55–56
TPN. See Total parental nutrition (TPN)
Transferrin, 85, 103, 276
Trauma
catabolic response, 98
cytokine response, 100–101
ebb and flow phases, 97–98
gut hypothesis, MOF, 101
MOF, cytokine hypothesis, 101
neuroendocrine response, 98–100
patient, nutrition
adequacy (see Nutritional adequacy)
assessment, 102
challenges, 104–105
estimation, 102
supplementation, 102–103
TEN and TPN, 102
Tris-hydroxymethyl aminomethane (THAM), 63
Tumor necrosis factor (TNF), 151

Ubiquitin-proteasome system, 78, 79, 151

V
Vaptans, 26, 30
Vitamin deficiencies, 83, 90, 274–275