

EMERGENCY RESUSCITATION IN A COMMUNITY HOSPITAL

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The last enemy that shall be destroyed is death

—1 Corinthians xiii, 26

IT IS A FACT that a small percentage of the people who suffer cardiac and respiratory arrest can be revived and, of these, a smaller percentage can live a normal life span. The key to successful resuscitation is appropriate treatment instituted within one hundred and eighty seconds of respiratory or cardiac failure. This is only possible if there are always personnel in the vicinity of the patient who are trained and practised in the art of resuscitation. Up to this date the nurses have always been near the patient.

The Resuscitation Training Programme for nurses at the Scarborough General Hospital is administered by and is the responsibility of the Nursing Inservice Education Department. The programme is directed and the lectures and examination are conducted by the doctors in the Department of Anaesthesia, with the assistance of the Department of Medicine.

The director of nurses must appoint one nurse to be in charge of the training programme; the success of the entire course and the preservation of patients' lives depend upon her personal qualities. She must be an enthusiastic enthusiast, a self-starter with a pleasant personality, because the main part of her job is dealing with people. She must realize that the role of the nursing staff is to initiate immediate emergency resuscitative procedures and to assist the physicians who have answered the emergency call.

At the Scarborough General Hospital we conduct our Course for the Resuscitation Teaching Team nurses twice each year. The course consists of a series of lectures, demonstrations, and films, and graduates twenty nurses who are highly trained in the art of emergency resuscitation. This team then circulates through the hospital and teaches the other nurses.

At some time during the lectures, the nurses must be made aware of the fact that this system of cardiopulmonary resuscitation is traumatic to the patient. There is a possibility that the resuscitative procedure in inexperienced hands might be the final blow which takes the life of a very sick patient. This type of resuscitation works best in patients whose cardiopulmonary system is not too greatly diseased. It certainly is not recommended in frail older people and those whose cardiac arrest is related to long-term or terminal disease. The final decision with regard to initiation or continuance of this treatment should rest with a qualified physician.

The object of this programme is to make every registered nurse who works at Scarborough General Hospital sufficiently aware of cardiac or respiratory arrest that she will be mentally prepared to institute immediate adequate resuscitative

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measures at any time and in any place where this catastrophe occurs. We hope that each nurse in the hospital will acquire enough skill through our programme to keep the patient alive until assistance arrives. The following programme is the course given at the Scarborough General Hospital this year to the nurses of the resuscitation teaching team.

SCARBOROUGH GENERAL HOSPITAL
RESUSCITATION PROGRAMME

1. Introductory Talk
2. Lecture—*Respiratory Physiology*
3. Lecture (slides)
4. Demonstration—*Cardiac Compression*
5. Lecture—*Cardiac Compression & Miscellaneous*
6. Film—*That They May Live*
7. Lecture—*Cardiac Arrest*
8. Film—*The Pulse of Life*
9. Film and slides—*External Cardiac Compression* with comments
10. Practice on Doll—Practice with Ambu bag and oral airway
11. Lecture and demonstration—*Pacemaker, Monitor, & Defibrillator* (old and new machines)
12. Lecture—*Drugs Used in Resuscitation*
13. Lecture and slides—*Infant Resuscitation, Complications of Cardiac and Pulmonary Resuscitation*
14. Film—*Resuscitation of the Newborn*
15. Demonstration—*ECC Machine, Procedure & Application of Electrodes*
16. Individual instruction—*Demonstration Breathing for an Unconscious Patient* (in operating room if possible)
17. Practice with Ambu bag on unconscious or semi-conscious patient (in operating room if possible)
18. Practice with doll until proficient
19. Questions by physician
20. Examination

Dates and times to be changed due only to unforeseen circumstances.

In order to simplify this description of our programme, we will divide it into the following parts:

1. General procedure.
2. Who Should Answer a Call for Dr. Purple? ("Dr. Purple" is our public cardiac arrest announcement code)
3. Who Shall Direct Emergency Treatment in an Emergency?
4. General Instructions to All Hospital Personnel
5. Duties of the Medical Director of the Resuscitation Programme
6. Duties of the Intravenous Nurse
7. Duties of the First Doctor Who Arrives at the Scene of a Cardiac or Respiratory Arrest
8. Duties of the Department of Inhalation Therapy
9. Duties of the Nurse in Charge of the Resuscitation Teaching Team
10. Duties of a Nurse on the Resuscitation Teaching Team
11. Duties of the Department of Biochemistry

GENERAL PROCEDURE

The nurse who finds a patient who has had a cardiac or respiratory arrest must start immediately to administer artificial respiration and closed chest cardiac compression. After doing this for a period of about three minutes, she must sound the alarm either by pressing the patient's alarm button or by calling for help. When help arrives, the person most practised in cardiac compression and ventilation will continue treating the patient, while the other person telephones the hospital switchboard and gives the telephone operator the order to broadcast the cardiac arrest alarm, and the details needed to bring assistance to the proper area.

The cardiac arrest alarm should be a system which brings pertinent information to all hospital personnel *immediately*. In our hospital we have a loudspeaker system in all the corridors. Thus a general announcement is made immediately, and all those personnel who are available and who have a skill which can be used in this situation go to the patient's room.

In some hospitals there is a wireless call system through which a few selected people hear a buzzing in their pocket radio receivers. In my opinion, this method wastes precious minutes which could be better spent treating the patient. There are articles in the literature about hospitals which have trained their inhalation therapists to do ventilation and closed chest cardiac compression. But it is an inescapable fact that the nurses are closest to the patient at all times, and they are the group who should be trained in this procedure.

The problem is that there are so many nurses, and the hours that they are available for training are so variable that it would seem a mountainous task. However, it is entirely feasible. At the Scarborough General Hospital we have a successful programme which results in all the nurses on every shift in the hospital being trained in these techniques. It is no exaggeration to state that we have the largest cardiac arrest team in North America, composed of five hundred general duty nurses divided among three shifts.

We have found that after the general alarm has been sounded, assistance begins arriving at the patient's room within seconds. Usually the first doctor arrives in the room within two minutes. Within four minutes of the alarm there are a large variety of specialists at the patient's bedside. All members of the Departments of Anaesthesia and Medicine who are in the hospital respond to the alarm. In this way we are certain to have the best trained personnel at the patient's bedside as quickly as possible. There is no time lost in deciding who will respond to the alarm because everyone responds, and then they decide who will stay with the patient.

When more than one anaesthetist or internist arrives, they confer on the treatment and decide which of them may not be needed to assist. Very often they all stay in order to gain more experience in treating this catastrophe. We also like to have all the members of the nurses' Resuscitation Teaching Team respond to the alarm and go to the patient's room. The nurses are then assigned to perform cardiac compression and ventilation, and to take blood pressure readings, thus

enabling the doctors present to confer on treatment and administer intravenous or intracardiac medication.

One of the problems which arises in a situation of this type is that someone must assume command of the situation. As we are unable to predict who will arrive, we are unable to designate in advance who will command. Generally, it has been found that the anaesthetist present assumes control of the ventilation and decides which of the nursing personnel will remain to assist. The specialist in internal medicine immediately on entering the room attempts to make a diagnosis by viewing the electrocardioscope which has been brought to the room and attached to the patient by the nurses of the Teaching Team or the Intravenous Team. This same team has connected the defibrilating equipment and drawn drugs into labelled syringes.

WHO SHOULD ANSWER A CALL FOR DR. PURPLE?

One of the first things the confirmed bureaucrat will do is attempt to make a regulation. In this case it will be folly to regulate which doctor or nurse must attend an emergency call. Time will be wasted because either the nurses or the telephone operators will have to ascertain which doctor or nurse is on call during that period.

If the loudspeaker system says, "Dr. Jones for Dr. Purple," then all others who are in the hospital will presume that Dr. Jones has answered the call for Dr. Purple. However, Dr. Jones is not and has never been under obligation to remain in the hospital, has dropped over to the office to pick up his mail, and valuable time will be lost finding a physician to replace him. Therefore anyone qualified to assist in emergency resuscitation should answer a call for Dr. Purple, our public announcement of a cardiac arrest and its location.

WHO SHALL DIRECT EMERGENCY TREATMENT IN AN EMERGENCY?

Clearly the one who is best qualified should direct emergency treatment. However, we have found that there is a chain of command which comes into play. The graduate nurse who first finds the emergency situation takes command of treatment and orders her assistants to commence treatment. The nurses from the nurses' Resuscitation Teaching Team will take charge of emergency treatment immediately on arrival at the patient's bedside. They will remain in charge until the arrival of a physician, who thereupon becomes the director of the resuscitation efforts and treatment.

We have found that, generally, the nurses of the Resuscitation Teaching Team are more expert in the actual technique of resuscitation than many of the physicians involved. Therefore it would seem best for the patient that the teaching nurses remain and perform the actual resuscitative procedures. There are two reasons why this is so. The first is that the patient is being treated by people who regularly practice resuscitation; the second is that the teaching team, which teaches hundreds of nurses, can speak with authority based on actual experience. This enables them to be better teachers, and they have an opportunity to teach and demonstrate to physicians who are in the area.

GENERAL INSTRUCTIONS TO ALL HOSPITAL PERSONNEL

RESUSCITATION PROGRAMME

METHOD OF OPERATION—CARDIAC ARREST

VITALLY IMPORTANT	<ul style="list-style-type: none"> • That the person or persons detecting an arrest start action <i>immediately</i> and continue <i>unremittingly</i> until the situation has been assessed by the nurse in charge.
IS THE PATIENT BREATHING?	<ul style="list-style-type: none"> • Assess colour: grey or bluish-white? • Expose chest and abdomen fully and quickly. • Do the chest or abdomen move during the time you take ten breaths? • Feel for pulse—wrist, neck, apex of heart.
SHOULD THE ABOVE SIGNS BE NEGATIVE COMMENCE TREATMENT	<ul style="list-style-type: none"> • Ventilate patient with mouth-to-mouth respiration for five breaths. • Make sure the chest rises and falls each time. • Do cardiac compression. • Sound alarm by pulling signal light in bathroom. • Continue ventilation and cardiac compression.
AS ASSISTANCE ARRIVES	<ul style="list-style-type: none"> • The nurse <i>most experienced</i> in cardiac and respiratory resuscitation will continue treatment. • She will direct an assistant to alert locating operation.
ALERT LOCATING BY	<ul style="list-style-type: none"> • Dialing 675. • Saying, "This is an emergency cardiac arrest in Room, Ward"
LOCATING OPERATOR WILL	<ul style="list-style-type: none"> • Announce over the public address system, "Dr. Purple, Room, Ward" • Repeat this four times. • Phone the operating room and/or the case room for an anaesthetist. • Announce over the public address system, "Code 33" and the name of the i.v. nurse on duty. "Code 33, Room, Ward"

DUTIES OF THE MEDICAL DIRECTOR OF THE RESUSCITATION PROGRAMME

1. To arrange a programme which will be of greatest value in teaching a resuscitation routine to the nursing staff. This programme should consist of films, lectures, demonstrations, and practice.
2. If necessary, to assist in arrangements for lectures by fellow physicians and qualified personnel.
3. To be sure that a doctor is present at most teaching sessions in order to give authoritative answers to any questions which may arise.

4. To examine personally the ability of each member of the nurses' Resuscitation Teaching Team before she is allowed to teach resuscitation, and to re-examine these teachers at six-month intervals.

5. To interview fellow physicians who have assisted at resuscitation attempts in order to determine if the nurses are correctly following the routine they have been taught, and to assess their suggestions on improving the service.

6. To act as a buffer so that any misunderstanding between nurses on the resuscitation team and the doctors will be explained and cleared up immediately. In these tense catastrophic situations where speed is essential, both groups, doctors and nurses, in their urgency may misunderstand the usefulness and intent of the actions of other team members, while over-valuing their own actions.

7. To have the hospital lawyer present him with written opinion on any legal responsibility arising from members of the resuscitation nurses, keeping in mind that the doctor involved has very little influence in choosing the nurse involved and receives no pay and little gratitude for his time and effort.

8. Not only to prepare and deliver lectures, but also to be available on short notice so that if the scheduled speaker does not arrive he will be able to lecture, and the nurses will not have come only to be disappointed.

9. To be available at all times for suggestions which may improve this service.

10. To check and ascertain that the over-all programme that has been laid out is adhered to as much as possible.

11. To facilitate the interpretation of records and results.

12. To select books and obtain reprints of articles on resuscitation which are kept with the nurse in charge and made freely available to anyone interested.

13. To prepare and have distributed to all nurses on the Hospital Resuscitation Teaching Team a monthly newsletter which will keep them abreast of the latest developments, changes, and improvements.

DUTIES OF THE INTRAVENOUS NURSE

On hearing the emergency call, the intravenous nurse must go to the designated area and bring her cart with its intravenous equipment into the room, placing it where it will not obstruct those who are treating the patient. She immediately and routinely starts an intravenous drip of 5 per cent sodium bicarbonate with a large bore needle in any of the patient's veins which are available. This intravenous drip is started immediately on every cardiac and respiratory emergency. If the doctor is not present, the drip should run at such a rate that the 500 ml. bottle of sodium bicarbonate will run into the patient within forty minutes. If the doctor is present, he will generally run it into the patient at a faster pace. The intravenous nurse should fix the needle well into the vein, and do all she can to protect it while treatment is being carried out.

In our hospital there are carts containing all the equipment used to start an intravenous drip in a patient. The carts also contain other 500 ml. bottles of sodium bicarbonate for emergencies.

After starting the sodium bicarbonate intravenous infusion, the intravenous nurse will immediately draw into separate labelled syringes all the drugs that

have been previously indicated by the medical staff for the emergency treatment of cardiac arrest. She will also prepare a heparinized syringe so that the attending physicians may withdraw arterial blood for gas analysis. Chart 1 is a list of equipment contained on our emergency resuscitation carts.

CHART 1
RESUSCITATION CART CONTENTS

Ambu bag with Ruben Valve	6 2 c.c. with #23 intramuscular needle attached
Face mask #4 or #5 (#1 and #3 available on floors with children)	
Airway #3 and #4, preferably disposable (#1A available on floors with children)	<i>Intravenous solutions</i>
1 laryngoscope handle, hook-on type	2 500 c.c. 5 per cent glucose and distilled water
1 laryngoscope blade, #4 Macintosh American type preferred	2 500 c.c. sodium bicarbonate 5 per cent (#18, 1½" needle attached to bottle for air filter)
1 #2 medium straight blade for children	<i>Attachments for cart</i>
1 #1 Miller hook-on blade for infants	1 cardiac arrest board (26" × 22")
4 batteries (2 as spares, both sets to be checked daily)	1 pair bandage scissors with holder
3 endotracheal tubes with 15 mm. connectors attached, #9.5 mm., #7 mm., #5 mm. (preferably disposable)	Adhesive with holder
2 endotracheal tubes, #1 and #00 with 15 mm. connectors attached (endotracheal tubes cut to length and resealed on floors with infants)	1 portable suction
1 blunt-end needle on 10 c.c. syringe	1 clipboard with paper and pencil
1 haemostat 6" in length	<i>Drugs to be available on each cart</i>
1 pair Magill forceps	Adrenaline, 5 ampoules of 1 c.c., 1/1000 strength
1 metal suction tip	Anectine, 20 c.c. bottle, 20 mg. per c.c.
1 scalpel (sterile in test tube)	Atropine, 20 c.c. bottle gr. 1/100 per c.c.
1 #11 scalpel blade	Calcium gluconate, 2 large ampoules
3 suction catheters Toronto #14 and #16	Cedilanid, 5 ampoules
3 connectors (2 straight, 1 Y-type)	Isuprel, 5 ampoules
2 tourniquets	Pronestyl, 10 c.c. vial
1 jar for cotton fluffs	Vasoxyl, 5 ampoules
1 alcohol dispenser	Xylocaine, 2% solution, 20 c.c. bottle
1 extension cord	<i>Oxygen equipment box on each cart to contain</i>
1 50 c.c. vial of sterile water for injection	1 flowmeter (Puritan quick connect—tower, O.R., and recovery room, case room, emergency & clinic)
<i>Needles</i>	1 flowmeter (CLA, push/twist, east and west wings)
2 #16 Argyle medicut plastic needles	1 humidifier
2 #18 (ditto)	1 mask with bag and tubing
10 #18 disposable intramuscular needles	1 extra tubing with 3" tapered connectors
5 #20 (ditto)	1 nasal O ₂ catheter, size 10
7 #21 all metal intramuscular needles to act as electrodes for ECG machine	1 nasal O ₂ catheter, size 12
2 #21 or #22 spinal needles with stilette (3"—3½") for intracardiac injection	1 Brooks airway
<i>Syringes</i>	Carts to be located on every floor and patient area
2 10 c.c. (glass)	Cart used is the same as the i.v. cart:
3 5 c.c. (glass)	24 × 15½ × 30, 3 shelves; Tote Cart, Darnell stainless steel series 20

DUTIES OF THE FIRST DOCTOR WHO ARRIVES AT THE SCENE OF A CARDIAC OR RESPIRATORY ARREST

This physician must assess the treatment which has been initiated by the nurses, who usually arrive before him. If he feels that the patient is a good candidate for resuscitation, he may initiate drug therapy, as may be indicated. By this time the nursing staff will have connected the patient to an electrocardioscope so the important diagnosis of cardiac standstill or fibrillation can be made. By far the most important duty of the first doctor to arrive at the scene of the disaster is to assume the role of director, and to make sure that all corrective measures are taken immediately. He cannot do this if he assists physically in the treatment. In other words, his most important role is to provide a focus of authority to co-ordinate the activities in the room to best serve the stricken patient.

DUTIES OF THE DEPARTMENT OF INHALATION THERAPY

Immediately on hearing the emergency call, any member of the department of inhalation therapy will bring to the patient's room a mechanical ventilator with all the attachments necessary to attach it to an endotracheal tube or mask, and the pressure source which drives it. This ventilator should be connected to its power source, and placed in the vicinity of the patient's head so that it will not obstruct the rescue operation, but will be immediately available to ventilate the patient by way of a mask or an endotracheal tube. Then the member of the Department of Inhalation Therapy will leave the room and wait outside the door.

The other duty of the Department of Inhalation Therapy is the care, cleaning, and maintenance of the resuscitation teaching equipment. In our hospital, members of this department are the best group for this purpose, as they are already repairing all the inhalation therapy equipment. Thus they have at hand all the necessary equipment. It would be the poorest form of management to have a trained nurse do this work, which requires only a technical background.

The Department of Inhalation Therapy also is responsible for the transport of the resuscitation teaching equipment to the areas where practice sessions are scheduled. In this way they can record and notify the medical director which areas and which shifts are not getting their quota of teaching and practice.

DUTIES OF THE NURSE IN CHARGE OF THE RESUSCITATION TEACHING TEAM

1. The primary duty of this nurse is to maintain good rapport and friendly relations between all people concerned. The most important part of this job is good interpersonal relations; from this will flow co-operation.

2. She must always refrain from destructive criticism and must absolutely not criticize or reprove anyone in the presence of others.

3. She must accept the fact that the smooth functioning and the success or failure of the programme or its parts are entirely her responsibility.

4. She must organize the times and dates of the lecture schedule which will facilitate attendance at the lectures by the greatest number of nurses.

5. She is expected to publish and distribute to all people concerned an information sheet stating the lecture subject, time, place, and lecturer; and to maintain this schedule once it has been published.

6. She records the lecture attendance of those nurses who have volunteered for the Resuscitation Teaching Team.

7. She ascertains that all equipment pertaining to resuscitation teaching is immediately repaired as necessary, and is easily available at all hours of every day to those of the hospital staff who are interested in practising.

8. With the advice of the medical director, she chooses nurses for the Resuscitation Teaching Team, keeping in mind the following points: (*a*) interest and enthusiasm of the nurse for resuscitation; (*b*) personality of the nurse selected to do the teaching (the teacher must realize that if the volunteer student does not understand the material, it is the fault of the teacher, not of the student); (*c*) nurses must have indicated a willingness to remain with the hospital for at least one year.

9. She must maintain a record of the amount of teaching done by each teaching nurse. In this way, she can encourage those who are not doing their share of the teaching and demonstration.

10. She maintains a record of the nursing stations and the shift at which teaching and demonstration of resuscitation have been performed. With this record the nurse can ascertain which areas of the hospital and which shifts are not receiving teaching.

11. She maintains records of all resuscitation attempts and their results.

12. With the advice and co-operation of the medical director, she is responsible for standardizing the resuscitation carts and equipment.

13. She should attach to each resuscitation cart a list of its contents.

14. She should check each cart once every three weeks for missing equipment.

15. She should make certain that all members of the nurses' Resuscitation Teaching Team are identified by their uniform badges, and that they receive the monthly bulletins prepared for their benefit by the doctors.

DUTIES OF A NURSE ON THE RESUSCITATION TEACHING TEAM

1. This nurse will receive instructions from the Nursing Office that she will teach the nurses on her shift, at specific stations, for a specified amount of time each week. The time of the teaching period will vary with the work load of the nurses involved.

2. She should arrange her time so that she may do at least one complete lecture demonstration to each group of nurses on each shift. If there is more time available, she will conduct practice sessions with the Resusci-Anne doll. The Inservice Education Department will arrange her programme so that each nursing station is exposed to a lecture demonstration on each shift at least once every month.

3. The teaching nurse must submit any questions she receives and cannot properly answer to the nurse or doctor in charge of the group.

4. She is responsible for relaying the answer back to the nursing group from which it originated.

5. The teaching nurse is responsible for reservation of the Resusci-Anne dummy and its return to the department of Inhalation Therapy, which is responsible for its care.

6. She must report to the nurse in charge of the teaching team if she is unable to fulfil her teaching assignments due to the pressure of other work.

7. She must report to the nurse in charge of the teaching team the names of patients that she has assisted in resuscitating.

In our teaching, we stress that the nurses should learn a resuscitation routine and follow that routine in its entirety every time they begin a resuscitation. One of the most difficult skills for the nurses to acquire is the sense of clinical judgment and indications for resuscitation. We have taught that if there is any doubt about resuscitating a patient, then the nurse should begin resuscitation—while she is thinking it over. In other words, "Don't vacillate, resuscitate." If the patient objects to the treatment he probably doesn't need it but should enjoy the attention he is receiving from a lovely nurse.

DUTIES OF THE DEPARTMENT OF BIOCHEMISTRY

On hearing the Dr. Purple emergency call, the technician will immediately prepare her equipment to perform an analysis for blood gases such as PO_2 , PCO_2 , and blood pH. This done, she will go to the cardiac arrest patient's room and identify herself to the attending doctor, who will tell her if any gas analysis will be done on the patient.

RÉSUMÉ

La clef du succès de la réanimation consiste à pouvoir instituer un traitement approprié en deça de 180 secondes après l'arrêt cardiaque ou respiratoire. Cela n'est possible qu'à la condition de trouver, à tous les instants, dans le voisinage du malade, du personnel qualifié capable de pratiquer l'art de la réanimation. Le personnel qui demeure toujours près des malades, ce sont les infirmières. En conséquence, si l'on tient à ce qu'un programme de réanimation soit efficace, il est essentiel que toutes les infirmières de l'hôpital soient renseignées sur les techniques de réanimation et puissent les pratiquer.

A l'Hôpital général de Scarborough, le programme d'enseignement de la réanimation pour les infirmières est régi par le département d'éducation interne du nursing et il demeure sous sa responsabilité. La direction de ce programme est la responsabilité des médecins du service d'anesthésie. L'infirmière en chef doit désigner une infirmière pour appliquer le programme d'enseignement.

Un cours pour l'enseignement de la réanimation aux infirmières se donne deux fois par année et les vingt infirmières qui graduent sont très bien préparées à la pratique de l'art de la réanimation d'urgence. Cette équipe circule alors dans l'hôpital et enseigne aux autres infirmières. Le but de ce programme est d'obtenir que toute infirmière diplômée qui travaille dans un hôpital soit suffisamment avertie de la possibilité d'arrêt cardiaque ou respiratoire, qu'elle puisse instituer, immédiatement, un traitement adéquat en aucun temps et en quelque endroit où cette éventualité puisse se produire. Toutes les infirmières, sur toutes les

équipes de l'hôpital, reçoivent de l'enseignement sur les techniques de réanimation par le groupe enseignant.

S'il survient un arrêt cardiaque ou respiratoire, l'infirmière qui le constate commence le traitement et demande de l'aide. Une alarme générale sonne dans tout l'hôpital et chacun des membres du département d'anesthésie et du département de médecine de l'hôpital répond à l'alarme. De cette façon, il n'y a pas de perte de temps pour savoir qui va répondre et une fois que les médecins sont auprès du malade, ils décident qui va rester près de lui.

L'expérience a démontré que généralement les infirmières de l'équipe d'enseignement de la réanimation sont plus habiles à employer les techniques actuelles de réanimation que plusieurs médecins concernés.

En conséquence, pour le malade, il semble préférable que ce soit l'infirmière enseignante qui applique les techniques actuelles de réanimation. Cela évite au médecin de consulter ses collègues pour diriger le traitement. En entendant l'appel d'urgence, un certain nombre d'autres départements de l'hôpital répondent de façon organisée. L'infirmière responsable de la thérapie endoveineuse accourt avec son chariot bien pourvu et elle commence immédiatement un goutte à goutte endoveineux de 5 pour cent de bicarbonate de sodium avec une aiguille de gros calibre.