Developing the role of the nurse specialist

Resuscitation training

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Summary
All physicians, dentists, nurses and health care personnel should be adequately and regularly trained in cardiopulmonary resuscitation. Guidelines for acquiring the necessary skills in basic and advanced life support are now available.

Keywords: resuscitation training, new services

Introduction

In the past 30 years, since the introduction of modern techniques of cardiopulmonary resuscitation there have been dramatic advances in the emergency care of victims with profound circulatory collapse and cardiac arrest.¹ These techniques have restored the lives of many people when breathing has ceased and the circulation has stopped. For those with spared neurological function and treatable cardiopulmonary disease, prolonged and vigorous life may ensue. Sporadic accounts of attempted resuscitation have been recorded since antiquity, but in 1960 the introduction of closed chest cardiac massage, with synchronised mouth to mouth ventilation, provided some realistic hope for preventing an important number of pre-hospital deaths.¹

United States of America (US)

By 1966 enthusiasm for cardiopulmonary resuscitation was so great in the US that the Ad Hoc Committee on cardiopulmonary resuscitation of the division of Medical Sciences, in conjunction with the American Heart Association recommended that all physicians, dentists, nurses, and health personnel be trained in cardiopulmonary resuscitation techniques to American Health Association standards. This stated that all health care workers be trained in basic life support, and all doctors and nurses working in critical care areas be trained in advanced life support.¹ These recommendations resulted in a widespread acceptance of the theory of cardiopulmonary resuscitation among health care professionals. From 1965 to 1973 large strides towards the implementation were made by the American Health Association through its training programme and materials.

United Kingdom (UK)

In the UK the Resuscitation Council was established in 1982 to foster improved knowledge and the practice of cardiopulmonary resuscitation which was at this time a subject that was comparatively neglected in Britain compared with the US. By 1987 the Royal College of Physicians were concerned about the standard of resuscitation in the UK, to the extent that they formed a working party to investigate these standards. From their results the Royal College of Physicians recommended that every health district should have a Resuscitation Training Officer. However many are still to create a position.² They also recommended that all doctors and nurses be adequately and regularly trained in cardiopulmonary resuscitation and that this training should also be offered to all health care workers.

Europe

In 1992 the European Resuscitation Council addressed this issue with a training programme in basic life support for instructors and their trainers which utilises a cascade principle (figure 1) in order to train a large number of people alike simultaneously.³ Such a programme is similar to that run by the American Health Association which uses didactic and prescriptive teaching methods, with reinforcement and practical sessions also playing a large role.

Figure 1 The cascade principle for training a large number of people

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Accepted 15 November 1994

Cardiac arrest
<ul style="list-style-type: none">• ventricular fibrillation (pulseless ventricular tachycardia)• asystole or severe bradycardia• electromechanical dissociation (the presence of an electrical rhythm but no detectable pulse)

Cardiac arrest
Factors increasing the chances of survival: <ul style="list-style-type: none">• the arrest is witnessed• basic life support is initiated promptly• defibrillation is carried out as soon as possible• the rhythm is ventricular tachycardia/ventricular fibrillation

Teaching adults
<ul style="list-style-type: none">• Heterogeneity: adults have a variety of needs and interests within a learning environment• Structure: the meaning an individual gives to a particular learning situation due to previous experience• Maturity: adults are independent and will seek assistance in problem solving

Basic life support
European Resuscitation Council guidelines: <ul style="list-style-type: none">Two hour session<ul style="list-style-type: none">– one instructor– ≤4 candidatesorThree hour session<ul style="list-style-type: none">– two instructors– ≤8 candidates

Cardiac arrest

The majority of sudden deaths are due to arrhythmias associated with acute myocardial infarction or chronic ischaemic heart disease. Cardiac arrest occurs in one of three rhythms (see box).

The factors which increase the chances of survival are summarised in the second box. These factors are in keeping with the term ‘chain of survival’. This consists of four links and, like any other chain, it is only as strong as its weakest link.¹

Cardiopulmonary resuscitation is often poorly performed and good management requires a team well versed in the basic skills, and a leader who is trained in all problems associated with cardiac arrest and who is able to direct the team clearly and concisely.

Education and training

Training in effective cardiopulmonary resuscitation techniques involves practical acquired skills⁴ and both doctors and nurses need to acquire these skills in the controlled environment where life-threatening situations can be simulated. This has been made possible by the development of the various resuscitation mannikins and aids.

An underlying principle of both basic and advanced life support is called the Gerstalt theory. The essence of this approach is that learning takes place when the material being taught is presented as a whole. The idea of wholeness has influenced both basic and advanced life support in that individual skills are presented in the form of basic life support routines or advanced life support simulated arrests (megacode). However, many authors have suggested that the megacode approach for training has major educational drawbacks which result in difficulties, which may prevent meaningful feedback to students.⁵ To a large extent these criticisms are justified, particularly when examined in the light of the principles of adult learning.

A major focus of cardiopulmonary resuscitation training is that instructors are working with adults. This requires that instructors are familiar not only with the materials they are demonstrating and teaching but also have some knowledge of the needs and expectations of adult learners.⁵ In 1964, Miller identified aspects important to the learning needs of the adult.⁶ These are shown in in the box.

The role of the Resuscitation Training Officer

As recommended by Skinner and Vincent,⁷ all members of the resuscitation team must be trained in the various skills they may require when attending a cardiac arrest.

The Resuscitation Training Officer, whose background maybe of a nursing, paramedic or technical grade, will usually have had a number of years experience working in a critical care area and will have been proven to be proficient in advanced life support skills by attending an accredited course. More Resuscitation Training Officers are now attending formalised instructor programmes which consolidate their knowledge and address the theoretical, educational, and practical requirements of adult learners relating to resuscitation techniques. The Resuscitation Training Officer will also provide a source of advice for changes in protocols, additional research published, equipment utilisation and familiarity, in addition to their role of providing formalised training and re-training in basic and advanced life support within their own hospitals and to other health care workers. She/he will also be able to co-ordinate and supply data relating to resuscitation attempts throughout the hospital (audit).

Basic life support

Basic life support refers to the maintaining of the airway and supporting breathing and circulation with no equipment other than a simple airway device.⁷

Within the hospital setting it is usually the nursing staff who are the first on the scene at a cardiac arrest and it is imperative that they can perform effective cardiopulmonary resuscitation.

Following the European Resuscitation Council guidelines in basic life support, each session averages two or three hours (see box). At this hospital all staff – nurses, doctors and other health care workers – are taught to the same level in basic life support.

All are assessed prior to any training and a record of their performance kept, so that after instruction and during the practice sessions each person is made aware of their positive and negative points and where improvements have to be made

Figure 2 Basic life support instruction

Figure 3 Laerdal pocket mask

Cardiac arrest: first response
Airways Breathing Circulation

Figure 4 Advanced life support instruction

(figure 2). Eighty per cent of the session is of practical skill training and covers only adult basic life support. All are taught how to use the 'Laerdal pocket mask' (figure 3) as self-inflating bags are not used in this hospital by inexperienced staff. Other aspects covered are the recognition of the equipment required for intubation, care of the patient with an obstructed airway, pharmacology and electrode placement.

Everyone is taught the ABC (see box) and that the most important action is that of summoning the cardiac arrest team in a clear and precise manner. Emphasis is also placed on safety, the correct positioning of the patient and of themselves, correct ventilation and correct hand positioning. Everyone is tested again at the end of the session on a 'one man' basis over a period of two minutes.

Advanced life support

Advanced life support has been defined as arrhythmia recognition and management, defibrillation, and intubation.⁸

Advanced life support is taught using a didactic approach. This includes a formal lecture, which includes all arrest protocols and post-resuscitation care, followed by demonstration of resuscitation skills, mannikin practice (figure 4) and assessment of skills.

Each session consists of skill station teaching. Skill stations that are included are basic life support with airway adjuncts, defibrillation, and intubation/airway management.

Each station is run by an instructor. Basic life support includes instructors from various directorates (eg, medicine, surgery). Intubation/airway management is run and tested by consultant anaesthetists, and defibrillation is run and tested by consultants from the Accident and Emergency Department.

People taught these techniques are medical staff, specialised nursing staff and final year medical students.

Royal Liverpool University Hospital

As recommended by the Association of Resuscitation Training Officers all junior House Officers are taught these skills on the first day of their induction programme, which takes place immediately prior to their first working day. All Senior House Officers, those who form the cardiac arrest team, are taught within two days of their being at the hospital, and all doctors working in the Accident and Emergency department are taught on their induction day, and then updated on a weekly basis for a period of about 10 weeks. Therefore over a period of three days approximately 67 junior house officers and senior house officers can be taught advanced life support techniques.

All these doctors are called for retraining and assessment at the end of six months. It was decided by the Hospitals Resuscitation Procedures Committee that this format would be followed for the initial training but all retraining would include a 'megacode' testing station, as well as the above, to assess skills of 'teamwork'. It was found that those doctors who work closely together for most of the time, ie, those working in the Accident and Emergency department, worked together better as a team than those who do not.

All training is compulsory and retraining is based around times that fit into the routines of the doctors (ie, clinics, on call, etc.), as it was found in the past that, although training is compulsory, doctors were not being released from their duties to attend. All non-attenders are followed up and another date/time arranged. Using this method the attendance has increased to 95%.

Conclusion

All training in basic and advanced skills are based on the European Resuscitation Councils 1992 guidelines. Cardiopulmonary resuscitation is an all or nothing procedure and nurses and doctors owe it both to the patients and themselves to be competent in their resuscitation skills.

1 Guidelines for cardiopulmonary resuscitation and emergency care. Recommendations of the 1992 National Conference American Heart Association. *JAMA* 1992; 268: 2172-3.

2 *Resuscitation from cardiopulmonary arrest: training and organisation*. London: Royal College of Physicians, 1987.

3 *Cardiopulmonary resuscitation instructors guide*. European Resuscitation Council, 1992.

4 Wynne G. *Training and retention of skills ABC of resuscitation*, 2nd edn. London: BMJ, 1990.

5 Cavanagh SJ. Educational aspects of cardiopulmonary resuscitation training *Intensive Care Nursing* 1990; 6: 38-44.

6 Miller HL. *Teaching and learning in adult education*. New York: Macmillan, 1964.

7 Guidelines for Basic Life Support. A statement by the basic life support working party of the European Resuscitation Council, 1992. *Resuscitation* 1992; 24: 99-204.

8 Seidelin PH, Bridges AB. Cardiopulmonary resuscitation: effect of training junior house officers on outcome of cardiac arrest. *J R Coll Physicians Lond* 1993; 27: 1-8.