



Guidance on the provision of anaesthesia services for Resuscitation

When considering the provision of anaesthesia, the Royal College of Anaesthetists recommends that the following areas should be addressed. The goal is to ensure a comprehensive, quality service dedicated to the care of patients and to the education and professional development of staff. The provision of adequate funding to provide the services described should be considered.

Summary

- Recognition of the patient at risk of cardiac arrest, and prompt, effective treatment to prevent it occurring, are more likely to improve outcome than changing the way resuscitation is undertaken.¹
- Anaesthetists play a significant role as resuscitation team members and in the resuscitation training of doctors, nurses and paramedics.
- National standards for clinical practice and training in cardiopulmonary resuscitation have been published elsewhere.²
- The majority of in-house resuscitation training in the UK is undertaken by resuscitation officers (ROs) but the instructor body on a Resuscitation Council (UK) ALS course will usually include anaesthetists.³
- All resuscitation attempts should be included in continuous audit.⁴
- The resuscitation services in a trust should be co-ordinated by a resuscitation committee.²

Introduction: The importance of anaesthesia services for resuscitation

- The incidence of in-hospital cardiac arrests is 1–5 per 1,000 admissions. Approximately 17% of these patients will be resuscitated successfully and will survive to hospital discharge.⁵
- A resuscitation attempt typically includes chest compressions and ventilation of the lungs, the delivery of electric shocks to restart the heart, and the injection of drugs.
- Anaesthetic departments make a considerable contribution to the resuscitation services in most hospitals. Anaesthetists are valuable members of the resuscitation team because they are highly skilled with most of the interventions used during a resuscitation attempt.⁶
- Anaesthetists are often involved in training other doctors and nurses in advanced life support (ALS).
- Anaesthetists are often involved in training clinical staff to recognise patients at risk of cardiac arrest and to initiate preventative treatment.
- Anaesthetists are skilled in airway management and will be involved in teaching these skills to hospital staff and to paramedics.
- The Chair of the hospital resuscitation committee is most commonly a consultant anaesthetist.

Levels of provision of service

1 Staffing requirements

- 1.1 In many UK hospitals the resuscitation team will include an anaesthetist or the resident doctor from the critical care unit (who is commonly an anaesthetist). The essential requirement, however, is for the presence of an individual, appropriately trained and assessed in advanced airway management skills. This core role on the team, which necessitates immediate availability at all times, is increasingly being taken by other clinical staff.

- 1.2 If a resuscitation attempt is initially successful, the patient will usually require transfer to the critical care unit. This transfer will normally be undertaken by an anaesthetist or another doctor from the critical care unit.
- 1.3 The majority of in-house resuscitation training in the UK is undertaken by resuscitation officers (ROs) but the instructor body on a Resuscitation Council (UK) ALS course will usually include anaesthetists.
- 1.4 Instructors need to maintain their knowledge and skills and need to teach regularly (two courses each year) to maintain their instructor status.
- 1.5 The time needed for anaesthetists to teach on these courses must be taken into consideration when planning the departmental workload. It is inappropriate for instructors to be expected to use their own study leave to deliver resuscitation training.
- 1.6 One consultant anaesthetist should take a lead role in resuscitation – this individual should be a member of the trust resuscitation committee and is often the Chair. In large trusts, this role may carry a significant workload and should be supported with appropriate administrative time.

2 Equipment, support services and facilities

Equipment

- 2.1 Relatively little equipment is required by the resuscitation team.
- 2.2 The defibrillator-monitor (typical cost is approximately £5,000) is central to the resuscitation attempt and these must be located strategically to enable shock delivery within three minutes of a patient arrest anywhere in the hospital.⁷
- 2.3 Other equipment is required for airway management and intravenous access – these items are relatively inexpensive.
- 2.4 A comprehensive list of the equipment required for adult and paediatric resuscitation is given on the Resuscitation Council (UK) website (www.resus.org.uk).
- 2.5 Additional equipment (e.g. transport monitor, ventilator) will be required for transferring the resuscitated patient to the critical care unit.
- 2.6 Equipment for training, including adult and paediatric manikins, airway management trainers, an ECG monitor and rhythm simulator and at least one defibrillator dedicated for training should be available. Training defibrillators should be the same as those used in the clinical areas of the institution.²

Support services

- 2.7 Every hospital should have at least one RO, who is responsible for co-ordinating the teaching and training of staff in resuscitation.
- 2.8 The role of the RO and the facilities required to deliver resuscitation training are detailed in ‘Cardiopulmonary Resuscitation – Standards for Clinical Practice and Training: A Joint Statement from the Royal College of Anaesthetists, the Royal College of Physicians of London, the Intensive Care Society, and the Resuscitation Council (UK)’.²
- 2.9 Other members of the resuscitation team will usually include general medical trainees and ward nursing staff.

Facilities

- 2.10 Resuscitation trainers must have access to a designated training room that will accommodate at least 10 people and all the relevant training equipment.

3 Areas of special requirement

- 3.1 **Paediatric resuscitation.** The typical causes of cardiac arrest in children are different from those of adults and there is some variation in the resuscitation techniques used in children and the newborn. Most hospitals have a separate paediatric cardiac arrest team – an anaesthetist will be a key member. Training in paediatric resuscitation is delivered typically by ROs, paediatricians and anaesthetists. Regular members of the paediatric resuscitation team should have completed either the advanced paediatric life support (APLS) or the European paediatric life support (EPLS) course. Anaesthetists comprise a significant proportion of the faculty on these courses.
- 3.2 **Trauma resuscitation.** Many hospitals have a trauma team for the resuscitation of seriously injured patients. Airway management can be particularly challenging in these patients and the anaesthetist has a vital role to play in the trauma team. Anaesthetists will also be responsible for intra- and inter-hospital transfer of injured and critically ill patients – this can involve considerable resources in terms of time and personnel. Anaesthetists who are expected to resuscitate patients with major injuries should have received advanced trauma life support (ATLS) training. Senior anaesthetists are frequently involved in ATLS training for doctors of all disciplines.⁸
- 3.3 **Prevention of in-hospital cardiac arrest.** The majority of patients sustaining in-hospital cardiac arrest show signs of physiological deterioration

in the hours leading up to the event. If these critically ill patients are recognised and treated promptly, many cardiac arrests could be prevented. Many hospitals have established medical emergency teams or outreach systems that are called to patients showing signs of deterioration. Anaesthetists/intensive care physicians are frequently members of these teams and are also involved in training doctors and nurses in the recognition and treatment of critically ill patients.

- 3.4 Ethics.** Every hospital should have an ethical resuscitation policy. This is normally based on the document 'Decisions Relating to Cardiopulmonary Resuscitation'.⁹ Anaesthetists/intensive care physicians usually make a significant contribution to the preparation of the local ethical resuscitation policy.

4 Training and education

- 4.1** All anaesthetists in training are expected to undertake specific training in resuscitation. For the majority, this means undertaking courses in ALS, ATLS and APLS/EPLS. Personnel who work in maternity services are also required to have training in newborn life support (NLS). This includes anaesthetists who regularly work in this capacity.
- 4.2** These courses are normally funded through existing study leave budgets but it is not uncommon for trainees to fund some of these courses themselves. The provider certificates are valid for four years. Regular updating of resuscitation knowledge is required; this may be achieved by completing another course, attending a specific revalidation course or by in-house training.
- 4.3** The faculty on these life support courses frequently include several anaesthetists – this represents a considerable workload for the average anaesthetic department and must be taken into account when planning requirements for permanent staff.
- 4.4** Most pre-hospital resuscitation in the UK is undertaken by paramedics. These individuals require training in intravenous cannulation and airway management. Paramedics are taught these skills by anaesthetists during elective surgical lists.

5 Research and audit

- 5.1** All resuscitation attempts should be included in continuous audit. There are international recommendations for the core data that require collection to enable meaningful audit of resuscitation practice.⁴ As members of the resuscitation team, anaesthetists will participate in

resuscitation audit. The resuscitation committee is responsible for evaluating and presenting resuscitation audit data and the anaesthetic lead for resuscitation will feed the results of the audit back to the anaesthetic department.

- 5.2** The recent European legislation on consent in research makes prospective controlled trials in resuscitation very difficult.¹⁰ Nevertheless, anaesthetists are encouraged to participate in resuscitation research and they are responsible for many of the UK studies published in this field.

6 Organisation and administration

- 6.1** The resuscitation services in a trust are co-ordinated by a resuscitation committee, which typically meets quarterly. The anaesthetic lead for resuscitation will be a key member of this committee and will frequently be the Chair. In large trusts this will represent a significant time commitment and should be recognised in job planning. Much of the day-to-day resuscitation training will be delivered by resuscitation training officers but more advanced training, especially for the medical emergency team systems, is often delivered by anaesthetists.

7 Patient information

- 7.1** A model information leaflet that accompanies the 'Decisions Relating to Cardiopulmonary Resuscitation' document has been produced by the BMA, RC(UK) and the RCN.¹¹ Many trusts have produced their own patient information leaflets based on the national document.

References

- 1 Hodgetts TJ et al. Incidence, location and reasons for avoidable in-hospital cardiac arrest in a district general hospital. *Resuscitation* 2002;**54**:115–123.
- 2 Gabbott D et al. Cardiopulmonary resuscitation standards for clinical practice and training in the UK. *Resuscitation* 2005;**64**:13–19 (available for download from www.resus.org.uk).
- 3 Nolan J et al. Advanced Life Support (5th edition). *Resuscitation Council (UK)*, London 2006 (www.resus.org.uk/pages/pub_ALS.htm).
- 4 Jacobs I et al. Cardiac arrest and cardiopulmonary resuscitation outcome reports: update and simplification of the Utstein templates for resuscitation registries. A statement for healthcare professionals from a task force of the international liaison committee on resuscitation. *Resuscitation* 2004;**63**:233–249.
- 5 Sandroni C, Antonelli M. In-hospital cardiac arrest: incidence, prognosis and possible measures to improve survival. *Intensive Care Med* 2007;**33**(2):237–245.
- 6 Quiney NF, Gardner J, Brampton W. Resuscitation skills amongst anaesthetists. *Resuscitation* 1995;**29**:215–218.
- 7 Deakin CD, Nolan JP. European Resuscitation Council guidelines for resuscitation 2005. Section 3. Electrical therapies: automated external defibrillators, defibrillation, cardioversion and pacing. *Resuscitation* 2005;**67**(Suppl 1):S25–37.
- 8 Nolan JP. Advanced trauma life support in the United Kingdom: time to move on. *Emerg Med J* 2005;**22**:3–4.
- 9 Decisions relating to Cardiopulmonary Resuscitation: A joint statement from the British Medical Association, the Resuscitation Council (UK) and the Royal College of Nursing. *BMA, RC(UK) and RCN*, October 2007 (www.resus.org.uk/pages/dnar.pdf).
- 10 Liddell K et al. The European Clinical Trials Directive revisited: the VISEAR recommendations. *Resuscitation* 2006;**69**:9–14.
- 11 Decisions about cardiopulmonary resuscitation: Model patient information leaflet. *BMA, RC(UK) and RCN*, April 2008 (www.resus.org.uk/pages/deccprmd.pdf).