

Guidelines

Core curriculum in emergency medicine integrated in the specialty of anaesthesiology¹

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Summary

Anaesthesiologists, for their knowledge, skills and expertise, have been playing a key role in the development of emergency medicine. In many countries, anaesthesiologists are today fully involved in teaching and practicing emergency medicine, and have leading roles in emergency departments. Proper education and effective interdisciplinary medical cooperation is essential for quality assurance in emergency medicine. This paper, produced by a working party of the European Board of Anaesthesiology of the European Union of Medical Specialists (EUMS/UEMS), gives directions for a core curriculum in emergency medicine integrated in the specialty of anaesthesiology.

Keywords: EMERGENCY MEDICINE; ANAESTHESIOLOGY; GUIDELINES.

Introduction

Anaesthesiology is a medical specialty, which has developed from a specialty with responsibilities for anaesthesia for surgical procedures to a specialty with expertise in pre-, per- and postanaesthesia care and, as a consequence of the knowledge and skills in that field, with expertise in a broader scale in

emergency medicine, intensive care medicine and pain medicine. Sharing and communicating the ensuing responsibilities with other medical and surgical specialties have resulted in considerable improvement in the quality of medical care and safety for patients [1].

The postoperative period, critical care and pre- and in-hospital management of emergency situations have such great similarities to the work in the operating room that anaesthesiological expertise in these areas has been recognized in many countries as integral parts of the specialty of anaesthesiology.

Common principles include stabilization/normalization of vital physiologic parameters (respiration, circulation, metabolism, renal function and temperature), providing adequate sedation and analgesia and maintaining an appropriate fluid balance.

Anaesthesiologists should therefore be considered 'clinical generalist physician specialists', not simply specialist of organs or pathologies. Accordingly, they have excellent characteristics to be experts

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in emergency and resumption of spontaneous circulation (ROSC) situations [2].

The majority of European anaesthesiologists hold top positions not only in emergency departments, in the emergency room and in rapid response systems (RRSs), but also in pre-hospital emergency systems and for emergency rescue helicopters too. They are leaders or members of a team cooperating with internal medicine and surgery, being recommended as the best experts to involve in extremely difficult emergencies, i.e. airway obstruction.

Anaesthesiologists are involved in the teaching and training of medical students as well as in the medical and nursing staff in all European countries, while in the majority of European countries they also assist in training physicians for emergency duties and RRS in hospitals and emergency technicians [3].

Anaesthesiologists conduct scientific studies in emergency medicine and are as well involved in the organization of scientific congresses. In many European countries, anaesthesiology scientists are also represented in emergency medicine societies. The literature has reached a strength of evidence good enough to get recommendations for good clinical practice statement and improvement [3].

Dealing with acute conditions or disease is a characteristic part of all medical specialties, but emergency medicine is devoted to clinical situations that can abruptly emerge in patient care of all medical-surgical specialties. Emergency medical situations are characterized by the fact that they may lead to irreversible damage of single organs or of the entire organism (death) in a short time (minutes), in the absence of a proper intervention. Emergency medicine is not only concerned with the treatment of individual persons but also instrumental in the development of emergency structures to handle mass accidents, disasters (earthquakes, flooding, hurricanes), and threats from terrorism and weapons of mass destruction [1,2,4].

Following these observations it must be clear that effective and safe practice in emergency medicine can only be achieved by effective interdisciplinary medical cooperation between medical and surgical specialties [4]. This is not the question of exclusivity for either medical specialty whatsoever. However, it is evident that anaesthesiologists have played a key role in the development of emergency medicine and must play a crucial role in emergency medicine in the future. Moreover, proper education and ongoing training in anaesthesiological skills are essential for quality assurance in emergency medicine. Therefore, our discipline must reinforce its efforts to maintain a leading role in further development of emergency medicine.

The present recommendations do reflect minimum criteria for the development of a core curriculum for the education at a postgraduate level in emergency medicine to be fulfilled during specialist training in anaesthesia. However, each individual country is responsible for its own training programme and certification.

Objectives in education/training

- To demonstrate satisfactory theoretical and scientific knowledge and professional skills in the fields of epidemiology, diagnosis and treatment of pre- and in-hospital medical emergencies.
- To handle safely the most common emergency conditions.
- To demonstrate satisfactory knowledge in coordinating an emergency department, an anti-poisoning centre, a pre-hospital emergency system including a helicopter base, wherever applicable.
- To show the ability to handle the complex organization of health care assistance in cases of mass accidents and disasters.
- To demonstrate a satisfactory knowledge of the methodology of a global approach to health care complex problems.
- To ensure optimization of resources and quality standards.
- To be able to function as a role model and teacher for younger colleagues.
- To show support in the development and science of emergency medicine.

Education and training

Training programs should be organized with education in the following areas:

- Basic and advanced cardiopulmonary resuscitation in adults, children and neonates: ALS, ATLS and PALS principles.
- Basic and advanced airway management for out of operating theatre difficulties.
- RRSs' principles and rules.
- Basic and advanced pre-hospital trauma management, including organizational aspects.
- Basic and advanced in-hospital trauma management, including organizational aspects of emergency care.
- Basic and advanced treatment of medical emergency pathologies, including endocrinological, gastroenterological, haematological, infectious and oncological emergencies.
- Diagnostic/therapeutic principles (primary and secondary survey).
- Pain therapy for emergency and critical care.

- Basic and advanced hyperbaric treatment (according to the necessity of each country).
- Basic and advanced treatment of acute poisonings and intoxications.
- Pre- and inter-hospital transport.
- Helicopter rescue.
- Triage.
- Mass accidents and disasters, including terrorist-related mass disasters with biological and chemical victims.
- Communication and cooperation with other players in the field of emergency medicine.
- General professional behaviour as a medical specialist with expertise in emergency medicine.

Training must progress from an introduction to more advanced clinical cases.

Training is recommended to be organized both theoretically and with long rotations in all recognized areas in order to give adequate exposure [5,6].

Training content

Besides clinical training, it is important that the trainee has access to a core curriculum of literature for individual studies or that it is covered in tutorial sessions.

Each trainee is recommended to have a mentor who will advise and follow each person's individual growth so that possible weaknesses can be corrected in time.

Training should be supervised and errors corrected continuously. The mentor/teacher/tutor/supervisor must show teaching qualifications in training skills and must demonstrate new techniques and procedures to the trainee, often several times before the trainee can take over and practice [5,6].

Simulation and crisis resource management (CRM) methodology is recommended to be developed to improve patient safety and team efficacy. Today there is a growing practice to use various simulators to practice both technical skills (part task simulators) and function as team (full-scale simulators). They seem to be valuable assets in training but, being at the moment quite expensive, should be considered at least for Continuing Medical Education (CME) activities.

Evaluation of each trainee is recommended to be given at intervals and remedial action to be taken to maintain the trainee at the expected educational level towards completion.

The Section and Board of Anaesthesiology of the European Union of Medical Specialists (EUMS/UEMS) states that the training programme in emergency medicine will be fulfilled in the 5 yr of continuous training in anaesthesiology.

A minimum of 4 months is recommended to be spent in emergency departments (including anti-poisoning centre if available, a trauma centre and hyperbaric centre) and 2 months in pre-hospital rescue teams (including helicopters).

The Section and Board of Anaesthesiology of UEMS supports the use of logbooks or preferably portfolios, which serve to support the visualization of a learning curve. The benefit of such a system is that it demonstrates quantity of cases and clear indications if a trainee needs trainers' support in the general scope of an educational plan. It also gives the program director an opportunity not only to compare trainees but also to 'benchmark' against other institutions [5,6].

Use of simulation-based training is encouraged to acquire skills and fulfil appropriate educational opportunities.

There are no fixed numbers that must be met, but in Table 1, some recommended numbers are given. In the logbook, special techniques such as spinal stabilizations, pleural drainage and cardiac pacing should also be noted.

Table 1. Suggested minimum number of procedures (real cases and/or simulation-based).

CPR adult	15
CPR children/neonates	5
Medical pathologies:	
Coma	10
Ischaemic and haemorrhagic stroke	10
Epilepsy	5
Myocardial infarction	10
Fatal arrhythmias	10
Hypertensive emergencies	10
Cardiogenic shock	10
Acute respiratory failure	10
Asthma and COPD	10
Pneumothorax	5
Pulmonary embolism	5
Hypovolaemic, haemorrhagic, and septic shock	10
Gastrointestinal bleeding	10
Acute hepatic failure	5
Acute renal failure	5
Metabolic emergencies (diabetic ketoacidosis, hypoglycaemia, hypercalcaemia, acid-base alterations)	20
Allergic reactions	5
Thoracic/abdominal pain	20
Advanced techniques for difficult airway management	20
Pre-hospital trauma assistance	20
In-hospital trauma assistance	20
Hyperbaric treatments	5
Near-drowning	5
Poisoning and intoxication	20
Transport (helicopter rescue)	25
RRS management	20

CPR: cardiopulmonary resuscitation; COPD: chronic obstructive pulmonary disease; RRS: rapid response system.

Evaluation and examination

It has been mentioned that the use of logbooks, structured training with mentors, and repeated evaluation and assessment will make sure that all specialist become experienced and qualified.

Some European countries have started to develop a competence-based evaluation system using training portfolios. These are systems by which the trainee has to meet set criteria in areas of training to guarantee a minimal level of accepted knowledge. The portfolio system creates assessments, which then become part of a final overall evaluation process. The Section and Board of Anaesthesiology of UEMS will closely follow the development of these systems and might recommend them in coming revisions [5,6].

Many countries have used the European Examination jointly organized by the European Board of Anaesthesia and European Society of Anaesthesiology as a final examination and evaluation to become Board certified as a specialist.

Hospital visitation program

The Section and Board of Anaesthesiology of UEMS and the European Society of Anaesthesia (ESA) have instituted a visitation system to evaluate training programme on facilities, design of education, standard and involvement of faculty, balance between clinical training and didactic teaching and possibility for research.

Such a visitation will also include interviews with trainees, review of records and logbooks.

Both bodies review results and a successful evaluation leads to a certificate, which then is valid for 5 yr before a revalidation ought to take place. Training programmes that do not meet the set standards will receive recommendations for corrections and an earlier scheduled re-evaluation.

Some countries have an internal review process much like the one proposed and a harmonization by these two systems would be desirable.

References

1. Hanson CW, Durbin CG, Maccioli GA *et al.* The anesthesiologist in critical care medicine – past, present, and future. *Anesthesiology* 2001; 95: 781–788.
2. Handley AJ, Koster R, Monsieurs K, Perkins GD, Davies S, Bossaert L. European Resuscitation Council Guidelines for Resuscitation 2005. *Resuscitation* 2005; 67S1: S7–S23.
3. European Union of Medical Specialists (UEMS) – Section and Board of Anaesthesiology of the – prot.klj.500.
4. Devita MA, Bellomo R, Hillman K *et al.* Findings of the First Consensus Conference on Medical Emergency Teams. *Crit Care Med* 2006; 349: 2463–2478.
5. De Lange S. The European Union on Medical Specialists and Specialty Training. *Eur J Anaesthesiology* 2001; 18: 561–562.
6. Members of UEMS Section of Anaesthesiology. Training guidelines in anaesthesia of the European Board of Anaesthesiology, Reanimation and Intensive Care. *Eur J Anaesthesiology* 2001; 18: 563–571.