



UNION EUROPÉENNE DES MÉDECINS SPÉCIALISTES EUROPEAN UNION OF MEDICAL SPECIALISTS

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Training Requirements for the Specialty of Anaesthesiology, Pain and Intensive Care Medicine

European Standards of Postgraduate Medical Specialist Training

Preamble

The UEMS is a non-governmental organisation representing national associations of medical specialists at the European Level. With a current membership of 34 national associations and operating through 39 Specialist Sections and European Boards, the UEMS is committed to promote the free movement of medical specialists across Europe while ensuring the highest level of training which will pave the way to the improvement of quality of care for the benefit of all European citizens. The UEMS areas of expertise notably encompass Continuing Medical Education, Post Graduate Training and Quality Assurance.

It is the UEMS' conviction that the quality of medical care and expertise is directly linked to the quality of training provided to the medical professionals. Therefore the UEMS committed itself to contribute to the improvement of medical training at the European level through the development of European Standards in the different medical disciplines. No matter where doctors are trained, they should have at least the same core competencies.

In 1994, the UEMS adopted its Charter on Post Graduate Training aiming at providing the recommendations at the European level for good medical training. Made up of six chapters, this Charter set the basis for the European approach in the field of Post Graduate Training. With five chapters being common to all specialties, this Charter provided a sixth chapter, known as "Chapter 6", that each Specialist Section was to complete according to the specific needs of their discipline.

More than a decade after the introduction of this Charter, the UEMS Specialist Sections and European Boards have continued working on developing these European Standards in Medical training that reflects modern medical practice and current scientific findings. In doing so, the UEMS Specialist Sections and European Boards did not aimed to supersede the National Authorities' competence in defining the content of postgraduate training in their own State but rather to complement these and ensure that high quality training is provided across Europe.

At the European level, the legal mechanism ensuring the free movement of doctors through the recognition of their qualifications was established back in the 1970s by the European Union. Sectorial Directives were adopted and one Directive addressed specifically the issue of medical Training at the European level. However, in 2005, the European Commission proposed to the European Parliament and Council to have a unique legal framework for the recognition of the Professional Qualifications to facilitate and improve the mobility of all workers throughout Europe. This Directive 2005/36/EC established the mechanism of automatic mutual

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recognition of qualifications for medical doctors according to training requirements within all Member States; this is based on the length of training in the Specialty and the title of qualification.

Given the long-standing experience of UEMS Specialist Sections and European Boards on the one hand and the European legal framework enabling Medical Specialists and Trainees to move from one country to another on the other hand, the UEMS is uniquely in position to provide specialty-based recommendations. The UEMS values professional competence as “the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served”¹. While professional activity is regulated by national law in EU Member States, it is the UEMS understanding that it has to comply with International treaties and UN declarations on Human Rights as well as the WMA International Code of Medical Ethics.

This document is the result of the work of the **Education and Professional Development (EPD)** standing committee of the European Board and Section of Anaesthesiology and would not exist without the close cooperation of all instances in anaesthesiology active in education, particularly the **ESA** (European Society of Anaesthesiology), and the **EDAIC** (European Diploma in Anaesthesiology and Intensive Care).

I. TRAINING REQUIREMENTS FOR TRAINEES

The following four generic competences or roles have been identified as the most important for any European specialist in anaesthesiology. These roles offer the **framework** in which are embedded the **specific competences** (outcomes) required from a specialist in anaesthesiology, pain and intensive care, competences that are then further broken down into measurable **learning objectives**.

A. Medical Expert

As a central role, the one of medical expert states that all anaesthesiologists must be familiar with anaesthetic and medical technology, general medicine, including diagnostic and therapeutic methods based on thorough basic knowledge of applied respiratory, circulatory and CNS-associated physiology and pharmacology.

The main field of an expert in anaesthesiology is perioperative medicine, and he/she should acquire all necessary competences enabling him/her to fulfil this expert role and function in a multidisciplinary setting.

1. The domain of perioperative medicine comprises the continuum in patient care, starting before the operative procedure and lasting well into the postoperative period ; it concerns all patient categories (including children, pregnant women and those lacking mental capacity) and comprises the following tasks, which practice should be evidence-based:

- Preoperative evaluation and preparation of the patient in cooperation with consultants of other specialties for optimal patient care;
- Preoperative discussion and information of patients, obtaining informed consent;
- Appropriate choice and relevant use of laboratory tests and all other complementary examinations/investigations, as well as use of and referral to interdisciplinary consultations when required;
- Individualized selection and conduct of the safest anaesthetic technique, best suited to the medical conditions of the patient and to the operative procedure planned;

¹ *Defining and Assessing Professional Competence, Dr Ronald M. Epstein and Dr Edward M. Houndert, Journal of American Medical Association, January 9, 2002, Vol 287 No 2*

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- Knowledge and appropriate use of clinically relevant invasive and non-invasive monitoring devices;
 - Safe conduct of anaesthesia as well as safe and appropriate perioperative clinical management of problems, incidents and complications;
 - Appropriate selection of postoperative management and care, including transfer to other specialized surveillance structures such as ICUs;
 - Postoperative pain management as well as treatment of side-effects; recognition and treatment of other postoperative complications.
2. Other major domains of competences are:
- Pre- and in-hospital resuscitation and emergency management of critical conditions, including trauma and burn
 - Intensive Care Medicine
 - Pain management

B. Leader

The specialist in anaesthesiology should have competences in communication which enables him/her to deal with different aspects of human interactions and relationships. Furthermore, he/she should have competences which permit effective organization and management tasks to take place during professional activities.

The main aspects are:

- Effective, open empathic and respectful communication with patients and family/relatives
- Effective and professional communication with colleagues and other collaborators to ensure optimal patient care
- Multidisciplinary and inter-professional team working in acute care (operating theatre, intensive care unit, emergency and recovery room, labour wards), as well as in the context of resuscitation
- Effective communication in the setting of multidisciplinary teams in the resolution of conflicts, decision-making skills, giving feed-back, taking and assuming leadership when required, including a knowledge of the relevant medico-legal and ethical frameworks
- Implementation and use of quality assurance programs according to recognized national and possibly international standards
- Implementation and use of local, national and international practice guidelines and standards while complying with national healthcare policies
- Promotion of and participation in better and safer patient care
- Knowledge of administrative and economical aspects of anaesthesiology practice; Operating room management principles
- Cost-effective and relevant use of diagnostic, prophylactic and therapeutic means and measures (health economics)

C. Scholar

It is the specialist's responsibility to develop and maintain a high degree of professional competence, to facilitate development of colleagues and other groups of professionals, and to promote development of the specialty itself. Different aspects comprise:

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- Life-long learning and reflective thinking; critical reading and appraisal of up-dated information relevant to clinical anaesthesiology and intensive care medicine;
- Acquisition of basic tools for teaching (including supervision), skills for research and education presentations, teaching of young colleagues, residents and allied healthcare professionals;
- Contribution to research, development, and implementation/transmission of new medical knowledge as well as auditing;
- Contribution to education of patients, students and healthcare professionals

D. Professional

The specialist in anaesthesiology will exhibit irreproachable behaviour and be aware of duties and responsibilities inherent to his/her role as a professional:

- Provision of high quality care with empathy, integrity, honesty and compassion;
- Recognition of one's personal limits and abilities, and appropriate consultation with/or delegation to others when caring for the patient;
- Medical decision-making based on thorough consideration of ethical aspects in patient care, management of ethical conflicts;
- Knowledge of medico-legal aspects of anaesthesiology practice, with particular emphasis on the management and prevention of conflicts of interest;
- Appropriate management of anaesthetic incidents and accidents, including near-misses.

In order to fulfil the four professional roles of a specialist in clinical anaesthesiology, a list of domains of expertise and related competencies within these domains have been identified.

The domains of expertise can be divided into “**domains of general core competencies**” and “**domains of specific core competencies**” (see detailed list below). Throughout the course of their 5-year training, trainees should progressively achieve the required level of competence within **each** domain.

The 10 domains of general core competencies identified are:

- 1.1 Disease management, Patient assessment and Preparation
- 1.2 Intraoperative patient care and Anaesthetic techniques
- 1.3 Postoperative patient care and Acute pain management
- 1.4 Emergency medicine: management of critical conditions including trauma and initial burn management
- 1.5 Medical and perioperative care of critically ill patients / General Intensive Care
- 1.6 Practical anaesthetic procedures / Invasive and Imaging techniques / Regional blocks
- 1.7 Quality - Safety - Management - Health economics
- 1.8 Anaesthesia Non-Technical Skills (ANTS)
- 1.9 Professionalism and Ethics
- 1.10 Education, self-directed learning, research

The 7 domains of specific core competencies identified are:

- 2.1 Obstetric Anaesthesiology
- 2.2 Airway Management and Surgery
- 2.3 Thoracic and Cardiovascular Anaesthesiology
- 2.4 Neuroanaesthesiology
- 2.5 Paediatric Anaesthesiology

2.6 Anaesthesiology in remote locations / Ambulatory Anaesthesiology

2.7 Multidisciplinary Pain Management

1. Content of training and learning outcome

Competencies required of the trainee

In the following sections of this document, both general and specific core competencies in each domain have been expressed in the form of a list of “**competence statements**”.

The **level of acquisition/expertise** for each competence defined in each domain ranges from “A” to “D”:

A: Has knowledge of, describes...

B: Performs, manages, demonstrates under supervision

C: Performs, manages, demonstrates independently

D: Teaches or supervises others in performing, managing, demonstrating.

a. Competences required from the trainee at the end of PGT

Domain 1.1: Disease management, Patient assessment and Preoperative preparation

During the course of their training, residents must acquire clinical abilities and skills in the anaesthetic and perioperative care of patients. These include the acquisition of following competences:

- a. Identifies, optimizes, and treats all relevant patient pathologies, including those with direct impact on anaesthetic techniques, including monitoring: **C**
- b. Assesses preoperative risks: **D**
- c. Uses and interprets preoperative investigations appropriately and rationally: **D**
- d. Assesses airway for potential difficulty with intubation and /or ventilation: **D**
- e. Knows and applies recognized principles of preoperative therapy, fasting and premedication: **D**
- f. Elaborates an individualized preoperative anaesthetic strategy, including rational use of drugs and techniques: **D**
- g. Provides appropriate information and obtains informed consent for anaesthesia: **D**

Domain 1.2: Intraoperative patient care and Anaesthetic techniques

During the course of their training, residents must acquire clinical abilities and skills in the anaesthetic and intraoperative care of patients. These include the following competences:

- a. Provides safe induction, maintenance of, and emergence from general anaesthesia, including choice of drugs, airway management, ventilation techniques and monitoring: **D**
- b. Provides safe regional anaesthesia, including choice of drugs, techniques and monitoring: **D**
- c. Masters knowledge of pharmacology relevant to general and regional anaesthesia, including preparation, administration and monitoring of drug effects: **D**
- d. Knows and uses appropriately and safely all relevant medical/technical equipment, takes appropriate environmental safety measures and prepares the workplace according to local checklists: **D**
- e. Chooses and uses appropriate monitoring devices for safe management of anaesthesia: **D**
- f. Provides adequate record keeping of perioperative procedures and events: **D**
- g. Maintains perioperative homeostasis of organ systems of patients throughout different procedures, including adequate fluid and volume management, safe use of blood and blood products, and maintains normothermia: **D**

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h. Recognizes diagnoses and manages intraoperative critical incidents, including allergic reactions as well as organ dysfunction, stress and inflammatory response: **D**

Domain 1.3: Postoperative patient care and Acute pain management

During the course of their training, anaesthesia must acquire clinical abilities and skills in the anaesthetic and postoperative care of patients. These include the following competences:

- a. Provides appropriate extubation and handover of a patient in PACU; provides an appropriate summary of relevant clinical features of the patient's care: **D**
- b. Is able to appropriately monitor a patient in PACU: **D**
- c. Assesses and adequately treats post-operative pain and post-operative nausea and vomiting: **D**
- d. Recognizes diagnoses and manages postoperative complications, including essentially airway, respiratory and circulatory: **D**
- e. Uses correct discharge criteria and appropriate PACU scores, including possible indication for transfer to ICU; ensures that appropriate treatment is provided beyond PACU setting if required: **D**

Domain 1.4: Emergency medicine: management of critical conditions including trauma and initial burn management

During the course of their training, residents must acquire clinical abilities and skills in managing medical and surgical acutely ill patients, including life threatening situations. These include the following competences:

- a. Is capable of handling life-threatening medical and surgical emergency conditions: **D**
- b. Provides basic and advanced pre- and in-hospital critical medical emergency management, including organizational aspects: **D**
- c. Masters initial and advanced pre- and in-hospital trauma management, including organizational aspects: **D**
- d. Masters initial burn management, including organizational aspects: **D**
- e. Is able to handle the complex organization of health care assistance in cases of mass accidents and disasters: **C**
- f. Masters pre and inter-hospital transport: **D**

Domain 1.5: Medical and perioperative Care of the critically ill / General Intensive Care

During the course of their training, residents must acquire clinical knowledge of medical and surgical conditions and skills for the management of critically ill patients. These include the following competences:

- a. Is able to treat ICU-patients: **D**
 - by defining the clinical problems arising in patients
 - by evaluating the clinical indicators of organ dysfunction
 - by developing further diagnostic strategies in relation to the comorbid conditions and existing complicating factors
 - by developing specific management plans and using evidence-based algorithms, including prognosis on both short and long-term
- b. Recognizes and masters specific aspects of monitoring and equipment, including respiratory therapy and hemofiltration: **C**
- c. Develops appropriate responses to life-threatening problems: **D**
- d. Acquires and applies knowledge of aspects of internal medicine, surgery, infectious disease, obstetrics, trauma care, and anaesthesia relevant to critically ill or severely injured patients: **C**

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e. Can describe the basic principles of ICU care, including paediatric patients; Understands medical and surgical disorders requiring specific ICU treatment and issues surrounding transfer for specialist care e.g. NICU , ECMO etc.: **C**

f. Knows the ethical principles involved in EOL issues in relation to national legislation, and under supervision is capable of participating in the decision of withdrawing or refusing intensive care treatment: **C**

Domain 1.6: Practical anaesthetic procedures / Invasive and Imaging techniques / Regional blocks

During the course of their training, residents must acquire and master the clinical abilities and skills to perform the following procedures in an appropriate and safe way. These include:

a. Operates technical monitors and machines and trouble-shoots basic technical malfunctions, including data capture, recording and analysis: **D**

b. Masters basic and specific skills in:

- general and regional anaesthesia in elective and emergency situations: **D**
- vascular access, particularly central venous and arterial lines: **D**
- management of patients with difficult airway including the use of fibre-optic techniques: **D**

c. Masters regional peripheral and central blocks for anaesthesia and analgesia: thoracic and lumbar epidural blocks, spinal and combined spinal epidural techniques, peripheral nerve blockade, including management of complications of regional blocks: **D**

d. Masters resuscitation skills, advanced life support (ALS), and resuscitation skills in infants and children: **D**

Domain 1.7: Quality, Safety, Management and health economics

During the course of their training, residents must acquire skills to assess the quality of their work, as well as appropriate knowledge in health economics. Adequate performance requires the following competences:

a. Understands and applies quality assurance (QA) processes in practice as a basis for continuing professional development: **C**

b. Applies in his/her work the local in-hospital, national, and European guidelines of the quality and safety programs (WHO checklists, patient and operative site identification, transmissible diseases, etc...): **C**

c. Organizes effectively his/her work with a multidisciplinary team and is aware of his/her own limits and is capable of seeking help when required: **D**

d. Has knowledge of the relevant European as well as the national and local healthcare infrastructures, practice settings and organisations: **D**

e. Demonstrates an understanding of both managerial and administrative responsibilities: **C**

Domain 1.8: Anaesthesia Non-Technical Skills (ANTS)

During the course of their training, residents must acquire non-technical abilities to master interpersonal and organizational tasks during the perioperative care of patients. These include the following competences:

a. Develops and maintains an overall dynamic awareness of the situation based on perceiving the elements of the operating room environment (patient, team, time, monitoring and equipment) and understands what they mean and anticipates what could happen in the near future: **C**

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- b. Makes decisions to reach a judgment or diagnosis about a situation, or to select a course of action, based on experience or new information under both normal conditions and in time-pressured crisis situations: **D**
- c. Manages resources and organizes tasks to achieve goals, be they individual case plans or longer term scheduling issues: **C**
- d. Communicates effectively and works with others in a team context, in any role, to ensure effective joint task completion and team satisfaction: **D**

Domain 1.9: Professionalism and Ethics

During the course of their training, residents must develop professional and ethical attributes of a specialist in anaesthesiology. These include the following competences:

- a. Formulates clinical decisions with respect to ethical and legal principles: **D**
- b. Communicates effectively with patients and relatives (doctor-patient relationship); involves patients and/or their surrogates in decisions about care and treatment: **D**
- c. Involves fellow colleagues from different other specialties in decision-making about care and treatment, in a respectful manner: **D**
- d. Maintains accurate and legible records, and documentation of clinical activities: **D**
- e. Respects privacy, dignity, confidentiality and legal constraints on the use of patient data: **D**
- f. Supports and participates in activities regarding professional and specialty development: **C**
- g. Within the context of a multidisciplinary team, provides end-of-life and palliative care and applies the ethical and legal guided process of withholding and withdrawing treatment: **C**

Domain 1.10: Education, Self-directed Learning, Research

During the course of their training, residents must acquire an understanding of the scientific basis of anaesthesia practice including basic statistical concepts and assessing the benefits of applying results of research to clinical practice. Trainees will also be required to develop competences in education and are required to show an attitude towards self-motivated learning:

- a. Uses information technology in a goal-oriented way to optimize clinical care: **D**
- b. Participates in, does and initiates literature retrieval, and critically assesses and compiles the information to solve a specific clinical task: **C**
- c. Is able to assess benefits versus risks of applying new scientific results in clinical practice with regards to medical, ethical, legal and economic aspects: **C**
- d. Demonstrates perpetual refreshment of his knowledge through participation to lectures, refresher courses, personal reading, putting emphasis on models of reflective learning: **D**
- e. Has knowledge of the principles of quality assurance programs and critical incident reporting, and basic knowledge in ethics and economics in health care: **C**
- f. Has basic knowledge and understanding of, and be able to describe, modern principles of teaching relevant to medical training: **B**
- g. Is able to identify learning needs of others (patients, relatives, colleagues and other collaborators, students) and choose methods of teaching to support them: **D**
- h. Demonstrates knowledge of basic statistics, criteria for a good clinical study; and critical reading of an article: **D**
- i. Participates in clinical or basic science research leading to peer-reviewed publications: **B**
- j. Is aware of basic concepts of evidence-based medicine: **A**

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Domain 2.1: Obstetric Anaesthesiology

During the course of their training, residents must acquire clinical abilities and skills in the anaesthetic and perioperative care of pregnant women and foetus or neonate. These include the following competencies:

- a. Understands the physiology of pregnancy, labour and delivery: **D**
- b. Has in-depth knowledge of the methods available for the relief of pain during labour and delivery including caesarean section: **D**
- c. Is able to select and perform the appropriate labour analgesia: **D**
- d. Must demonstrate ability to manage the complications of delivery and anaesthesia for delivery: **D**
- e. Is able to perform resuscitation of the new-born: **D**
- f. Manages the safe provision of general and regional anaesthesia and perioperative care for obstetric patients: **D**
- g. Is able to manage the high risk parturient: **C**
- h. Establishes a professional team approach with the obstetricians and midwives: **D**

Domain 2.2: Airway management and surgery

During the course of their training, residents must acquire clinical abilities and skills in the anaesthetic and perioperative care of patients with surgery concerning the airway and its surrounding structures. These include the following competences:

- a. Is capable of predicting difficulties in airway management through use of appropriate assessment tools: **D**
- b. Manages the airway in patients with both expected or unexpected difficult airway, including use of different devices and techniques and proper application of existing algorithms; manages the airway in trauma situations: **D**
- c. Appropriately manages anaesthesia of the shared airway, safely provides anaesthesia for laryngeal surgery, tracheotomy and laryngoscopy/bronchoscopy including in paediatric patients: **D**
- d. Manages the anaesthetic for laser surgery in the airway, including jet-ventilation: **C**
- e. Manages difficult and delayed extubation after airway interventions: **D**

Domain 2.3: Thoracic and Cardiovascular Anaesthesiology

During the course of their training, residents must acquire knowledge and skills relevant to the anaesthetic and perioperative care of thoracic and cardiac surgery patients. This includes the following competences:

- a. Evaluates operability for lung resection and selects patients who need preoperative preparation and treatment: **C**
- b. Manages all aspects of one lung ventilation: **C**
- c. Is aware of the perioperative risk factors and the specific postoperative complications of thoracic surgery: **D**
- d. Describes principles of acute and chronic pain management for thoracic surgery including epidural, paravertebral and intercostal blocks: **D**
- e. Is able to describe some emergencies in cardiac or thoracic procedures and their management: **C**
- f. Possesses anaesthetic basic knowledge of cardiopulmonary bypass and other assisting devices: **B**
- g. Can describe principles of invasive monitoring for cardiac surgery including pulmonary artery catheter and trans-oesophageal echocardiography: **C**

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h. Can describe the basic principles of anaesthetic and therapeutic techniques used for severely compromised cardiac function in high risk patients, for previous cardiac or lung transplanted patients, congenital heart disease patients, and those with implanted pacing or defibrillation devices: **C**

i. Manages anaesthesia for major vascular surgery, including emergency procedures: **D**

Domain 2.4: Neuroanaesthesiology

During the course of their training, residents must acquire clinical abilities and skills in the anaesthetic and perioperative care of patients with surgery and interventions concerning intracranial, spinal and surrounding structures. These include the following competences:

a. Assesses the neurosurgical patient pre- and postoperatively: **D**

b. Chooses the appropriate monitoring for neurosurgery and has knowledge of patient positioning for neurosurgical procedures: **C**

c. Manages the patient with raised IC pressure, and maintains cerebral perfusion pressure: **C**

d. Knows and applies strategies for cerebral protection and control of intracranial pressure: **C**

e. Is able to discuss and analyze the risks and benefits of available anaesthetic techniques for all aspects of neurosurgery and neuroradiology: **D**

Domain 2.5: Paediatric Anaesthesiology

During the course of their training, anaesthesia residents must acquire clinical abilities and skills in the anaesthetic and perioperative care of paediatric patients as well as resuscitation of the critical ill paediatric patient. These include the following competences:

a. Recognizes and understands the implication of differences between child and adult including airway management, anatomy, physiology, and pharmacology: **D**

b. Masters paediatric aspects of monitoring, equipment, and vascular access, as well as anaesthesia including induction, maintenance and emergence of general anaesthesia in children, as well as clinical aspects of fluid management: **C**

c. Masters postoperative care, pain management and critical care for the paediatric patient: **C**

d. Initiates and participates in resuscitation of the infants and children in every emergency setting: **D**

e. Knows the local and national guidelines in paediatric anaesthesia care and is able to take responsibility for transport of all children and neonates to a higher competence facility (including child protection issues): **C**

f. Is able to communicate effectively and with empathy with the children and their parents, and obtain appropriate informed consent: **D**

Domain 2.6 Anaesthesiology in remote locations / Ambulatory Anaesthesiology

During the course of their training, residents must acquire clinical abilities and skills in the anaesthetic care of patients managed outside the OR. These include the following competencies: 14

a. Is able to manage and provide anaesthesia outside the OR, taking into account organization of the site (day cases), type of patient (children, elderly, etc...), and type of procedure: **D**

b. Demonstrates safe and appropriate preoperative assessment and management of the patient; knows how to assess perioperative risks according to existing standards and in the context of remote locations: **D**

c. Applies principles of safety during X-ray, MRI and other minimally invasive diagnostic or therapeutic procedures in remote locations: **D**

- d. Is able to manage transport to and from remote locations: **D**

Domain 2.7: Multidisciplinary pain management

During the course of their training, residents must acquire clinical abilities and skills in the care of pain patients. These include the following competences:

- a. Is capable of performing an appropriate pain history, physical examination, and interpret tests accordingly: **C**
- b. Has knowledge of and uses basic validated scales and questionnaires to identify the type of pain, and is capable of measuring and documenting pain evolution: **C**
- c. Knows and applies basic pharmacological pain therapies, has basic knowledge in multimodal analgesia: **C**
- d. Can describe both non-pharmacological and invasive pain strategies: **B**
- e. Communicates with patients and relatives informing them about treatment options and goals, adequately referring the patients for appropriate treatment: **C**
- f. Can describe indications and contraindications for use of physical and psychological therapies, of regional blocks, and of implanted drug administration devices and electrical stimulators: **B**
- g. Demonstrates technical proficiency for following blocks: neuraxial, axillary and peripheral nerve blocks for acute and chronic pain: **C**
- h. Can recognize and describe incidents of interventional procedures and their treatment: **B**

b. Learning objectives

For each domain of expertise identified above, a detailed list of “**learning objectives**” has been identified, that constitute the **syllabus**.

- i. *Theoretical knowledge*
- ii. *Practical and clinical skills*

For the main learning objectives in terms of: Theoretical knowledge, Practical and Clinical (or case management) skills, as well as Attitudes and Professionalism, [PLEASE REFER TO ATTACHED SYLLABUS](#)

These learning objectives have been broken down into “**Knowledge, Skills and specific Attitudes**” that are deemed necessary to achieve the required level of competencies in each domain.

The “learning objectives” are realistic endpoints that should be attained by the end of the anaesthesia residency period. They are built upon previous knowledge, skills and attitudes acquired during the undergraduate education in medicine, that are required to hold a diploma/master degree in human medicine.

The “learning objectives” also represent measurable endpoints that should serve as a basis for the development of future evaluation modalities in order to objectively and reliably measure the acquisition of competencies throughout the curriculum.

As far as *Ethical commitment and principles, Quality & Safety Management, Non-Technical Skills and Multi-disciplinary aspects* are concerned, these aspects of training are considered as mandatory and have been identified as domains (domains 1.7 to 1.10 above) with proper learning objectives (c.f. syllabus); any other aspect considered relevant has been integrated in all domains accordingly.

2. Organisation of training

a. Schedule of training

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Minimum duration of training: a minimum training time of 5 years is necessary to reach the competencies required to become a specialist in anaesthesiology, of which up to 1 year can be specifically directed to Intensive Care Medicine training. No other particular scheduling or timing is required during the 5 years of postgraduate training; education and training modalities can take various forms and should be best suited to local practice, however with respect to reaching the competencies defined in the present document; the later should be considered as a framework for commonly agreed minimum outcomes.

b. Curriculum of training

Particular qualifications and Subspecialisation: further acquisition of expert status in certain domains will require extra training years, after completion of the 5-year certified postgraduate training.

These particular competences can be acquired in the following domains: Intensive Care Medicine (<http://www.cobatrice.org/en/index.asp>), Pain Medicine (Cunningham et al, European Journal of Anaesthesiology 2007; 24: 568–570; work in progress within the UEMS Multidisciplinary Joint Committee on Pain medicine) and Emergency Medicine (de Robertis et al, European Journal of Anaesthesiology 2007; 24: 987–990).

For further details, please refer to corresponding written curricula given in parenthesis.

Supplementary expertise in some domains considered as sub-specialties in Anaesthesiology is possible. These include paediatric, cardiac and obstetric anaesthesiology. Though guidelines for training in these domains exist, these are not considered as formal or recognized sub-specialty domains, isolated from Anaesthesiology.

c. Assessment and evaluation

Below are the definitions proposed by UEMS:

Assessment: *Process by which information is obtained relative to some known objective or goal. (a broad term that includes testing)*

Evaluation: *Inherent in the idea of evaluation is "value." Process designed to provide information that will help us make a judgment about a given situation*

Taking these des into account, the modalities proposed by the European Board of Anaesthesiology are the following:

Assessment modalities should include both formative and summative assessments.

Formative assessments should take place throughout the 5 year training period, and include different modalities such as resident evaluation tools based on the Mini-CEx or direct observations (of clinical encounters or of procedures), and simulation-based training/evaluation.

Further in-training evaluations of knowledge with MCQs or vivas are strongly recommended. (*Van Gessel et al, European Journal of Anaesthesiology 2010, 27:673–675*).

Trainees are also encouraged to keep a logbook of procedures performed, as well as or in conjunction with a portfolio documenting all teaching modalities used to reach the competencies defined.

They should obtain from their training institution all regulations, protocols and written procedures for good quality practice.

Completion of a logbook or a portfolio is vital for an appropriate follow-up of the trainee's progress.

The EPD recommends a compulsory appraisal of the trainee after the first year of training in order to help residents, unfit for training in Anaesthesiology, change to another specialty training.

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The training institutions should propose a “tutor” or “mentor” for appropriate follow-up and feedback to the trainee. It is the responsibility of the head of department and/or his consultants and tutors to have regular meetings with the trainee in order to document progress and provide guidance.

In order for both the trainee and the trainer to monitor progress and acquisition of specific competencies, particularly those related to non-technical skills relevant in Anaesthesiology, a few compulsory milestones are proposed:

1. To take the following training modules anytime over the 5-years PGT period:
Leadership, Communication, Team-working and Safety

2. After 2 years of PGT, a resident should have one abstract presentation at their national congress + 3 presentations at their hospital morbidity-mortality or staff meetings. Alternately, he/she should take a training module in EBM and/or write and publish a review or a reflection on a chosen topic.

3. At 3 years of PGT, the part I of EDAIC (see below) should be completed.

4. During the 4-5th years of PGT: National diploma or EDAIC part II should be completed.

During the last years of training, formal training modules on Professionalism-Management-Leadership, biomedical statistics and research methodology should be completed. It is desirable that all trainees perform a clinical research project.

Evaluation and Certification should occur through the European Diploma in Anaesthesiology and Intensive Care (EDAIC); the EPD endorses the in-training assessment (ITA) as an educational tool, and the EDAIC as a specialist label of excellence for specialist practice in Anaesthesiology.

Nine European countries have officially adopted the EDAIC as their National examination and in some countries the EDAIC is the official final or exit examination. The ITA and EDAIC are thus widely accepted in Europe as an important way to reach a high standard in our profession.

The EDAIC is a multilingual, end-of-training, two-part examination covering the relevant basic sciences and clinical topics appropriate for a specialist anaesthesiologist.

The existence of a supra-national examination in anaesthesiology provides an incentive for the development and improvement of departmental, university, national and European training programs. The aim of the examination is to achieve a uniformly high standard of knowledge by anaesthesiologists throughout Europe as judged by an independent Board of Examiners.

The EDAIC consists of two mandatory parts (Part I & Part II): Part I examination comprises two multiple choice question (MCQ) papers. Each paper has sixty questions and is of two hours duration. Paper I concentrates on the basic sciences and Paper II comprises clinical questions on internal and emergency medicine, clinical anaesthesia and intensive care medicine, as well as pain medicine. Part II comprises four separate 25-minute oral examinations. In each one, the candidate is examined by two examiners (each working in different countries), thereby meeting eight examiners in all; it embraces the same range of basic science and clinical subjects as is covered by the Part I.

For further details concerning the EDAIC as well as its regulation and organisation, please refer to the following website:

<http://www.euroanaesthesia.org/sitecore/Content/Education/~//media/Files/Education/EDAIC/Diploma%20Guide%20-%20English.ashx>

d. Governance

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It should be stressed that these guidelines and training requirements are non-exhaustive and represent only the actual state of medical practice in the specialty; the present document is thus a living document that will see many amendments and changes reflecting future changes in our medical specialty practice.

The Education and Professional Development (**EPD**) Standing Committee of the European Board and Section of Anaesthesiology, in close collaboration with the European Society of Anaesthesiology (**ESA**) as well as the European Diploma in Anaesthesiology and Intensive Care (**EDAIC**), is responsible

1. for defining the competences, the goals and objectives of the curriculum,
2. for the design, management, and evaluation of the postgraduate curriculum in accordance with the accreditation requirements of the HVTAP and the mission and vision of the EDAIC.

The Committee is responsible for establishing a process for reviewing, evaluating, and revising the curriculum on a recurring timeline to ensure that the curriculum is coherent, coordinated, current, and effective.

In addition, the Committee is responsible for making recommendations to the National Societies represented in the Section and Board about the system of incentives for teaching effort, support for faculty who teach, and other support requirements needed to make the curriculum operational.

The Committee has finally the ability, with the approval of all representatives of National Societies within the Board and Section, to propose educational objectives, specify teaching methods, and propose means to evaluate educational outcomes. Likewise, it can propose performance standards for tutors, propose means for faculty development efforts, and tutor performance evaluation.

II. TRAINING REQUIREMENTS FOR TRAINERS

1. Process for recognition as trainer

It is actually recognized by the **EPD**, that there are very different and non-harmonized levels in the different European countries in terms of professional development and educational training support, promotion of skill development, and encouragement of educational innovations among faculty.

The EPD recognizes that the integration of pedagogies and teaching technologies can enhance learning. EPD is committed to make proposals to prepare faculty to take on the academic challenges of instruction, along with the challenges of information delivery.

a. Requested qualification and experience

The **EPD** strongly recommends that the “Teach the Tutors” existing programs throughout European countries should use learning models focused on conceptual learning and behavioural practice to increase faculty members' pedagogical knowledge, provide instructional training, and promote the implementation of active learning across all curricular phases. The programs should be built on the belief that developing educational competencies is an ongoing process linked to both conceptual learning and behavioural practice.

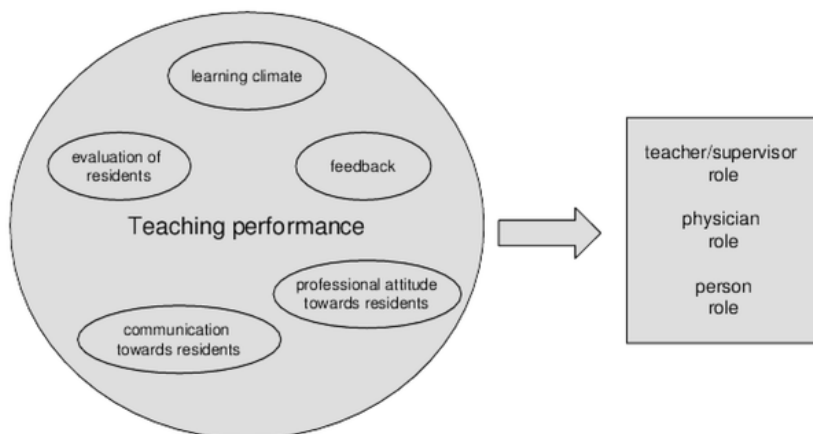
b. Core competencies for trainers

Special Qualifications of the trainers when required (if not covered by EU Directive on Professional Qualifications)

The core competencies for tutors and trainers rely on the SETQ studies (*Anesthesiology 2009; 111:709–16*), having validated tools for evaluation of teaching performance. These have identified **5 teaching qualities that define teaching performance**:

1. Creating a positive learning climate
2. Professional attitude towards residents
3. Communication of learning goals
4. Evaluation of residents
5. Feedback to residents

Thus future “Teach the Tutor” training programs should include training of these important aspects, as summarized in the figure below.



[The Teacher, The Physician and The Person: How Faculty's Teaching Performance Influences their Role Modelling. Boerebach BCM, Lombarts MJMH, Keijzer C, Heineman MJ, Arah OA. PLoS One. 2012](#)

2. Quality management for trainers

The EPD proposes in the near future to endorse the SETQ (System for Evaluation of Teaching Qualities) tool to measure and enhance teaching performance of clinical teachers.

The **2 valid and reliable SETQ tools** available for measuring teaching performance are:

- A resident-completed questionnaire
- A faculty-completed questionnaire

Both questionnaires evaluate the 5 teaching qualities defined as core competencies for tutors and have been validated. They are at the moment subjected to a European-wide research project before any implementation.

III. TRAINING REQUIREMENTS FOR TRAINING INSTITUTIONS

(if not covered by EU Directive on Professional Qualifications)

Training requirements and standards for training institutions vary in the different European countries. The conditions for accreditation depend a lot on national regulatory bodies. However, in 1997, UEMS edited

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guidelines in the form of a Charter on the visiting of Training Institutions which prevails as a basis for the development of visiting programs in all medical specialties.

In Anaesthesiology, at the European level, the Hospital Visiting and Training Accreditation Programme (HVTAP) Committee exists as a Joint Committee of the European Society of Anaesthesiology (ESA) and the European Board of Anaesthesiology (EBA). Together with the European Diploma in Anaesthesiology and Intensive Care (EDAIC), the HVTAP aims to improve and harmonise the anaesthesiology training throughout Europe by ensuring that the accredited centres meet the prerequisites of training in anaesthesia as set out in the EBA training guidelines.

1. Process for recognition as training center

a. Requirement on staff and clinical activities

Minimal number of patients cared for as inpatients and as out patients

Even if minimum numbers may apply nationally, the intention of the EBA training guidelines is that the training should be Competency Based Training and that a portfolio model can be used to continuously assess the progress of training.

Range of clinical specialties

All relevant specialties and subspecialties should be represented in the specialist training rotation:

- General surgery/Urology
- Orthopaedics/Hand/Plastics
- ENT/Eye/Dental/Maxillofacial surgery [Head & Neck]
- Trauma, Burns
- Obstetrics/ Gynaecology
- Paediatrics/ Neonatal
- Ambulatory surgery / ECT
- Management of acute pain and cancer pain
- Management of chronic pain
- General Intensive Care
- Subspecialty anaesthesia (Neurosurgery, Cardiothoracic, Transplantation etc.)

It is also important that preoperative assessment and postoperative care (incl. geriatric aspects) is covered, and that trainees are given the opportunity to practice and function in the pre-hospital environment and emergency medicine?

For skills training certain areas are essential:

- Blocks (Neuraxial, regional)
- Monitoring technologies
- Invasive techniques
- Vascular access (vascular ultrasound)
- Diagnostic methods (ECG, Cardiac and Abdominal ultrasound, Chest X-ray, Bronchoscopy)

Composition and availability of faculty, training programme defined, guidelines applies Trainee / trainer ratio

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There must be an appointed anaesthesiology tutor or consultant in charge of training and this person must have sufficient time allocated for the assignment. There must be a written document describing the teaching programme, and departmental guidelines for anaesthetic practice should be in place. The trainer / trainee ratio will be assessed and so the qualifications of training faculty (clinical, teaching and academic competence). Equally important is it that a positive attitude towards training and teaching is verified and supported by both trainees and teachers within the institution, and that there is a clear commitment to theoretical teaching and practical instruction of trainees within the full range of clinical practice.

Minimal scientific activity

The faculty publication record, lecturing and other academic activity will be assessed during accreditation. An accredited department of anaesthesia is also expected to organise and run programmes of educational activities (lectures on relevant topics, meetings and seminars on matters such as mortality and morbidity, critical incident reporting, clinical audit and research) as well to support opportunities for attending educational courses and scientific meetings.

b. Requirement on equipment, accommodation

Medical-technical equipment, library, opportunities for R&D

Accredited centres will provide research opportunities for trainees (resources, facilities, guidance and supervision). Hence, there should be sufficient resources on areas such as Library, IT, Statistics and other learning aid facilities. Adequacy of departmental accommodation/facilities for trainees is expected for both regular hours and when on-duty. Standard and availability of medical-technical equipment must be adequate for teaching.

2. Quality Management within Training institutions

Accreditation

The European Hospital Visiting and Training Accreditation Programme was instituted to evaluate training programme in terms of facilities, design of education, standard and involvement of faculty, balance between clinical training and didactic teaching and the possibility for research. These visits might be to single hospitals or to a group of hospitals, which are regarded as a training unit with a complete teaching programme. The accreditation process will also include interviews, review of anaesthesia records, logbooks, audits, guidelines and local protocols.

The inspection focuses on structure as well as process. *Structure* addresses resources such as medical staff, facilities, library, technical equipment, access to medical service and opportunities for research and development. *Process* refers to the “educational climate” and to how existing educational resources are used; whether there is a director of studies, whether training programmes are formulated and guidelines applied, how professional guidance is organised, and whether senior doctors take an active interest in the training of their younger colleagues. Good educational resources may not be used to their full potential because of inadequate involvement, and conversely, a positive educational and academic climate may compensate for material deficiencies.

Once accredited and certified these training units will, as *centres of excellence*, serve as references for national visiting programmes, and hopefully also take on a mentoring role for other European departments seeking accreditation. This will also promote rotation of trainers and trainees which will further contribute to future

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safety in acute and perioperative health care in line with the intentions of the Helsinki Declaration on patient safety.

Clinical Governance

Organisation, management, leadership, communication and team work are all topics that should be inherent to modern training programmes, but these also form a platform for Clinical Governance. Medico-legal aspects and work environment hazards must be part of the training and risk management policies should be in place.

An adequate standard of clinical care and patient safety is a pre-requisite for training and there should be a structured and systematic approach to Medical Audit.

Manpower planning

Working hours and adequacy of service workload should be reviewed and also if there are any negative effects of service pressures on the training. Roster planning and hours on-call must be compliant with the European Working Time Directive any impact on training of such issues should be noted. Physical working conditions (changing rooms, on-call accommodation, secure lockers, access to reference books and work space, etc.) must be of adequate standard to allow good training conditions.

Transparency of training programmes

All activities (anaesthetics, ICU, pain clinics, pre-hospital care, etc.) should be recorded in logbooks. The quality and availability of clinical instructions and formal teaching by consultants should also be noted as well as self-reflections on the management of cases.

Structure for coordination of training

Bed-side teaching and in-theatre training should be practised both day time and during on-call, with involvement also of ICU, Obstetrics and Emergency/Trauma theatres. Sufficient supervised time with tutors/consultants should be scheduled and help/advice/appropriate assistance from consultants must be available when requested both during office hours and on duty.

Framework of approval – how are they approved

It will assessed whether trainees undergo a process of continuous assessment, appraisal and guidance (conducted by consultant staff/led by programme director/tutor) to ensure that they are making good progress, and that appropriate amount of time is allocated for this. Ideally there is a continuous assessment of trainees' progress (formative assessment) and/or a competency based evaluation system (e.g. training portfolio) in place.