European Board of Anaesthesiology

UEMS Anaesthesiology Section

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European Training Requirement ETR

in

ANAESTHESIOLOGY

FROM THE STANDING COMMITTEE ON EDUCATION AND PROFESSIONAL DEVELOPMENT (EPD) OF THE SECTION AND BOARD OF ANAESTHESIOLOGY

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Part 1. General information about the ETR

ETR update preparation

The constant development of specialist training and practice dictates the need for a periodical review of the ETRs to ensure that they are consistent with current practice and fit for purpose. According to the *Guidelines for the Development of UEMS European Training Requirements* (published on 3.4.2017) the original training curriculum in Anaesthesiology published in 2013 by the European Board and Section of Anaesthesiology (EBA) under the auspices of the Union Européenne des Médecins Spécialistes (UEMS) has been revised. This document is the first update of the ETR in Anaesthesiology since 2013. Next review of the ETR in Anaesthesiology is planned in 3 years.

Timelines in current ETR update preparation

The process of the ETR update development started in-depth in August 2016 and included an extensive review of the current status in care delivery and experiences regarding training requirements across European countries. Extensive internal consultation within the Standing Committee on EPD and the Section and European Board of Anaesthesiology (EBA) was followed by a review of overlapping areas of practice, specifically in intensive care medicine, emergency medicine and pain medicine. In July 2017 consensus was obtained within the EBA regarding the ETR update. Consultation of the European Society of Anaesthesiology (ESA) resulted in minor revisions which have been approved by the EBA in November 2017. Finally, the ETR update has been submitted to the UEMS ETRs Committee for comments and approval in February 2018.

Scope of the ETR update

The UEMS ETR update does not aim to be imposed over established national curricula (if prepared under consideration of the United Nations declaration on Human Rights and World Medical Assembly International Code of Medical Ethics) but may complement them by offering a comprehensive and robust overall training framework created by medical specialists and based on assembled EU-wide educational and training experience. The advantage of specialists trained according to the competency based UEMS ETR is professional mobility across Europe; qualifications will automatically be recognised in other EU countries as established by EU law (Directive 2005/36/EC).

The ETR update represents current training practice in most European countries and supports high level of a medical training standard which will pave the way to first class patient safety and quality of care for the benefit of all European citizens. The ETR competencies in general core domains should be achievable by most national training programmes, even in the presence of considerable national variations due to, e.g. infrastructure, resources, manpower, working laws, financing, traditions. Basic competence levels proposed in specific core domains may stimulate implementation of education and training plans in clinical bottleneck areas. European hospitals not offering training possibilities in specific core domain competencies may search for upgrading training quality, e.g. by forming training units with training hospital. Thereby, the ETR update

may foster future clinical exchange programmes between hospitals (e.g. European fellowship) and may encourage the utilization of novel learning modalities, e.g. medical simulation centres.

Not all competencies listed in this document reach level D (for definition see page 8). Attaining full competencies in all domains of the broad discipline of Anaesthesiology in the minimum training timeframe would be an ideal but utterly impossible demand in any European country. In-service training after completion of medical training will enrich both the number and level of competencies.

Description of professional development in knowledge, skills and attitudes is beyond the scope of the current UEMS ETR update.

Implications of the UEMS ETR update are aimed at the content of the European Diploma in Anaesthesiology and Intensive Care (EDAIC) as well as the Hospital Visiting and Training Accreditation Programme (HVTAP).

Duration and type of training

Anaesthesiology as a specialty has grown from a service specialty strictly within the operating room to having responsibilities in various areas of medicine. The traditional role as a medical specialty, included assessment and evaluation, maintenance of organ function as well as analgesia and amnesia for all patients undergoing diagnostic, therapeutic or surgical procedures. The practice of Anaesthesiology has significantly changed towards more holistic competencies in the perioperative period, in intensive care medicine, emergency medicine and pain medicine which in many countries are integrated parts of the clinical specialty. Thus, training requires new generic competencies and common principles to be defined for the European specialist.
The process of training, attaining defined competencies and applying them safely and efficiently in clinical practice require time so that trainees can mature and develop. Minimum training duration is 5 years, of which at least 1 year is to be spent at an intensive care unit.

According to the UEMS basic principles, specialist training is competence-based and not number- or count-based. Scientific anaesthesia societies of EU member states may define minimum average numbers required for imparting and internalizing clinical skill at a recommended competence level in the specific local / national training setting.

ETR-based training may include a variety of training activities including operative procedures, interventional procedures, ward rounds, multidisciplinary meetings, clinical research, attendance of training courses, and medical simulation training. Training activities are not uniform throughout Europe and depend on the national structures and processes. However, the common goal of specialist training should always be the development of professional competency in the fields of generic competencies and roles as described below.

Generic competencies and roles

The ETR reflects the holistic qualifications of the European specialist. The following four generic competences and roles have been identified as the most important for any European specialist in Anaesthesiology.

Expert clinician

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 knowledge of applied respiratory, circulatory and CNS-associated physiology and pharmacology.

An expert in anaesthesiology should acquire all necessary competences enabling him/her to fulfil this expert role and function in the multidisciplinary settings in anaesthesia, intensive care, critical emergency medicine, and pain medicine.

a)   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, appropriate choice and relevant use of preoperative laboratory tests and all other complementary examinations/investigations, as well use of and referral to interdisciplinary consultations when require;
•   Preoperative discussion and information of patients, obtaining informed consent;
•   Individualized selection and conduct of the safest anaesthetic technique, best suited to the medical conditions of the patient and to the operative procedure planned;
•   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

b)   Other major domains of competences are:
•   Intensive care medicine
•   Pre- and in-hospital resuscitation and emergency management of critical conditions, including trauma and burn
•   Acute and chronic pain management

Professional leader

The specialist in anaesthesiology should have competences in communication that enables him/her to deal with different aspects of human interactions and relationships. Furthermore, he/she should have competences that 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

• Implementation and use of quality assurance programs according to recognized national and 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, medico-legal, ethical, 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)

Academic 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:

• 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

Inspired humanitarian

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.

Part 2. Domains and competencies in the ETR

Definition of domains

In order to fulfil the four professional roles of a specialist in Anaesthesiology, the following list of domains of expertise and related competencies within these domains are to be obtained during medical training:

1. Domains of general core competencies

1.1 Perioperative medicine, patient assessment and risk reduction
1.2 General anaesthesia and sedation
1.3 Airway management
1.4 Regional anaesthesia
1.5 Postoperative care and acute pain management
1.6 Intensive care medicine
1.7 Critical emergency medicine (CREM)
1.8 Anaesthesia Non-Technical Skills (ANTS)
1.9 Professionalism and ethics
1.10 Patient safety and health economics
1.11 Education, Self-directed Learning, Research

2. Domains of specific core competencies

2.1 Obstetric anaesthesiology
2.2 Cardiothoracic anaesthesiology
2.3 Neuroanaesthesiology
2.4 Paediatric anaesthesiology
2.5 Multidisciplinary chronic pain management

Learning objectives

Training includes acquisition of knowledge and expertise in all patient groups undergoing all contemporary elective and urgent surgical interventions as well as in all patients groups with critical illness and trauma.

For each domain, learning objectives are divided into "knowledge, skills and attitudes" that are deemed necessary to achieve the required level of competencies, as defined by the UEMS:

- **A**: observer level (has knowledge of, describes)
- **B**: performs, manages, demonstrates under direct supervision
- **C**: performs, manages, demonstrates under distant supervision
- **D**: performs, manages, demonstrates independently

a. Knowledge competencies are per definition required at a level of competence A.

b. Clinical skills:
Skills uniform in all clinical settings are reported only here and apply throughout.

– Basic and advanced life support, including resuscitation of the newborn
– Accurate record keeping

Skills required at various locations (intraoperatively in the OR, postoperative in the recovery room, in the emergency room, prehospital) are listed only once upon first appearance, e.g. defibrillation, cardioversion. (Exceptions: In domain 1.6 several skills are listed in order to visualize competencies as a complete training in intensive care medicine. In domain 2.1 several skills are listed in order to visualize competencies as a complete training in a specific core domain.)

Levels of skill competence are reported in the description of the domains.

c. Specific attitudes: Attitudes common to all clinical settings are reported only here and apply throughout (Exception: In domain 1.5 several skills are listed in order to visualize competences as a complete training in intensive care medicine):
– Effectively communicate and interact with patients and their relatives, including patients with impaired capacity of discernment and consent, and language barriers, treat them with respect and courtesy in answering all questions and concerns they may have
– Effectively communicate with other health care providers
– Team work together with other health care professionals to ensure smooth patient care and safety
– Vigilance and situational awareness
– Respecting basic ethical and legal principles
– Promoting safety and well-being of staff

These attitudes are per definition required at a level of competence D.

New aspects in the ETR update 2018

By eliminating redundancy and self-evident content, resorting the domains of general and specific core competencies, the ETR update has been shortened substantially, thereby increasing its applicability.

Formal revisions include:

- Compared to the original work from 2013, former guidelines and syllabus have been condensed into one single ETR update.
- Domains of general and specific core competences have been re-assigned compared to the original ETR 2013 according to the clinical requirement.
- Knowledge already gained during undergraduate medical studies are not explicitly listed (e.g. anatomy, physiology, pathophysiology, pharmacology, toxicology, hygiene, physics, chemistry, biochemistry, psychology, statistics) but are understood as a prerequisite and requirement for anaesthesiology-specific knowledge. During residency, basic medical knowledge has to be refreshed and enlarged by anaesthesiology-specific content.
- General skills already gained during undergraduate trainings are not explicitly listed (e.g. ECG monitoring and interpretation).
- Redundancy has been avoided in listing uniform skills and specific attitudes only once in the document.

By adding domains and competencies in clinical fields, revising competence levels and including scientific guidelines and new training activities, the quality of the ETR update is enhanced.

Content revision include:

- International clinical guidelines and standards of high quality and prepared according to high methodological standards, e.g. by the ESA and EBA, have been referenced.
- Medical simulation training has been referenced as an effective training activity.
- The ETR update proposed competence levels have been defined throughout and new competencies have been included, e.g. 2.4 organ transplantation and donor management.

Domain 1.1: Perioperative medicine, patient assessment and risk reduction

a. Knowledge

– Preoperative risk assessment

– Airway assessment including bedside tests to assess difficult intubation, ventilation, oxygenation

– Understanding disease processes, natural evolution and knowing its influence on the management of the perioperative period

– Knowledge of the effects of anaesthetic agents on the physiology of major systems such as cardiac, respiratory and neurologic

– Treatment of pre-existing diseases, in order to optimize patients and reduce risks before anaesthesia and surgery in cooperation with other physicians

– Pharmacology and interactions of perioperative drugs

– Other medical history (personal and family history of previous anaesthesia, allergy, drug abuse, habits)

– Understanding the need and value of preoperative testing

– Scores, e.g. ASA, risk for nausea and vomiting, physical capacity, OSAS

– Understanding specific perioperative risks, e.g. in the transplant patient undergoing general surgery, the elderly comorbid patient

– Preoperative evaluation guidelines from ESA

– Preoperative fasting guidelines from ESA

– Patient blood management in pre-existing anaemia and coagulopathy

– Medico-legal aspects of patient information and informed consent, appraisal of the capacity of discernment and consent

b. Clinical skills

– Patient assessment based on history and physical examination, use of appropriate examinations and laboratory tests in patients of all age groups with and without reduced functional cardiorespiratory capacity undergoing major and minor surgical routine and emergency interventions **D**

– Evaluation of the scores, including risks and ASA physical status **D**

– Evaluation of the airway **D**

– Interpretation, considering the value and limitation of preoperative tests and monitoring including:

o Electrocardiogram, and other methods assessing cardiovascular function (echocardiography, ergometry myocardial scintigraphy, coronary angiography)

o Pulmonary function test (spirometry) and arterial blood gas analysis

o Common radiological testing with special emphasis on chest X-ray

o Coagulation tests

o Liver and renal function tests

o Endocrine function tests

o Drug monitoring **D**

– Interdisciplinary patient optimization and risk reduction, including preoperative anaemia correction, cardiopulmonary treatment **D**

– Selection and planning of the individual anaesthesia technique, including rational use of monitoring, difficult airway management, allogeneic blood products ordering, and providing other equipment required for the procedure **D**
– Patient selection for anaesthesia in day surgery **D**
– Decision-making relating to postponement or cancellation of surgery **D**
– Preparing patients with implanted defibrillators for surgery **D**
– Applying recognized principles of preoperative fasting, therapy and premedication **D**

c. Specific attitudes
– Delivering patient information including alternatives, disclosure of risks, and obtaining informed consent

Domain 1.2: General anaesthesia and sedation

a. Knowledge

–   Physics and clinical measurement

o   Behaviour of fluids; flow of fluids; measurement of volumes, flows, and pressures; measurement of temperature;

o   Behaviour of gases (humidification, oximetry, analysis of gases, capnography, electrical safety, fires and explosions; gases in closed body cavities)

–   Stress response to surgery

–   Pharmacology of muscle relaxants, analgesic drugs, inhaled and intravenous anaesthetic agents including short acting agents suitable for day surgery

–   Work-related diseases and their prevention

–   Equipment and apparatus (equipment design, physics, and standards; gas supply; anaesthesia delivery system, including pressure valves and regulator; vaporizer; breathing system; devices to maintain the airway such as video- and conventional laryngoscopes, endotracheal tubes, tracheotomy tubes, face masks, supraglottic airway devices; information systems)

–   Minimum monitoring standards, and additional monitoring when appropriate (including central venous pressure, invasive arterial pressure, cardiac output monitoring, preload monitoring, echocardiography, neuromuscular monitoring, cerebral function, coagulation, blood gas analyses, urinary output, anaesthesia depth, neuromuscular monitoring)

–   Planning and physical layout of operating rooms and post-anaesthesia recovery room; lighting; safety; infection and pollution control in operating rooms; sharps policies

–   Principles of safety such as lifting and positioning patients

–   Indication, contraindications, and complications of general anaesthesia and sedation

–   Management of anaesthesia-related complications

–   Perioperative bleeding management guidelines from ESA (Patient Blood Management)

–   Prevention of venous thromboembolism guidelines from ESA

–   Prevention of postoperative delirium and cognitive deficits guidelines from ESA

–   Emergency checklist from ESA

–   Procedural Sedation guidelines from EBA/ESA

–   Safety Recommendations from EBA for minimum monitoring and use of capnography

–   Ethical and medico-legal aspects

–   Understanding the basic concept of evidence-based medicine (including levels of evidence)

b. Clinical skills

–   Providing safe inhalation and intravenous induction, maintenance of, and emergence from general anaesthesia, including the choice of drugs, airway management, ventilation technique and intraoperative adverse event management **D**

–   Defibrillation, cardioversion **D**

–   Aseptic techniques for invasive procedures including peripheral and central (ultrasound-guided) venous access, intraosseous access, arterial catheterization, arterial blood gas collection, urinary catheterization, chest drain insertion **D**

–   Gastrointestinal tube insertion **D**

–   Blood salvage **D**

–   Blood transfusion **D**

– Preparation of the workplace according relevant checklists and environmental safety measures **D**

– Use of medical and technical equipment appropriately, including neuromuscular blockade monitoring, volume monitoring, echocardiography **D**

– Trouble-shooting basic technical malfunctions of monitors and machines **D**

– Use of relevant checklists and guidelines **D**

– Monitoring nerve function during brain and spine surgery **D**

– Perioperative patient positioning avoiding tissue damage **D**

– Maintenance of homeostasis of organ systems throughout different surgical procedures in patients with and without pre-existing diseases **D**

– Diagnosis and management of intraoperative critical incidents including

o allergic reactions, anaphylaxis

o laryngospasm, bronchospasm, inadequate airway

o gas embolism, pulmonary aspiration and pneumothorax

o hypoxia, hypercarbia, hypocarbia, hypoventilation, hyperventilation, high ventilator peak inspiratory pressures

o hypertension, hypotension, arrhythmias, myocardial ischemia, bradycardia, tachycardia, cardio-pulmonary resuscitation

o oliguria, anuria

o hypothermia, hyperthermia, malignant hyperthermia

o intraoperative blood gas and electrolyte disturbances

o intraoperative awareness

o seizure

o adverse transfusion reaction

o severe bleeding

o stress and inflammatory response **D**

– Performing anaesthesia for laser airway surgery and interventions with a shared airway **D**

– Performing anaesthesia for fast track surgery and enhanced recovery after surgery **D**

– Performing anaesthesia in ICU patients **D**

– Performing sedation for invasive procedures **D**

– Performing anaesthesia and sedation outside the OR, taking into account organization of the site, type of procedures and patients **D**

– Management of patient transport to and from remote locations **D**

– Application of principles of safety during X-ray, MRI **D**

– Application of discharge criteria for ambulatory anaesthesia **D**

– Consideration of ethical and medico-legal aspects **D**

– Initial surgical intervention in burn trauma and traumatic injury of the upper airway **D**

– Management of brain death syndrome and donor management including explanation **D**

c. Specific attitudes

– Training in the management of rare adverse events and rare clinical situations in the medical simulation centre

Domain 1.3. Airway management

a. Knowledge

– Basic airway management
– Difficult airway algorithms
– Criteria for postoperative extubation
– Maintenance of patent oral and nasal airway
– Airway complications: stridor/laryngospasm, airway obstruction

b. Clinical skills

– Rapid sequence induction **D**
– Establishment and maintenance of an adequate airway in patients with anticipated and unanticipated difficult airway including patients with airway trauma and including the use of different devices and techniques according to existing algorithms **D**
– Cricothyroidectomy C (e.g. in medical simulation training)
– Management of difficult and delayed extubation after airway interventions **D**

Domain 1.4: Regional anaesthesia

a. Knowledge

– Pharmacology of local anaesthetics and adjuvants

– Indications and contraindications of peripheral and central blocks, choice of techniques

– Risks and complications

– Recognition of systemic local anaesthetic toxicity, treatment and resuscitation measures

– Techniques of peripheral and neuraxial blocks

– Equipment and apparatus (equipment design, physics, standards, limitations; ultrasonography; nerve stimulator)

– Emergency checklist from ESA

– EBA safety Recommendation on Invasive Procedures in Pain Medicine

b. Clinical skills

– Performing neuraxial blocks such as spinal (single shot), thoracic epidural and lumbar epidural (single shot and catheter technique) combined spinal-epidural, caudal block **D**

– Performing peripheral nerve blocks of the upper extremity (single shot and catheter technique) such as interscalene, axillary blocks **D**

– Performing peripheral nerve blocks of the lower extremity (single shot and catheter technique) such as femoral, obturator, sciatic blocks **C**

– Performing nerve blocks of the torso such as paravertebral, intercostal blocks **C**

– Providing safe regional anaesthesia, including choice of drugs, techniques, and monitoring **D**

– Positioning of patients with specific pathological conditions **D**

– Management of nerve blocks in pain therapy **B**

– Diagnosis and management of intraoperative critical incidents including

o residual nerve block

o inadequate nerve blockade

o local anaesthetic toxicity **D**

Domain 1.5: Postoperative care and acute pain management

a. Knowledge
–   Scoring systems for postoperative status, transfer and discharge criteria (e.g. Aldrete Score)
–   Pathophysiology and treatment of postoperative complications
–   Equipment and apparatus (equipment design, physics, standards, limitations; Patient-controlled analgesia pumps, non-invasive and invasive postoperative ventilation)
–   Weaning from non-invasive and invasive ventilator support
–   Multimodal and pre-emptive analgesia concepts
–   Logistics and patient pathways

b. Clinical skills
–   Providing handover of a patient in PACU (appropriate summary of relevant clinical features of the patient's care) **D**
–   Providing postoperative standard monitoring, indicating and interpreting individualized testing (e.g. ischemia monitoring, X-ray) **D**
–   Pain assessment in all patient groups **D**
–   Use of relevant checklists and guidelines **D**
–   Maintenance of homeostasis of organ systems after the impact of different surgical procedures and anaesthesia in patients with and without pre-existing diseases **D**
–   Diagnosis and management of postoperative critical incidents (beyond those listed in domain 1.1) and postoperative adverse events including:
o   residual neuromuscular blockade
o   anaesthesia overhang
o   atelectasis
o   nausea and vomiting
o   shivering
o   pain
o   discomfort
o   nerve damage
o   post-dural puncture headache
o   bleeding
o   delirium, cognitive dysfunction
o   postoperative facial and airway swelling
o   central anticholinergic syndrome **D**
–   Detection of, indication for, and interprofessional organization of re-operation **D**
–   Performing weaning from supportive therapy of vital functions **D**
–   Application of discharge criteria and transfer criteria to ICU **D**
–   Application of multimodal and pre-emptive analgesia concepts **D**

c. Specific attitudes
–   Supporting interdisciplinary efforts to further improve clinical outcome and prevent postoperative adverse events
–   Considering post-anaesthesia visit for assessment of intermediate-term clinical outcomes and patients' quality of life

Domain 1.6: Intensive care medicine

a. Knowledge

– Anatomy, physiology, pharmacology, toxicology, hygiene, physics, chemistry, biochemistry

– Aetiology, pathophysiology, diagnosis and treatment plans / bundles according to international standards of specific critical conditions in all patient cohorts including paediatric patients, geriatric patients, perioperative patients after elective and emergency surgery, (burn) trauma patients:

o Circulatory failure

▪ Shock
▪ Cardio-respiratory arrest
▪ Cardiac arrhythmias
▪ Ischemic heart disease
▪ Cardiomyopathy
▪ Valvular heart disease including endocarditis
▪ Pulmonary embolism
▪ Anaphylaxis

o Respiratory failure

▪ ARDS
▪ Pulmonary oedema
▪ Airway obstruction and stenosis
▪ Pneumothorax
▪ Aspiration
▪ Pneumonia
▪ COPD and asthma

o Renal failure

▪ Chronic and acute (RIFLE)

o Gastrointestinal failure

▪ Ileus
▪ Peritonitis of various aetiologies (including colitis and intestinal ischemic disease)
▪ Pancreatitis
▪ Liver failure
▪ Digestive fistulas

o Neurological failure

▪ Delirium and Coma
▪ Cerebrovascular and bleeding diseases
▪ Cerebral oedema
▪ Increased intracranial pressure including monitoring
▪ Brain stem death
▪ Seizures
▪ Guillain Barré syndrome and Myasthenia gravis

o Trauma

▪ Head/face and spine injury
▪ Airway and chest injuries

- Aortic injuries
- Abdominal trauma
- Pelvic and long bone injuries
- Massive transfusion
- Burns and electrocution
- Near-drowning
- Hyper- and hypothermia

o Infectious diseases
- SIRS and sepsis including sepsis bundle strategy
- Severe community acquired infections (e.g. meningitis)
- Severe nosocomial infections (e.g. MRSA)
- Fungal infections

o Endocrine and metabolic disorders
- Diabetes mellitus and insipidus
- Addison's disease, Cushing and Conn syndrome
- Thyroid disorders
- Phaeochromocytoma
- Malnutrition
- Carcinoid
- Acid-base and electrolyte disturbance

o Coagulation disorders
- DIC
- Heparin resistance, heparin-induced thrombocytopenia
- Severe bleeding
- Transfusion reaction

o Obstetric complications

- HELLP syndrome, Pre-eclampsia, Eclampsia
- Septic abortion
- amniotic fluid embolism

o Intoxications

o Organ donation

– Equipment and apparatus (equipment design, physics, standards, limitations; e.g. non-invasive and invasive postoperative ventilation, continuous renal replacement therapy devices, non-invasive and invasive haemodynamic monitoring including TTE and TEE, intracranial doppler monitoring, intracranial pressure monitoring)
– Scoring systems (e.g. sedation depth, pain severity, APACHE, TISS, SAPS, SOFA)
– Indication, contraindication, drug selection, complications: sedation, anaesthesia, analgesia, neuromuscular relaxation, nutrition in the ICU
– Multimodal and pre-emptive analgesia concepts
– Weaning and extubation criteria
– Transfer and discharge criteria

– Ethical and medico-legal aspects including end of life decisions, organ donation

– Understanding the principles of determination of Brain Stem death

– Familiarity with the legal aspects of brain stem death and organ donation within their jurisdiction

– Knowledge of the pathophysiological changes that occur after brain death

– Maintenance of the brain dead organ donor

– Principles of non-heart beating organ donation

– Demographics of organ donation and transplantation in Europe

– Principles of living kidney donation

– Familiarity with the EU directives and Council of Europe Recommendations on organ donation and transplantation

– Organization of Intensive Care Units and ICU standards including:

o Evaluating and taking into consideration the difficulty and complexity of the tasks in relation to resources, qualifications, as well as local organization.

o Identifying patients with need for treatment beyond local competencies according to national organization and take initiative to organize transport for these patients.

o Coordinating the multidisciplinary approach of patients and providing cooperation with all relevant partners, with proper respect for their medical competences and roles in specific situations.

o Contribute to the holistic vision of a homogeneous team interaction both with patients and peers, and providing consensual information.

o Medical auditing in intensive care

b. Clinical skills

– Performing patient assessment and physical examination including repetitive testing e.g. of peristaltic sounds, respiratory sounds, capillary refill, temperature gradient) **D**

– Identification of signs of instability of the cervical spine **D**

– Performing sedation, general anaesthesia, multimodal analgesia **D**

– Performing neuraxial and peripheral nerve blocks for analgesia **D**

– Performing airway management including intubation under emergency situations **D**

– Performing aseptic insertion of venous, central venous, arterial, intra-osseus cannulation, pleural drainage **D**

– Gastrointestinal tube insertion, urinary catheterization **D**

– Disease assessment and disease management including:

o Respiratory support including endotracheal suction, bronchoscopy (lavage, sampling), percutaneous tracheotomy, invasive and non-invasive ventilation techniques, ventilation in prone position, weaning

o Haemodynamic management and stabilization including advanced cardiovascular monitoring, inotropic and vasoactive therapy, basic and advanced life support, defibrillation, cardioversion, pacing, pericardiocentesis

o Fluid substitution, volume management

o Correction of coagulopathy, patient blood management, blood product transfusion

o Acute kidney injury and renal replacement therapy

o Nutritional support (enteral, parenteral) including management of electrolyte, glucose and acid-base disturbances

o   Neurological management including intracranial pressure control and maintenance of intracranial perfusion pressure

o   Infectious diseases and antibiotic therapy; antiviral therapy; rules for hospital hygiene

o   Identification and implication of relevant preexisting co-morbidities

o   Prevention, recognition, and treatment of complications such as:

▪   thromboembolism

▪   ventilator associated injuries, aspiration, pneumonia

▪   stress ulceration

▪   renal failure

▪   nosocomial infection

▪   gastrointestinal paralysis

▪   critically ill polyneuropathy

▪   sepsis-induced adrenal insufficiency

▪   drug interactions

o   Responding to trends in physiological variables **D**

–   Applying EBM-based therapeutic interventions, care bundles, guidelines protocols, and organ support in single or multiple organ failure (MODS) **D**

–   Patient transportation inter- and intra-hospital **D**

–   Applying damage control and systematic priority-based approach in severe trauma patients **D**

–   Applying transfer criteria to specialized centres e.g. the critically ill child **D**

–   Applying neuroprotection in head trauma and spinal cord trauma patients **D**

–   Performing general anaesthesia for repeated surgical interventions in burn trauma patients **B**

–   Applying triage and prioritization of patients **D**

–   Applying scoring systems (e.g. sedation depth, pain severity, APACHE, SAPS, TISS) **D**

–   Performing basic ultrasound techniques for:

o   Ultrasound-guided central venous line placement;

o   Recognition of severely abnormal ventricular function (right or left ventricle; hypo- or hyperkinesia, hypovolaemia);

o   Measurement of inferior vena cava diameter;

o   Recognition of large pericardial, pleural, or abdominal effusion;

o   Recognition of urinary retention (distended bladder) **D**

–   Indicating, interpretation, considering the value and limitation of:

o   Electrocardiogram, and other methods assessing cardiovascular function

o   Pulmonary function test (spirometry) and arterial blood gas analysis

o   Common radiological testing with special emphasis on chest X-ray

o   Coagulation tests

o   Liver and renal function tests

o   Endocrine function tests

o   Drug monitoring **D**

–   Differential diagnosis, liasing with interdisciplinary specialists to interpret complex data **D**

–   Indicating physio- and ergotherapy **D**

–   Consideration of ethical and medico-legal aspects **D**

–   Performing regular visit rounds, ensuring continuity of care **D**

–   Applying discharge criteria **D**

–   Applying criteria for management change from curative to palliative care **D**

–   Providing handover of a patient to the ward (appropriate summary of relevant clinical features of the patient's care) **D**

–   Accurate record keeping **D**

–   Performing brain stem testing **B**

–   Management of organ donors in Intensive care and during organ retrieval **B**

–   Performing anaesthesia for kidney transplantation **C**

–   Performing immediate postoperative care of a kidney transplant patient **C**

–   has been exposed to the skills required to discuss with relatives about end of life issues, brain death and organ donation **B**

c. Specific attitudes

–   Effectively communicate with patients, treat patients with respect of basic ethical principles such as autonomy, privacy, dignity, confidentiality, including discussing end of life decisions **D**

–   Establishing effective interaction with patients, including patients with impaired capacity of discernment and consent and their relatives **D**

–   Effectively communicate with patients with language barriers **D**

–   Effectively communicate with other health care providers **D**

–   Team work together with other health care professionals to ensure smooth patient care and safety **D**

–   Vigilance and situational awareness **D**

–   Respecting legal constraints **D**

–   Promoting safety and well-being of staff **D**

–   Promoting infection control measures **D**

Domain 1.7: Critical emergency medicine (CREM)

a. Knowledge
– Combining the knowledge from domains 1.1 to 1.5
– Scoring systems (e.g. GCS)
– Rapid response systems, principles and rules
– Transfer criteria for pre- and inter-hospital transport
– Helicopter rescue, evacuation using an airplane
– Mass accidents and disasters, including terrorist related mass disasters with biological and chemical agents
– Basics in hyperbaric treatment
– Organization and coordination of an emergency department, a burn centre, an anti-poisoning centre, a prehospital emergency system including a helicopter base
– Medical auditing in emergency medicine
– European trauma guidelines endorsed by ESA
– Ethical and medico-legal aspects including withdrawal, withholding of therapy
– Prehospital hygiene, patient safety, risk management

b. Clinical skills
– Applying skills from domains 1.1 to 1.5 in pre-hospital critical emergency scenarios **C**
– Management of life-threatening medical and surgical emergency conditions **D**
– Applying resuscitation algorithms and trauma guidelines **D**
– Assisting in rescue work **C**
– Performing emergency medicine in the interdisciplinary team of an emergency room **D**
– Performing intra-hospital resuscitation in the interdisciplinary cardiac arrest team **D**
– Performing echocardiography for fast differential diagnosis (FAST approach) **D**
– Supporting the complex organization of health care in cases of mass accidents and disasters **B**
– Declaration of death at the scene of emergency **D**

c. Specific attitudes
– Effectively communicate with patients and relatives in exceptional circumstances
– Effectively communicate with firefighters, members of action forces, public and executive authorities, public health officer
– Performing team training focusing on crisis resource management
– Repeated training (1-2 per year) in the medical simulation centre

Domain 1.8: Anaesthesia Non-Technical Skills (ANTS)

a. Knowledge
– Psychological aspects of team performance for successful task performance
– Crisis resource management
– Human error research, relevant for the perioperative setting
– Behavioural marker systems, relevant for successful training

b. Clinical skills
– Task management
o Planning and preparing
o Prioritizing
o Providing and maintaining standards
o Identifying and utilizing resources
o Ensuring effective joint task completion
– Team working
o Coordinating activities with team members
o Exchanging information
o Effective communication
o Using authority and assertiveness
o Assessing capabilities
o Supporting others
o Assessing team satisfaction
– Situation Awareness
o Gathering information
o Recognizing and understanding
o Anticipating
– Decision making
o Identifying options: individual case plans, long-term scheduling plans
under normal conditions and time-pressure crisis situations
o Balancing risks and selecting options
o Re-evaluating
– Leadership

o Organizing tasks **D**

Domain 1.9: Professionalism and ethics

a. Knowledge

–   Principles of medical ethics: autonomy, beneficence, non-maleficence, and justice

–   The Geneva Declaration and Helsinki protocol

–   Legal principles and medico-legal obligations defining medical practice and the use of patient data

–   Governmental regulations relevant for anaesthesia practice

–   Principles of communication with patients and physician-patient "contract" including:

o   Rights and responsibilities of patient, doctors and other medical staff

o   Informed consent

o   Patient confidentiality and privacy

o   Error and incidents disclosure

–   Principles of communication with colleagues including:

o   Methods (verbal, written, consultation or referral)

o   Manner (courtesy, integrity, respect)

o   Adequate record keeping (including medico-legal implications)

–   Personal issues including:

o   Balancing family and work, and the importance of non-professional activities

o   Depression; recognition and care plans

o   Substance abuse; recognition and access to appropriate referral

o   Mentoring and teaching

–   Leadership responsibilities and styles; team behaviours

–   Stress and crisis management

–   Principles underpinning conflict resolution

–   Principles of role model

–   Principles of teaching and patient empowerment

b. Clinical skills

–   Applying principles of medical ethics to problem solving; for example in the following areas:

o   end-of-life and palliative care;

o   withholding and withdrawing treatment;

o   Jehovah's witnesses;

o   patient unable to display judgment **D**

–   Attaining attributes in the 4 roles of a specialist in anaesthesiology: medical expert, leader; scholar; professional **D**

–   Applying the principles of evidence-based medicine to clinical practice **D**

–   Use of information technology in order to optimize clinical care, conducting literature searches **D**

–   Basic appraising journal articles including the interpretation of study design, statistics, results, and conclusions **D**

–   Awareness and management according to medico-legal obligations related to medical practice **D**

–   Commitment to the main ethical principles and professional values, such as altruism, fidelity, social justice, honour, integrity, and accountability **D**

–   Commitment to the rights of patients to autonomy, confidentiality, informed consent, comprehension of the risks of medical techniques (patient-centeredness) irrespectively of race, culture, gender, sexual orientation, and socio-economic status **D**

c.   Specific attitudes

–   Commitment to lifelong continuing professional education, perpetual refreshment of competencies in reflective learning, and maintaining an inquisitive attitude

–   Commitment to responsibility in local ethics committee

Domain 1.10: Patient safety and health economics

a**. Knowledge**

–   Patient safety guidelines from EBA

–   Recommendations of quality of care and patient safety from national, European and international authorities

–   Fundamentals in patient safety including:

▪   Error-model, system failure

▪   The so called Swiss cheese model by James Reason or nowadays the threat and error model

▪   Human limitations

▪   Stress, fatigue, decision making, fixation errors, prospective memory

▪   The role of the teams, hierarchy

▪   Safety culture, principles of High Reliability Organizations (HROs), the five common principles of HROs:

•   Preoccupation with failure

•   Reluctance to simplify interpretation

•   Sensitivity to operations

•   Commitment to resilience

•   Deference to expertise

–   Tools for quality assurance and error management:

o   Analyzing the problem:

▪   Reporting systems,

▪   Critical incident monitoring,

▪   Different methods of event-analysis,

▪   Root-cause analysis,

▪   London-protocol

o   Tackling the problem:

▪   Main topics in safety problems,

▪   Medication error (prescribing: wrong drug, wrong dose),

▪   Wrong side/site procedures,

▪   Hospital acquired infections,

▪   Patient-handover

▪   Open disclosure communication

–   Economic aspects:

o   Demographic data and resource utilization data relevant for anaesthesia practice

o   Basic knowledge on financial aspects of anaesthesia practice

o   Basic knowledge on organizational and budgeting aspects of anaesthesia practice (Principles of business management)

b. Clinical skills

–   Application of standards of quality of care and patient safety in daily practice including anaesthesia in remote locations **D**

–   Use of checklists and guidelines **D**

–   Providing data for both local and national data systems **D**

–   Considering cost-effectiveness **C**

c. Specific attitudes
–   Commitment to critical incidents reporting

Domain 1.11: Education, Self-directed Learning, Research

a. Knowledge
–   Trainees will understand the scientific approach to analysis and solving questions worthy of scientific investigation.
–   Information search and literature review
–   Proposing a hypothesis; research design, bias and appropriate methods of measurement; data collection and storage; good record keeping
–   Common statistical tests and application of statistics relevant to the project; Interpretation of results
–   Monitoring of studies and post study surveillance
–   Copyright and intellectual property
–   Responsibilities of Institutional Review Board/independent ethics committee, and of investigator to the ethics committee; ethical principles
–   Principles of writing a scientific paper, and of oral or poster presentation of a paper
–   Principles of evidence-based medicine (including levels of evidence)
–   The process of obtaining funding and writing a basic grant application

b. Clinical skills
–   Conducting and appraising literature searches **D**
–   Appraising journal articles including the application of statistics **C**
–   Applying the principles of evidence-based medicine to clinical practice **D**
–   Carrying out oral presentations and professional communication **D**
–   Presenting quality assurance exercises or projects **D**
–   Developing facilitation skills, such as tutoring in small-group learning and conducting small-group meetings **C**

c. Specific attitudes
–   Valuing rigorous educational and scientific processes
–   Distinguishing between practice with a sound scientific basis and that which requires further objective assessment
–   Committing to informed consent, confidentiality and all other ethical principles of research
–   Critical appraisal: to have insight into one's own limitations, abilities and areas of expertise
–   Committing to lifelong continuing professional development

Domain 2.1: Obstetric anaesthesiology

a. Knowledge
– Knowledge competencies from domains 1.1 to 1.4 in parturient
– Physiological and anatomical changes associated with normal pregnancy
– Physiology of labour and delivery
– Fetal and placental physiology and pathophysiology
o Placental transfer
o Materno-fetal circulation
o The effects of pharmacologic agents and anaesthetic techniques on uterine blood flow and foetal development
– Embryology and teratogenicity
– Neonatal physiology and neonatal resuscitation
o Foetal heart rate monitoring
o Doppler umbilical blood flow
o Apgar score and neuro-adaptive scores and their prognostic significance
– Obstetric management of labour (normal and abnormal)
– Pain of labour and pain pathways
– Tocolytic therapy, indications and contra-indications
– Localanaesthetic use in obstetrics
– Medical disease and pregnancy:
o Pre-eclampsia/eclampsia
o HELLP
o Fatty liver of pregnancy and liver diseases
o Gestational diabetes
o Heart disease
o Neurological diseases
o Obesity
o Bleeding disorders
o Thyroid diseases
o Substance abuse
o Immunological diseases
o Renal diseases
– Regional anaesthetic techniques in obstetrics:
o Neuraxial use of opioids in obstetrics
– Methods of analgesia during labour: indications and contraindications (psychological methods, complementary methods, systemic analgesia, epidural, combined spinal-epidural, paracervical and pudendal blocks, continuous spinal)
– Complications of regional anaesthesia in obstetrics
– General anaesthesia in obstetrics
– Airway management in the parturient
– Anaesthetic care of the high risk obstetrical patient, including trauma
– Anaesthetic management of complications:
o Obstetric haemorrhage: Ante partum, peripartum and postpartum

o   Pulmonary embolism

o   Amniotic fluid embolism

o   Fetal death

–   Cardiopulmonary resuscitation and advanced cardiac life support of the parturient

–   Post-operative pain management in obstetrics

–   Maternal medications and breastfeeding

–   Anaesthesia for non-obstetric surgery during pregnancy

–   Anaesthesia for assisted reproductive technologies and intrauterine surgery

–   Maternal mortality

b. Clinical skills

–   Applying skills from domains 1.1 to 1.4 in parturients including

o   Airway assessment

o   Rapid sequence induction

o   Diagnosis and management of critical incidents such as post-dural puncture headache, pulmonary aspiration **D**

–   Positioning of parturients **D**

–   Performing anaesthesia for delivery **D**

–   Performing spinal anaesthesia (single shot), combined spinal-epidural anaesthesia and lumbar epidural anaesthesia (single shot and catheter technique) for caesarean section **D**

–   Management of pain in pregnancy and labour **D**

–   Performing lumbar epidural catheter placement for labour analgesia **D**

–   Management of severe peri-partum haemorrhage **D**

–   Initial management of high-risk parturients and application of transfer criteria to higher-level hospitals **C**

–   Performing anaesthesia in pregnant and breastfeeding women **D**

–   Performing anaesthesia and analgesia in assisted reproductive technologies and intrauterine surgery **B**

–   Applying skills from domains 1.7 to 1.9 in parturients **D**

–   Applying uniform skills from part 1 of the ETR update:

o   Basic and advanced life support, including resuscitation of the newborn

o   Accurate record keeping **D**

c. Specific attitudes

–   Recognizing ethical issues including foetal and maternal rights

–   Recognizing psychological issues relevant to pregnancy and delivery

–   Effectively communicate with patients and relatives in exceptional circumstances related to childbirth

–   Effectively communicate with interdisciplinary team including obstetrician, midwife, neonatologist, labour/delivery nurse during critical phases (e.g. peri-partum haemorrhage)

Domain 2.2: Cardiothoracic anaesthesiology

a. Knowledge

– Knowledge competencies from domains 1.1 to 1.3

– General principles of aetiology, pathophysiology and clinical presentation of cardiovascular diseases requiring cardiac surgery and of thoracic diseases requiring thoracic surgery

– Understanding the principles, applied basic sciences, and management of anaesthesia and perioperative care for

o Thoracotomy and:

▪ Lung resection, including pneumonectomy and lung reduction surgery

▪ Mediastinal mass resection

▪ Oesophageal surgery

▪ Surgery on the thoracic aorta

o Tracheal and bronchial surgery (including use of lasers and stents)

o Thoracoscopic procedures

o Mediastinoscopy

– General principles of mechanical assist devices for circulation (intra-aortic balloon pump), cardio-pulmonary bypass or extracorporeal membrane oxygenation

– General principles of one-lung ventilation

– Specific intra- and postoperative complications including hypoxia and hypoventilation

b. Clinical skills

– Specific respiratory evaluation with regards to planned surgery (assessment of operability) **B**

– Performance of lung separation techniques

o Double lumen tracheal intubation **C**

o Clinical and fiberoptic control of tube positioning **D**

o Lung separation in difficult airway patients (including tube exchange devices) **B**

– Patient positioning, particularly in the lateral decubitus position **D**

– Using chest tube drainage systems and suction **D**

– Basic skills in the management of anaesthesia and perioperative care for cardiac operations performed on-pump and off-pump **B**

– Use of advanced haemodynamic monitoring **C**

– Use of TEE for evaluation of size and function of left and right ventricle, all valves (stenosis, insufficiency, severity), diagnosis of pericardial fluid or tamponade, dilation or dissection of the aorta **B**

c. Specific attitudes

– Recognizing psychological issues relevant to patients scheduled for cardiac surgery

– Effectively communicate with patients and relatives in exceptional circumstances related to cardiac disease

– Effectively communicate with surgical team during critical phases (e.g. lung separation, weaning from cardiopulmonary bypass)

Domain 2.3: Neuroanaesthesiology

a. Knowledge

– Knowledge competencies from domains 1.1 to 1.3

– General principles of aetiology, pathophysiology and clinical presentation of central nervous diseases requiring neurosurgery

– Neurological examination

– Basic neuroimaging

– Understanding the principles, applied basic sciences, and management of anaesthesia and perioperative care for

o Supra-tentorial surgery

o Posterior fossa surgery

o Pituitary fossa and skull base surgery

o Epilepsy surgery

o Awake craniotomy

o Craniofacial and craniobasal surgery

o Spinal surgery, including emergency cord decompression

o Paediatric neurosurgery

o Ventriculo-peritoneal shunts, neuro-endoscopy

o Imaging and interventional radiological procedures

o Functional surgery and deep brain stimulation

o Vascular neurosurgery

o Diagnostic and interventional neuroradiology

o Electroconvulsive therapy

o Routine diagnostic procedures (e.g. MRI, CT)

– General principles, indications, limitations and complications of advanced neurophysiological monitoring

b. Clinical skills

– Specific evaluation with regards to planned surgery (assessment of operability) **B**

– Patient positioning, particularly in the sitting position **D**

– Management of specific complications including air embolism, intracranial hypertension **D**

– Basic skills in the management of anaesthesia and perioperative care for intracranial operations, including induced hypotension, induced hypothermia**B**

– Apply principles of neuroprotection **D**

– Use and interpretation of advanced neuromonitoring (e.g. evoked potentials, cerebral oxygenation, blood flow, metabolism) **B**

Domain 2.4: Paediatric anaesthesiology

a. Knowledge

– Knowledge competencies from domains 1.1 to 1.3

– General principles of common comorbidities including congenital diseases, syndromes related to difficult airway, cerebral palsy and seizures, respiratory susceptibility, and typical differences in children < 1 year compared to adults in terms of anatomy, physiology, and pharmacology

– General principles of aetiology, pathophysiology and clinical presentation of diseases in early childhood requiring surgery

– Understanding the principles, applied basic sciences, and management of anaesthesia and perioperative care in surgery for

o Congenital cardiac disease (e.g. tetralogy of Fallot, septum defects)

o Prematurity and its complications

o Neonatal emergencies (e.g. trachea-oesophageal fistula, abdominal wall defects)

b. Clinical skills

– Applying skills from domains 1.1 to 1.4 in paediatric patients > 1 year of age **C**

– Performing vascular access in young children < 1 year **B**

– Performing airway management in young children < 1 year **B**

– Performing general anaesthesia in young children < 1 year **B**

– Performing peripheral and neuraxial regional blocks including caudal anaesthesia in young children < 1 year **B**

– Performing postoperative care, pain management, general intensive care in young children < 1 year **B**

– Performing cardiorespiratory resuscitation in children and neonates **D**

– Recognizing patients that should be transferred to a higher competence facility and safely transfer them **D**

Domain 2.5: Multidisciplinary chronic pain management

a. Knowledge

Anatomy and Physiology

– Pain transmission and modulation, development of the pain systems

– Pain sensitization: Progression from acute to chronic pain (pain chronification)

– Types of pain: classification

– Mechanisms to block or impede pain transmission and induce analgesia

– The placebo effect

Assessment

– Pain history, physical examination. Request and interpret additional tests

– Socioeconomic factors: work / compensation, family, personal

– Pain evaluation, including scales, questionnaires, and quantitative sensory testing

– Clinical nerve functional studies and imaging

– Follow-up: Patient's pain diary

Epidemiology, Psychology and Research

– Pain management as a fundamental human right

– Epidemiology of pain, including genetic differences, psychosocial and cultural aspects

– Designing, performing, and reporting clinical trials on pain and analgesia

– Comprehend the preclinical models of pain as essential tools to improve pain management in humans

– Ethical standards in pain management and research

Pain Management: Drugs

Comprehensive knowledge on the mechanisms, therapeutic and side effects, clinical use, routes (non-invasive and invasive), doses, and drug interactions, of the following drugs and adjuvants:

– Opioids

– Non-steroidal anti-inflammatory drugs and antipyretic analgesics

– Antidepressants and anticonvulsants

– Local anaesthetics, adjuvants, and glucocorticoids

– Miscellaneous agents

– Multimodal or balanced analgesia

– Patient controlled analgesia

– Implantable intrathecal devices for drug administration

– Substance abuse, addiction and detoxification of analgesic drugs

Pain Management: Non-Pharmacological methods

Understanding the mechanisms, limitations and the risk/benefit of the methods in order to recommend and enforce their use whenever appropriate:

– Interventional procedures including nerve blocks, neurolysis, and radiofrequency

– Neuromodulation and neurostimulation (TENS, peripheral, central)

– Radiofrequency

– Surgical procedures

– Physical medicine and rehabilitation. Work rehabilitation

– Psychological: Cognitive and behavioural interventions and psychiatric treatment

– Complementary therapies including acupuncture

– Basic knowledge of patient management in palliative care

Clinical states

– Somatic pain
o Acute pain: procedural, postoperative, emergency / transport
o Chronic post-surgical pain
o Musculoskeletal pains: Cervical, lumbar
o Muscle, tendon and myofascial pains
– Visceral pain
o Urogenital pain
o Pelvic pain
o Chronic gastrointestinal pain
o Pancreatic pain
o Thoracic pain (cardiac and non-cardiac). Post-thoracotomy pain.
o Referred pain and visceral hyperalgesia
– Neuropathic and mixed pains
o Radicular pain: lumbar, cervical
o Post-laminectomy pain
o Peripheral neuropathies
o Central pain
o Post-amputation pain
o Complex regional pain syndromes
– Cancer pain
– Headache, oral and facial pains
– Pain in special situations:
o Pain in infants, children and adolescents
o Pain in older adults
o Pain relief in patients with cognitive impairment
o Pain relief in substance abusers
o Pain relief in areas of deprivation and conflict

Multidisciplinary Pain Clinics
Organization of a pain clinic, referrals, circuit and flux of patients
Role of the different medical specialties and healthcare professionals in pain clinics

b. Clinical skills

– Evaluation of patients with chronic pain: history, physical examination and requesting and interpretation of additional tests considering the bio-psycho-social model **B**

– Applying pain scales and validated questionnaires **D**

– Explaining treatment options and clinical goals **B**

– Initial multimodal treatment of patients with chronic cancer and non-cancer pain **B**

– Diagnosis and management of adverse effects of pain therapy **B**

– Accurate record keeping (logbook), including treatments and procedures. Documentation of pain evolution **B**

c. Specific attitudes

– Establish effective interactions with the multidisciplinary team of health professionals working in the pain clinic

– Consider that patients have the right to be heard, believed, and informed, regarding their pain and its management

– Recognize the principle of minimum intervention, using the simplest and safest techniques likely to be effective to achieve the clinical goal

– Develop skills to communicate professionally with patients giving information about the best treatment options based on the available medical evidence. Explain the risk / benefit of the treatments, and obtain verbal or written agreement for the use of opioids. Kindly answers all questions and concerns patients may have

– Become skilled at discerning pain from simulation, often related to drug abuse or worker's compensation

– Effectively communicates with the primary care physician discussing treatment options and the follow-up of the patient

Part 3. Requirements for ETR implementation

High quality training can only be provided in high quality training centres by high quality trainers and has to be assessed in a meaningful and robust way.

Training institutions

Training requirements and standards for training institutions vary in the different European countries. The conditions for accreditation of training centres depend on national regulatory bodies. At the European level, based on the EU Directive on Professional Qualifications and the UEMS Charta 1997 on visiting programmes and appraisal, which includes recommendations on the quality criteria of training centres, the Hospital Visiting and Training Accreditation Programme (HVTAP) Committee has been established. HVTAP is 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) Committee, the HVTAP aims to improve and harmonise training in anaesthesiology throughout Europe by ensuring that the accredited centres meet the prerequisites of training as set out in this UEMS ETR.

Requirement on clinical activities

The training hospital as the training centre or the training unit consisting of more than one training hospital (with rotation of the trainees) must offer all relevant specialties and subspecialties such as general, orthopaedic, head and neck (ear nose throat, eye, maxillofacial), paediatric, neonatal, ambulatory surgery, urology, gynaecology, obstetrics, trauma, pain clinics, general intensive care as well as subspecialties (neurosurgery, cardiothoracic and transplant surgery). The training centre must offer training in the pre-hospital environment and critical emergency medicine.

Requirement on infrastructure and process

All relevant clinical activities must be available in the department of anaesthesiology in order to acquire clinical skills and attitudes listed in the UEMS ETR, including expertise in regional anaesthesia, invasive techniques, monitoring technologies, diagnostic methods such as ultrasound.

Faculty, teachers, trainers, consultant, and tutors must be available for efficient training at a minimum number and trainee-trainer-ratio.

Adequacy of departmental accommodation and facilities for trainees is expected for both regular hours and when on-duty.
Accredited training centres/units must provide medical-technical equipment as needed to fulfil skill-training according to the UEMS ETR. Access to a library (books, online, journals) and other learning aid facilities are a prerequisite.

Training centres/units may offer access to research facilities, support in IT and statistics.

An accredited department of anaesthesiology is also expected to organise and run programmes of educational activities, including lectures, meetings, seminars on matters such as mortality and morbidity, critical incident reporting and clinical audit. It is expected that the department of anaesthesiology supports opportunities for trainees to attend educational courses and scientific meetings, offer access to e-learning. Repetitive participation in training in medical simulation scenarios should be encouraged by the department especially in order to improve non-technical skills as well as technical skills in emergency situations and management of rare disorders.

EPD recommends the preparation of a written document describing the teaching programme in the specific training centre/unit including departmental guidelines / standard procedures for anaesthetic practice, considering the UEMS ETR.

Quality management: accreditation by HVTAP
HVTAP accreditation of trainings centres is highly encouraged by UEMS EBA.

Accreditation by HVTAP includes inspection of the training centre/unit, interviews with trainers and trainees, reviews of anaesthesia records, logbooks, audit reports, written guidelines and local protocols. The inspection by HVTAP for accreditation of the training centre/unit focuses on infrastructure as well as processes.
Good training conditions require standards: Assessment of infrastructure by HVTAP addresses resources such as medical staff, director of studies, facilities, trainee-trainer-ratio, qualification of trainers, library, technical equipment, existence and transparency of written training programmes and guidelines, access to medical service and opportunities for research and development, faculty publication record, faculty lecturing and academic activities.
Process refers to the "educational climate" and to how existing educational resources are used, how professional guidance is organized including trainee' assessment by the trainers, appraisal and guidance. EPD recommends a continuous assessment of trainees' progress (formative assessment) and a competency-based evaluation system (e.g. training portfolio) in place. During HVTAP accreditation the structure and coordination of training, standard of clinical care and patient safety, medico-legal aspects, work environment including compliancy with the European Working Time Directive are assessed.

Once accredited and certified these training centres/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 quality of care and patient safety in acute and perioperative health care in line with the intentions of the Helsinki Declaration on patient safety.

EPD recommends that medical simulation centres and their methodological training techniques be assessed and accredited by professional simulation societies. On a national level, accreditation of such training institutions has already been implemented.

Trainers
Clinical teaching options applied by trainers include bed-side teaching, in-theatre / at the scene

training at day time and during on-duty, individualized supervision and information, help, advice, assistance appropriate for the competence level of the trainee.

EPD encourages educational innovations such as for the promotion of skill development; medical simulation is a novel training support option applied by trainers with specific training.

Requirement on teaching qualification

Training staff must have competence level D in the assigned area of training.

Training staff must have sufficient time allocated for the training assignment.

Training staff must have knowledge about the UEMS ETR.

Training staff must have a positive attitude towards clinical training and expertise in didactic teaching, a clear commitment to theoretical teaching and practical instruction of trainees within the full range of clinical practice.

According to the System for Evaluation of Teaching Qualities (SETQ), core competencies for tutors and trainers include 1) creating a positive learning climate, 2) professional attitude towards residents, 3) communication of learning goals, 4) evaluation of residents, 5) feedback to residents.

Commitment and competence of training staff in science and research is supportive for effective training but not a prerequisite; training, however, will stimulate clinical questions with an impact on future research.

Current practice in most European countries is count-based assessment of trainees by trainers. Expertise in competence-based teaching and assessment are limited. EPD recommends preparation and dissemination of guidelines on how to teach competence-based (handbook on competence-based teaching and assessment).

Quality management: trainer competencies

The UEMS Council of European Specialist Medical Assessments (CESMA) defined recommendations on the development and organisation of assessment, selection and training of trainers.

The System for Evaluation of Teaching Qualities (SETQ) recommends validated questionnaires completed by residents and faculty as tools for assessing teaching performance. Both questionnaires evaluate the 5 teaching qualities listed above as core competencies for tutor.

Teaching is not part of under-graduate and post-graduate training in Anaesthesiology. Current practice in most European countries is "learning teaching by doing". The EPD recommends "teach the tutors" programs throughout European countries which should implement learning technology and learning models focused on conceptual learning and behavioural practice. Faculty should be prepared to take on the academic challenges of instruction, along with the challenges of information delivery and active learning across all curricular phases. The EPD further proposes scientific research comparing the effectiveness of teaching methods and of professional development courses on the topic of lecturing, enhanced learning and effective communication.

Assessment of trainees' competence gain

Transparency of training programmes means that all training activities are recorded. The EBA recommends

1) logbook and

2) portfolio (e-portfolio) for documentation.

Logbooks document all clinical procedures and cases.

Portfolio continuously monitors progress and acquisition of competencies, interventions at the specific competence level, instruction from the trainer, self-reflection on the management of the case and the value for the training progress. Regular meetings of the trainer / tutor with the trainee permit providing guidance and planning further progress.

Assessment of logbooks and portfolios allow quality control of the training institution.

A combination of 1) formative and 2) summative assessment modalities should be used for assessing the status of the competences acquired.

Formative in-training assessment should take place throughout the training period and should include evaluation tools based on mini-clinical evaluation exercise, direct observation of clinical encounters, skills and procedures, SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis of anaesthesia procedures performed and simulation-based training evaluation. Knowledge should be assessed with multiple choice questions or viva voce (if applicable) during the training period.

Summative (final) assessment is performed at predefined time points of the training period.

-      Early during training (e.g. after the first year) compulsory appraisal of the trainee is recommended in order to identify residents unfit for training in Anaesthesiology, who may be encouraged to change to another specialty.

-      After 3 years of training, part I of the exam for the European Diploma in Anaesthesiology and Intensive Care (EDAIC) may be completed.

-      After 3 years performing a research project may be considered but is not a requirement for accreditation as Anaesthesiologist; however, active research will stimulate effective in-depth knowledge and skill gain even during this early stage in professional life.

-      Towards the end of training, national diploma or part II of EDAIC may be completed.

The EPD endorses the EDAIC exams as a label of excellence for specialist practice in Anaesthesiology. EDAIC examination covers relevant basic sciences and clinical topics appropriate for a specialist anaesthesiologist. An increasing number of European countries have officially adopted the EDAIC as their national examination. 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. EDAIC examination achieve a uniformly high standard of knowledge throughout Europe as judged by an independent Board of Examiners. The UEMS Council of European Specialist Medical Assessments (CESMA) have defined recommendations on the development and organisation of assessment, selection and training of assessors.

List of abbreviations

APACHE	acute physiology and chronic health evaluation
ARDS	adult respiratory distress syndrome
ASA	American Society of Anesthesiologists
CESMA	UEMS Council of European Specialist Medical Assessments
CNS	central nervous system
COPD	chronic obstructive pulmonary disease
CT	computer tomography
EBM	evidence-based medicine
EPD	Standing committee on education and professional development of EBA
EBA	European Section and Board of Anaesthesiology
EDAIC	European Diploma in Anaesthesiology and Intensive Care
ETR	European training requirement
GCS	Glasgow coma scale
HVTAP	Hospital Visiting and Training Accreditation Programme
HRO	high reliability organization
ICU	intensive care unit
MODS	multiple organ dysfunction syndrome
MRI	magnetic resonance imaging
OSAS	obstructive sleep apnea syndrome
RIFLE	risk, injury, failure, loss, end-stage kidney disease
SAPS	simplified acute physiology score
SOFA	sequential organ failure assessment
TEE	transesophageal echocardiography
TENS	transcutaneous electrical nerve stimulation
TISS	therapeutic intervention scoring system
TTE	transthoracic echocardiography
UEMS	Union Européenne des Médecins Spécialistes