



## **Detailed Program of the CEEA Courses**

The CEEA is a Committee for Continuing Medical Education (CME/CPD) in close cooperation with the ESAIC Board of Directors, National Anaesthesiologists Societies Committee (NASC), ESAIC Scientific Committee and ESAIC Education and Training Committee (Edtc). The CEEA represents around 50 regional centres for Continuing Medical Education (CME) in Anaesthesiology, which organise refresher courses designed for specialists in Anaesthesiology, Pain, Intensive Care and Perioperative Medicine.

The revision of the CEEA Courses Program was made in 2023 by the CEEA Committee, taking into consideration the current (UEMS ETR) updated European Training Requirement ETR in Anaesthesiology from the Standing Committee on Education and Professional Development (EPD) of the Section and European Board of Anaesthesiology (EBA). This ETR reflects the holistic qualifications of the European specialist in Anaesthesiology, Pain, Intensive Care and Perioperative Medicine.

In summary, learning objectives for all CEEA courses are listed to improve the necessary competences needed to fulfil the roles of expert clinician, professional leader, academic scholar and inspired humanitarian in multidisciplinary settings in anaesthesia, intensive care, critical emergency medicine, and pain medicine. The components include: the fundamental knowledge and the latest news from the last 5 years. Furthermore, teaching tools (educational model and materials), are mentioned, in the annex, to facilitate the acquisition and maintenance of (new) knowledge, skills and attitudes to perform, manage and demonstrate domain related competencies at various locations.

Next update is planned for 2027



## **1. Thorax and Respiration**

### **Suggested topics for presentations:**

- 1.1 Respiratory physiology
  - 1.1.1 respiratory mechanics
  - 1.1.2 ventilation and perfusion of the lungs
  - 1.1.3 oxygen metabolism and oximetry
  - 1.1.4 carbon dioxide metabolism and capnography
- 1.2 Anaesthesia for thoracic surgery
- 1.3 Anaesthesia for the patient with respiratory failure
- 1.4 Postoperative respiratory distress
- 1.5 Intensive care for respiratory failure
  - 1.5.1 acute severe asthma
  - 1.5.2 ARDS
  - 1.5.3 respiratory infection
  - 1.5.4 COPD
- 1.6 Pocus and the thorax/thoracic ultrasound
- 1.7 Respiratory monitoring and techniques in anaesthesia and intensive care
- 1.8 High flow nasal oxygen therapy and noninvasive ventilation perioperatively
- 1.9 Intraoperative hyperoxia
- 1.10 Postoperative respiratory complications
- 1.11 Radiological imaging of the thorax
- 1.12 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 and trauma patients: o Respiratory failure; ARDS; Pulmonary oedema; Airway obstruction and stenosis; Pneumothorax; Aspiration; Pneumonia; COPD and asthma.

### **Evening Discussion:**

- 1.13 TBD selection domains of general core competencies Anaesthesia non-technical skills



1.14 Professionalism and ethics

1.15 Patient safety and health economics

1.16 Research, education and self-directed learning

### **Clinical skills which can be incorporated in the above mentioned topics:**

- Respiratory evaluation with regard to planned surgery (assessment of operability)
- Performance of lung separation techniques
  - o Double lumen tracheal intubation and bronchial blockers (techniques, indications and contraindications)
  - o Clinical and fiberoptic control of tube positioning
  - o Lung separation in difficult airway patients (including tube exchange devices)
- Patient positioning, particularly in the lateral decubitus position
- Using chest tube drainage systems and suction
- Use of advanced haemodynamic monitoring
- Effectively communicate with patients and relatives in particular circumstances related to cardiac and lung diseases and surgery
- Effectively communicate with surgical team during critical phases (e.g. lung separation, weaning from cardiopulmonary bypass, ECMO)
- Multimodal analgesia for thoracic surgery (including thoracic epidural, nerve and fascial plane blocks)
- Assessment, planning and management of perioperative and periprocedural airway management (e.g. identification of the cricothyroid membrane, confirmation of endotracheal intubation, lung sliding, nasogastric tube placement)
- Assessment of lung pathology (e.g. pleural fluid, pneumothorax, pulmonary contusion), diaphragmatic function
- Assessment of pulmonary parenchyma and identification of pleural fluid
- Procedural guidance in accessing central and peripheral vessels
- Assessment of stomach content and associated aspiration risk

## **2. Heart and Circulation**

### **Suggested topics for presentations:**



- 2.1 Cardiovascular physiology
  - 2.1.1 Electrophysiology and mechanics of the heart
  - 2.1.2 Pharmacology of cardiovascular drugs
  - 2.1.3 inotropic agents
  - 2.1.4 anti-arrhythmic drugs
- 2.2 Anaesthesia for non-cardiac surgery in the cardiac patient
  - 2.2.1 preoperative assessment
  - 2.2.2 coronary artery disease
  - 2.2.3 ICD
  - 2.2.4 holter monitoring and pacemakers
  - 2.2.5 hypertension
  - 2.2.6 arrhythmias
- 2.3 Anaesthesia for cardiovascular surgery
  - 2.3.1 open heart surgery and extracorporeal circulation
  - 2.3.2 aortic surgery and endovascular aortic grafts
  - 2.3.3 carotid surgery
  - 2.3.4 peripheral vascular surgery
  - 2.3.5 TAVI
  - 2.3.6 pacemakers
- 2.4 Perioperative cardiovascular complications
  - 2.4.1 intensive care for cardiovascular failure
  - 2.4.2 acute myocardial infarction
  - 2.4.3 cardiogenic shock
  - 2.4.4 cardiac arrest and CPR
  - 2.4.5 pulmonary oedema
  - 2.4.6 pulmonary thromboembolism
- 2.5 Monitoring in cardiovascular anaesthesia (invasive/non-invasive)
- 2.6 Controlled hypotension
- 2.7 Anaesthetic considerations in patients with ICD
  - 2.7.1 implantable cardioverter defibrillator
  - 2.7.2 holter monitoring
  - 2.7.3 TAVI Transcatheter Aortic Valve Implantation
  - 2.7.4 pacemakers
- 2.8 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 and trauma patients: o Circulatory failure; Shock; Cardio-respiratory arrest; Cardiac arrhythmias; Ischemic heart disease; Cardiomyopathy; Valvular heart disease including endocarditis; Pulmonary embolism; Anaphylaxis Renal failure; Chronic and acute kidney injury (RIFLE, KDIGO stages)

### **Evening Discussion:**

2.9 TBD selection domains of general core competencies Anaesthesia non-technical skills

2.10 Professionalism and ethics

2.11 Patient safety and health economics, Research

2.12 education and self-directed learning

### **Clinical skills which can be incorporated in the above mentioned topics:**

- Respiratory evaluation with regard to planned surgery (assessment of operability)
- Performance of lung separation techniques
  - o Double lumen tracheal intubation and bronchial blockers (techniques, indications and contraindications)
  - o Clinical and fiberoptic control of tube positioning
    - o Lung separation in difficult airway patients (including tube exchange devices)
- Patient positioning, particularly in the lateral decubitus position
- Using chest tube drainage systems and suction
- Basic skills in the management of anaesthesia and perioperative care for cardiac operations performed on-pump and off-pump
- Use of advanced haemodynamic monitoring
- Use of TOE for evaluation of size and function of left and right ventricle, valves (stenosis, insufficiency, severity), diagnosis of pericardial fluid or tamponade, dilation or dissection of the aorta
- Effectively communicate with patients and relatives in particular circumstances related to cardiac and lung diseases and surgery
- Effectively communicate with surgical team during critical phases (e.g. lung separation, weaning from cardiopulmonary bypass)
- Multimodal analgesia for thoracic surgery (including thoracic epidural, nerve and fascial plane blocks)



- Procedural guidance in accessing central and peripheral vessels
- Assessment of stomach content and associated aspiration risk
- Assessment of fluid responsiveness for diagnosis and management of haemodynamically unstable patients, critically ill patients
- Assessment of cardiac function for diagnosis and management of haemodynamically unstable and/or critically ill patients, assessment of morphologic signs of valvular disease (e.g. aortic stenosis), managing cardiac arrest and diagnosing hypovolemia, pulmonary embolism, left ventricular failure and pericardial tamponade
- Focused assessment with sonography for trauma (FAST) examination (subcostal, right upper quadrant, left upper quadrant, pelvic views), identification of free intraperitoneal fluid
  - Providing handover in PACU including appropriate summary of relevant clinical features of the patient's care
  - Providing postoperative standard monitoring, indicating and interpreting individualised testing (e.g. ischaemia monitoring, X-ray)
  - Pain assessment in all patient groups D
  - Maintenance of homeostasis of organ function after surgical procedures and anaesthesia in patients with and without pre-existing diseases
  - Diagnosis and management of postoperative critical incidents and postoperative adverse events including:
    - o residual neuromuscular blockade
    - o anaesthesia overhang
    - o dental injury o corneal abrasion o atelectasis
    - o nausea and vomiting
    - o shivering o pain
    - o post-dural puncture headache
    - o bleeding
    - o delirium, cognitive dysfunction
    - o discomfort o postoperative facial and airway swelling
    - o central anticholinergic syndrome
    - o residual nerve block
    - o epidural haematoma and abscess
    - o compartment syndrome
- Indication for re-operation and interprofessional organisation
- Weaning from supportive therapy of vital functions
- Use of discharge and transfer criteria to ICU



- Use of multimodal postoperative and post-discharge analgesia
- Making a post-anaesthesia visit for assessment of intermediate-term clinical outcomes and patients' quality of life
- Explaining to the patient how to reduce analgesia on returning home
- Informing the patient of any untoward incidents (e.g. difficult airway, peripheral nerve injury) and offering advice and written information on future anaesthesia
- Disease assessment and disease management including:
  - Respiratory support including endotracheal suction, bronchoscopy (lavage, sampling), percutaneous tracheotomy, invasive and non-invasive ventilation techniques, ventilation in prone position, high-flow oxygenation, weaning
  - Haemodynamic management and stabilization including advanced cardiovascular monitoring, inotropic and vasoactive therapy, basic and advanced life support, defibrillation, cardioversion, pacing
  - Fluid substitution, volume management
  - Management of coagulopathy, patient blood management, blood product transfusion
  - Acute kidney injury and renal replacement therapy
  - Nutritional support (enteral, parenteral) including management of electrolyte, glucose, and acid-base disturbances
  - Neurological management including intracranial pressure control and maintenance of intracranial perfusion pressure
  - Infectious diseases and antibiotic therapy; antiviral therapy; development & implementation of rules for hospital hygiene
  - Identification and implications of relevant pre-existing co-morbidities
  - Prevention, recognition, and treatment of complications such as: thromboembolism; ventilator associated lung injuries (VILI), aspiration, pneumonia; stress ulceration; renal failure; nosocomial infection; gastrointestinal paralysis; critically ill polyneuropathy; sepsis-induced adrenal insufficiency; drug interactions
  - Responding to trends in physiological variables
  - Pericardiocentesis
- Applying EBM-based therapeutic interventions, care bundles, guidelines protocols, and organ support in single or multiple organ failure (MODS)
- Performing ultrasound techniques for:
  - Ultrasound-guided vascular access placement
  - Recognition & management of severely abnormal ventricular function (right or left ventricle; hypo- or hyperkinesia, hypovolaemia)



- o Measurement of inferior vena cava diameter and interpretation
- o Recognition and management of pericardial, pleural, or abdominal effusion
- o Recognition and management of urinary retention (distended bladder)
- 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 Cardiopulmonary Exercise Test (CPET)
  - o Common radiological testing with special emphasis on lung ultrasound, chest X-ray, and CT scan
- o Coagulation tests (including viscoelastic haemostatic assays)
- o Liver and renal function tests (including indocyanine green test)
- o Endocrine function tests
- o Drug monitoring
- Differential diagnosis, liaising with specialists from other disciplines to interpret complex data

### **3. Intensive Care, Emergency Medicine, Blood and Blood Transfusion**

#### **Suggested topics for presentations:**

- 3.1 Disease management
  - 3.1.1 pathophysiology
  - 3.1.2 diagnosis and management of respiratory, cardiovascular, renal, neurological, gastrointestinal, haematological and oncological disorders
  - 3.1.3 endocrine disturbances
- 3.2 Common medical emergencies and trauma care
  - 3.2.1 multiple injuries
  - 3.2.2 chest injuries
  - 3.2.3 head and spinal injuries
  - 3.2.4 burns
  - 3.2.5 cardiopulmonary resuscitation
  - 3.2.6 damage control resuscitation
  - 3.2.7 haemorrhagic shock
  - 3.2.8 Intoxications
  - 3.2.9 crush syndrome
  - 3.2.10 raised intra abdominal pressure)





### 3.3 Infections

- 3.3.1 nosocomial
- 3.3.2 sepsis and septic shock
- 3.3.3 pathogenesis of MODS
- 3.3.4 antibiotics
- 3.3.5 COVID
- 3.3.6 immunology

### 3.4 Patient blood management Blood and blood transfusion

- 3.4.1 blood saving techniques
- 3.4.2 haemostasis and haemorrhage, antiplatelet drugs
- 3.4.3 anticoagulants and thrombolytics
- 3.4.4 Blood not an option (BNAO, eg Jehovah's Witness)

### 3.5 Focused ultrasound for trauma patient evaluation

### 3.6 Nutrition: parenteral and enteral

### 3.7 Endocrine and metabolic response to anaesthesia and surgery

### 3.8 Sodium, potassium, calcium, magnesium, phosphorus and water metabolism

### 3.9 Carbohydrates, lipids and protein metabolism

### 3.10 Sedation in the ICU

### 3.11 Anaesthesiologist-patient communication in the operating theatre; Medical error and second victim; Communication of bad news on the ICU/ operating room

### 3.12 Surgical infection: risk factors and prevention

### 3.13 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 management of sepsis according to the Surviving Sepsis Campaign bundle; Severe community acquired infections (e.g. meningitis,

SARS-CoV-2); Severe nosocomial infections (e.g. MRSA); Fungal infections; Hand hygiene & use of personal protective equipment (PPE); Isolation measures;

Management of needle stick injuries; Requirements for fluid, droplet and aerosol precautions in airway management using face shields and barrier masks, gloves

and fluidimpermeable gowns

18 o Endocrine and metabolic disorders; Diabetes mellitus and insipidus; Addison's disease, Cushing and Conn syndrome; Thyroid disorders; Pheochromocytoma; Malnutrition; Carcinoid; Acid-base and

electrolyte disturbance

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

o Intoxications

o Organ donation



### **Evening Discussion:**

3.14 TBD selection domains of general core competencies Anaesthesia non-technical skills

3.15 Professionalism and ethics

3.16 Patient safety and health economics

3.17 Research, education and self-directed learning

### **Clinical skills which can be incorporated in the above mentioned topics:**

- Applying skills from other general domains in pre-hospital critical emergency scenarios
- Patient assessment and physical examination including repetitive testing e.g. of peristaltic sounds, respiratory sounds, capillary refill, temperature gradient
- Identification of signs of instability of the cervical spine
- Sedation, general anaesthesia, multimodal analgesia
- Neuraxial and peripheral nerve blocks for analgesia
- Cerebrospinal fluid drainage for diagnosis and treatment
- POCUS: lung ultrasound, vascular ultrasound, heart ultrasound
- Airway management including intubation under emergency situations
- Aseptic insertion of venous, central venous, arterial, intra-osseous cannulation, pleural drainage
- Gastrointestinal tube insertion, urinary catheterization
- Use protective equipment in patients with infection diseases
- 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, high-flow oxygenation, weaning
  - o Haemodynamic management and stabilization including advanced cardiovascular monitoring, inotropic and vasoactive therapy, basic and advanced life support, defibrillation, cardioversion, pacing
  - o Fluid substitution, volume management
  - o Management 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; development & implementation of rules for hospital hygiene

- o Identification and implications of relevant pre-existing co-morbidities

- o Prevention, recognition, and treatment of complications such as: thromboembolism; ventilator associated lung injuries (VILI), 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

- o Pericardiocentesis B

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

- Patient transportation inter- and intra-hospital

- Applying damage control and systematic priority-based approach in patients with severe trauma

- Applying transfer criteria to specialised centres e.g. the critically ill child

- Applying neuroprotection in patients with head or spinal cord trauma

- Performing general anaesthesia for repeated surgical interventions in patients with burns

- Applying triage and prioritisation of patients' care

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

- Performing ultrasound techniques for:

- o Ultrasound-guided vascular access placement

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

- o Measurement of inferior vena cava diameter and interpretation.

- o Recognition and management of pericardial, pleural, or abdominal effusion

- o Recognition and management of urinary retention (distended bladder)

- 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 Cardiopulmonary Exercise Test (CPET)

- o Common radiological testing with special emphasis on lung ultrasound, chest X-ray, and CT scan

- o Coagulation tests (including viscoelastic haemostatic assays)



- o Liver and renal function tests (including indocyanine green test)
- o Endocrine function tests
- o Drug monitoring
- Differential diagnosis, liaising with specialists from other disciplines to interpret complex data
- Indications for physio- and occupational therapy
- Consideration of ethical and medico-legal aspects
- Performing regular patient visit rounds, ensuring continuity of care
- Applying discharge criteria
- Applying criteria to change management from curative to palliative care
- Providing handover of a patient to the ward (appropriate summary of relevant clinical features of the patient's care)
- Accurate and detailed record keeping
- Performing brain stem testing
- Management of organ donors in intensive care and during organ retrieval
- Performing anaesthesia for transplantation
- Performing postoperative care of a transplant patient
- Discussion with relatives about end of life care, brain death and organ donation level
- Performing basic and advanced life support
- Effectively communicate with patients, treating them with respect using basic ethical principles such as autonomy, privacy, dignity, confidentiality, including discussing end of life decisions
- Establish effective interaction with patients, including patients with impaired capacity and consent, and with their relatives
- Effective communication with patients with language barriers
- Emergency skills; Applying skills from other domains in pre-hospital critical emergency scenarios
- Management of life-threatening medical and surgical emergency conditions
- Applying resuscitation algorithms and trauma guidelines
- Assisting in rescue work
- Performing emergency medicine in the interdisciplinary team of an emergency room
- Performing intra-hospital resuscitation in the interdisciplinary cardiac arrest team
- Performing echocardiography for fast differential diagnosis (FAST approach)
- Performing multimodal analgesia in emergency care



- Supporting the complex organisation of health care in cases of mass casualty incidents and disasters
- Declaration of death at the scene of emergency
- Conducting a team debrief
- Performing team training focusing on crisis resource management
- POCUS Assessment, planning and management of perioperative and periprocedural airway management (e.g. identification of the cricothyroid membrane, confirmation of endotracheal intubation, lung sliding, nasogastric tube placement); Assessment of lung pathology (e.g. pleural fluid, pneumothorax, pulmonary contusion), diaphragmatic function; Assessment of pulmonary parenchyma and identification of pleural fluid; Procedural guidance in accessing central and peripheral vessels; Assessment of stomach content and associated aspiration risk; Assessment of fluid responsiveness for diagnosis and management of haemodynamically unstable patients, critically ill patients; Assessment of cardiac function for diagnosis and management of haemodynamically unstable and/or critically ill patients, assessment of morphologic signs of valvular disease (e.g. aortic stenosis), managing cardiac arrest and diagnosing hypovolemia, pulmonary embolism, left ventricular failure and pericardial tamponade; Focused assessment with sonography for trauma (FAST) examination (subcostal, right upper quadrant, left upper quadrant, pelvic views), identification of free intraperitoneal fluid

#### **4. Mother and Child. Adverse Reactions**

##### **Suggested topics for presentations:**

- 4.1 Organization of the obstetric anaesthesia unit
- 4.2 Anaesthesia and analgesia for vaginal delivery
- 4.3 Anaesthesia for caesarian section
- 4.4 Anaesthesia for non-obstetric surgery during pregnancy
- 4.5 Resuscitation and intensive care for obstetric emergencies
- 4.6 Obstetric patient with high risk concomitant diseases
- 4.7 Drug choices in pregnancy and during breast feeding
- 4.8 Anaesthesia for infants and newborn
- 4.9 General and regional anaesthesia in paediatrics
- 4.10 Resuscitation of the newborn



## Analgesedation in paediatrics

### 4.11 Drug interactions

### 4.12 Allergic reactions in the OR and ICU

### 4.13 Anaesthesia for the patient with allergic disease

### 4.14 Locoregional anaesthesia in paediatrics

### 4.15 Anaesthesia in major neonatal emergencies

### 4.16 Anaesthetic neurotoxicity in paediatrics

### 4.17 Preoperative anxiety in children

### 4.18 WHO Check-List

4.19 Obstetric complications; HELLP syndrome, Pre-eclampsia, Eclampsia; Septic abortion; amniotic fluid embolism; postpartum haemorrhage; placenta percreta/accrete

4.20 Anatomic features of the neonatal, infant, pediatric and adolescent airway; Physiologic characteristics of the different childhood periods including cardiovascular, respiratory, renal, neurologic and neuromuscular; Sufficient knowledge of behavioural and emotional developmental changes in children; 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)

## **Evening Discussion:**

4.21 TBD selection domains of general core competencies

4.22 Anaesthesia non-technical skills

4.23 Professionalism and ethics

4.24 Patient safety and health economics, Research

4.25 Education and self-directed learning

## ***Clinical skills which can be incorporated in the above mentioned topics:***



- Applying skills from other domains 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
- Positioning of parturients
- Performing lumbar epidural catheter placement, combined spinal-anaesthesia, spinal for labour analgesia
- Performing anaesthesia for delivery
- Performing spinal anaesthesia (single shot and catheter techniques), combined spinepidural anaesthesia and lumbar epidural anaesthesia (single shot and catheter technique) for caesarean section
- Management of pain in pregnancy and labour
- Management of severe peri-partum haemorrhage
- Initial management of high-risk parturient and application of transfer criteria to more specialist hospitals
- Performing anaesthesia in pregnant and breastfeeding women
- Performing anaesthesia and analgesia in assisted reproductive technologies and intrauterine surgery
- Effectively communicate with patients and relatives in circumstances related to childbirth
- Effectively communicate with interdisciplinary team including obstetrician, midwife, neonatologist, labour/delivery nurse during critical phases (e.g. peri-partum haemorrhage)
- Applying uniform skills from other domains:
  - o Basic and advanced life support, including resuscitation in pregnancy and of the newborn - Recognise the neonate needing resuscitation - Initiate resuscitation of neonates
- Apply skills from other domains in paediatric patients >1 year of age
- Perform vascular access in young children < 1 year with and without ultrasound
- Perform airway management in young children
- Diagnosis and management of intraoperative critical incidents including (appropriate use of the Crisis Checklist):
  - 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, cardiac arrest
- 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

## **5. Neurology, Regional Anaesthesia and Pain Management**

### **Suggested topics for presentations:**

- 5.1 Anaesthesia for neurosurgery
- 5.2 Anaesthesia for the patient with neurological disease/Anaesthesia and stroke
- 5.3 Anaesthesia for the patient with neuromuscular disease (neuromuscular physiology and pharmacology, neuromuscular junction, neuromuscular transmission monitoring)
- 5.4 Perioperative neurological complications and cognitive dysfunction
- 5.5 Neurologic emergencies (coma, intoxication, poisoning, malignant hyperthermia, cerebral death and organ donor management)
- 5.6 CNS physiology: graphs and curves every anaesthesiologist should know about
- 5.7 Postoperative circuits in neuroanaesthesia
- 5.8 Brain death
- 5.9 Neuromonitoring : ICP, SSMP, SrO<sub>2</sub>, DTC, BIS
- 5.10 Physiology central, peripheral and autonomous nervous system/nociceptive pathways and mechanisms
- 5.11 Temperature regulation
- 5.12 (Loco)Regional anesthesia (spinal/epidural/nerve blocks/ complications)
- 5.13 Management of and clinical tools for the assessment of acute and chronic pain
- 5.14 End-of-life care and palliative medicine
- 5.15 Ultrasound and peripheral blocks





5.16 Opioid-free anaesthesia

5.17 Quantification of nociception during the intraoperative period

5.18 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 pain; 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 Organisation of a pain clinic, referrals, patient flow Role of the different medical specialties and healthcare professionals in pain clinics

### **Evening Discussion:**

5.19 TBD selection domains of general core competencies Anaesthesia non-technical skills

5.20 Professionalism and ethics

5.21 Patient safety and health economics

5.22 Research, education and self-directed learning

### **Clinical skills which can be incorporated in the above mentioned topics:**

- Specific evaluation with regard to planned neuro-surgery (assessment of operability)
- Patient positioning, particularly in the sitting position
- Management of specific complications including air embolism, intracranial hypertension, seizures
- Basic skills in the management of anaesthesia and perioperative care for intracranial operations, including induced hypotension, induced hypothermia
- Apply principles of neuroprotection
- Use and interpretation of advanced neuromonitoring (e.g. evoked potentials, cerebral oxygenation, blood flow, metabolism)



- Perform scalp block
- Management of cardiac arrest in the prone position
- Diagnosis and management of postoperative critical incidents and postoperative adverse events including:
  - o residual neuromuscular blockade
  - o anaesthesia overhang
  - o dental injury
  - o corneal abrasion
  - o atelectasis
  - o nausea and vomiting
  - o shivering
  - o pain
  - o post-dural puncture headache
  - o bleeding
  - o delirium, cognitive dysfunction
  - o discomfort
  - o postoperative facial and airway swelling
  - o central anticholinergic syndrome
  - o residual nerve block
  - o epidural haematoma and abscess
  - o compartment syndrome
- Pain assessment in all patient groups
- Use of multimodal postoperative and post-discharge analgesia
- Making a post-anaesthesia visit for assessment of intermediate-term clinical outcomes and patients' quality of life
- Explaining to the patient how to reduce analgesia on returning home
- Informing the patient of any untoward incidents (e.g. difficult airway, peripheral nerve injury) and offering advice and written information on future anaesthesia
- Evaluation of patients with chronic pain: history, physical examination and requesting and interpretation of additional tests considering the bio-psycho-social model
- Applying pain scales and validated questionnaires
- Explaining treatment options and clinical goals
- Initial multimodal treatment of patients with chronic cancer and non-cancer pain
- Procedural guidance in invasive pain management techniques using POCUS
- Effectively communicate with patients and relatives in particular circumstances related to chronic pain, including informing about best treatment option, risk/benefit of the treatments, obtain informed consent and written agreement



- Effective interactions with the multidisciplinary team of health professionals working in the pain clinic
- Effectively communicate with the primary care physician discussing treatment options and the follow-up of the patient
- Prevention, diagnosis and management of adverse effects of pain therapy
- Accurate record keeping (logbook), including treatments and procedures. Documentation of pain evolution

## **6. Specific Domains of Perioperative Medicine**

### **Suggested topics for presentations:**

- 6.1 Anaesthesia in the elderly
- 6.2 Anaesthesia for the morbidly obese patient
- 6.3 Anesthesia for the patient with transplanted organ
- 6.4 Anesthesia for the patient with renal failure
- 6.5 Anaesthesia in urology
- 6.6 Anesthesia for the patient with liver disease
- 6.7 Anesthesia for the patient with major abdominal surgery
- 6.8 Anesthesia for the patient with endocrine surgery
- 6.9 Anesthesia for the patient with dental and orofacial surgery
- 6.10 Anesthesia for the patient with orthopedic surgery
- 6.11 Anesthesia for the patient with head and neck surgery
- 6.12 Day case surgery
- 6.13 Sedation and anaesthesia for non-surgical procedures (radiological, endoscopic, electroconvulsive therapy), often outside the operating room
- 6.14 Videoendoscopic and robotic procedures
- 6.15 Preoperative clinic
- 6.16 Simulation in critical situations
- 6.17 Pre-rehabilitation and recovery enhancement
- 6.18 How to start a research project and how to write a manuscript
- 6.19 Anaesthesia outside the operating theatre - organisational model

### **Evening Discussion:**



6.20 TBD selection domains of general core competencies Anaesthesia non-technical skills

6.21 Professionalism and ethics

6.22 Patient safety and health economics

6.23 Research, education and self-directed learning

**Clinical skills which can be incorporated in the above mentioned topics:**

- Patient assessment based on history and physical examination, use of appropriate diagnostic tools 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
- Evaluation and using of risk scores including ASA physical status
- Assessment of the airway
- Interpretation, understanding the value and limitation of preoperative tests and monitoring including:
  - Electrocardiogram, and other methods assessing cardiovascular function (echocardiography, ergometry, myocardial scintigraphy, coronary angiography, MRI)
  - Pulmonary function test (spirometry) and arterial blood gas analysis
  - Cardiopulmonary Exercise Test (CPET)
  - Common radiological testing with special emphasis on lung ultrasound, chest X-ray and CT scan
  - Hemogram and coagulation tests
  - Liver and renal function tests
  - Endocrine function tests
  - Drug monitoring
- Interdisciplinary patient optimisation and risk reduction, including preoperative anaemia correction, cardiopulmonary optimisation
- Selection and planning of the individual anaesthesia technique, including rational use of monitoring, difficult airway management, allogeneic blood products administration, and providing other equipment required for the procedure
- Patient selection for anaesthesia in day surgery
- Preparing and managing patients with pacemakers or implanted cardiac defibrillators for surgery
- Applying recognised principles of preoperative fasting, therapy, and premedication



- Application of multimodal and pre-emptive analgesia (including opioid-sparing strategies)
- Detailed recording and transferring patient information to other colleagues
- Decision-making relating to postponement or cancellation of surgery
- Delivering patient information including alternatives, discussion of risks, and obtaining informed consent
- Preparation of the workplace according to relevant checklists and environmental safety measures
- Providing safe inhalational and intravenous induction, maintenance of, and emergence from general anaesthesia, including the choice of drugs, airway management, ventilation technique and intraoperative adverse event management
- Defibrillation, cardioversion
- Aseptic techniques for invasive procedures including peripheral and central vascular access, intraosseous access, arterial catheterization, arterial blood gas collection, urinary catheterization, chest drain insertion
- Naso- and orogastric tube insertion
- Blood salvage
- Blood products transfusion
- Apply and adjust the anaesthetic decision by using risk scores
- Appropriate use of medical and technical equipment
- Trouble-shooting basic technical malfunctions of monitors and machines
- Regular use of recommended checklists and guidelines
- Monitoring nerve function during brain and spine surgery
- Appropriate perioperative patient positioning
- Maintenance of homeostasis of organ systems throughout different surgical procedures in patients with and without pre-existing diseases
- Diagnosis and management of intraoperative critical incidents including (appropriate use of the Crisis Checklist):
  - allergic reactions, anaphylaxis
  - laryngospasm, bronchospasm, inadequate airway
  - gas embolism, pulmonary aspiration, and pneumothorax
  - hypoxia, hypercarbia, hypocarbia, hypoventilation, hyperventilation, high ventilator peak inspiratory pressures
  - hypertension, hypotension, arrhythmias, myocardial ischemia, bradycardia, tachycardia, cardiac arrest
  - 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
- Performing anaesthesia for laser airway surgery and interventions with a shared airway
- Performing anaesthesia for fast-track surgery and enhanced recovery after surgery
- Performing anaesthesia for patients in ICU
- Performing sedation for invasive procedures
- Performing anaesthesia and sedation outside the operating theatre, considering organisation of the site, type of procedure and patient
- Performing anaesthesia in robotic surgery
- Management of patient transport to and from remote locations
- Anaesthesia in remote locations (e.g. MRI, CT, electroconvulsive therapy suite)
- Application of principles of safety during X-ray, MRI
- Application of discharge criteria for ambulatory anaesthesia and from PACU
- Management of unplanned hospital admissions
- Consideration of ethical and medico-legal aspects
- Initial surgical intervention in burn, trauma, and traumatic injury of the upper airway
- Management of brain death syndrome and donor management including explanation
- Provide safe regional anaesthesia, including choice of drugs, techniques, timing, safety checks and monitoring
- Procedural guidance of regional anesthesia techniques using POCUS
- Perform neuraxial blocks such as spinal (single shot), thoracic epidural and lumbar epidural (single shot and continuous technique -catheter placement) combined spinal-epidural, caudal block
- Perform peripheral nerve blocks of the upper extremity (single shot and continuous techniques) such as interscalene, axillary blocks
- Perform peripheral nerve blocks of the lower extremity (single shot and continuous techniques) such as femoral, obturator, sciatic blocks



- Perform nerve blocks of the torso such as paravertebral, intercostal blocks □
- Perform fascial plane blocks (e.g. PECS, ESP, TAP, QLB, rectus sheath)
- Positioning of patients with specific pathological conditions
- Management of acute and chronic pain with resource to nerve blocks
- Diagnosis and management of intraoperative critical incidents including
  - inadequate nerve blockade
  - total spinal block
  - pneumothorax
  - local anaesthetic systemic toxicity (LAST)
- Management of block-related nerve damage
- Diagnosis and management of peripheral nerve injury
- Diagnosis and management of central blocks complications (e.g. epidural haematoma, abscess, arachnoiditis, meningitis)



## **ANNEX: Suggested sources**

In the European recertification program for anesthesiology and intensive care (ERP) the aim to adapt the content and modalities of the CEEA course program and transform the CEEA program as one of the educational tools we offer to our participants, many but not all are ESAIC members, for recertification, was highlighted.

This annex is aiming at encouraging interactive conversations during the CEEA courses program by implementing educational innovations (webinars, podcasts, e-learning modules etc). It is important to keep focus on a positive attitude towards new educational methods taking into account our four roles of the specialist in the multidisciplinary settings of perioperative medicine, intensive care medicine, critical emergency medicine and pain medicine: medical expert, inspired humanitarian, scientific scholar and professional leadership.

Furthermore this annex will be a guide for local directors on how to find updated and new guidelines which can be used during the courses support the important task of local directors in sharing the knowledge of clinical anesthesia as well as maintaining and improving their roles in all the fields of perioperative medicine, intensive care medicine, critical emergency medicine and pain medicine. To define common goals of the CEEA course program is to define common successes.

## **The European Training Requirement (ETR) in Anaesthesiology**

Consult the updated European Training Requirement ETR in Anaesthesiology from the Standing Committee on Education and Professional Development (EPD) of the Section and European Board of Anaesthesiology (EBA).

Access [HERE](#)





## **ESAIC Website**

[Teach The Teacher | ESAIC](#)

[Simulation Training | ESAIC](#)

[eLearning | ESAIC](#)

[Education Tuesday | ESAIC](#)

## **ESAIC Academy**

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*From 2023, ESAIC on-demand materials (e.g. Webinar Replays, eLearning modules) are accessible to full ESAIC members.*

## **ESAIC Library**

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## **ESAIC Guidelines**

The Guidelines Committee has established several task forces to elaborate guidelines on the related subject. The guideline topics were approved by the Guidelines Committee and the ESAIC Board after a consultation process within the subcommittees of the ESAIC Scientific Committee.

Access published guidelines [HERE](#)