Detailed Program of the CEEA Courses

This revision of the CEEA Courses Program was made in 2014 within the frames of the ESA Academy taking into consideration the UEMS EBA "Syllabus to the postgraduate training program on anaesthesiology, pain and intensive care medicine" and "Charter on continuing medical education/continuing professional development" guideline.

1. Thorax and Respiration

1.1 Physics and principles of measurement
- 1.1.1 Laws of physics
- 1.1.2 Vaporizers
- 1.1.3 Inhalational anaesthetics monitoring

1.2 Respiratory physiology
- 1.2.1 Respiratory mechanics
- 1.2.2 Ventilation and perfusion of the lungs
- 1.2.3. Oxygen metabolism and oximetry
- 1.2.4. Carbon dioxide metabolism and capnography

1.3 Anaesthesia for the patient with respiratory failure

1.4 Anaesthesia for thoracic surgery

1.5 Postoperative respiratory distress

1.6 Intensive care for respiratory failure
- 1.6.1 Acute severe asthma
- 1.6.2 ARDS
- 1.6.3 Community acquired and nosocomial severe respiratory infection
- 1.6.4 Patient with COPD in the ICU

1.7 Techniques
- 1.7.1 Anaesthetic circuits
- 1.7.2 Ventilators, anaesthesia machines and workstations
- 1.7.3 Modes of mechanical ventilation
- 1.7.4 Non-invasive ventilation in anaesthesia and intensive care
- 1.7.5 Respiratory monitoring

1.7.6 Fiberoptic bronchoscopy for thoracic surgery
1.7.7 Basic thoracic echography

Evening discussion:
1.8 Professional risks
1.9 Choice of ventilation modes
Practical (workshops, hands-on, video or simulations):
1.10 Capnography
1.11 Closed circuits and low flow anaesthesia
1.12 Ventilation modes in intensive care
1.13 High Frequency and Jet Ventilation
1.14 Equipment for separate lung ventilation
1.15 Inhalational induction end-tidal anesthetic concentration-guided anesthesia

2. Heart and Circulation

2.1 Cardiovascular physiology
- 2.1.1 Electrophysiology and mechanics of the heart
- 2.1.2 Arterial blood pressure
- 2.1.3 Cardiac cycle and cardiac output
- 2.1.4 Both ventricles preload assessment

2.2 Pharmacology of cardiovascular drugs
- 2.2.1 Inotropic agents
- 2.2.2 Anti-arrhythmic drugs
- 2.2.3 Beta-adrenergic blocking drugs
- 2.2.4 Calcium channel blocking drugs
- 2.2.5 Vasodilators and controlled hypotension
- 2.2.6 Vasopressors

2.3 Anaesthesia for non-cardiac surgery in the cardiac patient
- 2.3.1 Preoperative assessment
- 2.3.2 Coronary artery disease (CAD)
- 2.3.3 Hypertension
- 2.3.4 Arrhythmias

2.4 Anaesthesia for cardiovascular surgery
- 2.4.1 Open heart surgery and extracorporeal circulation
- 2.4.2 Aortic surgery and endovascular aortic grafts
- 2.4.3 Carotid surgery
- 2.4.4 Peripheral vascular surgery

2.5 Perioperative cardiovascular complications
2.6 Intensive care for cardiovascular failure
- 2.6.1 Acute myocardial infarction
- 2.6.2 Cardiogenic shock
- 2.6.3 Cardiac arrest and CPR
- 2.6.4 Pulmonary oedema
- 2.6.5 Pulmonary thromboembolism

2.7 Techniques and devices
- 2.7.1 ECG
- 2.7.2 Haemodynamic monitoring
- 2.7.3 Pacemakers
- 2.7.4 Mechanical circulatory assistance
- 2.7.5 Transoesophageal echocardiography

Evening discussion:
2.8 Monitoring in anaesthesia
2.9 Postoperative cardiovascular monitoring
Practical (workshops, hands-on, video or simulations):
2.10 Simulation of advanced CPR and arrythmias
2.11 Haemodynamics
2.12 Transoesophageal echocardiography
2.13 Focused transthoracic echocardiography in the perioperative settings
2.14 Ultrasound-guided vascular access

3. Intensive Care, Emergency Medicine, Blood and Blood Transfusion
3.1 Physiology of metabolism
- 3.1.1 Sodium and water metabolism

3.1.2 Potassium metabolism
3.1.3 Calcium, magnesium and phosphorus metabolism
3.1.4 Acid-base metabolism
3.1.5 Carbohydrates, lipids and protein metabolism
3.1.6 Endocrine and metabolic response to anaesthesia and surgery

3.2 Intensive care
3.2.1 Management of acute renal failure
3.2.2 Parenteral and enteral nutrition
3.2.3. Fluid and electrolyte disturbances

3.3 Endocrine and metabolic diseases
3.3.1 Diabetes
3.3.2 Endocrine disturbances
3.3.3 Acute pancreatitis

3.4 Emergency and trauma care
3.4.1 Multiple injuries
3.4.2 Chest injuries
3.4.3 Head and spinal injuries
3.4.4 Burns
3.4.5 Haemorrhagic shock
3.4.6 Crush syndrome
3.4.7 Damage control resuscitation

3.5. Infections
3.5.1 Nosocomial infections
3.5.2 Sepsis and septic shock
3.5.3 Antibiotics
3.5.4 Immunology and HIV/AIDS

3.6 Blood, blood transfusion and its substitutes
3.6. Blood and substitutes
3.6.2 Blood saving techniques
3.6.3 Haemostasis and haemorrhage
3.6.4 Antiplatelet drugs, anticoagulants and thrombolytics

Evening discussion:

3.7 Safety and legal aspects of blood and substitutes transfusions

3.8 Preventing and provoking infections in OR and ICU: role of anaesthesiologist
Practical (workshops, hands-on, video or simulations):
3.9 Haemodialysis and haemofiltration
3.10 Rapid infusion devices
3.11 Cell savers
3.12 Focused ultrasound for trauma patient evaluation

4. Mother and Child. Adverse Reactions

4.1 Obstetrics
- 4.1.1 Physiological changes during pregnancy
- 4.1.2 Anaesthesia and analgesia for vaginal delivery
- 4.1.3 Anaesthesia for caesarean section
- 4.1.4 Anaesthesia for non-obstetric surgery during pregnancy
- 4.1.5 Resuscitation and intensive care for obstetric emergencies
- 4.1.6 Obstetric patient with high risk concomitant diseases

4.2. Paediatrics
- 4.2.1 Physiological differences between adults and children
- 4.2.2 Blood loss and fluid replacement
- 4.2.3 Ventilatory requirements of infants and neonates
- 4.2.4 Anaesthesia for infants and newborn
- 4.2.5 General and regional anaesthesia in paediatrics
- 4.2.6 Resuscitation of the newborn
- 4.2.7 Analgosedation in paediatrics

4.3 Adverse reactions
- 4.3.1 Drug interactions
- 4.3.2 Drug choices in pregnancy and during breast feeding
- 4.3.3 Allergic reactions in the OR and ICU
- 4.3.4 Anaesthesia for the patient with allergic disease

Evening discussion:
4.4 Organization of the obstetric anaesthesia unit

4.5 The anaesthesia team
Practical (workshops, hands-ons, video or simulations):
4.6 Central and peripheral neural blocks in paediatrics
4.7 Mobile epidural in obstetrics
4.8 Neonatal resuscitation
4.9 How to manage obstetric patients with dural tap and postdural headache

5. Neurology, Regional Anaesthesia and Pain Management

5.1 Physiology
- 5.1.1 Central, peripheral and autonomic nervous system
- 5.1.2 Nociceptive pathways and mechanisms
- 5.1.3 Temperature regulation
- 5.1.4 Neuromuscular physiology and pharmacology
  - 5.1.4.1 Physiology of the neuromuscular junction
  - 5.1.4.2 Neuromuscular transmission monitoring
  - 5.1.4.3 Neuromuscular blocking agents
  - 5.1.4.4 Neuromuscular blockade reversal
  - 5.1.4.5 Anaesthesia for the patient with neuromuscular disease

5.2 Diagnostic approach to neurologic emergencies and to pain syndromes
- 5.2.1 Evaluation of the patient with stroke
- 5.2.2 Evaluation of the patient with coma and delirium
- 5.2.3 Evaluation of the patient with persistent seizures
- 5.2.4 Neuro-orthopedic assessment of the patient with pain

5.3 Anaesthesia for neurosurgery
5.4 Anaesthesia for the patient with neurological disease
5.5 Perioperative neurological complications and cognitive dysfunction
5.6 Intensive care for neurologic emergencies
- 5.6.1 Coma, intoxication and poisoning
- 5.6.2 Malignant hyperthermia
- 5.6.3 Cerebral death and organ donor management
- 5.6.4 Sedation in the ICU

5.7 Regional anaesthesia

5.7.1 Local anaesthetics: pharmacology and toxicity
5.7.2 Spinal anaesthesia
5.7.3 Epidural anaesthesia
5.7.4 Regional anaesthesia of the upper limb
5.7.5 Regional anaesthesia of the lower limb
5.7.6 Other specific nerve blocks
5.7.7 Regional anaesthesia complications

5.8 Management of acute and chronic pain
5.8.1 Analgesics, co-analgesics and analgesic adjuvants
5.8.2 Acute pain, including postoperative pain
5.8.3 Chronic pain
5.8.3.1 Pain syndromes. Clinical evaluation
5.8.3.2 Mechanism-based pain treatment
5.8.3.3 Pain management
5.8.3.4 End-of-life care and palliative medicine

Evening discussion:
5.9 How to manage failed/insufficient locoregional anaesthesia?
5.10 Clinical cases of acute and chronic pain syndromes
Practical (workshops, hands-on, video or simulations):
5.11 Physical assessment for neurologic emergency and for pain syndromes
5.12 Anaesthesia depth monitoring
5.13 Ultrasound-guided nerve blocks
5.14 Monitoring of neuromuscular blockade
5.15 Clinical tools for the assessment of acute and chronic pain

6. Specific Domains of Perioperative Medicine

6.1 Anaesthesia according to the patient
6.1.1 Anaesthesia in the elderly
6.1.2 Anaesthesia for the patient with renal failure
6.1.3 Anaesthesia for the patient with liver disease

6.1.4 Anaesthesia for the morbidly obese patient
6.1.5 Anaesthesia for the patient with transplanted organ
6.2 Anaesthesia according to the field of surgery and organization
6.2.1 Head and neck surgery
6.2.2 Ophthalmic surgery
6.2.3 Dental and orofacial surgery
6.2.4 Endocrine surgery
6.2.5 Urogenital surgery
6.2.6 Major upper abdominal surgery
6.2.7 Major colorectal surgery
6.2.8 Videoendoscopic and robotic procedures
6.2.9 Organ transplantation
6.2.10 Orthopedic surgery
6.2.11 Sedation and anaesthesia for non-surgical procedures (radiological, endoscopic, electroconvulsive therapy)
6.2.12 Abdominal surgical emergencies in the ICU
6.2.13 Day case surgery
6.3 Difficult airway management

Evening discussion:
6.4 Consultation by anaesthesiologist
6.5 Quality assurance, evaluation and accreditation
6.6 Medico-legal aspects and ethics of anaesthesia and intensive care. Informed consent
6.7 Pharmacoeconomics in anaesthesiology and intensive care
Practical (workshops, hands-on, video or simulations):
6.8 TIVA – drugs, pharmacokinetic concepts, techniques and pumps
6.9 Anaesthesic information to be included into electronic medical record
6.10 Difficult airway management
6.11 Fiberoptic bronchoscopy