



UNIwersytet
Andrzeja Frycza Modrzewskiego
w Krakowie

Collegium Medicum Faculty of Medicine

SUBJECT CARD

Field of studies: Medicine
Form of studies: Full-time course
Degree: long-cycle Master's program
Specializations: No specialization
Academic year: 2024/2025

ANESTHESIOLOGY AND INTENSIVE CARE

SUBJECT NAME	Anesthesiology and intensive care
NUMBER OF ECTS POINTS:	3
LANGUAGE OF INSTRUCTION	english
TEACHER(S)	Assoc. Professor Ryszard Gajdosz, MD, PhD Marta Jezierska, MD Jarosław Pawlik, MD Wojciech Pogoda, MD Michał Świdrak, MD
PERSON RESPONSIBLE	Assoc. Professor Ryszard Gajdosz, MD, PhD
NUMBER OF HOURS:	
LECTURES:	15 h.
CLASSES:	30 h
GENERAL OBJECTIVES	
OBJECTIVE 1:	The aim of this course is to teach students about anesthesiology (i.e. methods of safe and pain free performance of surgical/diagnostic procedures and management of postoperative period) and intensive care (managing patients in life-threatening and critical condition), emphasizing practical skills useful in other areas of medicine.

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OBJECTIVE 2:

An additional goal is to demonstrate to students the interdisciplinary nature of this subject, combining the following areas of practical medicine: preoperative assessment of organ reserve, intensive care, cardiopulmonary resuscitation, management of acute pain and palliative care.

LEARNING OUTCOMES

MK1

Knowledge: Student critically assesses definitions and theories of anesthesia. Interprets pharmacological properties of anesthetic agents. Justifies anesthesia-related aspects of organ anatomy and physiology (respiration, circulation, elimination, endocrine system, nervous system and immune system).

MK2

Knowledge: Student is able to categorize organ sufficiency. Distinguishes between NYHA and CCS scores. Critically assesses management of chronic conditions. Explains principles of anesthesia in the elderly /anesthesia for geriatrics/ and obese patients /anesthesia for bariatric procedures/. Explains the significance of pre-operative consultation and the role of premedication. Anticipates effects of allergies and clotting disorders.

MK3

Knowledge: Student explains the notion of homeostasis. Analyzes types of pain. Calculates and administers doses of sedatives and analgesics. Understands the difference between local, regional and conduction. Classifies headaches. Differentiates between classical and specialized methods of pain management, explains multimodal pain management. Justifies different modalities for perinatal analgesia. Compares therapies for acute and chronic pain.

MK4

Knowledge: Student abides by and interprets anesthesia documentation. Approves sample collection and uses interpretation of lab test. Analyzes and understands the difference between disinfection and sterilization. Justifies the need for imaging or endoscopy and is able to choose best anesthesia for these procedures. Knows radiographic contrasts and their properties. Explains management of patients with psychiatric conditions.

MK5

Knowledge: Student interprets the notion of urgent surgery and explains surgical risk categories according to ASA. Understands dehydration and anemic state. Compares types of shock. Drafts a preoperative status of cachectic, obese or cancer patients. Compares and contrasts anesthesia in thoracic surgery, neurosurgery, orthopedics, pediatrics and obstetrics.

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MK6	<p>Knowledge: Student explains and employs the organization of a preoperative room. Knows anesthesia equipment, monitoring equipment and surgical equipment. Interprets patient positioning for surgery. Understands induction to anesthesia, intubation, maintenance and emergence from anesthesia. Describes the role and benefits of postoperative suite. Classifies complications of local, regional and general anesthesia.</p>
MK7	<p>Knowledge: Student knows aims, methods and types of intensive care. Selects monitoring patterns and justifies indications for gasometry, spirometric assessment and types of oxygen therapy. Interprets basic types of acid-base imbalance and types of ventilators. Classifies types of assisted ventilation. Explains the principles of pleural suction drainage. Anticipates the effects of respiratory physiotherapy.</p>
MK8	<p>Knowledge: Student presents advantages and disadvantages of central line placement. Understands different types of parenteral nutrition /TPN/ and classifies feeding pumps. Explains the role of hemodialysis, hemofiltration and plasmapheresis. Interprets the effects of analgesedation. Critically assesses unconsciousness and applies Glasgow score, as well as pressure ulcer risk scores. Justifies indications for tracheostomy.</p>
MK9	<p>Knowledge: Student interprets severity of "trauma" and presents reaction to trauma. Presents criteria for a critical patient and for multiorgan failure. Assesses organ damage using relevant scores. Analyses water balance, electrolyte status, protein status and calorific status of a patient in serious condition.</p>
MK10	<p>Knowledge: Student differentiates radical and palliative management. Describes rules and guidelines for basic and advanced CPR. Is able to perform defibrillation and cardioversion, operates the defibrillator/cardioverter. Interprets ethical principles and the ethics of overzealous/futile treatment. Presents modern definition of brain death. Knows the basics of transplantation medicine and is able to interpret the criteria for brain death in the context of discontinuing therapy, donor qualification and organ donor care.</p>
MS1:	<p>Skills: Student knows how to behave and move around the OR. Complies with the rules of aseptic and antiseptic conduct. Is familiar with the anesthesia unit, workplace of an anesthesiologist's and basic anesthesia instruments. Assists at induction, maintenance and emergence from anesthesia. Completes anesthesia documentation. Knows how to insert oropharyngeal airway, place laryngeal mask and perform supervised tracheal intubation.</p>

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MS2:	Skills: Student knows how to administer local anesthesia for a simple outpatient procedure. Knows how to measure glycemia. Assists at incisions, punctures and diagnostic biopsies. Build atmosphere of trust in the course of hospital admission and treatment. After trauma, applies antiseptic and places sutures, dresses the wound. After fracture, immobilizes. Schedules specialized consults. Is able to recognize agony and death.
MS3:	Skills: Student operates simple measuring devices. Is able to set up a heart monitor and pulse oximeter. Knows how to do 12 lead ECG. Is able to measure arterial blood pressure and pulse. Knows how to measure body temperature, skin and core. Monitors basic vitals post surgically. Assists with central venous pressure measurement. Inserts peripheral venous access devices. Assists with infusions, transfusions and documenting them.
MS4:	Skills: Student is able to place a gastric tube. Assists with pleural puncture and inserting suction drainage. Assists with planning and executing calorific balance, water and electrolyte balance. Assesses indications for urinary catheterization. Is able to take swabs for bacterial culture, collect a blood sample, urine sample and excretion sample for cultures. Assists with suprapubic puncture and cystoscopy. Assesses decubitus ulcers and the risk of their development.
MS5:	Skills: Student assesses patient's general condition, consciousness and awareness status. Is able to recognize life-threatening emergencies. Assesses and scores the condition of an unconscious patient. Recognizes symptoms of increasing intracranial pressure. Delivers first aid. Manages acute poisoning and monitors patient condition. Performs basic resuscitation activities, administers oxygen therapy and resuscitation pharmacotherapy. Complies with the algorithm for advanced resuscitation. Complies with standards of professional ethics.

COURSE PROGRAM

DESCRIPTION

LECTURE 1:	Anesthesiology I: Definitions and theories of anesthesia. Pharmacology of anesthetic agents. Preoperative assessment I: Organ sufficiency. NYHA and CCS scores. Management of chronic conditions. Rules and foundations of anesthesia. Preoperative consult. Premedication. Allergies and clotting disorders. Homeostasis. Types of pain and their management. Sedatives and analgesics. Local, regional and conduction anesthesia. Classical and specialized pain management strategies. Perinatal analgesia. Outpatient anesthesia: documenting anesthesia. Collecting samples and interpreting lab results. Anesthesia for imaging and endoscopy. Disinfection and sterilization. Radiographic contrast media. CNS agents /neuroprotective/.
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LECTURE 2:	Anesthesiology II: Preoperative assessment. Emergency situation and surgical risk. Patients with dehydration, anemia or after severe blood loss. Types of shock. Obese, cachectic or oncology patients. Differences in anesthetic procedure for thoracic surgery, neurosurgery, orthopedics, pediatrics and obstetrics.
LECTURE 3:	Anesthesiology III: Rules of the OR. Equipment for anesthesia, monitoring and surgery. Patient positioning on the operating table. Induction to anesthesia, intubation. Maintenance of anesthesia. Emergence from anesthesia. Postoperative suite. Complication after local and general anesthesia.
LECTURE 4:	Intensive care I: Aims, methods and types of intensive therapy. Patient monitoring, blood gases and oxygen therapy. Acid-base balance. Ventilators and types of artificial ventilation. Drainage and suction devices. Respiratory physiotherapy. Intensive care II: Central venous cannulation. Intravenous nutrition. Pumps and hemodialysis. Analgo-sedation and hypnorelaxation. Acute poisoning, diabetes, uremia. Unconscious patient – Glasgow scale. Tracheostomy. Effects of long-term ventilation and risk of pressure ulcers.
LECTURE 5:	Intensive care III: Trauma severity. Reaction of the body to trauma. Patient in critical condition. Multiorgan failure. Sepsis. Scoring of organ damage. Calory, water, electrolyte and nitrogen balance. Palliative care and resuscitation: radical treatment and palliative care. Basic and advanced CPR. Ethics of overzealous/futile treatment. Brain death. Organ transplant. Chemotherapy, bone marrow aplasia, vomiting, diarrhea.
CLASS 1	I – Surgical suite: Performs washing and dressing for surgery. Complies with asepsis and antisepsis. Learns premedication, types of anesthesia, perioperative risk assessment, ASA score, tracheal intubation. Learns pharmacology of anesthesia / intravenous and inhalational anesthetics, opiates and muscle relaxants/. Assists with preparation, induction, maintenance and emergence from general anesthesia. Performs intra- and postoperative monitoring in the recovery room. Uses anesthesia documentation and knows its features. Workshops in Centre of Medical Simulation: Operates anesthesia machine, suction device, manages airways.
CLASS 2	II – Surgical suite: Collects anesthetic medical history and examines the patient with anesthesia in mind. Performs local anesthesia for a simple day surgery procedure, learns the basics of ultrasound-guided central and regional anesthesia. Assesses severity of postoperative pain using NRS score, learns the basics of analgo-sedation and monitored anesthesia care /MAC/. Measures glycemia. Participates in selecting specialist consults prior to planned surgery.

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CLASS 3	<p>III - ICU: Learns about the specifics of managing ICU patients, securing airway, basics of mechanical ventilation and prevention of ventilator-associated pneumonia /VAP/. Operates simple measuring devices, sets up heart monitors and pulse oximeters. Knows how to perform 12 lead ECG. Takes arterial BP, pulse, respiratory rate, and body temperature (skin and core). Assists with measuring central venous pressure, hemodynamic evaluation using minimally invasive methods, infusions and transfusions. Performs peripheral venous cannulation. Assists with other procedures performed within Intensive Care Unit: central line insertion, arterial cannulation, bronchofiberscopy, thoracocentesis, percutaneous tracheostomy, collecting samples for microbiological tests, securing and monitoring patients in transport outside ICU (en route to CT, MRI or OR).</p>
CLASS 4	<p>IV - ICU: Knows how to place a gastric tube, urinary catheter. Assists with pleural puncture and insertion of suction drainage. Assesses indications for urinary catheterization and suprapubic puncture. Dressings. Learns practical rules of renal replacement therapy /CVVHD, CVVHDF/. Learns the basics of clinical nutrition for severely ill patients, interprets lab results, including acid-base balance. Learns the basics of ultrasound diagnostics useful in the ICU.</p>
CLASS 5	<p>Assesses general condition, consciousness and awareness of the patient. Monitors the postoperative period basing on vitals. Assesses and scores unconsciousness. Recognizes signs of increasing intracranial pressure and knows the documentation of such patients.</p>
CLASS 6	<p>Workshops in Centre of Medical Simulation: Monitors at the basic level: NIBP, Pulse oximetry, ECG. Operates defibrillator. Administers external defibrillation. Can safely deliver external stimulation, cardioversion. Complies with the Advanced Cardiovascular Life Support (ACLS) algorithm. Takes part in simulation of initial management of critically ill patient prior to transfer to ICU</p>

DIDACTIC METHODS (APPLIED)

DESCRIPTION

Multimedia presentations
Lectures Bedside instruction
Case study
Simulation
Brainstorming

STUDENTS WORKLOAD:

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CONTACT HOURS WITH THE ACADEMIC TEACHER	45 h
HOURS WITHOUT THE PARTICIPATION OF THE ACADEMIC TEACHER	Preparation for classes: 10 hours Preparation for exam: 10 hours
TOTAL NUMBER OF HOURS FOR THE COURSE	65 h

CONDITIONS FOR COURSE COMPLETION

To receive credits for this course it is required to be present during lectures, to participate in practical classes, to complete a case study in the course of practical classes and to pass the final exam, in compliance with below-listed criteria. The condition for admission to the exam is passing the classes.

METHODS OF ASSESMENT:

IN TERMS OF KNOWLEDGE:	Multiple choice test where only one answer is correct. Oral test.
IN TERMS OF SKILLS:	Practical test with medical history analysis.
IN TERMS OF SOCIAL COMPETENCE:	Assessment of engagement during classes, monitoring student behavior toward patients and colleagues, assessment of teamwork.
FORMATIVE:	Analysis and passing case report once (1) in the course of practical classes.
SUMMATIVE (I & II)	I term (EXAM): test of 100 questions II term (RETAKE EXAM): oral exam.

GRADING SCALE

	Test-based closed exam, where only one answer is correct, 100 questions. Grading criteria – percentage of correct answers.
3,0 (Satisfactory)	60-70% correct answers
3,5 (Satisfactory plus)	71-75% correct answers
4,0 (Good)	76-80% correct answers
4,5 (Good plus)	81-88% correct answers
5,0 (Very Good)	od 89% correct answers

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BASIC LITERATURE

[1] Smith and Aitkenhead “Textbook of Anaesthesia” 7th edition Elsevier; 2019, CPR guidelines.

SUPPLEMENTARY LITERATURE

[1] Paul L. Marino, “The Icu Book” , Lippincott Williams and Wilkins 2013;

[2] Fang Gao Smith and Joyce Yeung “Core Topics in Critical Care Medicine” Cambridge University Press; 2010;

[3] European Resuscitation Council. CPR Guidelines 2015.