

SUBJECT CARD

Faculty of Medicine and Health Sciences

Field of studies: Medicine

Form of studies: Full-time course

Degree: long-cycle Master's program

Specializations: No specialization

Academic year: 2022/2023

ASSESSMENT OF SUFFICIENCY OF LIFE-CRITICAL ORGANS	
SUBJECT NAME	Assessment of sufficiency of life-critical organs
NUMBER OF ECTS POINTS	2
LANGUAGE OF INSTRUCTION	English
TEACHER(S)	lek. med. Michał Świdrak
PERSON RESPONSIBLE	lek. med. Michał Świdrak
NUMBER OF HOURS	
LECTURES	10
CLASSES	20
GENERAL OBJECTIVES	
OBJECTIVE 1	The main aim of this subject is to prepare students to perform an initial, and then an extended assessment of the sufficiency of the so-called life-critical organs and systems. Teaching focuses on diagnostic assessment of the function of cardiovascular system, respiratory system, central and peripheral nervous system, the digestive and metabolic systems. Diagnostic skills pertinent to assessment of the function of those systems should be acquired by the students at the propaedeutic level.
OBJECTIVE 2	Another goal of the course is to prepare students for the performance of extended diagnostics and therapy of failing life-critical organs, which is to be continued in the course of further study under the modular education model, utilizing skills and knowledge from other medical specialties.
LEARNING OUTCOMES	
MK1	Knowledge: Student is able to correctly define the principles of collecting a medical history and performing physical examination, as well as additional tests.
MK2	Knowledge: Student is able to present the basics of a physical examination, as well as clinical normal values for the sufficiency of selected organs, basing on the knowledge of physiology.

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MK3	Knowledge: Student knows the order and proper algorithm for diagnosing key abnormalities of vital organs, using basic hemodynamic monitoring, spirometric evaluation and ultrasound imaging.
MK4	Knowledge: Student knows basic rules for providing medical assistance in the context of a specific organ insufficiency, with the use of pharmacotherapy, assisted respiration and monitoring.
MS1	Skills: As regards the cardiovascular system – student knows how to correctly perform a physical and employ diagnostic devices on this basis; ECG, LidcoRapid /hemodynamic assessment/, pulse oximeter. Knows how to determine mean arterial pressure /MAP/, and how to evaluate lab results from the point of view of cardiac enzymes /troponins, CK-MB/.
MS2	Skills: Student knows how to perform an ECG trace with basic interpretation of rhythm abnormalities. As regards the interrelation of the cardiovascular and respiratory systems, knows how to perform a physical examination, taking into account gasometric parameters in terms of blood gas partial pressure and acid-base balance. Knows how to set up and operate a transport ventilator in the circumstances of respiratory insufficiency.
MS3	Skills: Student knows how to assess sufficiency of the gastrointestinal and urinary tracts, with basic evaluation of solid organs – sufficiency of liver and kidneys. Knows how to assess the degree of malnutrition and how to propose initial nutritional therapy. As regards the central and peripheral nervous systems, knows how to evaluate neurological deficiencies on the basis of basic physical examination. Is able to assess polyneuropathies and decreased consciousness using GCS.

INTRODUCTORY REQUIREMENTS

It is necessary to have proper command of anatomy and physiology of selected organs. Initial requirements also include the knowledge of basic lab tests with normal values, understanding of diagnostic imaging, as well as ability to perform physical examination and collect medical history.

COURSE PROGRAM	DETAILED DESCRIPTION OF THE TOPIC BLOCKS
LECTURE 1	Assessing the sufficiency of the cardiovascular system. Cardiogenic shock.
LECTURE 2	Assessing the sufficiency of the respiratory system. Pathologies in the area of respiratory gases elimination. Respiratory shock.
LECTURE 3	Assessing the sufficiency of the central and peripheral nervous systems. Neurogenic shock.
LECTURE 4	Assessing the sufficiency of peripheral nervous system. Autonomic nervous system disorders.

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LECTURE 5	Assessing the sufficiency of digestive and urinary tracts, Hypovolemic shock.
CLASS 1	Assessing a patient in critical condition. ABCDE protocol. Assessing sufficiency and pathologies of the cardiovascular system /AS, NIBP, IBP, MAP, SpO ₂ , CVP, capillary return. Ability of evaluating basic hemodynamic parameters/ CO, SVR, CI/, basics of imaging: X-ray, ultrasound and ECHO in the diagnostics of cardiovascular insufficiency and hypovolemia. Diagnosing shock and determining its effect on the sufficiency of other organs. Multiorgan failure - MODS.
CLASS 2	Learning to assess sufficiency of the respiratory system, recognize clinical symptoms of respiratory failure and causes of respiratory dysfunction. Interpreting abnormalities of acid-base balance, as well as capnometric, pulse oximetry and spirometric parameters. Learning to perform oxygen therapy, non-invasive ventilatory support and the basics of mechanical ventilation. Radiological signs of acute respiratory failure. Using ultrasound to evaluate pathologies of the respiratory system /pneumothorax, atelectasis, pneumonia, pulmonary edema, pleural effusion/.
CLASS 3	Assessing neurological status, GCS and AVPU scores and their interpretation. Evaluating pupils and intracranial hypertension /ICP/. Assessing abnormal neurological symptoms; meningeal symptoms. Determining the effect of CNS pathology on other systems – neurogenic shock, neurogenic pulmonary edema. Sequelae of CNS trauma: coma, vegetative state, brain death.
CLASS 4	Assessing the sufficiency and main dysfunctions of the gastrointestinal tract, with physical examination and abdominal ultrasound. Signs of “acute abdomen”, differential diagnosis for diarrhea. Evaluating kidney function and liver sufficiency, symptoms and management of acute kidney and liver failure, basics of renal replacement therapy and extracorporeal blood purification.

DIDACTIC METHODS (APPLIED)

	Lectures Bedside instruction Case studies Brainstorming
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STUDENT' S WORKLOAD

CONTACT HOURS WITH THE ACADEMIC TEACHER	30 hours
HOURS WITHOUT THE PARTICIPATION OF THE ACADEMIC TEACHER	Preparation for classes: 30 hours Preparing a report, presentation, medical history: 10 hours

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TOTAL NUMBER OF HOURS FOR THE COURSE

70 hours

CONDITIONS FOR COURSE COMPLETION

To receive credits for this course it is required to be present during lectures, to pass practical exercises and perform an analysis of medical history of a randomly selected patient, as well as to pass a final test.

METHODS OF ASSESSMENT

IN TERMS OF KNOWLEDGE

Multiple choice test with single best answer. Oral test.

IN TERMS OF SKILLS

Practical test with medical history analysis.

IN TERMS OF SOCIAL COMPETENCE

Evaluation of student engagement during classes, monitoring student behaviour toward patients and colleagues, assessment of teamwork.

FORMATIVE

NA.

SUMMATIVE (I & II terms)

I term: 40-question test

II term: oral test

GRADING SCALE

3,0 (Satisfactory)

Multiple choice Test based on the material from lectures and practical classes - **min. score of 60%.**

3,5 (Satisfactory plus)

Multiple choice Test based on the material from lectures and practical classes - **min. score of 65%.**

4,0 (Good)

Multiple choice Test based on the material from lectures and practical classes - **min. score of 70%.**

4,5 (Good plus)

Multiple choice Test based on the material from lectures and practical classes - **min. score of 80%.**

5,0 (Very Good)

Multiple choice Test based on the material from lectures and practical classes – **min score of 90%.**

BASIC LITERATURE

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

SUPPLEMENTARY LITERATURE

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