Federal State Budgetary Educational Institution of Higher Education
"Orenburg State Medical University" of the Ministry of Health of the Russian Federation

GUIDELINES
FOR THE TEACHER
ORGANIZING THE STUDY OF THE DISCIPLINE

ANESTHESIOLOGY, REANIMATION, INTENSIVE CARE

31.05.01 Medical business

(Faculty of foreign students)

It is part of the main professional educational program of higher education in the specialty 31.05.01 General Medicine, approved by the Academic Council of the Orgmu of the Ministry of Health of Russia

Protocol No. 8 dated March 25, 2016

Orenburg

1. Methodological recommendations for the lecture course.

Lecture number 1.

Theme: "Organization of anesthesiology and reanimation services."

Objective: to study the history of formation; practical tasks of anesthesiology, resuscitation and intensive care of emergency conditions; organization of work of the anesthesiology and resuscitation services. Learn the principles and master the skills of cardiopulmonary resuscitation.

Lecture abstract

The history of the formation of anesthesiology and reanimation service in the Russian Federation and the world.

Legal aspects of anesthesiology and resuscitation. Regulatory documents regulating the activities of the anesthesiologist-resuscitator and anesthesiology-resuscitation service. The Constitution of the Russian Federation. Law 323 FZ The Law on the Basics of Health Protection of Citizens of the Russian Federation. Order of the Ministry of Health of the Russian Federation dated November 15, 2012. Order No919n "On approval of the procedure for providing medical care to adults by profile" anesthesiology and resuscitation. Professional standard. Anesthesiologist-resuscitator. Order No919n The procedure for establishing the diagnosis of human brain death.

Organization of anesthesiology and resuscitation care for the child population, in obstetrics and gynecology, for stroke and ACS.

The organization of the department of anesthesiology, resuscitation and intensive care.

Official duties of the anesthesiologist-resuscitator.

Deontology and ethics in the activities of the anesthesiologist-resuscitator.

Administrative and criminal liability of the anesthesiologist-resuscitator in the Russian Federation. The application of the rules of the Criminal Code. The concept of medical error in the context of the activity of the anesthesiologist-resuscitator.

The form of organization of the lecture: introductory.

Teaching methods used in the lecture: verbal (lecture), visual (illustration), inductive and deductive.

Means of education:

- didactic: presentation.
- material: multimedia projector.

Lecture number 2.

Theme: "Fundamentals of Toxicology."

Objective: to give an idea of the concept of science "toxicology", its goals and objectives, the basic terms of toxicology (toxicant, poison, administration, toxicokinetics and toxicodynamics), the basics of intensive therapy in toxicology.

Lecture abstract

Definition of the concept of science "toxicology". The purpose and task of toxicology. The concept of a harmful substance (toxicant, poison). Types of classification of harmful substances and poisoning. Classes of poisons. Classification of harmful substances according to the degree of impact on the body. Threshold of specific action.

The average lethal concentration of a harmful substance. Ways of intake of poisons in the body.

Poisoning by social toxicants (drugs and alcohol). Addictive and addictive. Types of dependencies. Toxins of natural origin Chemical components of food products of plant origin. The natural components of soil and water that accumulate in food. Poisoning with heavy metal compounds and arsenic. Organo-mercury poisoning. FOS poisoning.

The clinical picture of poisoning. Acute hepatic, renal, vascular, respiratory and cerebral insufficiency in the clinic of poisoning.

The concept of specific antidotes.

Fundamentals of intensive care for poisoning and intoxication. Gravity technologies in the treatment of poisoning.

Intensive therapy in narcology.

The form of lecture organization: thematic.

Teaching methods used in the lecture: verbal (lecture), visual (illustration), inductive and deductive.

Means of education:

- didactic: presentation.
- material: multimedia projector.

Lecture number 3.

Theme: "Terminal States, SLR".

Purpose: to form an idea of terminal states, the basics of CPR.

Lecture abstract

Terminal states are patho-functional changes, which are based on increasing hypoxia of all tissues (primarily the brain), acidosis and intoxication with metabolic products.

The characteristic of the pathogenesis of human dying processes is given. Increasing phenomena of polyorgan dysfunction, tissue hypoxemia, acidosis, total energy deficit.

Terminal conditions include: pre-diagonal state, terminal pause, agony, clinical death.

Types of circulatory arrest: asystolia, ventricular fibrillation, pulseless tachycardia, bradycardia, electro-mechanical dissociation. Factors affecting the prognosis of circulatory arrest.

Execution Protocol for CPR. Revisions 2005, 2010, 2015.

Post-resuscitation disease. Causes, stage PWB. Syndrome of multiple organ failure. The role of infection and sepsis in adverse outcome of PRB. Factors affecting the forecast.

The basic principles of intensive therapy PWB.

Strategies for mechanical ventilation, infusion therapy, cerebroprotection, sepsis therapy.

The form of lecture organization: thematic.

Teaching methods used in the lecture: verbal (lecture), visual (illustration), inductive and deductive.

Means of education:

- didactic: presentation.
- material: multimedia projector.

Lecture number 4.

Theme: "Impaired Consciousness."

Purpose: to form an idea of disturbances of consciousness, their classification, clinic, diagnosis, basics of intensive therapy.

Lecture abstract

Definition of consciousness. The physiology of the functioning of the nervous system while maintaining a clear consciousness. Reticular formation of the brain stem. Neurosmitter support for maintaining consciousness. The concept of stimulating and inhibitory mediator systems.

Classification of violations of the level of wakefulness. Productive and unproductive violations of the level of wakefulness. Primary and secondary cerebral coma.

Neurophysiology of impaired consciousness.

Scale com Glasgow. The use of GCS in clinical practice.

The clinical picture of primary cerebral coma. Cerebral perfusion and ICP. The Monroe-Kelly Doctrine.

The clinical picture and pathogenesis of hypoglycemic, ketoacidotic, hyprosmolar and lactate-cidemic coma. Emergency care for diabetic coma.

Hypoxic, toxic, dysmetabolic coma. Therapeutic measures for coma of unknown origin.

General principles of therapy for acute cerebral insufficiency.

Chronic vegetative state.

Brain death Record of brain death.

The form of lecture organization: thematic.

Teaching methods used in the lecture: verbal (lecture), visual (illustration), inductive and deductive.

Means of education:

- didactic: presentation.
- material: multimedia projector.

Lecture number 5.

Theme: "Disorders of homeostasis and their correction."

Objective: to form an idea of disorders of homeostasis (KHS, VEO), their classification, clinic, diagnosis, the basics of intensive therapy.

Lecture abstract

The theoretical basis for maintaining the constancy of the internal environment of the human body. The concept of acid-base balance. Buffer systems and their functioning environments. Values KSPR in normal and pathology.

Algorithm for diagnosing violations KSHR.

The clinical significance of metabolic acidosis in critical conditions. Causes of metabolic acidosis. Correction of metabolic acidosis.

The clinical significance of metabolic alkalosis in critical conditions. Causes of metabolic alkalosis. Correction of metabolic alkalosis.

The clinical significance of respiratory acidosis in critical conditions. Causes of respiratory acidosis. Correction of respiratory acidosis.

The clinical significance of respiratory alkalosis in critical conditions. Causes of respiratory alkalosis. Correction of respiratory alkalosis.

Pathophysiological aspects of water-electrolyte homeostasis.

Vol. The volume of circulating blood. Isotonic hypovolemia. Monitoring and correction of violations of the BCC.

Electrolyte disorders in the clinic of critical conditions. Hypo and hypernatremic syndromes. Syndrome of inadequate release of ADH. Diabetes insipidus. Central Solter Syndromes.

Osmolarity. Notion Norm. Hyper and hypo-osmolar states.

The form of lecture organization: thematic.

Teaching methods used in the lecture: verbal (lecture), visual (illustration), inductive and deductive.

Means of education:

- didactic: presentation.
- material: multimedia projector.

Lecture number 6.

Theme: "Physiology, pathology of external respiration. ONE. Mechanical ventilation.

Purpose: to form an idea of external respiratory disorders (ARF), their classification, clinic, diagnosis, basics of intensive therapy (ALV).

Lecture abstract

Physiology, pathology of external respiration. Oxygen cascade. Transport of gases. Theory of pulmonary shunt. Causes of obstructive and restorative disorders. Gas exchange monitoring.

ONE. Classification ODN. Ventilation respiratory failure. Causes, mechanisms of development. Parenchymal respiratory failure. Causes, mechanisms of development.

IVL Absolute and relative indications. Classification. The device is a ventilator. Modes of ventilation. Patterns IVL. Control. Triggering. Cycling Spontaneous, assisted and forced ventilation.

Monitoring for mechanical ventilation. Criteria for the effectiveness of respiratory support. Complications of mechanical ventilation. Hypoventilation. Hyperventilation. Barotrauma. Fan-associated pneumonia.

High frequency ventilation. Theory and practice.

Non-invasive mechanical ventilation. Indications. Contraindications.

IVL of newborns. IVL in children's practice. IVL in neuro-reanimatology.

Excommunication from mechanical ventilation. Vining simple, complex. The reasons for the prolongation of stay on the ventilator. Modern protocols of weaning from mechanical ventilation.

The form of lecture organization: thematic.

Teaching methods used in the lecture: verbal (lecture), visual (illustration), inductive and deductive.

Means of education:

- didactic: presentation.
- material: multimedia projector.

Lecture number 7.

Theme: “Pain. Anesthesia. Fundamentals of anesthesiology. Anesthesia Local anesthesia".

Objective: to form an idea of the physiology of pain, methods of pain relief (general and local anesthesia).

Lecture abstract

Pain. Definition Nociception, antinociception. Stages of nociception. Transduction, transmission, modulation, perception. Pain mediators. Pathways of pain sensitivity.

Anesthesia. Definition Background N.I. Pirogov - the founder of anesthesiology in Russia.

Types of anesthesia. General and local anesthesia. Theories of anesthesia. Classification of anesthesia. Inhalation anesthesia: mask, endotracheal, endobrochial. Non-inhalational anesthesia. Mononarcosis, mixed anesthesia. Combined anesthesia. Introductory, supportive, basic anesthesia.

Fundamentals of pharmakinetic and pharmacodynamics of the main drugs for anesthesia. Myorelaxation.

Device anesthesia apparatus. The concept of the respiratory circuit.

Medicament Goals Tasks. Drugs used for primedikatsii.

Components of anesthesia, stages of anesthesia. Stages of ether anesthesia. Monitoring for anesthesia. Complications of anesthesia.

Anesthetic risks.

Local anesthesia. Types of local anesthesia. Pharmacological characteristics of local anesthetics. Indications and contraindications for local anesthesia.

Spinal and epidural anesthesia. Indications and contraindications for spinal and epidural anesthesia. Complications of regional anesthesia.

Infiltration, terminal, conduction anesthesia.

The form of lecture organization: thematic.

Teaching methods used in the lecture: verbal (lecture), visual (illustration), inductive and deductive.

Means of education:

- didactic: presentation.
- material: multimedia projector.

Lecture number 8.

Theme: "Shocks."

Purpose: to form an idea of shocks, their classification, clinic, diagnosis, the basics of intensive therapy.

Lecture abstract

The concept of shock, the definition of the concept. Classification. The mechanism of development of the main types of shock. Types of shock, form of shock. Shock in the context of multiple organ failure syndrome. Monitoring patients in shocks of various origins.

Traumatic shock. The reasons. Development mechanisms. Emergency care for traumatic shock.

Hemorrhagic shock. The reasons. Development mechanisms. Emergency care for hemorrhagic shock.

Anaphylactic shock. The reasons. Development mechanisms. Emergency care for anaphylactic shock.

Infectious and toxic shock. The reasons. Development mechanisms. Sepsis as the leading pathological condition. Emergency care for infectious and toxic shock.

True cardiogenic shock. The reasons. Development mechanisms. Oks. OiM Emergency care in the context of modern approaches to the treatment of ACS.

Arrhythmic shock. The reasons. Development mechanisms. Emergency care for arrhythmic shock.

Standards and procedures for assisting with shocks of various origins. Features of infusion therapy with the use of colloid and crystalloid solutions, vazopressorov.

The form of lecture organization: thematic.

Teaching methods used in the lecture: verbal (lecture), visual (illustration), inductive and deductive.

Means of education:

- didactic: presentation.
- material: multimedia projector.

Lecture number 9.

Theme: "Basics of infusion therapy."

Purpose: to form an idea of infusion therapy and transfusion, their types, calculation, indications, complications.

Lecture abstract

Infusion therapy Definition of the concept. Basic infusion therapy. Correcting infusion therapy.

Calculation of the volume of infusion. Pathological loss. Place dyspnea and hyperthermia in determining the volume of infusion. The concept of infusion media. Drawing up an infusion program. Volity monitoring. Correction of electrolyte and acid-base disorders.

Ways of infusion solutions. Vascular path.

Percutaneous puncture with the introduction of microcatheters. Venesection.

Percutaneous catheterization of the superior vena cava, subclavian and jugular veins.

Nonvascular path.

Enteral introduction. Rectal administration of solutions is limited, since only water can be absorbed in the intestine.

Subcutaneous administration. Catheterization of the subclavian vein by Seldinger. Navigation-controlled catheterization of the jugular and femoral veins. Puncture of the arteries.

Complications of infusion therapy.

The concept of transfusiology. Hemotransfusions. Blood preparations. Indications for blood transfusion and its components. Conducting blood transfusions. Complications of blood transfusions.

The form of lecture organization: thematic.

Teaching methods used in the lecture: verbal (lecture), visual (illustration), inductive and deductive.

Means of education:

- didactic: presentation.
- material: multimedia projector.

2. Methodological recommendations for conducting practical classes.

Module 1. «Anesthesiology»
Theme 1.1 «The pain. Acute and chronic pain. Pain syndrome»
Practical lesson.

Goal: forming an idea of anesthesiology as a science; mechanisms of formation of pain (nociception) and the operation of the antinociceptive system, the main methods of dealing with pain; methods, advantages, disadvantages and possible complications of various types of general and local anesthesia.

Lesson plan

№ п/п	Stages and content of the lesson
1	**Organizing time.** Announcement of the topic, objectives Motivational moment (the relevance of studying the topic of employment)
2	**Input control, the actualization of the supporting knowledge, skills, skills - testing.**
3	**The main part of the training session.** **Consolidation of theoretical material - oral survey.** **Issues for consideration:** 1. The modern concept of pain. 2. Classification of pain syndromes 3. Etiology, pathogenesis and pathways of pain 4. Principles of treatment of acute pain. 5. Possible ways to block pain sensitivity 6. Methods for assessing the severity of pain 7. Pharmacological agents used for treatment of pain. Narcotic analgesics. Non-narcotic analgesics.
4	**The final part of the lesson:** summing up the lessons; putting current grades in the educational journal

Means of education:
- didactic (tables, charts, posters, handouts);
- material and technical (chalk, blackboard, multimedia projector).

Module 1. «Anesthesiology»

Theme 1.2 «Fundamentals of modern anesthesiology»
Practical lesson.

Goal: formation of an idea of anesthesiology as a science; methods, advantages, disadvantages and possible complications of various types of general and local anesthesia.

Lesson plan

№ п/п	Stages and content of the lesson
1	**Organizing time.** Announcement of the topic, objectives Motivational moment (the relevance of studying the topic of employment)
2	**Input control, the actualization of the supporting knowledge, skills, skills - testing.**
3	**The main part of the training session.** **Consolidation of theoretical material - oral survey.** **Issues for consideration:** 1. Questions of terminology, objectives and goals of anesthesia. 2. Classification of modern methods of anesthesia. 3. Stages and clinic of anesthesia. 4. Components of general anesthesia.
4	**The final part of the lesson:** summing up the lessons; putting current grades in the educational journal

Means of education:
- didactic (tables, charts, posters, handouts);
- material and technical (chalk, blackboard, multimedia projector).

Module 1. «Anesthesiology»
Theme 2. «General issues of resuscitation»
Practical lesson.

Goal: introduction of concepts of urgent, critical, terminal conditions and intensive care for them. Cardiopulmonary resuscitation. Russian and European SLMR Protocol.

Lesson plan

№ п/п	Stages and content of the lesson
1	**Organizing time.** Announcement of the topic, objectives Motivational moment (the relevance of studying the topic of employment)

2	**Input control, the actualization of the supporting knowledge, skills, skills - testing.**
3	**The main part of the training session.** **Consolidation of theoretical material - oral survey.** **Issues for consideration:** 1. Etiology, pathogenesis and types of cessation of cardiac activity. 2. Etiology, pathogenesis and types of termination of respiratory activity. 3. Signs of clinical death. 4. Methods of reanimation. Indications and stages of CPR. 5. Base CPR. 6. Extended CPR. 7. Features of CPR in children. 8. Forecast after CPR. Post-resuscitation disease. 9. Legal documents for the resuscitation procedure.
4	**The final part of the lesson:** summing up the lessons; putting current grades in the educational journal

Means of education:

- didactic (tables, charts, posters, handouts);
- material and technical (chalk, blackboard, multimedia projector).

Module 1. «Anesthesiology»

Theme 3.1. «Intensive care. Acute respiratory failure»

Practical lesson.

Goal: to form an idea of respiratory disorders (ODN), their classification, clinic, diagnosis, basics of intensive care (ventilator).

Lesson plan

№ п/п	Stages and content of the lesson
1	**Organizing time.** Announcement of the topic, objectives Motivational moment (the relevance of studying the topic of employment)
2	**Input control, the actualization of the supporting knowledge, skills, skills - testing.**
3	**The main part of the training session.** **Consolidation of theoretical material - oral survey.** **Issues for consideration:** 1. Acute respiratory failure of central genesis. 2. Acute respiratory failure with airway obstruction. 3. Laryngospasm 4. Asthmatic conditions. Asthmatic status 5. Cardiac asthma

	6. Pulmonary embolism 7. Pneumothorax 8. Pneumonia, complicated ARF 9. Acute respiratory distress syndrome (ARDS)
4	**The final part of the lesson:** summing up the lessons; putting current grades in the educational journal

Means of education:
- didactic (tables, charts, posters, handouts);
- material and technical (chalk, blackboard, multimedia projector).

Module 1. «Anesthesiology»
Theme 3.2. «Intensive care. Emergency conditions in diseases of the cardiovascular system».
Practical lesson.
Goal: to form an idea of acute coronary syndrome, myocardial infarction, diagnosis, the basics of intensive care.
Lesson plan

№ п/п	Stages and content of the lesson
1	**Organizing time.** Announcement of the topic, objectives Motivational moment (the relevance of studying the topic of employment)
2	**Input control, the actualization of the supporting knowledge, skills, skills - testing.**
3	**The main part of the training session.** **Consolidation of theoretical material - oral survey.** **Issues for consideration:** 1. Sudden cardiac death. 2. Acute coronary syndrome. 3. Myocardial infarction 4. principles of treatment of acute myocardial infarction 5. Complications of acute myocardial infarction 6. acute heart failure 7. myocardial ruptures 8. heart rhythm and conduction disorder 9. Complicated hypertensive crisis.
4	**The final part of the lesson:** summing up the lessons; putting current grades in the educational journal

Means of education:
- didactic (tables, charts, posters, handouts);
- material and technical (chalk, blackboard, multimedia projector).

Module 1. «Anesthesiology»
Theme 3.3. «Intensive care. Shock»
Practical lesson.
Goal: to form an idea of shocks, their classification, clinic, diagnosis, basics of infusion-transfusion therapy.
Lesson plan

№ п/п	Stages and content of the lesson
1	**Organizing time.** Announcement of the topic, objectives Motivational moment (the relevance of studying the topic of employment)
2	**Input control, the actualization of the supporting knowledge, skills, skills - testing.**
3	**The main part of the training session.** **Consolidation of theoretical material - oral survey.** **Issues for consideration:** 1. The main parameters of hemodynamics and methods for their control in shock conditions. 2. Classification of shock. 3. Clinic of shock. 4. Principles of treatment of certain types of shock. 5. principles of treatment of hypovolemic shock 6. principles of treatment of septic shock 7. principles of treatment of anaphylactic shock 8. principles of treatment of cardiogenic shock
4	**The final part of the lesson:** summing up the lessons; putting current grades in the educational journal

Means of education:
- didactic (tables, charts, posters, handouts);
- material and technical (chalk, blackboard, multimedia projector).

Module 1. «Anesthesiology»
Theme 3.4. «Intensive care. Infusion and transfusion therapy and acute blood loss»
Practical lesson.
Goal:
Lesson plan

№ п	Stages and content of the lesson

/п	
1	**Organizing time.** Announcement of the topic, objectives Motivational moment (the relevance of studying the topic of employment)
2	**Input control, the actualization of the supporting knowledge, skills, skills - testing.**
3	**The main part of the training session.** **Consolidation of theoretical material - oral survey.** **Issues for consideration:** 1. Infusion and transfusion therapy. 2. Acute blood loss.
4	**The final part of the lesson:** summing up the lessons; putting current grades in the educational journal

Means of education:
- didactic (tables, charts, posters, handouts);
- material and technical (chalk, blackboard, multimedia projector).

Module 1. «Anesthesiology»
Theme 3.5. «Intensive care. Acute impairment of consciousness»
Practical lesson.
Goal: to form an idea of disorders of consciousness, their classification, clinic, diagnosis, the basics of intensive care.
Lesson plan

№ п /п	Stages and content of the lesson
1	**Organizing time.** Announcement of the topic, objectives Motivational moment (the relevance of studying the topic of employment)
2	**Input control, the actualization of the supporting knowledge, skills, skills - testing.**
3	**The main part of the training session.** **Consolidation of theoretical material - oral survey.** **Issues for consideration:** 1. Syndromes of impaired consciousness. 2. Consciousness syndromes requiring emergency care. 3. Assessment of the level of consciousness and general examination of the patient. 4. Systematization of types of loss of consciousness. 5. General recommendations for emergency care.

	6. Emergency assistance for loss of consciousness.
4	**The final part of the lesson:** summing up the lessons; putting current grades in the educational journal

Means of education:

- didactic (tables, charts, posters, handouts);
- material and technical (chalk, blackboard, multimedia projector).