Приложение 4

MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN FEDERATION

Federal State Autonomous Educational Institution of Higher Education
«National Research Lobachevsky State University of Nizhny Novgorod»

Институт клинической медицины

УТВЕРЖДЕНО
решением Ученого совета ННГУ

протокол № 10 от 02.12.2024 г.

Working programme of the discipline

Pharmacology

Higher education level

Specialist degree

Area of study / speciality

31.05.03 - Dentistry

Focus /specialization of the study programme

Dentistry

Mode of study

full-time

Nizhny Novgorod

Year of commencement of studies 2025

1. Место дисциплины в структуре ОПОП

Дисциплина Б1.О.31 Фармакология относится к обязательной части образовательной программы.

2. Планируемые результаты обучения по дисциплине, соотнесенные с планируемыми результатами освоения образовательной программы (компетенциями и индикаторами достижения компетенций)

Формируемые компетенции (код, содержание компетенции)	**Планируемые результаты обучения по дисциплине (модулю), в соответствии с индикатором достижения компетенции**		**Наименование оценочного средства**	
	Индикатор достижения компетенции (код, содержание индикатора)	**Результаты обучения по дисциплине**	**Для текущего контроля успеваемости**	**Для промежуточной аттестации**
ОПК-3: Способен к противодействию применения допинга в спорте и борьбе с ним	*ОПК-3.1: Знать способы противодействия применения допинга в спорте и борьбе с ним* *ОПК-3.2: Уметь применять способы противодействия применения допинга в спорте и борьбе с ним* *ОПК-3.3: Владеть опытом противодействия применения допинга в спорте и борьбе с ним*	*ОПК-3.1:* *Знает способы противодействия применения допинга в спорте и борьбе с ним* *ОПК-3.2:* *Умеет применять способы противодействия применения допинга в спорте и борьбе с ним* *ОПК-3.3:* *Владеет опытом противодействия применения допинга в спорте и борьбе с ним*	*Задачи* *Задания* *Тест*	*Зачёт:* *Контрольные вопросы* *Экзамен:* *Контрольные вопросы*
ОПК-6: Способен назначать, осуществлять контроль эффективности и безопасности немедикаментозного и медикаментозного лечения при решении профессиональных задач	*ОПК-6.1: Знать принципы, контроль эффективности и безопасности немедикаментозного и медикаментозного лечения* *ОПК-6.2: Уметь назначать, осуществлять контроль эффективности и безопасности немедикаментозного и медикаментозного лечения при решении профессиональных задач* *ОПК-6.3: Владеть навыком назначать, осуществлять контроль эффективности и безопасности немедикаментозного и*	*ОПК-6.1:* *Знает принципы контроль эффективности и безопасности немедикаментозного и медикаментозного лечения* *ОПК-6.2:* *Умеет назначать, осуществлять контроль эффективности и безопасности немедикаментозного и медикаментозного лечения при решении профессиональных задач*	*Задания* *Задачи* *Тест*	*Зачёт:* *Контрольные вопросы* *Экзамен:* *Контрольные вопросы*

	медикаментозного лечения при решении профессиональных задач	*ОПК-6.3: Владеет навыком назначать, осуществлять контроль эффективности и безопасности немедикаментозного и медикаментозного лечения при решении профессиональных задач*		

3. Структура и содержание дисциплины

3.1 Трудоемкость дисциплины

	очная
Общая трудоемкость, з.е.	**7**
Часов по учебному плану	**252**
в том числе	
аудиторные занятия (контактная работа):	
- занятия лекционного типа	**32**
- занятия семинарского типа (практические занятия / лабораторные работы)	**96**
- КСР	**3**
самостоятельная работа	**85**
Промежуточная аттестация	**36** **Экзамен, Зачёт**

3.2. Содержание дисциплины

(структурированное по темам (разделам) с указанием отведенного на них количества академических часов и виды учебных занятий)

Наименование разделов и тем дисциплины	Всего (часы)	в том числе			
		Контактная работа (работа во взаимодействии с преподавателем), часы из них			Самостоятельная работа обучающегося, часы
		Занятия лекционного типа	Занятия семинарского типа (практические занятия/лабораторные работы), часы	Всего	
	о ф о	о ф о	о ф о	о ф о	о ф о
General Pharmacology	100	15	45	60	40
Private Pharmacology	113	17	51	68	45
Аттестация	36				

КСР	3			3	
Итого	252	32	96	131	85

Contents of sections and topics of the discipline

1. General Pharmacology
1.1. General pharmacology. Determination of the medicinal substance, form, means, preparation. Medicinal raw materials, their types by origin. The State Pharmacopoeia. The recipe and its structure. The form of prescription forms. Rules for prescribing prescriptions.
1.2. Rules for prescribing dosage forms
1.2.1. Solid dosage forms
Pills, pills, powders. Rules for prescribing prescriptions. Solid dosage forms, the most commonly used in practice.
1.2.2. Liquid dosage forms
Solutions for external and internal use, dosage forms for injection. Rules for prescribing liquid dosage forms. Dosage forms from vegetable raw materials: infusions, decoctions. The rules of discharge. Dosage forms from vegetable raw materials: tinctures, extracts. The rules of discharge.
1.2.3. Mild dosage forms
Ointments, pastes, suppositories. Rules for prescribing individual soft dosage forms.
1.3. The content of pharmacology and its tasks.
Position among other medical disciplines. The main stages of the development of pharmacology.
Pharmacodynamics of medicines: The main biological substrates with which medicinal substances interact. The concept of specific receptors, agonists and antagonists. Types and nature of the action of medicinal substances.
1.4. Pharmacokinetics of medicines.
Ways of administration of medicines. Absorption of drugs in different routes of administration. The main mechanisms of suction. Distribution, deposition and transformation of medicinal substances in the body. Ways of removing drugs from the body.
Factors affecting the pharmacokinetics and pharmacodynamics of medicinal substances.
1.5. Dependence of the effect on the dose (concentration) of the medicinal substance. Types of doses. The breadth of therapeutic action. The change in the effect of drugs during their repeated administration. Drug dependence (mental, physical). Medical and social aspects of the fight against drug addiction.
Combined use of medicinal substances
1.6. Side effects of medicinal substances.
Causes, manifestations, methods of prevention and treatment.
Classification of drug poisoning by reason of their occurrence and clinical course. The concept of detoxification of the body. Principles of detoxification and basic methods of detoxification of the body. Methods of enhancing natural detoxification. Indications. Contraindications. Side effects. Methods of artificial detoxification. Indications. Contraindications. Side effects.
Methods of antidote detoxification. The concept of antidotes. Classification of antidotes by mechanism of action. The main directions of antidote therapy for acute poisoning. Symptomatic treatment to maintain the basic vital functions of the body.
2. Private pharmacology
Pharmacology of neurotropic drugs
2.1. Drugs affecting afferent innervation
Local anesthetics: Classification. Mechanism of action. Comparative characteristics of drugs and their use for different types of anesthesia. Indications and contraindications. The toxic effect of locally anesthetic substances and measures to prevent it.
Astringents: Organic and inorganic binders. The principle of operation. Indications for use.
Enveloping and adsorbing agents: The principle of operation. Application. Adsorbing agents. The principle of

operation. Application.
Irritating agents: Effects on the skin and mucous membranes. The significance of the reflexes that arise in this case. A distracting effect. The use of irritating agents.
2.2. Means affecting efferent innervation.
2.2.1. Agents acting on cholinergic synapses
The concept of M- and N-cholinergic receptors. Subtypes of M- and N-cholinergic receptors. Classification of agents affecting the transmission of excitation in cholinergic synapses. The creation of drugs with a predominant effect on certain subtypes of cholinergic receptors.
M- and N-cholinomimetic agents. Mediator, its derivatives, anticholinesterase drugs, prokinetics.
M-cholinergic drugs. Effects arising from the excitation of various subtypes of M-cholinergic receptors. Comparative characteristics of M-choline-blocking agents. Measures of assistance in case of poisoning with M-cholinomimetics and M-cholinoblockers.
N-cholinergic drugs. Classification. Effects associated with the excitation of N-cholinergic receptors. The toxic effect of nicotine. Ganglioblocking agents. The main effects, the mechanism of their occurrence. Indications for use. Side effect. Drugs that block neuromuscular transmission. The mechanism of action of depolarizing and antidepolarizing agents. Application. Side effects.
2.2.2. Agents acting on adrenergic synapses
Definition. Ways of possible pharmacological effects on the functions of the adrenergic synapse. Classification of adrenoreceptors. Effects of adrenoreceptor excitation.
Classification of adrenergic substances.
Characteristics of the main groups: adrenomimetic substances,
adrenomimetic substances, sympathomimetics of mixed action; adrenoblocking agents, adrenoblocking substances, adrenoblocking substances, sympatholytics. In each group: the severity of the effect on various types of adrenoreceptors, pharmacological effects, indications for use and contraindications. Side effects. In each group: the severity of the effect on various types of adrenoreceptors, pharmacological effects, indications for use and contraindications. Side effects.
2.3. Drugs for anesthesia
Definition of anesthesia. The history of the discovery and application of anesthesia. Classification of drugs for anesthesia. Theories about the mechanism of action of drugs for anesthesia. The concept of the breadth of narcotic action. Comparative characteristics of drugs for inhalation anesthesia. Complications during and after anesthesia. Measures of assistance. Features of the action of drugs for non-inhalation anesthesia. Indications and contraindications for use. Side effects. Measures of assistance.
2.4. Ethyl alcohol
The resorptive effect of ethyl alcohol. Local effect on the skin and mucous membranes. Application in medical practice. Toxicological characteristics. Effects on the cardiovascular system, gastrointestinal tract, liver, and endocrine system. Acute poisoning and its treatment. Chronic alcoholism, its social aspects. Principles of pharmacotherapy of chronic alcoholism.
2.5. Sleeping pills
Sleeping pills. Classification. Mechanisms of action. Benzodiazepine receptor agonists, central histamine H1 receptor blockers. The use of melatonin drugs in sleep disorders. Barbituric acid derivatives, their application. Side effect of sleeping pills. The development of drug dependence. Acute poisoning, relief measures. Antagonists of sleeping pills of the benzodiazepine series (flumazenil).
2.6. Painkillers (analgesics)
Classification of analgesic drugs. Narcotic analgesics. Classification. Effects due to the effect on the central nervous system. Features of the analgesic effect. Possible mechanisms of analgesia. Understanding of opiate receptors and their endogenous ligands. Influence on the activity of internal organs. Comparative characteristics of drugs. Indications and contraindications for use. Side effects. Acute poisoning and relief measures. Addiction, drug addiction.
Antagonists of narcotic analgesics. Principles of action. Application.
Non-opioid analgesics are predominantly of central action. COX-3 inhibitors. Sodium channel blockers

(carbamazepine), monoamine reverse neuronal uptake inhibitors (amitriptyline), centrally acting α2-adrenomimetics (clofelin), NMDA receptor antagonists (ketamine), GABA-B mimetics. Differences from opioid analgesics. The mechanism of analgesic action, application.

2.7. Antiepileptic drugs

Mechanisms of action of antiepileptic drugs. Comparative characteristics of drugs used in different forms of epilepsy. Remedies for the relief of epileptic status. Side effects of antiepileptic drugs.

2.8. Antiparkinsonian remedies

Mechanisms of action of antiparkinsonian drugs stimulating dopaminergic processes. MAO-B inhibitors; substances that inhibit COMT. Comparative characteristics of individual drugs. The main side effects. The use of DOPA decarboxylase inhibitors, peripheral dopamine receptor blockers, and "atypical" antipsychotics to reduce the side effects of levodopa.

2.9. Psychotropic drugs:

2.9.1.Antipsychotic drugs

The history of the discovery of psychotropic drugs.

Antipsychotic drugs. Classification (by chemical structure and side effects). Comparative characteristics of the main groups of drugs. Indications and contraindications to the appointment. Side effects and their pharmacological correction.

2.9.2. Anxiolytics (tranquilizers)

Classification. Mechanism of action. Pharmacological effects. Comparative characteristics of the main groups of drugs. Indications and contraindications for use. Side effects. The possibility of developing drug dependence.

2.9.3. Sedatives

Classification. Mechanism of action. Comparative characteristics of bromides and sedatives of plant origin.

2.9.4. Psychostimulating agents

Classification. Effects on the central nervous system and cardiovascular system. Characteristics of the psychostimulating effect. Indications and contraindications for the use of Side effects. The possibility of developing drug dependence.

2.9.5. Nootropic drugs

Classification. Effect on metabolic processes in the central nervous system. Indications for use.;

2.9.6. Analeptics

Indications for the appointment. Classification. Mechanisms of stimulating action on the central nervous system. Effects on blood circulation and respiration. Indications and contraindications for use.;

2.9.7.Antidepressants

Classification. Effects on adrenergic, serotonergic and dopaminergic processes in the central nervous system. Comparative evaluation of drugs for antidepressant, psychostimulating and sedative effects. Indications and contraindications to the appointment. Side effects.

Pharmacology of medicines, regulatory,
functions of executive bodies and systems

2.10. Drugs affecting the functions of the respiratory system

Classification of drugs affecting the respiratory system.

Respiratory stimulants. Classification. The mechanism of the stimulating effect of substances on respiration. Indications and contraindications for use.

Antitussive remedies. Classification. Mechanism of action. Indications and contraindications for use. Side effects.

Expectorants. Classification. Mechanism of action. Indications and contraindications for the use of Side effects.

Remedies used for bronchospasm. Physiological mechanisms of regulation of bronchial patency. Ways of pharmacological effects on bronchial tone. Classification of bronchodilators. Mechanisms of action of various groups of bronchodilators. Indications, contraindications for use. Side effect.

Drugs used for pulmonary edema, respiratory distress syndrome. Principles of action of medicinal substances. Used for the treatment of pulmonary edema. The choice of drugs depends on the pathogenesis of pulmonary edema.

2.11. Drugs affecting the cardiovascular system

2.11.1. Cardiotonic devices

Cardiac glycosides. Definition. The history of the study of cardiac glycosides (V. Withering, E.V. Pelikan, the work of S.P. Botkin, I.P. Pavlov). Plants containing cardiac glycosides. Individual glycosides isolated from plants. Pharmacodynamics of cardiac glycosides. Cardiac and non-cardiac effects of cardiac glycosides. Comparative characteristics of various drugs (activity, absorption from the gastrointestinal tract, rate of development and duration of action, accumulation). Intoxication with cardiac glycosides, clinic, treatment and prevention.

Cardiotonic agents of a non-glycosidic structure. The mechanism of cardiotonic action, application.

2.11.2. Medicines used for cardiac arrhythmias (antiarrhythmic drugs)

Classification. Drugs used for tachyarrhythmias. The main properties of sodium channel blockers (effect on automatism, conductivity, effective refractory period). Features of the antiarrhythmic action of beta-blockers, blockers of potassium and calcium channels. Indications for use. Side effects.

Drugs used for bradyarrhythmias. Features of the antiarrhythmic action of M-cholinolytics, beta-adrenomimetics.

2.11.3. Drugs used for coronary circulatory insufficiency

The basic principles of eliminating oxygen deficiency in coronary heart disease. Classification of drugs used in coronary heart disease.

Organic nitrates. Mechanism of action, pharmacological effects. Indications for use, contraindications, side effects. Comparative characteristics of preparations of nitroglycerin, isosorbide dinitrate and isosorbide-5-mononitrate.

Antianginal properties of beta-blockers, calcium channel blockers, bradycardic drugs. The principle of action of cardioprotective drugs.

Medicines used for myocardial infarction.

2.11.4. Antihypertensive agents (antihypertensive agents)

Classification. Localization and mechanisms of action of neurotropic drugs. Application. Side effects.

Drugs that affect the renin-angiotensin system. Classification. The mechanism of action of ACE inhibitors. Indications for use. Side effects. Angiotensin receptor blockers. Application.

Myotropic agents (calcium channel blockers, potassium channel activators, nitric oxide donors and drugs with different mechanisms of action). Mechanisms of action. Pharmacological effects. Application.

Hypotensive effect of diuretics. Comparative data on the effectiveness of different drugs, the rate of development of the effect, and its duration.

Combined use of antihypertensive agents with different localization and mechanism of action.

2.11.5. Hypertensive drugs (drugs used in the treatment of arterial hypotension)

Drugs that increase cardiac output and peripheral vascular tone. Pharmacology of adrenomimetics. Means that increase the tone, mainly the tone of peripheral vessels. Characteristics of drugs, indications, contraindications, side effects

2.12. Medicines affecting the functions of the digestive system

Remedies that affect appetite. Appetite-enhancing drugs. The mechanism of the stimulating effect of bitterness on appetite and gastric secretion. Indications for use.

Appetite-reducing drugs. Mechanisms of action. Use in the treatment of obesity. Side effects. Contraindications to use.

Drugs used in violation of the function of the glands of the stomach. Drugs that stimulate the secretion of gastric glands. Application for the diagnosis of disorders of secretory activity of the stomach. Means of substitution therapy. The effect of hydrochloric acid and pepsin on the digestive processes in the stomach. Indications for use. Drugs that reduce the secretion of gastric glands. Classification. Principles of action of H+, K+-ATPASE blockers, histamine H2 receptor blockers and M-cholinoblockers. Application. Side effects.

Antacids. Comparative characteristics of drugs. Indications for use. Side effects.

Gastroprotectors. Principles of action. Use in peptic ulcer disease.

Emetics and antiemetics. Classification. The mechanism of action of emetics. Their application. Principles of

action of antiemetics. Indications for the use of certain drugs.
Drugs that affect liver function. Choleretic agents. Classification. The principle of action of drugs that enhance the formation of bile. Means that promote the formation of bile. Indications for use. Agents that promote the dissolution of gallstones. The principle of action of cholelitolytic drugs. Indications for use.
Hepatoprotectors. The principle of operation, indications for use.
Drugs used in violation of the excretory function of the pancreas. Means of substitution therapy for insufficient pancreatic function.
Drugs that affect the motility of the gastrointestinal tract. Drugs that inhibit the motility of the gastrointestinal tract. The difference in the mechanism and localization of the action of drugs that inhibit the motility of the gastrointestinal tract. Application. Side effects. Drugs that enhance the motility of the gastrointestinal tract. The difference in the mechanism and localization of the action of substances that enhance the motility of the gastrointestinal tract (cholinomimetic agents).
Laxatives. Classification by mechanism and predominant localization of action. Comparative characteristics of laxatives that cause chemical irritation of the receptors of the intestinal mucosa; changes in the volume of chyme and mechanical irritation of the receptors of the intestinal mucosa; contributing to the softening of feces, facilitating their movement through the intestine (mechanism and speed of action, indications and contraindications for use, side effects).
2.13. Diuretics (diuretics)
Classification. Mechanisms of action of diuretics that inhibit the function of the epithelium of the renal tubules. Their comparative assessment (effectiveness, rate of development and duration of the effect, effect on the ion balance). Indications for use. Side effects. Potassium- and magnesium-sparing diuretics. Mechanism of action. Application. Aldosterone antagonists, effect on ion balance. Indications for use. The principle of action of osmotic diuretics. Application. Principles of drug combination. Side effects.
2.14. Medicines affecting the tone and contractile activity of the myometrium
Classification. Medicines used to enhance labor activity. The effect of oxytocin on the myometrium. Pharmacological properties of prostaglandin preparations. Application. Tocolytic agents. Mechanism of action. Application. Uterine hemostatic agents. Pharmacological properties of alkaloids and ergot preparations. Indications for use. Side effects. Poisoning, relief measures. Synthetic products. Application features.
2.15. Medicines affecting hematopoiesis Antianemic drugs.
Drugs that affect erythropoiesis. Drugs used to treat hypochromic anemia. Absorption, distribution and excretion of iron preparations. The effect on hematopoiesis. Comparative characteristics of iron preparations. Side effect. The effect of cobalt preparations on hematopoiesis. The use of recombinant human erythropoietin drugs in anemia. The mechanism of the pharmacotherapeutic effect of cyanocobalamin, folic acid in hyperchromic anemia.
Drugs that affect leukopoiesis. Mechanism of action. Indications for use.
2.16. Drugs affecting platelet aggregation, blood clotting and fibrinolysis
Agents that inhibit platelet aggregation. The effect of drugs on the biosynthesis of thromboxane and prostacyclin. The use of substances that inhibit platelet aggregation.
Drugs that affect blood clotting. Substances that promote blood clotting. Direct and indirect coagulants. The mechanism of action and the use of direct coagulants. The mechanism of action of vitamin K preparations. Application.
Substances that prevent blood clotting (anticoagulants). Mechanisms of action of heparin and indirect anticoagulants. Features of low molecular weight heparins. Application. Side effects. Antagonists of anticoagulants of direct and indirect action.
Agents that affect fibrinolysis. Fibrinolytic agents. The mechanism of fibrinolytic activity. Indications for use. Antifibrinolytic agents. The mechanism of action and pharmacological effects of kontrical. Indications for use.
Pharmacology of drugs
regulating metabolic processes
2.17. Hormonal drugs
2.17.1. Hormonal preparations of polypeptide structure, amino acid derivatives

Preparations of hypothalamic hormones. Somatostatin and its synthetic analogues. Application. Bromocriptine, effect on prolactin and somatotropin production, application. Gonadorelin, danazol. Application.
Hormone preparations of the anterior pituitary gland. Pharmacological effects. Indications for use.
Preparations of hormones of the posterior pituitary gland. The mechanism of action and pharmacological effects of oxytocin. Indications for use. Side effects. Antidiuretic properties of vasopressin, effect on vascular tone. Application.
Preparations of thyroid hormones. The effect on metabolism. Application. The physiological role and use of calcitonin. Antithyroid drugs. Classification.
Pharmacodynamics of mercazolil. The mechanism of antithyroid action of iodine preparations. Application. Side effects.
A preparation of the hormone of the parathyroid glands. The effect of parathyroidin on phosphorus and calcium metabolism. Application.
Insulin preparations and synthetic hypoglycemic agents. The significance of L.V. Sobolev's works. Obtaining insulin (F. Banning, K. Best). Classification of insulin preparations. The mechanism of action, the effect on metabolism. Principles of insulin dosing in the treatment of diabetes mellitus. Prolonged-acting insulin preparations. Preparations of recombinant human insulins.
Synthetic hypoglycemic agents. Classification. Mechanism of action. Comparative evaluation of insulin preparations and synthetic hypoglycemic agents. Indications for use. Side effects.
2.17.2. Hormonal preparations of the steroid structure
Glucorticoid preparations. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Synthetic glucorticoids for topical use.
Preparations of mineralocorticoids. The main effect. Indications for use.
Preparations of male sex hormones. Androgen preparations for enteral and parenteral use. Long-acting drugs. Pharmacological effects. Indications for use. Side effects. Antiandrogenic drugs (androgen receptor blockers, 5a reductase inhibitors). Application.
Anabolic steroids. The effect on protein metabolism. Indications and contraindications for use. Side effects.
Preparations of ovarian hormones (preparations of estrogens and progestogens). The physiological significance of estrogens and progestogens. Classification of drugs. Mechanism of action. Pharmacological effects. Indications and contraindications for use. Side effects. Antiestrogenic and antiestagenic drugs. Application. Contraceptive products.
2.18. Vitamin preparations
2.18.1. Preparations of water-soluble vitamins. Exogenous and endogenous causes of hypo- and vitamin deficiency. The main symptoms of hypo- and vitamin deficiency. Vitamins as medicines. The role of B vitamins in metabolism. Effects on carbohydrate, fat and protein metabolism. Participation in redox processes. Effects on the nervous and cardiovascular system, gastrointestinal tract, hematopoiesis, regeneration processes. Indications for the use of certain drugs. Side effects.
The participation of ascorbic acid in redox processes. Therapeutic use.
2.18.2. Preparations of fat-soluble vitamins
Features of pharmacodynamics and pharmacokinetics of vitamin preparations. Antioxidant properties of fat-soluble vitamins.
Indications and features of their application. Side effects of vitamins as medicines.
2.19. Drugs used for hyperlipoproteinemia (anti-atherosclerotic drugs)
Classification. Mechanisms of influence on lipid metabolism. Inhibitors of cholesterol synthesis. Bile acid sequestrants. Derivatives of fibroic acid. Nicotinic acid and its derivatives. The use of anti-atherosclerotic agents in different types of hyperlipoproteinemia. Side effects.
Pharmacology of drugs that inhibit
inflammation and affect immune processes
2.20. Anti-inflammatory drugs
2.20.1. Steroid anti-inflammatory drugs
Mechanisms of anti-inflammatory action. Characteristics of individual drugs. Indications for use. Side effects.

2.20.2.Nonsteroidal anti-inflammatory drugs
Classification of nonsteroidal anti-inflammatory drugs. Influence on various isoforms of COX.
The mechanism of anti-inflammatory, antipyretic and analgesic action. Comparative characteristics of drugs. Indications, contraindications for use. Side effects.
2.21.Antiallergic agents
The concept of immediate and delayed hypersensitivity reactions.
Glucocorticoids. The mechanism of their antiallergic action. The principle of action and application of cromoline-sodium and ketotifen. Antihistamines are H1 receptor blockers. Their comparative assessment. Application. Side effects.
Immunosuppressive properties of cytostatic agents.
The use of antiallergic agents for allergic reactions of delayed and immediate types.
Immunostimulants. Application. Side effects.
The use of drugs of interferons and interferogens to stimulate immune processes
Pharmacology of antimicrobial,
antiviral, antifungal and
antiparasitic drugs
2.22. Antiseptic and disinfectants
The concept of antiseptics and disinfection. The history of the use of antiseptic drugs. (A.P. Nelyubin, I. Semmelweis, D. Lister). Conditions determining antimicrobial activity. The main mechanisms of action of antiseptics. Classification.
Halogen-containing compounds. Features of the action and application of chlorine and iodine compounds.
Oxidizing agents. Mechanism of action. Apply.
Acids and alkalis. Mechanism of action. Indications and contraindications for use. Side effects.
Metal compounds. Antimicrobial properties. Conditions determining antimicrobial activity. Local action (astringent, irritating and cauterizing effects). Features of the use of individual drugs. Characteristics of resorptive action. Poisoning with salts of heavy metals. Measures of assistance.
Antiseptics of the aliphatic series (alcohols, aldehydes). Antimicrobial properties, mechanism of action. Application.
Aromatic antiseptics (pure phenol, birch tar, ichthyol). Features of action and application.
Dyes. Features of action and application.
Detergents. The concept of anionic and cationic detergents. Antimicrobial properties. Application.
Nitrofuran derivatives. The spectrum of antimicrobial action. Application.
2.23. Antibiotics
The biological significance of antibiosis. The history of obtaining and using antibiotics. Research by P. Ehrlich, A. Fleming, H.V. Florey, E.B. Chain, Z. V. Ermolyeva.
Classification of antibiotics. The mechanisms of action of antibiotics. Principles of rational antimicrobial therapy.
Side effects of antibiotic therapy, their prevention and treatment.
Penicillins. Classification. Mechanism of action. The spectrum of action. Comparative characteristics of semi-synthetic penicillins. Combined (inhibitor-protected) penicillins. Indications and contraindications for the use of antibiotics of the penicillin group.
Cephalosporins. Classification. Mechanism of action. Comparative characteristics of cephalosporins of I –IY generations. Indications and contraindications for use.
Carbapenems. Mechanism of action. The spectrum of action. Indications for use.
Macrolides. Classification. Mechanism of action. The spectrum of action. Comparative characteristics of 14, 15, 16-membered macrolides. Indications and contraindications for use.
Lincosamides. Mechanism of action. The spectrum of action. Indications and contraindications for use.
Tetracyclines and glycylcyclines. Mechanism of action. The spectrum of action. Indications and contraindications for use.
Chloramphenicol (levomycetin). Mechanism of action. The spectrum of action. Indications and

contraindications for use.
Aminoglycosides. Classification. Mechanism of action. The spectrum of action. Comparative characteristics of aminoglycosides of I-III generations.
Oxazolidinones (linezolid). Mechanism of action. The spectrum of action. Indications for use.
Polymyxins. Mechanism of action. The spectrum of action. Comparative characteristics of drugs. Indications and contraindications for use.
Antibiotics of different chemical structures. Features of the action and application of fusidic acid and fusafunjin.
2.24. Anti-tuberculosis drugs
The relevance of the problem in the 21st century. Principles of tuberculosis treatment in modern conditions.
Classification of anti-tuberculosis drugs. Mechanism of action. Comparative characteristics of anti-tuberculosis drugs. Indications, contraindications for use. Side effects.
2.25. Anti-syphilitic drugs
Anti-spirochete properties of benzylpenicillin preparations. The mechanism of action of bismuth preparations, their use in the treatment of syphilis. Side effect.
Backup anti-spirochete antibiotics.
2.26. Sulfonamide preparations and other synthetic products
Sulfonamide preparations. Classification by chemical structure, spectrum and duration of action. Features of the chemical structure, the relationship of the chemical structure and action in a number of sulfonamide preparations. Mechanism of action. Principles of sulfonamide therapy. Indications for the use of sulfonamide preparations. Side effects.
Synthetic antimicrobial agents. Classification Characteristics of the main groups (8-hydroxyquinolines, quinolones and fluoroquinolones, nitroimidazoles, nitrofurans, quinoxalines). Mechanism of action. The spectrum of action. Indications and contraindications for use. Side effects.
2.27. Antiviral agents
Antiviral drugs. Classification by exposure at the stage of reproduction of the virus. Anti-influenza drugs. Mechanism of action. Side effects. Antiherpetic drugs. Mechanism of action. Indications for use. Side effects. The drug of choice in the treatment of HIV infection. Mechanism of action. Side effects.
2.28.Antifungal agents
Classification. Drugs for the treatment of systemic mycoses. Mechanisms of action. Indications and contraindications for use. Side effects. Preparations for the treatment of dermatomycosis. Mechanism of action. The spectrum of action. Pharmacological effects. Indications and contraindications for use. Side effects.
2.29. Antiprotozoal agents
Antimalarial medicines. Medicines for the treatment of trichomoniasis, leishmaniasis, amoebiasis. Pharmacodynamics and pharmacokinetics of drugs. Features of dosing. The release form. Ways of introduction. Indications and contraindications for use. Side effect.
2.30. Anthelmintic agents
Drugs used in the treatment of intestinal and extra-intestinal helminthiasis.
Pharmacodynamics and pharmacokinetics of drugs. Features of dosing. The release form. Ways of introduction. Indications and contraindications for use. Side effect
Pharmacology of drugs used
in malignant neoplasms
2.31. Antitumor (antiblastoma) agents
Alkylating agents and similar drugs. Antimetabolites.
Antibiotics.
Herbal remedies.
Hormonal drugs and hormone antagonists.
Enzymes. Cytokines.
Monoclonal antibodies.
Protein kinase inhibitors.

Pharmacodynamics and pharmacokinetics of drugs. Features of dosing. The release form. Ways of introduction. Indications and contraindications for use. Side effect

4. Учебно-методическое обеспечение самостоятельной работы обучающихся

Самостоятельная работа обучающихся включает в себя подготовку к контрольным вопросам и заданиям для текущего контроля и промежуточной аттестации по итогам освоения дисциплины приведенным в п. 5.

Коноплева Е. В. Клиническая фармакология : учебник и практикум / Е. В. Коноплева. - Москва : Юрайт, 2023. - 661 с. - (Высшее образование). - ISBN 978-5-534-16293-6. - Текст : электронный // ЭБС "Юрайт". https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=871607&idb=0

5. Assessment tools for ongoing monitoring of learning progress and interim certification in the discipline (module)

5.1 Model assignments required for assessment of learning outcomes during the ongoing monitoring of learning progress with the criteria for their assessment:

5.1.1 Model assignments (assessment tool - Tasks) to assess the development of the competency ОПК-3:

6. Aprotinin, bisacodyl, omeprazole, parathyroidin, thiamazole, thyroxine, fibrinogen, epinephrine – find in the list:

A – a drug prescribed for endemic goiter; how can it be replaced?

B – a drug effective for tetany; which drug should be administered with it?

7.

1. Galantamine, desmopressin, ketorolac, lisinopril, mebhydroline, nialamide, rabeprazole, ephedrine – find in the list:

A – a drug effective for diabetes insipidus; how to use it?

B – an antihypertensive drug; what is the mechanism of its action?

2. Write down:

- glibenclamide

- antiarrhythmic drug

8. Ademetionine, bisacodyl, gludantan, lansoprazole, maalox, propofol, flumazenil, cytisine – find in the list:

A – a drug effective in case of overdose with sleeping pills; what is the mechanism of its action?

B – a drug that activates dopaminergic structures of the brain, in which cases is it prescribed?

9.

1. Apomorphine, aprotinin, valproic acid, galantamine, domperidone, clemastine, rabeprazole, phenytoin - find in the list:

A is a GABA transferase inhibitor; how can it be replaced?

B is a drug that inhibits gastric secretion; what is the mechanism of its action?

2. Write down:

- nitrazepam

- bromhexine

10. Amitriptyline, aprotinin, cromoglycate, molsidomine, omnopone, pirylene, fenofibrate, ethamide – find in the list:

A – a drug for the treatment of coronary heart disease; what is the mechanism of its action?

B – an anti-sclerotic drug; name its adequate substitute.

11.

1. Atropine, vinpocetine, diphenhydramine, quifenadine, pancreatin, neostigmine, sydnocarb, etymizole – find in the list:

A is a drug recommended for disorders of cerebral hemodynamics; how does it affect blood pressure?

B is a bronchial dilator drug; how will the bronchial tone change if aceclidine is administered after it?

2. Write down:

- nitroglycerin

- epinephrine

12. Arbidol, josamycin, idoxuridine, levamisole, meropenem, neomycin, ornidazole, rimantadine – find in the list:

A – anthelmintic drug; what is the mechanism of its action?

B – antiprotozoal drug; specify the spectrum of its activity.

13.

1. Acyclovir, ganciclovir, praziquantel, propranolol, rimantadine, tamsulosin, phenoterol, ephedrine - find in the list:

A is a drug for the prevention and treatment of influenza; what is the mechanism of its action?

B is an antiarrhythmic drug; how does it affect bronchial tone?

2. Write down:

- metronidazole in tablets

- verapamil

14. Aprotinin, atropine, galantamine, drotaverine, procaine, propofol, rabeprazole, cetirizine – find in the list:

A – drug for anesthesia; how does it affect pain sensitivity?

B – local anesthetic; indicate its possible effect on blood pressure.

15.

1. Azamethonium bromide, apomorphine, bisoprolol, isoflurane, carvedilol, quifenadine, metoprolol, tropisetron – find in the list:

A is a drug for inhalation anesthesia; indicate its negative sides.

B is an antiemetic drug; what is the mechanism of its action?

2. Write down:

- metacin in tablets

- ranitidine

5.1.2 Model assignments (assessment tool - Tasks) to assess the development of the competency ОПК-6:

1.

1. Galantamine, xylometazoline, orciprenaline, pyrroxane, epinephrine, ephedrine – in the list, find a drug that reduces blood pressure; specify the mechanism of its action.

2. How will blood pressure change if ephedrine is administered after metoprolol?

3. Write down propranolol, indicate its effect on renin production.

2.

1. Atropine, galantamine, dietixime, carbacholine, clemastine, famotidine – find in the list:

A is a drug that dilates the bronchi; specify the mechanism of its action.

B is a drug effective for allergic reactions; how does it affect the central nervous system?

2. Prescribe diphenhydramine in tablets.

3.

1. Ampicillin, hydroxyzine, dopamine, clindamycin, nitrofungin, strophanthin, fosinopril, chloxyl – find in the list:

A is an antifungal drug; specify the mechanism of its action.

B is a hypotensive agent; what is the mechanism of its action?

2. Prescribe griseofulvin in tablets.

4.

1. Atropine, bromhexine, valproic acid, doxazosin, neostigmine, nitrazepam, nitroglycerin, omeprazole – find in the list:

A is a drug for emergency relief of an angina attack; the mechanism of action.

B is a drug that causes mydriasis; how does it affect salivation?

2. Prescribe verapamil in tablets.

5.

1. Atorvastatin, vinpocetine, halopidol, nitrous oxide, molsidomine, nimesulide, prazosin, prenoxdiazine – find in the list:

A is a drug effective for coronary heart disease; specify the mechanism of its action.

B is a hypolipidemic drug; what is the mechanism of its action?

2. Prescribe nitroglycerin.

Assessment criteria (assessment tool — Tasks)

Grade	Assessment criteria
pass	The level of knowledge in the volume corresponding to the training program. Several gross mistakes were made.
fail	The level of knowledge is below the minimum requirements. There were gross mistakes.

5.1.3 Model assignments (assessment tool - Assignments) to assess the development of the competency ОПК-3:

Task 1.

Determine the drug by describing the effects and application. It is used for all types of anesthesia. Procaine is 2.5 times more active, while its effect is longer. The drug can also be used as an antiarrhythmic agent.

Task 2.

Combine the names of medicines with their pharmacological group:

Amiodarone is an Adrenomimetic

Amitriptyline is an antiarrhythmic and antianginal drug

Atropine is an antibiotic

Benzylpenicillin is an antithyroid drug

Vikasol is a fat-soluble vitamin

Halothane (fluorotane) Cardiac Glycoside

Indomethacin is a local anesthetic drug

Digoxin is a Muscle Relaxant

Omeprazole M-holinoblocker

Procaine (novocaine) is a neuroleptic

Retinol is a nonsteroidal anti-inflammatory drug

Suxamethonium (ditiline) Anti-ulcer drug

Thiamazole (mercazolil) A synthetic analogue of vitamin K

Chlorpromazine (aminazine) Preparation for inhalation anesthesia

Epinephrine (adrenaline) Tricyclic antidepressant

5.1.4 Model assignments (assessment tool - Assignments) to assess the development of the competency ОПК-6:

Task 4.

Identify the group of drugs, give examples. They have a wide range of effects. They disrupt DNA replication and RNA formation by blocking bacterial enzymes – topoisomerase II (in gram-negative microorganisms) and topoisomerase IV (in gram-positive microorganisms). Side effects: allergic reactions, dysbiosis, dyspeptic disorders, photosensitization.

Task 5.

Identify the pharmacotherapeutic group. They reduce the feeling of emotional tension, anxiety, anxiety, and fear. They also have sedative, hypnotic, anticonvulsant, muscle-relaxing effects. They enhance gabaergic processes in the central nervous system.

Assessment criteria (assessment tool — Assignments)

Grade	Assessment criteria
pass	The level of knowledge in the volume corresponding to the training program. Several gross mistakes were made.
fail	The level of knowledge is below the minimum requirements. There were gross mistakes.

5.1.5 Model assignments (assessment tool - Test) to assess the development of the competency ОПК-3:

1. Which drug is semi-synthetic penicillin:

a) amoxicillin

b) clarithromycin

c) phenoxymethylpenicillin

d) azithromycin

2. Doxycycline belongs to the group:

a) tetracyclines

b) aminoglycosides

c) macrolides

d) cephalosporins

3. Choose the correct statement for sulfonamides:

a) very toxic

b) can be administered intravenously

c) cause crystalluria

d) clavulanic acid increases their effectiveness

4. In the absence of resistance against Mycobacterium tuberculosis, ampicillin is effective:

a) ampicillin;

b) streptomycin;

c) tetracycline;

d) chloramphenicol

5.1.6 Model assignments (assessment tool - Test) to assess the development of the competency ОПК-6:

5. The side effect of chloramphenicol is:

a) ototoxicity

b) visual impairment

c) suppression of hematopoiesis

d) constipation

6. A decrease in the effectiveness of the substance with repeated use is called:

a) idiosyncrasy

b) addiction

c) cumulation

d) tolerance

7. One of the main mechanisms of action of local anesthetics:

a) non-specific effect on M2-cholinergic receptors

b) blocks the permeability of membranes to sodium ions

c) blocks adrenoreceptors

d) potentiation of GABA action

8. A drug that increases intraocular pressure:

a) pilocarpine

b) atropine

c) neostigmine

d) doxazosin

9. Sulfonamides are limited in use for the treatment of infants due to:

a) low efficacy

b) potential hepatotoxicity

c) possible crystalluria

d) neurotoxicity

Assessment criteria (assessment tool — Test)

Grade	Assessment criteria
pass	more than 70% of the correct answers

Grade	Assessment criteria
fail	less than 70% of the correct answers

5.2. Description of scales for assessing learning outcomes in the discipline during interim certification

Шкала оценивания сформированности компетенций

Уровень сформированности компетенций (индикатора достижения компетенций)	**плохо**	**неудовлетворительно**	**удовлетворительно**	**хорошо**	**очень хорошо**	**отлично**	**превосходно**
	не зачтено		**зачтено**				
Знания	Отсутствие знаний теоретического материала. Невозможность оценить полноту знаний вследствие отказа обучающегося от ответа	Уровень знаний ниже минимальных требований. Имели место грубые ошибки	Минимально допустимый уровень знаний. Допущено много негрубых ошибок	Уровень знаний в объеме, соответствующем программе подготовки. Допущено несколько негрубых ошибок	Уровень знаний в объеме, соответствующем программе подготовки. Допущено несколько несущественных ошибок	Уровень знаний в объеме, соответствующем программе подготовки. Ошибок нет.	Уровень знаний в объеме, превышающем программу подготовки.
Умения	Отсутствие минимальных умений. Невозможность оценить наличие умений вследствие отказа обучающегося от ответа	При решении стандартных задач не продемонстрированы основные умения. Имели место грубые ошибки	Продемонстрированы основные умения. Решены типовые задачи с негрубыми ошибками. Выполнены все задания, но не в полном объеме	Продемонстрированы все основные умения. Решены все основные задачи с негрубыми ошибками. Выполнены все задания в полном объеме, но некоторые с недочетами	Продемонстрированы все основные умения. Решены все основные задачи. Выполнены все задания в полном объеме, но некоторые с недочетами.	Продемонстрированы все основные умения. Решены все основные задачи с отдельными несущественными недочетами, выполнены все задания в полном объеме	Продемонстрированы все основные умения. Решены все основные задачи. Выполнены все задания, в полном объеме без недочетов
Навыки	Отсутствие базовых навыков. Невозможность оценить наличие навыков вследствие отказа обучающегося от	При решении стандартных задач не продемонстрированы базовые навыки. Имели место грубые ошибки	Имеется минимальный набор навыков для решения стандартных задач с некоторым	Продемонстрированы базовые навыки при решении стандартных задач с некоторыми	Продемонстрированы базовые навыки при решении стандартных задач без ошибок и недочетов	Продемонстрированы навыки при решении нестандартных задач без ошибок и	Продемонстрирован творческий подход к решению нестандартных задач

	ответа		и недочетами	недочетами		недочетов	

Scale of assessment for interim certification

Grade		Assessment criteria
pass	**outstanding**	All the competencies (parts of competencies) to be developed within the discipline have been developed at a level no lower than "outstanding", the knowledge and skills for the relevant competencies have been demonstrated at a level higher than the one set out in the programme.
	excellent	All the competencies (parts of competencies) to be developed within the discipline have been developed at a level no lower than "excellent",
	very good	All the competencies (parts of competencies) to be developed within the discipline have been developed at a level no lower than "very good",
	good	All the competencies (parts of competencies) to be developed within the discipline have been developed at a level no lower than "good",
	satisfactory	All the competencies (parts of competencies) to be developed within the discipline have been developed at a level no lower than "satisfactory", with at least one competency developed at the "satisfactory" level.
fail	**unsatisfactory**	At least one competency has been developed at the "unsatisfactory" level.
	poor	At least one competency has been developed at the "poor" level.

5.3 Model control assignments or other materials required to assess learning outcomes during the interim certification with the criteria for their assessment:

5.3.1 Model assignments (assessment tool - Control questions) to assess the development of the competency ОПК-3

1. Local anesthetics. Classification. Mechanism of action. Indications for use. Features of local and resorptive action. Side effects. Comparative characteristics of local anesthetics.

2. Astringents. The concept of astringent, irritating, cauterizing action. Classification. Mechanism of action. Indications for use. Side effects. Adsorbing agents. Mechanisms of action, indications for use.

3. Irritating agents. Mechanism of action. The concept of distracting and trophic effects. Indications for use. Bitterness. The role of I.P.Pavlov in the study of the mechanism of action of bitterness. Indications and contraindications for use.

4. Expectorants. Classification. Mechanism of action. Indications for use. Side effects.

5. Laxatives. Classification. Mechanism of action. Indications and contraindications for use. Side effects.

6. The structure of the cholinergic synapse. Ways of pharmacological effects on cholinergic transmission. Classification of cholinergic drugs.

7. The structure of the adrenergic synapse. Ways of pharmacological effects on adrenergic transmission. Classification of adrenergic drugs.

8. Localization and functions of M- and N-cholinergic receptors, alpha- and beta-adrenergic receptors. The concept of mimetics and lithics.

9. M-cholinomimetics. The main pharmacological effects. Indications and contraindications for use. Side effects. Toxicology of muscarine. Measures of assistance in case of poisoning with Mholinomimetics.

10. M-cholinolytics. Classification of drugs. Mechanism of action. Indications for use. Side effects. Comparative characteristics of drugs. Acute atropine poisoning. Measures of assistance.

11. Anticholinesterase agents of reversible and irreversible action. Mechanism of action. The main pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Toxicology of irreversible anticholinesterase agents - organophosphorus compounds (FOS). Measures of assistance in case of poisoning. The concept of cholinesterase reactivators.

5.3.2 Model assignments (assessment tool - Control questions) to assess the development of the competency ОПК-6

12. N-cholinomimetics. Nicotine. Toxicological characteristics of nicotine. Clinic of acute nicotine poisoning. The phenomenon of nicotine addiction, its consequences. N-cholinomimetics are respiratory analeptics. Mechanism of action. The main pharmacological effects. Indications for use. Side effects. Drugs that promote smoking cessation. Application features.

13. Ganglioblockers. Mechanism of action. The main pharmacological effects. Indications for use. Side effects, ways to prevent them.

14. Peripheral muscle relaxants (curare-like drugs). Classification. Mechanisms of action. The main pharmacological effects. Indications for use. Side effects. Remedies for overdose. Comparative characteristics of drugs.

15. α,β-Adrenomimetics and sympathomimetics. The main pharmacological effects. Indications and application. Side effects.

16. α-Adrenomimetics and β-adrenomimetics. Classification of drugs. Indications for use. Side effects. Comparative characteristics of drugs.

17. α,β-Adrenoblockers and sympatholytics. The main pharmacological effects. Indications and application. Side effects.

18. α-blockers and β-blockers. The main pharmacological effects. Indications and application. Side effects. Comparative characteristics of drugs.

Assessment criteria (assessment tool — Control questions)

Grade	Assessment criteria
pass	The level of knowledge in the volume corresponding to the training program. Several gross mistakes were made.

Grade	Assessment criteria
fail	The level of knowledge is below the minimum requirements. There were gross mistakes

5.3.3 Model assignments (assessment tool - Control questions) to assess the development of the competency ОПК-3

1. The recipe, its structure. The principles of making recipes. Forms of prescription forms. Official and main registers.

2. Classification of solid dosage forms, rules for their prescription.

3. Classification of liquid dosage forms, rules for their prescription. Dosage forms for injection. The rules for prescribing them in prescriptions.

4. Classification of mild dosage forms, rules for their prescription.

5. Definition of the subject of pharmacology, goals and objectives of pharmacology, the role of pharmacology among other biomedical sciences. The main historical milestones in the development of pharmacology. Prominent domestic and foreign pharmacologists and toxicologists.

6. Basic principles and methods of testing new drugs. Evidence-based medicine: principles, levels of evidence. The concept of placebo, "blindness" of the study, randomization. GLP and GCP standards.

7. Manufacture of medicines by the chemical and pharmaceutical industry. GMP standard. The basic concepts of industrial production of dosage forms.

8. Principles of rational pharmacotherapy. Standards and treatment protocols. Federal Guidelines for the Use of Medicines (formulary system). The Law of the Russian Federation on medicines.

9. Pharmacokinetics of medicines. Determination of pharmacokinetics. Ways of administration of medicines. Mechanisms of drug transport through membranes. Factors that change the absorption of substances.

5.3.4 Model assignments (assessment tool - Control questions) to assess the development of the competency ОПК-6

10. Pharmacodynamics of medicines. The dependence of the pharmacotherapeutic effect on the properties of medicinal substances and their use.

11. Interaction of medicinal substances in their combined administration. Undesirable effects of drugs. Basic principles of treatment of acute poisoning with medicines.

12. Agents acting on cholinergic synapses. Classification. Mechanisms of action. Indications for use. Toxic effects.

13. Drugs acting on adrenergic synapses. Classification. Mechanisms of action. Indications for use. Toxic effects.

14. Local anesthetics. Classification. Mechanisms of action. Indications for use. Toxic effects.

15. Astringents, enveloping, adsorbing, irritating agents, bitterness. Classification. Mechanisms of action. Indications for use. Toxic effects.

Assessment criteria (assessment tool — Control questions)

Grade	Assessment criteria
outstanding	A high level of training, impeccable command of theoretical material, the student demonstrates a creative approach to solving non-standard situations. The student gave a complete and detailed answer to all the theoretical questions of the ticket, confirming the theoretical material with practical examples. The student actively worked in practical classes. 100% completion of control exam tasks.
excellent	High level of training with minor mistakes. The student gave a complete and detailed answer to all the theoretical questions of the ticket, confirms the theoretical material with practical examples. The student actively worked in practical classes. Completion of control exam tasks by 90% and above.
very good	Good preparation. The student gives an answer to all the theoretical questions of the ticket, but there are inaccuracies in the definitions of concepts, processes, etc. The student actively worked in practical classes. Completion of control exam tasks from 80 to 90%.
good	In general, good preparation with noticeable mistakes or shortcomings. The student gives a complete answer to all theoretical questions of the ticket, but there are inaccuracies in the definitions of concepts, processes, etc. Mistakes are made when answering additional and clarifying questions from the examiner. The student worked in practical classes. Completion of control exam tasks from 70 to 80%.
satisfactory	Minimum sufficient level of training. The student shows a minimum level of theoretical knowledge, makes significant mistakes, but when answering leading questions, he can orient himself correctly and give the correct answer in general terms. The student attended practical classes. Completion of control exam tasks from 50 to 70%.
unsatisfactory	The preparation is insufficient and requires additional study of the material. The student gives erroneous answers, both to the theoretical questions of the ticket, and to the leading and additional questions of the examiner. The student missed most of the practical classes. Completion of control exam tasks up to 50%.
poor	The preparation is absolutely insufficient. The student does not answer the questions posed. The student was absent from most lectures and practical classes. The completion of control exam tasks is less than 20%.

6. Учебно-методическое и информационное обеспечение дисциплины (модуля)

Основная литература:

1. Трофимова Т. Г. Методические рекомендации и контрольные работы по дисциплине «клиническая фармакология» : учебно-методическое пособие для вузов / Трофимова Т. Г. -

Воронеж : ВГУ, 2011. - 44 с. - Книга из коллекции ВГУ - Медицина., https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=884694&idb=0.
2. Фармакология в стоматологии : практикум / Минакина Л. Н.,Куклина Л. Б.,Клец О. П.,Одинец А. Д. - Иркутск : ИГМУ, 2021. - 49 с. - Книга из коллекции ИГМУ - Медицина., https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=867586&idb=0.

Дополнительная литература:

1. Ракшина Н. С. Клиническая фармакология для медицинских специальностей. Практикум : Учебное пособие / Ракшина Н. С. - Москва : КноРус, 2024. - 205 с. - ISBN 978-5-406-11936-5., https://e-lib.unn.ru/MegaPro/UserEntry?Action=FindDocs&ids=872249&idb=0.

Программное обеспечение и Интернет-ресурсы (в соответствии с содержанием дисциплины):

ЭБС «Юрайт». Режим доступа: http://biblio-online.ru.
ЭБС «Консультант студента». Режим доступа: http://www.studentlibrary.ru.
ЭБС «Лань». Режим доступа: http://e.lanbook.com/.
ЭБС «Znanium.com». Режим доступа: www.znanium.com.

7. Материально-техническое обеспечение дисциплины (модуля)

Учебные аудитории для проведения учебных занятий, предусмотренных образовательной программой, оснащены мультимедийным оборудованием (проектор, экран), техническими средствами обучения.

Помещения для самостоятельной работы обучающихся оснащены компьютерной техникой с возможностью подключения к сети "Интернет" и обеспечены доступом в электронную информационно-образовательную среду.

Программа составлена в соответствии с требованиями ФГОС ВО по направлению подготовки/специальности 31.05.03 - Dentistry.

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