

Federal State Budgetary Educational Institution of Higher Education "North Ossetian State Medical Academy" of the Ministry of Health of the Russian Federation



РАБОЧАЯ ПРОГРАММА ДИСЦИПЛИНЫ

"CLINICAL PHARMACOLOGY»

the main professional educational program of higher education-specialty program in the specialty
31.05.01 General Medical, approved on 25.12.2020.

Form of education _____ Full-time _____
The period of development _____ 6
Department of Pharmacology with Clinical Pharmacology

When developing the work program , the disciplines are based on:

1. Federal State Educational Standard in the specialty 31.05.01 Medical business, approved by the Ministry of Education and Science of the Russian Federation "August 12", 2020 No. 988
2. The curriculum of the OPOP in the specialty 31.05.01 Medical business (LD-21-01-21), approved by the Academic Council of the Federal State Budgetary Educational Institution of the Ministry of Health of the Russian Federation on December 25, 2020, Protocol No. 3

The working program of the discipline was approved at the meeting of the Department of Pharmacology with Clinical Pharmacology on November 16, 2020, Protocol No. 4

The working program of the discipline was approved at the meeting of the central coordinating Educational and Methodological Council of December 04, 2020, Protocol No. 2.

The working program of the discipline was approved by the Academic Council of the Federal State Budgetary Educational Institution of the Ministry of Health of the Russian Federation on December 25, 2020, Protocol No. 3

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The content of the work program

1. name of the discipline;
2. the list of planned learning outcomes in the discipline, correlated with the planned results of the development of the educational program;
3. indication of the place of discipline in the structure of the educational program;
4. the volume of the discipline in credit units indicating the number of academic or astronomical hours allocated for contact work of students with the teacher (by type of training sessions) and for independent work of students;
5. the content of the discipline, structured by topics (sections) with an indication of the number of academic or astronomical hours allocated to them and types of training sessions;
6. the list of educational and methodological support for independent work of students in the discipline;
7. fund of evaluation funds for conducting intermediate certification of students in the discipline;
8. the list of basic and additional educational literature necessary for the development of the discipline;
9. the list of resources of the information and telecommunication network "Internet" (hereinafter referred to as the "Internet"), necessary for the development of the discipline;
10. methodological guidelines for students on the development of the discipline;
11. list of information technologies used in the implementation of the educational process in the discipline, including a list of software and information reference systems (if necessary);
12. description of the material and technical base necessary for the implementation of the educational process in the discipline.
13. conducting educational activities using e-learning and distance learning technologies

№./n/a	Competence number/index of the operation	The content of the discipline (or its sections)	Topic of the lesson (section)	Indicators of competence achievement	Development results		
					To know	be able to	own
1	2	3	4	5	6	7	8
1	PC3 OPK-7	PC-3 Prescribing treatment and monitoring its effectiveness and safety OPK-7 Capable of prescribing, monitoring effectiveness and safety	General questions of clinical pharmacology	ID-2 PC-3 Prescribes medications, medical devices and therapeutic nutrition, taking into account the diagnosis, age and clinical picture of the disease in accordance with the current procedures for providing medical care, clinical recommendations (treatment protocols) on the provision of medical care, taking into account the standards of medical care ID-1 OPK-7 Conducts effective, safe therapy based on the clinical recommendations of the Ministry of Health of Russia.	The subject and objectives of clinical pharmacology. Sections of clinical pharmacology (clinical pharmacokinetics, pharmacodynamics, pharmacogenetics, pharmacoeconomics, pharmacoepidemiology). The concept of pharmacotherapy. Types of pharmacotherapy Basic principles of rational pharmacotherapy. Stages of pharmacotherapy. Pharmacological and allergological history Pharmacological test. The patient's adherence to treatment is compliance. Evaluation of the effectiveness and safety of medicines. Principles of development of programs for monitoring the effectiveness and safety of medicines. Assessment of the effect of medicines on the quality of life. Undesirable reactions when using medications. WHO classification. Interaction of medicines. Rational, irrational and dangerous combinations. Features of pharmacokinetics and pharmacodynamics of drugs in pregnant women and fetus. Categories of medicines according to the degree of risk to the fetus according to WHO: Principles of pharmacotherapy in pregnant women. Features of pharmacokinetics and pharmacodynamics of drugs in lactating women. Features of pharmacokinetics and pharmacodynamics of medicines of elderly and senile patients. Calculation of the dose of the drug in elderly and senile patients. Drug overdose: diagnosis, first aid, basic principles of therapy (prevention of absorption, enhanced excretion).	Calculate the main pharmacokinetic parameters: volume of distribution (Vd), elimination rate constant (Kelim), half-elimination and (half-life) period ($t_{1/2}$), clearance (Cl), bioavailability (F). Calculate the loading and maintenance doses of LV. Calculate the dose of LV in patients with CRF. To correct the dose of LV in patients with impaired liver function.	The algorithm for evaluating the main parameters of pharmacokinetics of drugs by the methodology of conducting a pharmacological test. The methodology for submitting a notification of the NPR.
2	PC3	PC-3 Prescribing treatment and monitoring its effectiveness and safety	Clinical and pharmacological approaches to the selection and use of medicines for diseases of internal organs.	ID-2 PC-3 Prescribes medications, medical devices and therapeutic nutrition, taking into account the diagnosis, age and clinical picture of the disease in accordance with the current procedures for providing medical care, clinical recommendations	Clinical pharmacology of antimicrobial drugs. Antibiotics: penicillins, cephalosporins, carbapenems aminoglycosides, macrolides, lincosamides, tetracyclines glycopeptides, linezolid, fluoroquinolones, cotrimoxazol, metronidazole. Antifungal. Antiviral. Spectrum of antimicrobial activity. Principles of choice (empirical and etiotropic), determination of the dosage regimen depending on the localization of infection and severity of the condition, kidney function. Methods for evaluating the effectiveness and safety of antimicrobial drugs. Diagnostics and prevention of	To choose effective, safe medicines in accordance with the clinical diagnosis based on pharmacotherapy standards, the list of VED, the formulary system; to calculate the loading and maintenance dose of the drug; to calculate the doses of medicines for patients	The algorithm for choosing the drug, dosage form and dosage regimen depending on the clinical situation

				<p>(treatment protocols) on the provision of medical care, taking into account the standards of medical care</p> <p>ID-1 OPK-7 Conducts effective, safe therapy based on the clinical recommendations of the Ministry of Health of Russia.</p>	<p>NLR. Combination of antimicrobial drugs and interactions when co-prescribed with drugs of other groups. Clinical and pharmacological approaches, taking into account nosology, individual characteristics pharmacokinetics and pharmacodynamics, to the choice of antifungal and antiviral drugs. Clinical pharmacology of psychotropic drugs. Psychostimulants are Nootropics. Anxiolytics. Neuroleptics. Anticonvulsant medications. Clinical and pharmacological approaches, taking into account individual characteristics of pharmacokinetics, pharmacodynamics, treatment standards and the list of VED, to the selection and use of medicines for mental and neurological diseases: sleep disorders, neuroses, depression, schizophrenia, manic-depressive psychosis, epilepsy, migraine, multiple sclerosis, Parkinson's disease, transient disorders of cerebral circulation (according to ischemic or hemorrhagic types). Methods for evaluating effectiveness and safety. Diagnosis, correction and prevention of NLR. Possible interactions with the combined administration of drugs and in combination with other drugs.</p> <p>Clinical pharmacology of drugs affecting hemostasis. Antiplatelet agents. Direct anticoagulants. Indirect anticoagulants. Fibrinolytics. Synthetic selective inhibitor of activated factor X (Xa) Drugs that increase blood clotting. Fibrinolysis inhibitors. Iron preparations. Means to stop bleeding. Principles of selection and determination of the dosage regimen depending on the state of the coagulating, anti-clotting, fibrinolytic system of the patient, data on the pharmacodynamics and pharmacokinetics of drugs and their efficacy in diseases of the liver, kidneys, gastrointestinal tract, hematopoietic organs, cardiovascular system, use in various periods of pregnancy, in lactating women and the elderly (taking into account treatment standards and the list of VED). Methods for evaluating effectiveness and safety. Diagnosis, correction and prevention of NLR. Possible interactions with their combined administration and in combination with drugs of other groups. Clinical pharmacology of steroid anti-inflammatory drugs. Clinical pharmacology of drugs affecting bronchial patency. Anti-inflammatory anti-asthmatic agents: inhaled glucocorticoids, systemic glucocorticoids. Stabilizers of mast cell membranes, leukotriene inhibitors. Antitussive and expectorant agents. Antihistamines. Pulmonary surfactants. Principles of drug selection, determination of routes</p>	<p>with chronic renal insufficiency, impaired liver function, elderly and senile age; choose the dosage form of the drug, dose, route, frequency and duration of administration, determine the optimal dosage regimen for a particular patient; develop a program for monitoring the effectiveness and safety of prescribed medicines, choosing the necessary set of routine (survey, examination) and special laboratory and functional research methods, including therapeutic drug monitoring and research of quality of life indicators, in order to assess the pharmacodynamic effects of drugs, their pharmacokinetic indicators; interpret the data obtained; choose methods for adequate control of the effectiveness and safety of treatment and predict the risk of developing NLR; identify, classify, register NLR when prescribing the most common medications and suggest ways to prevent and correct them; fill out documents on notification of the development of undesirable drug reactions; take measures to increase the patient's adherence to medication; diagnose and treat drug overdoses</p>	
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				6	<p>of administration, methods of drug delivery to the respiratory tract and rational dosage regimen of drugs, taking into account the reversibility of airway obstruction, severity of bronchial obstruction, characteristics of sputum, state of the cardiovascular system, pharmacokinetics, factors that change sensitivity to the drug, treatment standards and the list of VED. The concept of step therapy of bronchial asthma. Diagnosis, correction and prevention of NLR. The syndrome of decreased receptor sensitivity (tachyphylaxis, internalization and decreased regulation), causing the development of resistance to beta-stimulants, methods of its correction and prevention. Methods for evaluating effectiveness and safety. Assessment of the quality of life. The concept of compliance (or adherence to treatment). Possible interactions with their combined purpose and in combination with drugs of other groups. Clinical pharmacology of nonsteroidal anti-inflammatory drugs. Clinical pharmacology of cytostatics and immunosuppressants. Anti-inflammatory drugs: NSAIDs, basic, slow-acting anti-inflammatory drugs. Remedies used for gout. Drugs that affect the structure and mineralization of bones. Painkillers (paracetamol, tramadol), opioids (morphine), ketamine, fentanyl. Clinical and pharmacological approaches, taking into account the individual characteristics of pharmacokinetics, pharmacodynamics, treatment standards and the list of VED, to the selection and use of medicines for rheumatic diseases: systemic lupus erythematosus, rheumatoid arthritis, deforming osteoarthritis, osteoporosis, gout. Principles of the choice of routes of administration, dosage regimen depending on the features of the inflammatory process: localization, intensity, taking into account chronopharmacology. Methods for evaluating effectiveness and safety. Diagnosis, correction and prevention of NLR. Possible interactions with their combined administration and in combination with drugs of other groups. Clinical pharmacology of drugs affecting the organs of the digestive system. Antacids. Blockers of H₂-histamine receptors. Proton pump inhibitors. Prokinetics. Drugs for the treatment of functional disorders of the intestine. Enzyme preparations. pancreatin. Drugs used for diarrhea: loperamide. Laxatives. Clinical and pharmacological approaches, taking into account individual characteristics of pharmacokinetics, pharmacodynamics, pharmacotherapy standards in gastroenterology and a list of receptors, direct renin</p>	
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				7	<p>inhibitor, beta-blockers, slow calcium channel blockers, venous dilators, pentoxifylline.</p> <p>Hypolipidemic drugs: statins, fibrates. Fibrinolytics.</p> <p>Painkillers: NSAIDs, tramadol, opioids. Clinical and pharmacological approaches, taking into account the individual characteristics of pharmacokinetics, pharmacodynamics, treatment standards and the list of VED, to the selection and use of medicines for coronary artery disease (angina pectoris, myocardial infarction, unstable angina), hyperlipidemia and hypertension. Methods for evaluating effectiveness and safety. Diagnosis, correction and prevention of NLR. Possible interactions with their combined administration and in combination with drugs of other groups.</p> <p>Clinical pharmacology of drugs affecting the main functions of the myocardium and diuretics.</p> <p>Antiarrhythmic drugs. Inotropic drugs: Diuretics.</p> <p>Clinical and pharmacological approaches, taking into account individual characteristics pharmacokinetics, pharmacodynamics, treatment standards and the list of VED, to the selection and use of medicines for frequent and life-threatening rhythm disorders and chronic heart failure. Methods for evaluating effectiveness and safety. Diagnosis, correction and prevention of NLR. Possible interactions with their combined administration and in combination with drugs of other groups.</p> <p>Clinical pharmacology of drugs used in endocrinology. Antidiabetic medicinal products.</p> <p>Thyroid hormone preparations and antithyroid drugs.</p> <p>Clinical and pharmacological approaches, taking into account the individual characteristics of pharmacokinetics, pharmacodynamics, treatment standards and the list of VED, to the selection and use of medicines for type 1 and 2 diabetes mellitus, hypothyroidism, hyperthyroidism. Therapy of emergency conditions in endocrinology. Methods for evaluating effectiveness and safety. Diagnosis, correction and prevention of NLR. Possible interactions with their combined administration and in combination with drugs of other groups.</p>		
3	PC3	PC-3 Prescribing treatment and monitoring its effectiveness and safety	Evidence-based medicine. Requirements for pharmacotherapy and drug provision	D-2 PC-3 Prescribes medications, medical devices and therapeutic nutrition, taking into account the diagnosis, age and clinical picture of the disease in accordance with the	Preclinical studies. Clinical drug trials: phases of clinical trials, the concept of GCP, ethical and legal norms of clinical trials, participants in clinical trials, clinical trial protocol. The concept of randomized controlled trials. Bioequivalence studies. Generics. Evidence-based medicine: principles, levels (classes) evidence. The "endpoints" of clinical trials. Meta-analysis. The importance of evidence-based	To justify the need to include drugs in the formulary list	Methodology of planning and conducting CI of medicines

	OPK-7	OPK-7 Capable of prescribing, monitoring effectiveness and safety	according to the Priority National project "Health".	<p>current procedures for providing medical care, clinical recommendations (treatment protocols) on the provision of medical care, taking into account the standards of medical care</p> <p>ID-1 OPK-7 Conducts effective, safe therapy based on the clinical recommendations of the Ministry of Health of Russia.</p>	<p>medicine in clinical practice. Formulary system: principles of construction, methods of selection of medicines. The system of rational use of medicines in Russia. Federal and territorial lists of vital and essential medicines (VED). Formulary lists of hospitals. Protocols for the management of patients. Standards of diagnosis and treatment. Federal Guidelines for the Use of Medicines (formulary system). Clinical recommendations for pharmacotherapy of diseases of internal organs. The analog replacement form. Sources of clinical and pharmacological information (reference books, electronic databases, Internet resources). Clinical pharmacoepidemiology. Tasks, methods and types of pharmacoepidemiological studies. Clinical pharmacoeconomics. Criteria of pharmacoeconomical research. Assessment of the cost of drug treatment (cost estimation). Types of pharmacoeconomical analysis. Federal Law "On Circulation of Medicines". The role of the Ministry of Health and Social Development of the Russian Federation in the field of circulation of medicines. Organization of clinical and pharmacological service in the Russian Federation. Clinical and pharmacological service of medical institutions (principles of organization, main functions). Organization of work with medical devices and rules for their storage. Goals and objectives of the Priority National project "Health". The principle of choosing rational pharmacotherapy in the work of doctors providing primary health care to the population. The program of additional drug provision. Fundamentals of anti-doping legislation.</p>		
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3. The place of discipline in the structure of the educational program

The discipline "Clinical pharmacology" refers to the basic part of Block 1 of the Federal State Educational Standard in the specialty 31.05.01 "Medical business".

4. The scope of the discipline

N o. n/ a	Type of work	Total credits	Total hours	Term
				XI
				hours
1	2	3	4	5
1	Contact work of students with the teacher (total), including:	2	72	72
2	Lectures (L)	-	18	18
3	Clinical Practical training (PZ)	-	52	52
4	Seminars (C)	-	-	-
5	Laboratory work (LR)	-	-	-
6	Independent work of a student (SRS)	1	36	38
7	Type of intermediate certification	credit (H)		+
		exam (E)	-	-
8	total: Total labor intensity	hours	108	108
		ZE	3	3

5. Content of the discipline

№ №	Semester No.	Name of the section of the academic discipline (module)	Types of educational activities, including independent work of students (in hours)				Forms of ongoing monitoring of academic performance (by semester weeks)
			L	PZ	SRS	in total	
1	2	3	4	5	6	7	8
1	XI	General questions of clinical pharmacology General questions of clinical pharmacology	14	-	7	21	TK, SZ, UZ
2	XI	Clinical and pharmacological approaches to the selection and use of medicines for diseases of internal organs.	-	34	17	51	TK, SZ, UZ
3	XI	Evidence-based medicine. Requirements for pharmacotherapy and drug provision according to the Priority national project "Health".	4	18	14	36	TK, SZ, UZ

		total:	18	52	38	108	
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Note: C - interview, TZ - test tasks, SZ - situational tasks, UZ - training tasks

6. The list of educational and methodological support for independent work of students in the discipline

No./n	Semester No.	Name of the educational and methodological development
1	11	Bolieva L.Z., Gonobobleva T.N., Archegova E.G., Filippova Yu.A. Nonsteroidal anti-inflammatory drugs // Textbook - Vladikavkaz.- 2015.- 80 p.- UMO No. 47/05.05-21 of 28.09.2015

7. Fund of evaluation funds for the interim certification of students in the discipline

No./n	List of competencies and	Semester No.	Evaluation indicator(s)	Evaluation criterion(s)	Rating scale	Name of the FOS
1	2	3	4	5	6	7
1	OPK-7 PC-3	11	cm. the standard for assessing the quality of education, approved. By order of the FGBOU IN SOGMA Ministry of Health of Russia dated 10.07.2018., No.264/o	cm. the standard for assessing the quality of education, approved. By order of the FGBOU IN SOGMA Ministry of Health of Russia dated 10.07.2018., No.264/o	cm. the standard for assessing the quality of education, approved. By order of the FGBOU IN SOGMA Ministry of Health of Russia dated 10.07.2018., No.264/o	Test tickets; Test tasks; Control tasks

8. The list of basic and additional educational literature necessary for the development of the discipline

Основная литература

№	Наименование	Автор (ы)	Год, местоиздания	Кол-во экземпляров		Наименование ЭБС
				в библиотеке	На кафедре	Наименование ЭБС/ссылка в ЭБС
1	2	3	4	5	6	7
1.	Клиническая фармакология: учебник.	В.Г. Кулес	М.: ГЭОТАР-Медиа, 2006 2008 2013 2015	104 28 9 102		«Консультант студента» http://www.studmedlib.ru/book/ISBN9785970441961.html

Дополнительная литература

п/№	Наименование	Автор (ы)	Год, местоиздания	Кол-во экземпляров		Наименование ЭБС
				в библиотеке	на кафедре	Наименование ЭБС/ссылка в ЭБС
1	2	3	4	5	6	7
1.	Клиническая фармакология: национальное руководство.	Ю.Б. Белоусов, В.Г. Кулес, В.К. Лепехин, В.И. Петров	М.: ГЭОТАР-Медиа, 2009	-	1	-
2.	Современная антимикробная химиотерапия: руководство для врачей	Козлов С.Н., Страчунский Л.С.	М.: МИА, 2017	-	1	
3.	Клиническая фармакология и фармакотерапия в реальной врачебной практике: учебник	Петров В.И.	М.: ГЭОТАР-Медиа, 2015	3	-	«Консультант студента» http://www.studmedlib.ru/book/ISBN9785970420331.html
4.	Рациональная антимикробная фармакотерапия: руководство для практикующих врачей	Яковлев В.П.	М.: Литтерра, 2007	2	-	

5	Нестероидные противовоспалительные препараты: учебное пособие	Болиева Л.З., Голубовлева Т.Н., Арчегова Э.Г., Филиппова Ю.А.	Владикавказ, 2015	-	1	
6	Противоаллергические средства: учебное пособие.	Болиева Л.З.	Владикавказ, 2007	30	1	ЭБ СОГМА
7	Лечение аллергического ринита: учебное пособие.	Болиева Л.З., Гаппоева Э.Т.	Владикавказ, 2007	28	1	ЭБ СОГМА



9. The list of resources of the information and telecommunication network "Internet", necessary for the development of the discipline

1. Interregional Society of Evidence-based Medicine Specialists.

<http://www.osdm.org/index.php>

2. Moscow Center for Evidence-Based Medicine

<http://evbmed.fbm.msu.ru/>

3. Databases, information and reference and search engines:

- Standards of medical care: <http://www.rspor.ru/index.php?mod1=standarts3&mod2=db1>
- Protocols for the management of patients: <http://www.rspor.ru/index.php?mod1=protocols3&mod2=db1>
- State Register of Medicinal Products facilities:
<http://www.drugreg.ru/Bases/WebReestrQuery.asp>
- Federal State University Scientific Center for Expertise of Medical Devices of Roszdravnadzor. Circulation of medicines: <http://www.regmed.ru>
- Pharmaceutical Information Foundation: <http://www.drugreg.ru>
- Russian Encyclopedia of Medicines (Radar): <http://www.rlsnet.ru>
- The Vidal Handbook. Medicines in Russia: <http://www.vidal.ru>
- Website of the Chief Freelance Specialist - Clinical Pharmacologist of the Ministry of Health and Social Development of the Russian Federation - <http://www.clinpharmrussia.ru>
- Moscow Center for Evidence-Based Medicine. <http://evbmed.fbm.msu.ru/>
- The website "Formulary system of Russia". <http://www.formular.ru>
- Interregional Association for Clinical Microbiology and Antimicrobial Chemotherapy (MCMAN). <http://antibiotic.ru/iacmac/>
- Chelyabinsk Regional Center for the Study of Side Effects of Drugs with programs for pharmacoeconomical analysis (ABC VEN analysis) and for the evaluation of drug interactions.
<http://tabletka.umi.ru>
- Website of the program for clinical pharmacologists: <http://pharmsuite.ru/>
- European Society of Clinical Pharmacologists and Pharmacotherapists..
<http://www.eacpt.org>
- American Society of Clinical Pharmacologists and Pharmacotherapists.
<http://www.ascpt.org/>
- U.S. Food and Drug Administration (FDA). <http://www.fda.gov>
- Pharmacogenetics Resource. <http://www.pharmgkb.org/>
- Australian Bulletin of Adverse Drug Reactions.
<http://www.tga.health.gov.au/adr/aadrb.htm>
- British Monthly Bulletin on Drug Safety.
<http://www.mhra.gov.uk/Publications/Safetyguidance/DrugSafetyUpdate/index.htm>

- Resource on drug interaction. <http://medicine.iupui.edu/flockhart/>
- Lectures for postgraduate education "Principles of clinical Pharmacology" of the Clinical Center of the National Institutes of Health of the USA.
<http://www.cc.nih.gov/researchers/training/principles.shtml>

4. Electronic versions of magazines:

- «Consilium medicum» - <http://www.consilium-medicum.com/media/consilium>
- «Bulletin of Evidence-based Medicine» <http://www.evidence-update.ru/>
- «Doctor» - <http://www.rusvrach.ru/journals/vrach>
- «Hematology and transfusiology» - <http://www.medlit.ru/medrus/gemat.htm>
- «Evidence-based cardiology» - <http://www.mediasphera.ru/journals/dokcard>
- «Intensive care» - <http://www.icj.ru>
- «Infections and antimicrobial therapy» -
<http://www.consilium-medicum.com/media/infektion/index.shtml>
- «Проблемы эндокринологии» - <http://www.medlit.ru/medrus/probe.htm>
- «Psychiatry and psychopharmacotherapy» - <http://www.consilium-medicum.com/media/psycho>
- «Pulmonology» - <http://www.consilium-medicum.com/media/pulmo>
- «Russian Journal of Gastroenterology, Hepatology, Coloproctology» - <http://www.m-vesti.ru/rggk/rggk.html>
- «Russian Medical Journal» - <http://www.rmj.ru>
- «Modern oncology» - <http://www.consilium-medicum.com/media/onkology>
- «Directory of polyclinic doctor» - <http://www.consilium-medicum.com/media/refer>
- «Difficult patient» - <http://www.t-pacient.ru>
- «Pharmateca» - <http://www.pharmateca.ru>

10. Methodological guidelines for students on the development of the discipline

Training consists of contact work of students with a teacher (72 hours), including a lecture course (20 hours) and practical classes (52 hours), and independent work (36 hours). In accordance with the requirements of the Federal State Educational Standard, the implementation of the competence approach should provide for the widespread use of active and interactive forms of classes in the educational process (computer simulations, business and role-playing games, analysis of specific situations, psychological and other trainings) in combination with extracurricular work in order to form and develop professional skills of students. As part of the study of clinical pharmacology, meetings with representatives of Russian and foreign companies, state and public organizations, master classes of experts and specialists should be provided.

The proportion of classes conducted in interactive forms is determined by the main purpose (mission) of the program, the peculiarity of the contingent of students and the content of the discipline, and in general, in the educational process they should make up at least 10% of classroom classes (determined by the requirements of the Federal State Educational Standard, taking into account the specifics of the PLO). Lecture-type classes for the relevant groups of students cannot make up more than 30% of classroom classes (determined by the relevant Federal State Educational Standard).

Forms of work that form students' general cultural competencies:

- The student's work in the group forms a sense of collectivism and sociability.
- Independent work with patients contributes to the formation of deontological behavior, accuracy, discipline.
- Independent work with literature, writing case histories and writing and defending abstracts, receiving patients form the ability to analyze medical and social problems, the ability to use natural science, biomedical and clinical sciences in practice in various types of professional and social activities.
- Various types of academic work, including independent work of a student (writing and defending a medical history), contribute to mastering the culture of thinking, the ability to logically formalize its results in written and oral speech; readiness for

formation of a systematic approach to the analysis of medical information, perception of innovations; form the ability and readiness for self-improvement, self-realization, personal and subject reflection.

- Various types of educational activities form the ability in the conditions of the development of science and practice to re-evaluate the accumulated experience, analyze their capabilities, the ability to acquire new knowledge, use various forms of education, information and educational technologies. The main means of ensuring the development of clinical pharmacology: demonstration of patients with various diseases of internal organs, demonstration of research methods, screening of films, slides, tables, posters, multimedia presentations.

The most important stage in the formation of professional competencies, the formation of stable practical skills in clinical pharmacology is the student's independent work, which consists in writing and defending a medical history.

11. The list of information technologies used in the implementation of the educational process in the discipline

Term	Type of occupation L, PR, S,	Educational technologies used (active, interactive)	Number of hours	% of classes in an interactive form	List of software
11	L	A set of slides, videos for a traditional lecture	20		Microsoft Office PowerPoint; Internet Explorer
11	PZ	A set of questions and tasks for a practical task, a set of situational tasks for a PO, a set of case histories for the analysis of clinical cases.	52	20	Microsoft Office
11	C	A set of questions and tasks for independent work	36		Microsoft Office

12. Description of the material and technical base necessary for the implementation of the educational process in the discipline

No./ n	Name of the equipment	Quantity	Technical condition
1	2	3	4
Special equipment			
1.	Computer	4	2 – satisfactory

			2 –for debiting
2.	A laptop	4	4 – satisfactory
3.	Projector	2	1 – satisfactory 1 – requires repair
4.	Copying equipment: scanner, copier, printer	5	5– satisfactory
5.	Uninterruptible power supply	2	For debiting
Таблицы			
6.	Thematic tables	12	4 - need to be replaced

13. Conducting educational activities using e-learning and distance learning technologies

In the conditions of the introduction of restrictive measures (quarantine) associated with an unfavorable epidemiological situation, the threat of the spread of a new coronavirus infection and other force majeure events that do not allow for face-to-face training, it is possible to study this discipline or part of it using e-learning and distance learning technologies.

Teaching the discipline in the situations described above will be carried out through the development of an electronic course with access to video lectures and interactive course materials: presentations, articles, additional materials, tests and various tasks. When conducting training sessions, ongoing monitoring of academic performance, as well as intermediate certification of students, the platforms of the electronic information and educational environment of the academy and / or other e-learning systems recommended for use at the academy can be used, such as Moodle, Zoom, Webinar et al .

Lectures can be presented in the form of audio, video files, "live lectures", etc.

Seminars and practical classes can be held on-line in both synchronous and asynchronous mode. Seminars can be held in the form of web conferences.