

**MINISTRY OF EDUCATION AND SCIENCE OF THE RUSSIAN
FEDERATION**

PENZA STATE UNIVERSITY

Medical Institute

AGREED



The head of the medical institute

 A.N. Mitroshin

« 5 » 03 2016

STUDY PROGRAM

C1.2.11.2 PHARMACOLOGY AND EVIDENCE-BASED MEDICINE

Course 31.05.01 General medicine

Qualification (degree) graduate – General practitioner

Form of training - full-time

Penza 2016

1. Aims and goals

The aims and goals of the discipline (module) Pharmacology and evidence-based medicine are as follows: formation of the competencies, aimed at protecting the health of the citizens by ensuring pharmaceutical care in accordance with the requirements and standards in the field of health care.

2. Links to other disciplines of the general curriculum

Pharmacology and evidence-based medicine refers to the variable part of the block C.1 - Disciplines, being a discipline at the student's choice.

The discipline "Pharmacology and evidence-based medicine" is interconnected with the disciplines: Latin language, biochemistry, normal physiology, pathological physiology, clinical pathology, pharmacology.

The main provisions of the discipline are necessary for the study of theoretical and clinical disciplines: therapy, surgery, obstetrics and gynecology, pediatrics, otorhinolaryngology, traumatology and orthopedics, infectious diseases.

3. Student competences, developed during learning

According to the state curriculum for the course, learning is oriented at developing of the following competences and their elements:

Competence code	Name of the competence	Structural elements of the competence (knowledge, skill, application as a final learner outcome)
PC-8	ability to formulate the tactics of maintaining patients with various nosological forms	knowledge: a therapeutic approach to the patients with different nosological forms
		skill: to define therapeutic approach to the patients with different nosological forms
		application: ability to define a therapeutic approach to the patients with different nosological forms
PC-20	readiness for analysis and public presentation of medical information on the basis of evidence-based medicine;	knowledge: the principles of evidence-based medicine
		skill: to analyze medical information from the position of evidence-based medicine;
		application: the skills of analyzing medical information from the perspective of evidence-based medicine

4. Structure and content of the discipline «Pharmacology and evidence-based medicine»

4.1. Structure of the discipline (module)

Overall workload equals 2 ECTSs, 72 hours.

№	Names of parts and topics of the discipline	Semester	*Day of cycle	Types of learner activities, including students' individual work and workload (in hours)									Forms of current assessment (divided in weeks)							
				Class study				Individual work					Discussion	Checking skills (prescription works)	Achievement tests assessment	Test paper grading	Research paper assessment	Essays and other creative work assessment	Term paper (project)	other
				Total	Lectures	Practical classes	Laboratory classes	Total	Preparation for class study	Research paper, essay, etc.	Term paper (project)	Exam preparation								
1.	Basic concepts and methods of evidence-based medicine. Basic principles and methodology of evidence-based medicine. Levels of evidence and classes of recommendations.	7	1	6		6		4	4				1		1					
2.	Clinico-pharmacological approaches to the prescription of drugs for pulmonary diseases with using of principles evidence-based medicine.	7	2	6		6		5	5				2		2					
3	Clinico-pharmacological approaches to the prescription of drugs for cardiology diseases with using of principles evidence-based medicine.	7	3	6		6		5	5				3		3					
4	Clinico-pharmacological approaches to the prescription of drugs for gastroenterology diseases with using of principles evidence-based medicine.	7	4	6		6		5	5				4		4					
5	Clinico-pharmacological approaches to the prescription of drugs for endocrinology diseases with using of principles evidence-based medicine.	7	5	6		6		5	5				5		5					

	ciples evidence-based medicine.																			
6	Principles of rational antibiotic therapy with using of principles evidence-based medicine.	7	6	6		6		5	5				6		6					
7	Control class	7	7	2		2		5	5				7	7	7					
	<i>Term paper (project)</i>																			
	<i>Exam preparation</i>																			
	Overall workload, in hours			38		38		34	34				Interim assessment							
													Type	Semester						
													Pass-fail exam	7						
													Exam							

**Classes are held in cyclic form*

4.2. Contents of the discipline

1. Basic concepts and methods of evidence-based medicine. Basic principles and methodology of evidence-based medicine. Levels of evidence and classes of recommendations.

Basic concepts and methods of evidence-based medicine. Tasks of evidence-based medicine. History of Evidence-Based Medicine. Levels of Evidence (A, B, C) and Classes of Recommendations (I, IIa, IIb, III). A systematic review. Meta-analysis. Analysis of publications from the position of evidence-based medicine. The main sections of publications: the title, the list of authors and the name of the institution, the abstract, research methods: the methodological requirements for quality clinical studies, results, discussion and conclusions. Use of randomization of patients in the study. Criteria for assessing the effectiveness and safety of treatment.

2. Clinico-pharmacological approaches to the prescription of drugs for pulmonology diseases with using of principles evidence-based medicine.

Stepwise therapy of bronchial asthma. Inhalation devices. Treatment of exacerbation of bronchial asthma. Therapy of COPD. Therapy of an exacerbation of COPD. Vaccine prophylaxis of respiratory diseases in the framework of primary health care for the population.

3. Clinico-pharmacological approaches to the prescription of drugs for cardiology diseases with using of principles evidence-based medicine.

Drugs treatment of chronic heart failure. General principles. Drugs that have proven the ability to reduce mortality and morbidity precisely in chronic heart failure and are used in all patients. Tactics of treatment of patients with arterial hypertension. Drug therapy. Choosing of antihypertensive drug. Combined therapy of arterial hypertension. Pharmacological treatment of stable angina pectoris. Correction of lipid metabolism disorders in order to prevent and treat atherosclerosis. Treatment of acute coronary syndrome.

4. Clinico-pharmacological approaches to the prescription of drugs for gastroenterology diseases with using of principles evidence-based medicine.

Principles of pharmacotherapy and drug choice for functional dyspepsia, irritable bowel syndrome, chronic pancreatitis and gastric ulcer. Pharmacology of antacid, antisecretory, gastroprotective, laxatives, prokinetics and enzyme preparations. Principles of choice in certain categories of patients.

5. Clinico-pharmacological approaches to the prescription of drugs for endocrinology diseases with using of principles evidence-based medicine.

Principles of pharmacotherapy and choice of drugs for diabetes mellitus and thyrotoxicosis.

Pharmacology of insulin, oral hypoglycemic agents, agents for the treatment of thyrotoxicosis. Principles of choice in certain categories of patients.

6. Principles of rational antibiotic therapy with using of principles evidence-based medicine.

General principles of antimicrobial therapy. Rules for the rational use of antimicrobial agents. Principles of choosing the choice of antibiotics to treat the most relevant infections in outpatient practice from the standpoint of minimum sufficiency (benefit / harm ratio). Pharmacology of penicillins, cephalosporins, carbapenems, tetracyclines, macrolides, aminoglycosides and other antibiotics. Methods for assessing the efficacy and safety of these drugs.

5. Teaching forms and techniques

1. Traditional classroom classes.
2. Testing.
3. The solution of situational problems.

5.1. Active learning methods

The method of the analysis of concrete situations (the case-method)

Choice and prescription of drugs in pulmonological practice from the standpoint of evidence-based medicine.

Choice and prescription of drugs in cardiological practice from the standpoint of evidence-based medicine.

Choice and prescription of drugs in gastroenterological practice from the perspective of evidence-based medicine

Choice and prescription of drugs in endocrinological practice from the perspective of evidence-based medicine

The choice and appointment of antibiotic drugs from the position of evidence-based medicine.

5.2 When teaching students who carry out the educational process on their own trajectory within the framework of an individual work plan, the study of this discipline is based on the following possibilities: provision of out-of-class work with students including in the electronic educational environment with the use of appropriate software equipment, distance learning forms, resources, individual consultations, etc.

6. Teaching and learning materials for students' individual work.

Forms of current and interim assessment.

6.1. Outline of students' individual work

№	Topic	Type of individual work	Task	Suggested reading material	Hours
1.	Basic concepts and methods of evidence-based medicine. Basic principles and methodology of evidence-based medicine. Levels of evidence and classes of recommendations.	Preparing for the classroom	Preparation for a discussion and testing.	Pharmacology [Электронный ресурс] / Kharkevitch D.A. Kharkevitch D.A. - М. : ГЭОТАР-Медиа, 2008. - http://www.studentlib.ru/book/ISBN5970402648.html	4
2.	Clinico-pharmacological approaches to the prescription of drugs for pulmonology diseases with using of principles evidence-based medicine.	Preparing for the classroom	Preparation for a discussion and testing.	The same	5
3.	Clinico-pharmacological approaches to the prescription of drugs for cardiology diseases with using of principles evidence-based medicine.	Preparing for the classroom	Preparation for a discussion and testing.	The same	5
4.	Clinico-pharmacological ap-	Preparing for the classroom	Preparation for a discussion and testing.	The same	5

	proaches to the pre- scription of drugs for gastroenterology dis- eases with using of principles evidence- based medicine.				
5.	Clinico- pharmacological ap- proaches to the pre- scription of drugs for endocrinology diseas- es with using of prin- ciples evidence-based medicine.	Preparing for the classroom	Preparation for a discus- sion and testing.	The same	5
6.	Principles of ra- tional antibiotic thera- py with using of prin- ciples evidence-based medicine.	Preparing for the classroom	Preparation for a discus- sion and testing.	The same	5
7.	Control class	Preparing for the classroom	Preparation for a discus- sion and testing.	The same	5

6.2. Methodical instructions on the organization for individual students' work

1. Moiseeva I.Ya, Rodina O.P., Kustikova I.N., Vodopiyanova O.A. Pharmacology: Educational handbook. Penza: PSU Publisher, 2017.

6.3. Current and interim assessment materials

Competence development assessment

№	Type of assessment	Topics (parts) assessed	Competences and ele- ments assessed
1	Testing	Parts 1-6	PC-8; PC – 8
2	Discussion	Parts 1-6	PC-8; PC – 8
3	Decision of case study	Parts 7	PC-8; PC – 8

Demo variant of test

1. Acompanyng diseases: ciliary arruthmia, stenocardia, and chronic bronchitis. The physician has decided to use a drug from the group of beta-adrenoblockers. Which agent should be used , taking into account the acompanyng diseases?

A. *Metoprololum

B. Timololum

C. Anaprinilum

D. Pindololum

F. Oxprenololum

2. A patient who had been suffering from arterial hypertension was treated with the drug which mechanism of action is connected with exhaustion of noradrenalin content in sympathetic nerve endings. Indicate this drug.

A. *Reserpinum

B. Clopheinum

C. Anaprinilum

D. Prazosine

E. Dibazolum

3. A 40 year old patient suffers from arterial hypertension with hyperkinetic type of circulation and increased level of renin, sternocardia, sinus tachycardia. Indicate the group of drugs which is more preferable for treatment of this patient.

- A. *beta-adrenoblockers
- B. Organic nitrates
- C. α -adrenoblockers
- D. Sympatholytics
- E. Ganglion blockers

4. Indicate the drug which possesses hypotensive action exactly due to decrease of vascular tone. What drug can be used?

- A. * α -adrenoblocker
- B. N-cholinoblocker
- C. α - β - adrenoblocker
- D. M-cholinoblocker
- E. β -adrenoblocker

5. Indicate the group of drugs to which prazosine belongs.

- A. * α -adrenoblockers
- B. Cardioselective β -adrenoblockers
- C. Nonselective beta-adrenoblockers
- D. Sympatholytics
- E. Angiotensin converting enzyme inhibitors

6. A 40-years-old patient suffers from cardiovascular diseases: arterial hypertension of hyperkinetic type and high blood rennin level, stenocardia and sinus tachycardia. Indicate the most expedient group of drugs for treatment of the patient?

- A. *beta-adrenoblockers
- B. Organic nitrates
- C. alfa-adrenoblockers
- D. Sympatholytics
- E. Ganglion blockers

7. Indicate the state in which nonselective beta-adrenoblockers are contraindicated?

- A. *Bronchial asthma
- B. Thyrotoxicosis
- C. Cardiomyopathy
- D. Myocardial infarction
- E. Arterial hypertension

8. Anaprilin (propranolol) was administered to a patient with hypertension that normalized BP fast. What is the mechanism of action of this drug?

- A. *Blockade of beta1- and beta2-adrenoceptors
- B. Blockade of beta1- adrenoceptors
- C. Inhibition of phosphodiesterase
- D. Blockade of alfa1-adrenoceptors
- E. Stimulation of atfa2-adrenoceptors

9. Anaprilin was administered to a patient with arterial hypertension accompanied by obstructive bronchitis. After that the attack of bronchospasm occurred in the patient. Indicate the reason of this side-effect.

- A. *Blockade of beta 2-adrenoceptors of bronchi
- B. Stimulation of beta 2-adrenoceptors of bronchi
- C. Blockade of alfa 2-adrenoceptors of bronchi
- D. Blockade of beta1-adrenoceptors of bronchi
- E. Stimulation of alfa 1-adrenoceptors of bronchi

10. Therapeutic effect of beta-adrenoblocker propranolol during the treatment of stenocadia is explained by:

- A. *Decrease of myocardium oxygen demand
- B. Inhibition of catecholamines' production
- C. Dilation of coronary arteries
- D. Increase of sensibility to catecholamines
- E. Increase of peripheral arteries resistance

Criteria for assessing the test

"Excellent" ("5") - 91% or more correct answers to test items.

"Good" ("4") - 81-90% of correct answers to test items.

"Satisfactory" ("3") - 71-80% of correct answers to test items.

"Disappointing" ("2") - 70% or less correct answers to test items.

Demo variant of questions for pass-fail exam

1. Basic concepts and methods of evidence-based medicine.
2. Levels of Evidence (A, B, C) and Classes of Recommendations (I, IIa, IIb, III).
3. Vaccine prophylaxis of respiratory diseases within the framework of primary medical and sanitary assistance to the population.
4. Drug treatment of CHF. General principles.
5. Eradication therapy *Helicobacter pylori*.

Criteria for assessing the discussion session on classes and pass-fail exam

"Excellent" - a full response, competent, logical; fluency of pharmacological terminology; answers to additional questions clear brief.

"Good" - the answer is quite logical with single errors in the particulars; single error in the Latin terminology; answers to additional questions correct, clear enough.

"Satisfactory" - the answer is not enough literate, part-time, with errors in the details; Errors in Latin terminology; answers to additional questions is not enough clear, with errors in the particulars, the material covered in part.

"Disappointing" - the answer is illiterate, incomplete, with gross errors; ignorance of the Latin terminology; answers to additional questions wrong, there is a partial view of the subject, there is no ability to rationalize their thoughts.

Demo variant of case study

A 65-year-male was diagnosed to be suffering from congestive heart failure (CHF). He had pitting edema of feet, dyspnoea and cough on mild exertion, fatigue, engorged neck veins, soft enlargement of liver, pulmonary congestion and mild cardiac dilatation. The pulse was 100/min, respiration 20/min and BP 130/86 mm of Hg. He was prescribed—Tab furosemide 40 mg once daily in the morning, tab captopril 25 mg twice daily, morning and evening. After 2 hours of taking the medicines, he started passing increased quantity of urine and in the next few hours he gradually started feeling weakness, nausea, sweating and fainted while walking to the toilet. The pulse was recorded as 110/min and BP 80/40 mm Hg.

- (a) What could be the cause of sudden onset symptoms and the marked fall in BP?
- (b) Is the choice of drugs incorrect?
- (c) How could such adverse event be prevented?
- (d) What immediate management is required?

Criteria for assessing the decision of case study

"Excellent" - a full response, competent, logical; fluency in pharmaceutical terminology.

"Good" - the answer is not enough to single logical errors in particular; single error in the pharmaceutical terminology.

"Satisfactory" - the answer is not enough literate, part-time, with errors in the details; errors in pharmacological terms.

"Disappointing" - the answer is illiterate, incomplete, with gross errors; ignorance of pharmaceutical terminology.

7. Information materials for the discipline

a) Basic reading

Pharmacology [Электронный ресурс] / Kharkevitch D.A. - М. : ГЭОТАР-Медиа, 2008. - <http://www.studmedlib.ru/book/ISBN5970402648.html>

b) Supplementary reading:

Фармакология [Электронный ресурс]: учебник / под ред. Р.Н. Аляутдина. - 4-е изд., перераб. и доп. - М.: ГЭОТАР-Медиа, 2013. - <http://www.studmedlib.ru/book/ISBN9785970425183.html>

Медицина, основанная на доказательствах [Электронный ресурс]: учебное пособие / Петров В.И., Недогода С.В. - М. : ГЭОТАР-Медиа, 2012. - <http://www.studmedlib.ru/book/ISBN9785970423219.html>

c) Software and Internet resources

1. Microsoft Windows (DreamSpark/Microsoft Imagine Standart); reg. number 00037FFEBA CF8FD7, contract № СД-130712001 of 12.07.2013.
2. Kaspersky Anti-Virus 2016-2017, reg. number KL4863RAUFQ, contract № XII-567116 of 29.08.2016.
3. Open source software: LibreOffice; Google Chrome; Adobe Reader; 7zip.
4. Free video lectures - freevideolectures.com
5. EBS 'student Consultant - <http://www.studmedlib.ru>

8. Equipment

№	Specialty rooms and rooms for independent work	Facilities special facilities and space for independent work
1.	Classroom 10-314, 10th PSU enclosure, 17.2 m2	1. Desks for school - 9 pieces 2. Chairs - 18 pieces 3. Personal computer - 1 pieces 4. Visual aids (posters). 5. Training Board - 1 piece
2.	Classroom 10-204, 10th PSU enclosure for students' individual work	1. Desks for school - 10 pieces 2. Chairs - 20 pieces 3. Personal computer - 10 pieces 4. Visual aids (posters).5.

The study programme for the discipline «Pharmacology and evidence-based medicine» is prepared in accordance with the requirements of the FGOS VO and the educational plan of the specialty

The study programme for the discipline «Pharmacology and evidence-based medicine» is prepared in accordance with the requirements of the FGOS VO and the educational plan of the specialty 31.05.01 "General Medicine"

The programme developers:

1. ass. professor  O.P. Rodina

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The programme was discussed and agreed at the department meeting "G&CPh"

Records № 11 on « 04 » 03 2016


Head of the department  professor I.Ya. Moiseeva
(signature, names)

The programme is agreed with the head of

The medical faculty  The dean, professor
I.Ya. Moiseeva
(department) (signature, names, date)

The programme was approved by methodology council of the medical Institute

Records № 7 on « 5 » 03 2016

Chair of the methodology council of the medical Institute  professor O.V. Kalmin

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