

MINISTRY OF EDUCATION AND SCIENCE OF THE KYRGYZ REPUBLIC
OSH STATE UNIVERSITY
INTERNATIONAL MEDICAL FACULTY
Department of Pathology, Basic and Clinical Pharmacology

APPROVED

at the meeting of the Department
Minutes No. ____ dated "22" *октября* 2025
Head of the Department
PhD (Biology), Associate Professor
A.A. Momunova *[Signature]*

APPROVED

Chairperson of the Faculty Academic Council
PhD (Economics), Associate Professor
A.M. Bazieva *[Signature]*
"22" *октября* 2025

Assessment Tools Fund

for the discipline "Clinical Pharmacology"

for students enrolled in the program
560001: General Medicine (GM)

Osh – 2025

The Assessment Tools Fund for the discipline "Clinical Pharmacology" is intended to assess learning outcomes, including knowledge, skills, abilities, and professional experience, as defined by the educational program.

1. Passport of the Assessment Tools Fund
for the discipline "Clinical Pharmacology"

№ п/ п	Controlled sections topics of the discipline	Code of the controlled competency	Learning outcomes for the discipline	Option of assessment	Total
1	SLC-2, PC-17	Introduction to clinical pharmacology. Main parameters of clinical pharmacokinetics and pharmacodynamics	<p>To know:</p> <ul style="list-style-type: none"> methods of critical analysis and evaluation of modern scientific achievements; methods of generating new ideas when solving research and practical tasks, including those in interdisciplinary fields. <p>To be able to:</p> <ul style="list-style-type: none"> be capable of and prepared to perform basic therapeutic interventions for the most common diseases and conditions in adults and children in outpatient and inpatient settings; be capable of and prepared to master professional communication skills, build interpersonal relationships, work in a team, constructively resolve conflict situations, and demonstrate tolerance toward social, ethnic, religious, and cultural differences 	Test items Individual assignments Case tasks	15 12 4
	Clinical pharmacology of antihypertensive drugs	SLC-2, PC-18, LO-8	<p>To know:</p> <p>the regulatory framework of ethical standards of professional activity adopted in research and educational teams for solving scientific and scientific-educational tasks;</p> <p>be capable of and prepared to master professional communication skills, build interpersonal relationships, work in a team, constructively resolve conflict situations, and demonstrate tolerance toward</p>	Test items Individual assignments Case tasks	

			<p>social, ethnic, religious, and cultural differences.</p> <p>To be able to:</p> <p>be capable of and prepared to provide medical care for acute diseases, conditions, and exacerbations of chronic diseases that are not life-threatening and do not require emergency medical care;</p> <p>apply basic knowledge in the field of clinical practice to solve professional tasks.</p> <p>To possess: skills in applying ethical standards and various types of communication when interacting with colleagues and students in the course of scientific and pedagogical activities aimed at solving scientific and educational tasks</p>		
	Clinical pharmacology of antianginal and antithrombotic drugs	PC-17, PC-19, LO-11	<p>To know:</p> <ul style="list-style-type: none"> basic principles of diagnosis and treatment of the most common diseases in adults and children; stages of therapeutic interventions in outpatient and inpatient settings; indications and contraindications for therapy. <p>To be able to:</p> <ul style="list-style-type: none"> apply basic research methods to solve professional tasks; analyze the obtained data. <p>To possess:</p> <ul style="list-style-type: none"> skills of independent research activity; use scientific knowledge to improve practical practice. 		
	Clinical pharmacology of antiarrhythmic drugs	PC-17, PC-19, LO-11	<p>Knowledge and understanding: understanding the classification, mechanisms of action, indications, contraindications,</p>	case-based tasks, ECG interpretation, and oral or	

			<p>adverse effects, and interactions of antiarrhythmic drugs.</p> <p>Applying knowledge and understanding: ability to select and justify antiarrhythmic therapy, determine dosing and regimen, and assess treatment effectiveness and safety.</p> <p>Making judgements: ability to analyze clinical and ECG data, evaluate risks and benefits, and identify drug-induced arrhythmias and adverse reactions.</p> <p>Communication skills: ability to clearly explain therapeutic decisions, adverse effects, and monitoring principles to colleagues and patients.</p> <p>Learning skills: ability to independently update knowledge in antiarrhythmic therapy and apply evidence-based clinical pharmacology principles.</p>	written assessment.	
	Clinical pharmacology of drugs for diabetes mellitus	PC-17, PC-18, PC-19	<p>Knowledge and understanding: understanding the classification of antidiabetic drugs (insulin preparations and non-insulin agents), their mechanisms of action, indications, contraindications, adverse effects, and clinically significant drug interactions.</p> <p>Applying knowledge and understanding: ability to select antidiabetic therapy according to the type of diabetes, glycemic profile, comorbidities, and clinical guidelines; determine dosing regimens and routes of administration; assess treatment efficacy and safety.</p> <p>Making judgements: ability to analyze glycemic control indicators (blood glucose, HbA1c), recognize hypoglycemia and other adverse reactions, and evaluate</p>	case-based tasks, clinical problem-solving, oral questioning, and written assignments.	

			<p>benefit–risk balance of antidiabetic therapy.</p> <p>Communication skills: ability to explain treatment plans, insulin administration techniques, and safety measures to patients and to communicate therapeutic decisions within the healthcare team.</p> <p>Learning skills: ability to independently update knowledge on antidiabetic pharmacotherapy and apply evidence-based recommendations in clinical practice.</p>		
	Drugs for bronchial obstruction (BA, COPD)	PC-17, PC-18, PC-19	<p>Knowledge and understanding: classification of bronchodilators and anti-inflammatory drugs used in BA and COPD, mechanisms of action, indications, contraindications, adverse effects, and drug interactions.</p> <p>Applying knowledge and understanding: selection of pharmacotherapy according to disease (BA or COPD), severity, and clinical guidelines; choice of inhalation devices; assessment of treatment effectiveness and safety.</p> <p>Making judgements: evaluation of clinical symptoms, spirometry results, and exacerbation risk; identification of adverse drug reactions and inappropriate therapy.</p> <p>Communication skills: ability to instruct patients on correct inhaler technique, adherence, and prevention of exacerbations; communication of therapeutic decisions within the healthcare team.</p> <p>Learning skills: ability to independently update knowledge on BA and COPD management using evidence-based recommendations.</p>	<p>MCQs; case-based clinical tasks; spirometry and symptom interpretation tasks; practical assessment of inhaler technique; oral examination; written assignments.</p>	
	Drugs for peptic ulcer, gastritis	PC-17, PC-18, PC-19	Knowledge and understanding:	MCQs; case-based tasks;	

		<p>classification of drugs used in peptic ulcer disease and gastritis, mechanisms of action, indications, contraindications, adverse effects, and drug interactions.</p> <p>Applying knowledge and understanding: selection of pharmacotherapy according to etiology (H. pylori-associated or non-associated), disease severity, and clinical guidelines; planning eradication and maintenance therapy.</p> <p>Making judgements: evaluation of treatment effectiveness, recognition of adverse drug reactions, and assessment of benefit–risk balance of therapy.</p> <p>Communication skills: ability to explain treatment regimens, adherence importance, and lifestyle recommendations to patients; effective communication with healthcare professionals.</p> <p>Learning skills: ability to independently update knowledge and apply evidence-based approaches in gastroenterological pharmacotherapy.</p>	clinical problem-solving; oral questioning; written assignments.	
	Clinical pharmacology of antibacterial drugs	PC-17, PC-18, PC-19	<p>Knowledge and understanding: classification of antibacterial drugs, mechanisms of antimicrobial action, spectra of activity, indications, contraindications, adverse effects, and drug interactions.</p> <p>Applying knowledge and understanding: selection of antibacterial therapy based on infection type, suspected pathogen, and clinical guidelines; determination of dosing regimens, routes of administration, and treatment duration.</p> <p>Making judgements: analysis of clinical response, laboratory and microbiological data; identification of adverse</p>	MCQs; case-based clinical tasks; interpretation of microbiological data; oral examination; written assignments.

			<p>drug reactions and antimicrobial resistance risks.</p> <p>Communication skills: ability to justify antibacterial choice, explain treatment plans and adherence importance to patients, and communicate decisions within the healthcare team.</p> <p>Learning skills: ability to independently update knowledge on antimicrobial therapy and apply principles of rational antibiotic use.</p>		
	Drugs for bronchial obstruction (BA, COPD)	PC-17, PC-18, PC-19	<p>Knowledge and understanding: classification of bronchodilators and anti-inflammatory drugs used in BA and COPD, mechanisms of action, indications, contraindications, adverse effects, and drug interactions.</p> <p>Applying knowledge and understanding: selection of pharmacotherapy according to disease type and severity; choice and correct use of inhalation devices; assessment of treatment efficacy and safety.</p> <p>Making judgements: evaluation of symptoms, spirometry results, and exacerbation risk; identification of inappropriate therapy and adverse drug reactions.</p> <p>Communication skills: ability to instruct patients on inhaler technique, adherence, and prevention of exacerbations; effective communication within the healthcare team.</p> <p>Learning skills: ability to independently update knowledge and apply evidence-based recommendations in BA and COPD management.</p>	MCQs; case-based tasks; spirometry interpretation; practical assessment of inhaler technique; oral examination; written assignments.	

2 Assessment Criteria and Grading Scale

Competency code	Grade 5 (Excellent)	Grade 4 (Good)	Grade 3 (Satisfactory)	Grade 2 (Unsatisfactory)
-----------------	---------------------	----------------	------------------------	--------------------------

SLC-2 PC-17 PC-18	deep mastery of the curriculum content.	solid knowledge of the curriculum content.	knowledge of the core material; minor gaps are acceptable.	lack of knowledge of a significant part of the curriculum content.
PC-19 PC-32 LO-8 LO-11	logically structured presentation; ability to discuss the problem; ability to link theory with its practical application; confident problem-solving and justification of decisions; proficiency in research methodology and methods, modeling methods; ability to collect, calculate, analyze, classify, and interpret data using mathematical and statistical tools independently.	minor inaccuracies are acceptable; generally correct answers; correct application of theoretical concepts; ability to solve standard tasks based on basic knowledge and given algorithms; occasional difficulties in solving practical tasks.	knowledge of the core material with noticeable gaps; inaccuracies in answers; violations of logical sequence in presenting the curriculum material; ability to solve only simple tasks.	inability to formulate correct answers even with the instructor's assistance; failure to complete practical tasks.

1. Assessment Tools (complete list of assessment tools)

1.1. Current Assessment

1.1.1. Controlled section of the discipline

“General Issues of Clinical Pharmacology”;

formed competencies: SLC-2, PC-17, PC-18, PC-19, PC-32, LO-8, LO-11

1.1.1.1. Test items for assessment of competency SLC-2

1. The main practical significance of clinical pharmacology is:

1. assessment of the rate of metabolism
2. calculation of bioavailability
3. calculation of the rate of elimination
4. optimization and individualization of drug therapy

2. A simple blind clinical trial is:

1. when the patient does not know whether they belong to the main or control group
2. determination of the subject's visual fields
3. when the physician does not know whether the patient belongs to the main or control group
4. when the physician does not know the patient's diagnosis

3. Drug bioavailability is:

1. the rate of entry into the bloodstream
2. the amount of the drug that reaches the site of action
3. the fraction of the dose that reaches the systemic circulation
4. the time to reach maximum concentration

4. What refers to pharmacodynamic drug interaction?

1. accelerated elimination
2. altered protein binding
3. enhancement or reduction of effect
4. impaired absorption

5. The main goal of rational pharmacotherapy is:

1. to increase the number of drugs
2. to reduce treatment cost
3. to achieve maximum effect with minimal risk
4. to prolong the course of treatment

1.1.1.2. Test items for assessment of competency PC-17

6. Which drug is first-line therapy for arterial hypertension in most patients?

1. glucocorticosteroids
2. ACE inhibitors

- 3. antibiotics
- 4. antiarrhythmic drugs

7. What is the main measure for relieving an angina attack?

- 1. intramuscular administration of an antibiotic
- 2. sublingual nitroglycerin
- 3. prescription of antihistamines
- 4. prescription of glucocorticosteroids

8. What therapeutic measure is primary in hypoglycemic conditions?

- 1. administration of insulin
- 2. administration of glucose
- 3. prescription of diuretics
- 4. administration of antibiotics

9. Which drug is the first aid treatment for anaphylactic shock?

- 1. prednisolone
- 2. adrenaline
- 3. suprastin
- 4. furosemide

10. Which drug is used to relieve an uncomplicated hypertensive crisis?

- 1. captopril
- 2. digoxin
- 3. paracetamol
- 4. ampicillin

1.1.1.2. Test items for assessment of competency PC-18

11. Which drug is used to relieve heartburn in gastritis?

- 1. amoxicillin
- 2. omeprazole
- 3. furosemide
- 4. digoxin

12. Which drug is used for mild exacerbation of bronchial asthma?

- 1. salbutamol
- 2. heparin
- 3. warfarin
- 4. insulin

13. Which drug is prescribed for acute non-infectious diarrhea?

- 1. loperamide
- 2. ceftriaxone
- 3. prednisolone
- 4. furosemide

14. Which drug is first-line therapy for uncomplicated pain syndrome?

- 1. morphine
- 2. paracetamol
- 3. prednisolone
- 4. adrenaline

15. Which drug is used for mild allergic reactions?

- 1. adrenaline
- 2. antihistamines
- 3. narcotic analgesics
- 4. anticoagulants

1.1.1.3. Test items for assessment of competency PC-19

16. Which indicator primarily reflects drug safety?

- 1. bioavailability
- 2. therapeutic index
- 3. half-life
- 4. maximum concentration

17. Which complication is most characteristic of NSAID overdose?

- 1. bronchospasm
- 2. gastric mucosal injury
- 3. hypoglycemia
- 4. convulsive syndrome

18. What action should be taken in case of a severe adverse drug reaction?

- 1. continue therapy unchanged
- 2. increase the dose
- 3. immediately discontinue the drug
- 4. prescribe vitamins

19. Which factor must be considered when prescribing drugs to elderly patients?

1. tablet color
2. reduced liver and kidney function
3. time of day
4. package weight

20. Which type of interaction enhances the effect of one drug by another?

1. antagonism
2. synergism
3. tachyphylaxis
4. cumulation

1.1.1.3. Test items for assessment of competency PC-32

21. A statement related to the term “first-pass effect”:

1. hepatic uptake and metabolism before entering systemic circulation
2. inactivation by gastric hydrochloric acid
3. absorption in the duodenum
4. rapid accumulation in CNS neurons

22. Type of interaction in which substance “A” inactivates substance “B” when mixed in one syringe:

1. pharmacodynamic
2. pharmaceutical
3. pharmacokinetic
4. physical

23. Routes of administration classified as enteral:

1. sublingual, transbuccal
2. rectal, oral
3. oral, rectal, transdermal
4. inhalational, oral

24. Active transport is:

1. pharmacological effects of a drug
2. transport across membranes by facilitated diffusion
3. transport not requiring energy
4. transport against a concentration gradient requiring energy

25. Drug elimination is:

1. extent of reabsorption in renal tubules
2. clearance of a given volume of blood from a substance
3. time for plasma concentration to decrease by 50%
4. process of removing a xenobiotic from the body

26. The main practical significance of pharmacokinetics is:

1. assessment of metabolism rate
2. calculation of bioavailability
3. calculation of elimination rate
4. optimization of dosing regimen

27. The main mechanism of absorption of most drugs in the gastrointestinal tract is:

1. passive diffusion
2. ultrafiltration
3. pinocytosis
4. active transport

28. The degree of drug penetration into the CNS is determined by:

1. molecular size
2. physicochemical properties
3. molecular weight
4. mechanism of action

29. Affinity of a substance for a receptor resulting in complex formation is called:

1. affinity
2. intrinsic activity
3. antagonism
4. extrinsic activity

30. Receptors responsible for the main drug effect are called:

1. specific
2. principal
3. basic
4. active

1.1.1.2. Case study for assessment of competency PC-17

Case 1.

Female patient F., 68 years old, admitted with dyspnea on mild exertion, palpitations, leg edema, and general weakness. Ill for 6 years with progressive worsening. History of frequent pneumonias and kidney disease.

Examination: harsh breathing, dry scattered pneumosclerotic rales; HR 100/min, regular rhythm; BP 150/90 mmHg; abdomen soft, painless; liver enlarged 2–3 cm below costal margin; edema of shins and feet. Blood biochemistry: urea nitrogen 40%. Digoxin prescribed at 0.75 mg/kg/day. On day 4, severe weakness, nausea, and palpitations developed. ECG: multifocal extrasystoles. Serum digoxin level 2.2 ng/mL.

Tasks:

1. Determine the cause of increased drug concentration.
2. Explain why the drug was toxic in this case.
3. Analyze the case; characterize therapy types and justify them.
4. Assess the appropriateness of digoxin prescription.
5. Identify the type of drug action on repeated administration.
6. Justify therapy to eliminate the adverse effect.

Case 2.

Male patient R. with ischemic heart disease, exertional angina class III; HR 90/min; BP 105/80 mmHg; no conduction or contractility disorders. History of chronic bronchitis with bronchospastic syndrome in remission and fatty liver degeneration.

Tasks:

1. Analyze the case and justify therapy types.
2. Indicate optimal drugs for antianginal therapy.
3. Propose optimal regimen: dose, frequency, route.
4. Select measures for efficacy and safety monitoring.

1.1.1.3. Case study for assessment of competency PC-18

Case 2.

Male patient D., 56 years old, received 0.5% novocaine solution at the planned incision site. Suddenly developed discomfort, anxiety, chills, weakness, dizziness, tinnitus, visual impairment, numbness of fingers, tongue, lips, lumbar and abdominal pain, pruritus, dyspnea, urticaria, edema, and bronchospasm. BP 90/60 mmHg. Blood test: leukocytosis with marked eosinophilia.

Tasks:

1. Analyze the cause of complications.
2. Identify drugs for emergency treatment.
3. Justify symptomatic therapy based on pathogenesis.

1.1. Current assessment

1.1.1. Controlled section of the discipline “General Issues of Clinical Pharmacology”; formed competencies: SLC-2, PC-17, PC-18, PC-19, PC-32, LO-8, LO-11

1.1.1.1. Test items for assessment of competency SLC-2:

1. The main practical significance of clinical pharmacology is:
 1. assessment of the rate of metabolism
 2. calculation of bioavailability
 3. calculation of the rate of elimination
 4. optimization and individualization of drug therapy
2. A simple blind clinical trial is:
 1. when the patient does not know whether they belong to the main or control group
 2. determination of the subject's visual fields
 3. when the physician does not know whether the patient belongs to the main or control group
 4. when the physician does not know the patient's diagnosis
3. Drug bioavailability is:
 1. the rate of entry into the bloodstream
 2. the amount of the drug that reaches the site of action
 3. the fraction of the dose that reaches the systemic circulation
 4. the time to reach maximum concentration
4. What refers to pharmacodynamic drug interaction?
 1. accelerated elimination
 2. altered protein binding
 3. enhancement or reduction of effect
 4. impaired absorption
5. The main goal of rational pharmacotherapy is:
 1. to increase the number of drugs
 2. to reduce treatment cost
 3. to achieve maximum effect with minimal risk
 4. to prolong the course of treatment

3.1.1.2. Test items for assessment of competency PC-17:

6. Which drug is first-line therapy for arterial hypertension in most patients?
 1. glucocorticosteroids
 2. ACE inhibitors
 3. antibiotics
 4. antiarrhythmic drugs

7. What is the main measure for relieving an angina attack?
 1. intramuscular administration of an antibiotic
 2. sublingual nitroglycerin
 3. prescription of antihistamines
 4. prescription of glucocorticosteroids
8. What therapeutic measure is primary in hypoglycemic conditions?
 1. administration of insulin
 2. administration of glucose
 3. prescription of diuretics
 4. administration of antibiotics
9. Which drug is the first aid treatment for anaphylactic shock?
 1. prednisolone
 2. adrenaline
 3. suprastin
 4. furosemide
10. Which drug is used to relieve an uncomplicated hypertensive crisis?
 1. captopril
 2. digoxin
 3. paracetamol
 4. ampicillin

3.1.1.2. Test items for assessment of competency PC-18:

11. Which drug is used to relieve heartburn in gastritis?
 1. amoxicillin
 2. omeprazole
 3. furosemide
 4. digoxin
12. Which drug is used for mild exacerbation of bronchial asthma?
 1. salbutamol
 2. heparin
 3. warfarin
 4. insulin
13. Which drug is prescribed for acute non-infectious diarrhea?
 1. loperamide
 2. ceftriaxone
 3. prednisolone
 4. furosemide
14. Which drug is first-line therapy for uncomplicated pain syndrome?
 1. morphine
 2. paracetamol
 3. prednisolone
 4. adrenaline
15. Which drug is used for mild allergic reactions?
 1. adrenaline
 2. antihistamines
 3. narcotic analgesics
 4. anticoagulants

3.1.1.3. Test items for assessment of competency PC-19:

16. Which indicator primarily reflects drug safety?
 1. bioavailability
 2. therapeutic index
 3. half-life
 4. maximum concentration
17. Which complication is most characteristic of NSAID overdose?
 1. bronchospasm
 2. gastric mucosal injury
 3. hypoglycemia
 4. convulsive syndrome
18. What action should be taken in case of a severe adverse drug reaction?
 1. continue therapy unchanged
 2. increase the dose
 3. immediately discontinue the drug
 4. prescribe vitamins
19. Which factor must be considered when prescribing drugs to elderly patients?
 1. tablet color
 2. reduced liver and kidney function

3. time of day
4. package weight

20. Which type of interaction enhances the effect of one drug by another?

1. antagonism
2. synergism
3. tachyphylaxis
4. cumulation

3.1.1.3. Test items for assessment of competency PC-32:

21. A statement related to the term "first-pass effect":

1. hepatic uptake and metabolism before entering systemic circulation
2. inactivation by gastric hydrochloric acid
3. absorption in the duodenum
4. rapid accumulation in CNS neurons

22. Type of interaction in which substance "A" inactivates substance "B" when mixed in one syringe:

1. pharmacodynamic
2. pharmaceutical
3. pharmacokinetic
4. physical

23. Routes of administration classified as enteral:

1. sublingual, transbuccal
2. rectal, oral
3. oral, rectal, transdermal
4. inhalational, oral

24. Active transport is:

1. pharmacological effects of a drug
2. transport across membranes by facilitated diffusion
3. transport not requiring energy
4. transport against a concentration gradient requiring energy

25. Drug elimination is:

1. extent of reabsorption in renal tubules
2. clearance of a given volume of blood from a substance
3. time for plasma concentration to decrease by 50%
4. process of removing a xenobiotic from the body

26. The main practical significance of pharmacokinetics is:

1. assessment of metabolism rate
2. calculation of bioavailability
3. calculation of elimination rate
4. optimization of dosing regimen

27. The main mechanism of absorption of most drugs in the gastrointestinal tract is:

1. passive diffusion
2. ultrafiltration
3. pinocytosis
4. active transport

28. The degree of drug penetration into the CNS is determined by:

1. molecular size
2. physicochemical properties
3. molecular weight
4. mechanism of action

29. Affinity of a substance for a receptor resulting in complex formation is called:

1. affinity
2. intrinsic activity
3. antagonism
4. extrinsic activity

30. Receptors responsible for the main drug effect are called:

1. specific
2. principal
3. basic
4. active

1.1.1.2. Case study for assessment of competency PC-17:

Case 1. Female patient F., 68 years old, admitted with dyspnea on mild exertion, palpitations, leg edema, and general weakness. Ill for 6 years with progressive worsening. History of frequent pneumonias and kidney disease.

Examination: harsh breathing, dry scattered pneumosclerotic rales; HR 100/min, regular rhythm; BP 150/90 mmHg; abdomen soft, painless; liver enlarged 2–3 cm below costal margin; edema of shins and feet. Blood

biochemistry: urea nitrogen 40%. Digoxin prescribed at 0.75 mg/kg/day. On day 4, severe weakness, nausea, and palpitations developed. ECG: multifocal extrasystoles. Serum digoxin level 2.2 ng/mL.

Tasks:

1. Determine the cause of increased drug concentration.
2. Explain why the drug was toxic in this case.
3. Analyze the case; characterize therapy types and justify them.
4. Assess the appropriateness of digoxin prescription.
5. Identify the type of drug action on repeated administration.
6. Justify therapy to eliminate the adverse effect.

Case 2. Male patient R. with ischemic heart disease, exertional angina class III; HR 90/min; BP 105/80 mmHg; no conduction or contractility disorders. History of chronic bronchitis with bronchospastic syndrome in remission and fatty liver degeneration.

Tasks:

1. Analyze the case and justify therapy types.
2. Indicate optimal drugs for antianginal therapy.
3. Propose optimal regimen: dose, frequency, route.
4. Select measures for efficacy and safety monitoring.

1.1.1.3. Case study for assessment of competency PC-18:

Case 2. Male patient D., 56 years old, received 0.5% novocaine solution at the planned incision site. Suddenly developed discomfort, anxiety, chills, weakness, dizziness, tinnitus, visual impairment, numbness of fingers, tongue, lips, lumbar and abdominal pain, pruritus, dyspnea, urticaria, edema, and bronchospasm. BP 90/60 mmHg. Blood test: leukocytosis with marked eosinophilia.

Tasks:

1. Analyze the cause of complications.
2. Identify drugs for emergency treatment.
3. Justify symptomatic therapy based on pathogenesis.

1.1.2. Controlled Section

“Clinical and Pharmacological Approaches to the Selection of Medicines Used in Diabetes Mellitus”

Formed Competencies: PC-17, PC-18, PC-19

1.1.2.1. Test Tasks for Assessment of Competency PC-17

1. Which criterion is the key factor in choosing initial therapy for a patient with type 2 diabetes mellitus according to current clinical guidelines?

1. Fasting plasma glucose level
2. Body mass index
3. Presence of cardiovascular disease or high cardiovascular risk
4. Patient's age

2. Which mechanism of action is most characteristic of SGLT2 inhibitors?

1. Increased insulin secretion by β -cells
2. Reduced insulin resistance in skeletal muscle
3. Increased renal glucose excretion
4. Inhibition of intestinal α -glucosidase

3. Which drug is contraindicated in chronic kidney disease with eGFR <30 mL/min/1.73 m²?

1. Liraglutide
2. Metformin
3. Glibenclamide
4. Linagliptin

4. In a patient with type 2 diabetes mellitus and significant heart failure, the preferred drug would be:

1. Metformin at the maximum dose
2. Pioglitazone
3. Empagliflozin or dapagliflozin
4. Sitagliptin

5. Why is insulin therapy advisable in patients with severe hyperglycemia (glucose >16–17 mmol/L or HbA1c >10%)?

1. Insulin has the longest duration of action among oral antidiabetic drugs
2. Reduction of glucotoxicity accelerates recovery of β -cell function
3. Insulin is preferable in patients with low body weight
4. It prevents diabetic nephropathy during the first weeks

3.1.3.1. Case Study for Assessment of Competency PC-18

Case 1

A 64-year-old woman with type 2 diabetes mellitus diagnosed 5 years ago.

She was referred for endocrinology consultation due to worsening glycemic control.

Complaints: periodic weakness, dry mouth, ankle edema in the evening.

Examination data:

- Fasting plasma glucose — 9.6 mmol/L

- HbA1c — 8.4%
- BMI — 29 kg/m²
- eGFR — 58 mL/min/1.73 m²
- Blood pressure — 156/94 mmHg
- BNP — elevated
- Echocardiography: heart failure with preserved ejection fraction (HFpEF)
- Current therapy: metformin 1500 mg/day, amlodipine, indapamide, rosuvastatin

The physician plans to adjust antihyperglycemic therapy.

Tasks:

1. Which drug class is preferred considering heart failure?
2. Which additional clinical effect of this drug class is especially important in HFpEF?
3. Which drug is undesirable due to the risk of fluid retention and worsening edema?
4. Which factor allows safe continuation of metformin at the current dose?

3.1.3.4. Case Study for Assessment of Competency PC-19

Case 2

A 17-year-old adolescent hospitalized in a cardiology-rheumatology department for arterial hypertension with blood pressure up to 160/90 mmHg.

At admission, atenolol was prescribed. After initiation, BP stabilized at 140/80 mmHg, HR = 60 bpm.

According to a specialist consultation, propranolol (anaprilin) was recommended and added by the duty physician.

The next day the patient developed weakness, dizziness, and two brief episodes of loss of consciousness. BP = 120/80 mmHg, HR = 42 bpm.

Tasks:

1. To which pharmacological groups do atenolol and propranolol belong? Provide a brief characterization (indications, adverse effects, contraindications).
2. What mechanisms underlie the development of adverse effects? Which agents may be used for emergency management?
3. Describe the sequence of actions in the treatment of arterial hypertension regarding drug selection and evaluation of antihypertensive therapy effectiveness. Discuss possibilities of combination therapy.

1.1.3. Controlled Section

“Clinical and Pharmacological Approaches to the Selection of Medicines Used in Bronchial Obstruction (Bronchial Asthma, COPD)”

Formed Competencies: PC-17, PC-18, PC-19

1.1.3.1. Test Tasks for Assessment of Competency PC-17

1. Which class of drugs is the basic long-term therapy for moderate bronchial asthma?
 1. Inhaled corticosteroids
 2. Short-acting anticholinergics
 3. Methylxanthines
 4. Short-acting β_2 -agonists (as needed)
2. Which option is preferred in a patient with COPD and frequent exacerbations despite LAMA therapy?
 1. Add inhaled corticosteroids to existing therapy
 2. Prescribe theophylline only
 3. Switch to SABA monotherapy
 4. Discontinue bronchodilators
3. Why are long-acting β_2 -agonists (LABA) not used as monotherapy in bronchial asthma?
 1. Too short duration of action
 2. Lack bronchodilatory effect
 3. Increase risk of severe attacks and mortality without ICS
 4. Impair mucociliary clearance
4. Bronchodilator with **myotropic** mechanism of action:
 1. Theophylline
 2. Ephedrine
 3. Formoterol
 4. Zafirlukast
5. The bronchodilatory effect of adrenaline in bronchial asthma is due to:
 1. Stimulation of β_2 -adrenergic receptors
 2. Stimulation of M-cholinergic receptors
 3. Blockade of N-cholinergic receptors
 4. Stimulation of H₁-histamine receptors

1.1.3.2. Tasks for Assessment of Competency PC-18

Individual Assignments

Provide detailed, well-reasoned answers.

1. A patient with a severe asthma attack and arterial hypertension was prescribed a drug that relieved bronchospasm and reduced blood pressure.

Questions:

- Identify the pharmacological group and the drug.
- Explain the mechanisms underlying these effects.
- Propose measures to correct possible adverse effects.

2. A 50-year-old woman receiving enalapril for arterial hypertension was prescribed carbamazepine for trigeminal neuralgia. After 3 days, frequent episodes of elevated blood pressure were observed.

Questions:

- What is the most likely cause of reduced enalapril effectiveness?
- What are the type, level, and mechanism of the drug interaction?

1.1.3.4. Test Tasks for Assessment of Competency PC-19

1. Adverse effect characteristic of coumarin derivatives:

1. Bleeding
2. Reduced myocardial contractility
3. Decreased atrioventricular conduction
4. Reduced myocardial oxygen consumption

2. Effect characteristic of iron preparations in therapeutic doses:

1. Increased heart rate
2. Increased hemoglobin synthesis
3. Improved atrioventricular conduction
4. Increased myocardial oxygen consumption

3. Long-acting anticoagulant:

1. Warfarin
2. Phenylhydine
3. Verapamil
4. Heparin

4. Bronchodilator causing tachyphylaxis:

1. Theophylline
2. Ephedrine
3. Formoterol
4. Zafirlukast

5. The bronchodilatory effect of ipratropium bromide is due to:

1. Stimulation of β_2 -adrenergic receptors
2. Stimulation of M-cholinergic receptors
3. Blockade of M-cholinergic receptors
4. Stimulation of H₁-histamine receptors

Individual Assignments

1. A patient with cardiac edema was prescribed a diuretic. After two weeks, calf muscle cramps and arrhythmia developed.

Questions:

- Which diuretic was prescribed?
- What are the causes and mechanisms of these adverse effects?

2. A 45-year-old woman receiving prolonged-release verapamil 240 mg/day for arterial hypertension was prescribed carbamazepine for trigeminal neuralgia. After 3 days, frequent BP elevations were observed.

Questions:

- What is the most likely cause of reduced verapamil effectiveness?
- What are the type, level, and mechanism of the drug interaction?

Controlled Section

“Clinical and Pharmacological Approaches to the Selection of Medicines Used in Peptic Ulcer Disease and Gastritis”

Formed Competencies: GPC-18, PC-19, PC-32

1.1.3.5. Tasks for Assessment of Competency PC-18

1. Which regimen is basic for *Helicobacter pylori* eradication in peptic ulcer disease?

1. Omeprazole
2. Clarithromycin
3. Amoxicillin
4. Combination of PPI + two antibiotics

2. What is the key mechanism of action of proton pump inhibitors (PPIs)?

1. Blockade of H₂ receptors
2. Inhibition of H⁺/K⁺-ATPase in parietal cells
3. Stimulation of bicarbonate secretion
4. Acceleration of gastric emptying

3. Hormonal drug that increases blood glucose level:

1. Acarbose
2. Insulin
3. Glucagon
4. Testosterone

4. Female sex hormone preparation:

1. Progesterone
2. Insulin
3. Somatostatin
4. Testosterone

5. Male sex hormone preparation:

1. Progesterone
2. Insulin
3. Somatostatin
4. Testosterone

1.1.3.6. Individual Assignments for Assessment of Competency PC-4

1.

A hormonal drug is used to stimulate labor. It may cause an increase in arterial blood pressure. Identify the drug and its pharmacological group.

Explain the mechanism underlying the development of this adverse effect.

2.

A drug is used in the treatment of hyperthyroidism. With long-term use, it may cause leukopenia, agranulocytosis, and a “goitrogenic” effect.

Identify the drug and its pharmacological group.

Explain the mechanisms underlying these adverse effects.

List drugs used for the prevention of the goitrogenic effect.

3.

A 50-year-old woman presents with complaints of general weakness, thirst, frequent urination, and pruritus. On examination, obesity is noted (body weight 96 kg, height 168 cm).

Blood glucose level — 9.9 mmol/L, urine glucose — 1%, acetone test — negative.

Which antidiabetic agents are optimal in this case? Justify your choice.

1.1.3.7. Individual Assignments for Assessment of Competency PC-5

1.

A woman receiving carbamazepine for epilepsy began taking a combined oral contraceptive containing ethinyl estradiol. Despite adherence to the dosing regimen, pregnancy occurred.

Explain why the contraceptive was ineffective in this case.

1.1.4. Controlled Section

“Medicinal Products Suppressing Inflammation and Affecting Immune Processes”

Formed Competencies: GPC-2, PC-4, PC-5

1.1.4.1. Test Tasks for Assessment of Competency GPC-2

1. An *in vivo* experiment showed that the antipyretic effect of nonsteroidal anti-inflammatory drugs (NSAIDs) is due to:

1. increased heat production
2. decreased heat loss
3. reduced histamine synthesis
4. impaired prostaglandin synthesis

2. Drugs used **only for the prevention** of allergic reactions:

1. cytostatics
2. H₂-histamine receptor blockers
3. mast cell stabilizers (inhibitors of mast cell degranulation)
4. adrenomimetics

3. Drugs used in **delayed-type hypersensitivity reactions**:

1. cytostatics
2. H₂-histamine receptor blockers
3. mast cell stabilizers
4. adrenomimetics

4. An *in vivo* experiment showed that NSAIDs:

1. increase heat production
2. reduce heat loss
3. reduce histamine synthesis
4. increase heat loss

5. NSAIDs are used to induce experimental gastric ulcers because they:

1. increase heat production
2. reduce heat loss

3. reduce histamine synthesis
4. reduce prostaglandin synthesis in the gastrointestinal tract

1.1.4.2. Individual Assignments for Assessment of Competency PC-4

Provide detailed, well-reasoned answers.

1.

An elderly patient has been taking acetylsalicylic acid for thrombosis prevention for a long time. Signs of progressive anemia have developed.

Explain the causes of anemia and its relationship to acetylsalicylic acid use.

2.

After one week of using a high dose of an analgesic drug, a patient developed life-threatening anemia, agranulocytosis, and thrombocytopenia.

Which drug was used?

What is the cause of this adverse effect?

1.1.4.3. Individual Assignments for Assessment of Competency PC-5

1.

A patient with chronic alcoholism took paracetamol (5.0 g within 24 hours) to reduce fever and was urgently hospitalized with signs of acute liver failure.

Explain the cause and mechanism of paracetamol toxicity.

Justify the use of drugs for detoxification therapy.

2.

A patient with rheumatoid polyarthritis was prescribed an oral medication. Symptoms were relieved; however, due to fear of disease recurrence, the patient continued therapy.

After some time, facial puffiness, significant weight gain, and frequent epigastric pain appeared. Laboratory tests revealed decreased lymphocyte and eosinophil counts; peptic ulcer disease was diagnosed.

Which drug was taken?

What are the main causes of these complications?

Which drugs may be prescribed to treat these complications?

1.1.5. Controlled Section

“Antimicrobial Medicinal Products”

Formed Competencies: GPC-2, PC-4, PC-5

1.1.5.1. Test Tasks for Assessment of Competency GPC-2

1. Bicillin-5 inhibits:

1. synthesis of the treponemal cell wall
2. cytoplasmic membrane permeability
3. protein synthesis on ribosomes
4. RNA synthesis

2. Tetracycline inhibits:

1. synthesis of the treponemal cell wall
2. cytoplasmic membrane permeability
3. protein synthesis on ribosomes
4. RNA synthesis

3. Azithromycin inhibits:

1. synthesis of the treponemal cell wall
2. cytoplasmic membrane permeability
3. protein synthesis on ribosomes
4. RNA synthesis

4. Imipenem inhibits:

1. synthesis of the treponemal cell wall
2. cytoplasmic membrane permeability
3. protein synthesis on ribosomes
4. RNA synthesis

5. Gentamicin inhibits:

1. synthesis of the treponemal cell wall
2. cytoplasmic membrane permeability
3. protein synthesis on ribosomes
4. RNA synthesis

1.1.5.2. Individual Assignments for Assessment of Competency PC-4

1.

A patient with systemic candidomycosis received rapid intravenous administration of an antifungal antibiotic, after which a sharp drop in blood pressure, choking attack, and chills occurred.

Explain the mechanism of these adverse effects.

2.

A pregnant woman was diagnosed with HIV infection.

Which drug prescribed during pregnancy can prevent mother-to-child transmission of HIV?

1.1.5.3. Individual Assignments for Assessment of Competency PC-5

1.

A patient with purulent conjunctivitis was prescribed topical sodium sulfacyl eye drops, which were soon discontinued due to ineffectiveness.

Explain the physician's error.

Why was the sulfonamide ineffective in this case?

2.

A patient treated for pneumonia with a fluoroquinolone developed severe joint pain after three days of therapy. Explain the mechanism of this adverse effect.

What should be the physician's management strategy?

1.2. Interim Assessment

1.2.1. Controlled Competency UK-1

“Ability to critically analyze and evaluate modern scientific achievements and generate new ideas in solving research and practical tasks, including interdisciplinary fields”

1.2.1.1. Test Tasks

1. The main practical significance of pharmacokinetics is:

1. evaluation of metabolism rate
2. calculation of bioavailability
3. calculation of elimination rate
4. optimization of dosing regimens

2. The main practical significance of pharmacodynamics is:

1. evaluation of metabolism rate
2. calculation of bioavailability
3. calculation of elimination rate
4. selection of a drug based on its mechanism of action

3. The degree of drug penetration into the central nervous system depends on:

1. molecular size
2. physicochemical properties
3. molecular weight
4. mechanism of action

4. The affinity of a substance for a receptor resulting in complex formation is called:

1. affinity
2. intrinsic activity
3. antagonism
4. extrinsic activity

5. Receptors responsible for the main effect of a drug are called:

1. specific
2. primary
3. main
4. active

6. Accumulation of a pharmacological substance in the body is called:

1. cumulation
2. tolerance
3. drug dependence
4. withdrawal

7. The type of interaction in which one substance interferes with hepatic metabolism of another is:

1. pharmacodynamic
2. physicochemical
3. pharmaceutical
4. pharmacokinetic

8. Phase II biotransformation reactions include:

1. oxidation, reduction, hydrolysis
2. conjugation with endogenous substances
3. oxidation, conjugation, hydrolysis
4. reduction, hydrolysis, conjugation

9. The route of administration in which the “first-pass effect” must be considered:

1. sublingual
2. intravenous
3. intra-articular
4. oral

10. Mechanisms of action and pharmacological effects are studied by:

1. Pharmacodynamics
2. Pharmacogenetics
3. Pharmacokinetics
4. Chronopharmacology

1.2.1.2. Individual Assignments for Assessment of Competency UK-1

Provide detailed, well-argued answers to the questions.

1.

A 56-year-old patient with a coagulation disorder is receiving warfarin for prevention of thromboembolic complications.

Due to sleep disturbances, a drug from the barbiturate group was prescribed, after which a relapse of the disease occurred.

Laboratory data revealed a marked increase in blood coagulation.

Questions:

- What is the most likely cause of the adverse drug reaction (ADR) during warfarin therapy?
- What are the type, level, and mechanism of the possible drug interaction?
- What should be the physician's actions to prevent this drug interaction?

2. A 77-year-old patient with an angina attack took sublingual nitroglycerin while standing. After administration, facial flushing, a sensation of "heat waves," palpitations, tremor, dizziness, and a sharp decrease in arterial blood pressure developed.

These symptoms resolved spontaneously when the patient assumed a sitting position.

Questions:

- Is the described ADR an allergic reaction?
- To which type does this ADR belong?
- What risk factor for ADR development is present in this patient?
- Determine the degree of certainty of the causal relationship between nitroglycerin intake and the described ADR.

1.2.2. Controlled Competency GPC-2

"Ability and readiness to conduct fundamental scientific research in the field of biology and medicine"

1.2.2.1. Test Tasks

1. Evaluate the correctness of definitions of the reliability of presented information:

1. High reliability — information is based on results of several independent clinical trials (CTs) with consistent outcomes summarized in systematic reviews.
2. Moderate reliability — information is based on results of at least several independent CTs with similar objectives.
3. Limited reliability — information is based on the results of a single CT.
4. Expert opinion — CTs have not been conducted; strict scientific evidence is lacking.

2. Generalizability is determined by the extent to which study results:

1. comply with generally accepted norms or criteria
2. are subject to generalization
3. may have a generalized nature
4. are applicable to other study populations

3. Generalization of results of individual studies in systematic reviews предполагает:

1. inclusion of studies with small sample sizes that do not allow reliable conclusions
2. exclusion of studies whose results significantly differ from the majority
3. inclusion of studies regardless of obtained results
4. establishment of quality criteria for selecting published studies

4. If an agonist produces a maximal effect when interacting with a receptor, this is:

1. allosteric interaction
2. partial agonism
3. agonist–antagonism
4. full agonism

5. A phenomenon that may occur with combined administration of two drugs:

1. synergism
2. dependence
3. cumulation
4. tolerance

6. If a drug does not produce an effect when interacting with a receptor but reduces or abolishes the effects of an agonist, this is called:

1. antagonism
2. partial agonism
3. agonist–antagonism
4. full agonism

7. A phenomenon occurring during simultaneous administration of drugs:

1. synergism
2. tolerance
3. potentiation
4. additive effect

8. If the total effect exceeds the sum of individual drug effects, this is:

1. competitive antagonism
2. summation
3. potentiation
4. noncompetitive antagonism

9. A situation representing **pharmacodynamic interaction**:

1. competition for the same target
2. alteration of metabolism of one substance by another
3. inactivation of one substance by another when mixed in a syringe
4. inactivation during drug preparation

10. A situation representing **pharmacokinetic interaction**:

1. competition for the same target
2. inactivation when mixed in a syringe
3. inactivation during preparation
4. impairment of absorption of one substance by another

1.2.2.2. Individual Assignments for Assessment of Competency GPC-2

Provide detailed, well-argued answers.

Case 1

A 52-year-old patient with a prosthetic mitral valve has been taking warfarin 7.5 mg once daily under laboratory monitoring of coagulation for 1 year.

No ADRs, including bleeding, were previously observed. Alcohol intake is rare and in small amounts. However, after consuming a large amount of alcohol, the patient noticed red urine and hemorrhages the next day.

Laboratory data revealed a sharp decrease in blood coagulation.

Questions:

1. What is the most likely cause of the ADR during warfarin therapy?
2. What are the type, level, and mechanism of the interaction?

Case 2

A 75-year-old patient with essential arterial hypertension was prescribed a nonselective β -blocker by a general practitioner.

The patient had previously been taking verapamil for tachycardia.

When the drugs were combined, asthma-like attacks and marked bradycardia developed.

Questions:

1. Is the described ADR allergic? To which type does it belong?
2. What risk factor for ADR development is present?
3. Determine the degree of certainty of the causal relationship between the drug combination and the ADR.

Case 3

A 35-year-old woman with chronic rheumatic disease (grade II) is hospitalized and receives:

- Delagil 0.25 mg at night
- Indomethacin 0.025 mg 4 times daily
- Bicillin-5 1.5 g IM once every 4 weeks

After 2 weeks, moderate intermittent epigastric pain developed.

Questions:

1. Which additional investigations are most appropriate?
2. Is dose adjustment required with creatinine clearance of 50 mL/min? If yes, how?
3. How should therapy be modified if gastric ulcer is detected?

3.2.4. Controlled Competency PC-4

“Ability and readiness to study mechanisms of action of pharmacological agents in experiments”

3.2.4.1. Test Tasks

1. Tolerance is:

1. increased sensitivity after repeated administration
2. unusual reaction on first administration
3. weakening of drug effect after prolonged use
4. reduction of effect after short-interval administration

2. The most appropriate characteristic of a drug with bioavailability of 1%:

1. low lipophilicity
2. molecular weight >100 kDa
3. high plasma protein binding
4. renal excretion

3. If the total effect is less than the sum of individual effects, this is:

1. competitive antagonism
2. summation
3. potentiation

4. noncompetitive antagonism

4. If an agonist produces a maximal effect, this is:

1. allosteric interaction
2. partial agonism
3. agonist–antagonism
4. full agonism

5. A phenomenon that may occur with narcotic analgesics:

1. synergism
2. dependence
3. cumulation
4. tolerance

3.2.4.2. Individual Assignments for Assessment of Competency PC-4

Provide detailed answers.

1.

A patient was admitted with nystagmus, ataxia, lethargy, reduced reflexes, dyspnea, pupillary constriction alternating with dilation, cyanosis, and hemorrhages at pressure sites.

History reveals intake of barbiturates and alcohol.

Prescribe emergency management measures.

2.

A methylxanthine derivative that increases mental and physical performance, stimulates respiratory and vasomotor centers, regulates vascular tone, increases diuresis, and may cause psychological dependence.

Name the drug.

3.

A phenylalkylamine derivative that releases norepinephrine and dopamine from presynaptic terminals, suppresses appetite, increases blood pressure, and causes dependence.

Name the pharmacological group and drug.

4.

A GABA-related drug that improves cognitive function, increases cerebral blood flow, and has anticonvulsant activity.

Name the pharmacological group and drug.

3.2.6. Controlled Competency PC-5

“Ability and readiness to plan, organize, and conduct scientific research in fundamental medicine using optimal methods and principles of evidence-based medicine”

Case Study for Assessment of Competency PC-4

Case 1

A 45-year-old patient was admitted to the cardiology department with dyspnea on minimal exertion, palpitations, and edema of the feet and lower legs.

History: dilated cardiomyopathy diagnosed 2 years ago.

During the past week, uncontrolled digoxin intake occurred due to clinical deterioration.

Findings:

- Severe condition
- Pallor, normohydration
- Weakened vesicular breathing, basal moist rales
- Muffled heart sounds, systolic murmur, arrhythmia, HR 56/min
- Hepatomegaly (5–6 cm)
- ECG: bradysystolic atrial fibrillation, frequent polymorphic ventricular extrasystoles
- Digoxin level: 4.4 ng/mL
- Potassium: 4.8 mmol/L
- Creatinine: 110 µmol/L

Task:

What is the cause of the rhythm disturbances?

What is the appropriate treatment?

Case Study for Assessment of Competency PC-4: Case 2

A 55-year-old patient was admitted to the Intensive Care Unit with complaints of pressing retrosternal chest pain and general weakness lasting more than 10 hours.

The patient's condition is severe. He is undernourished; body weight — 60 kg.

Skin is pale, marked hyperhidrosis.

Auscultation: weakened vesicular breathing over the lungs.

Heart sounds are muffled, rhythm regular, heart rate about 100 bpm, blood pressure 70/55 mmHg.

ECG: sinus tachycardia, signs of the acute phase of Q-wave myocardial infarction of the anteroseptal region of the left ventricle.

Task

Propose the most rational therapy for **acute heart failure**.

Case Study for Assessment of Competency PC-4: Case 3

A 60-year-old patient was admitted to the cardiology department with complaints of dyspnea at rest and marked weakness.

The patient's condition is of moderate severity.

Skin is pale, hyperhidrosis present.

Heart sounds are muffled, rhythm regular, heart rate about 140 bpm, blood pressure 140/90 mmHg.

ECG: regular narrow QRS tachycardia with a rate of 142 bpm; atrial activity represented by flutter (F) waves.

Quinidine was prescribed according to the regimen:

- 400 mg orally as a single dose,
- followed by 200 mg every 2 hours.

After 10 hours of therapy, the patient's condition sharply deteriorated:

blood pressure 70/50 mmHg, regular rhythm with a rate of about 250 bpm.

ECG: regular narrow QRS tachycardia at 260 bpm; atrial activity difficult to identify.

Task

Establish the diagnosis and indicate possible causes of clinical deterioration.

How could this complication of quinidine therapy have been prevented?

3.2.6.1. Individual Assignments for Assessment of Competency PC-5

1.

A psychosedative drug reduces fear, anxiety, and emotional tension, decreases motor activity, does not eliminate delusions or hallucinations, and has a pronounced anticonvulsant effect.

Identify the drug and indicate its clinical indications.

2.

A patient with psychosis was prescribed a drug that caused dry mouth and a decrease in arterial blood pressure.

Identify the pharmacological group and the drug.

Explain the mechanisms underlying these adverse effects.

3.

A 40-year-old woman consulted a physician for insomnia. From the history: she had been living in a different time zone for several months.

Which hypnotic drug should be prescribed in this situation?

Case Study for Assessment of Competency PC-5: Case 1

A 62-year-old woman was admitted to the ICU with complaints of pressing retrosternal chest pain, nausea, vomiting, and general weakness.

The patient's condition is severe.

Skin is pale, marked hyperhidrosis.

Auscultation: vesicular breathing over the lungs; heart sounds are muffled, rhythm regular, heart rate about 70 bpm, blood pressure 100/70 mmHg.

ECG:

- Complete atrioventricular (AV) block (grade III)
- Sinus tachycardia with HR 105 bpm
- Junctional escape rhythm at 40 bpm
- Signs of acute Q-wave myocardial infarction of the inferior wall of the left ventricle with extension to the right ventricle

Task

Propose the most rational therapy for the rhythm disturbance in this patient.

Indicate drug dosages.

Case Study for Assessment of Competency PC-5: Case 2

In a 78-year-old patient with inferior wall myocardial infarction, the acute phase was complicated by complete AV block with an idioventricular escape rhythm of 32 bpm (thrombolytic therapy was not performed).

The patient complained of dizziness and severe weakness.

Atropine 1 mg subcutaneously 4 times daily was prescribed.

Despite treatment, cardiac rhythm rigidity persisted, and on the second day of myocardial infarction the patient developed an episode of loss of consciousness accompanied by clonic seizures lasting about 50 seconds.

Task

Evaluate the treatment strategy and indicate possible causes of the patient's deterioration.

[Case Study for Assessment of Competency PC-5: Case 3](#)

A 76-year-old patient with type 2 diabetes mellitus and stage II arterial hypertension (very high cardiovascular risk, risk 4) is receiving outpatient monotherapy with propranolol 20 mg/day.

According to the patient's diary, systolic blood pressure during the past month ranged from 135–140 mmHg, with one episode of elevation to 165 mmHg.

Task

Provide your conclusion regarding the antihypertensive treatment strategy.

[Case Study for Assessment of Competency PC-5: Case 4](#)

A 57-year-old man consulted a physician with complaints of ankle edema.

From the history: the patient has been taking amlodipine 10 mg/day as monotherapy for arterial hypertension for 5 months.

Lower limb edema appeared about one month ago.

The patient's condition is satisfactory.

Lung auscultation: vesicular breathing, no rales.

Heart sounds are muffled, accentuated second heart sound over the aorta.

Blood pressure 135/90 mmHg, pulse regular, 90 bpm.

The liver is palpable at the costal margin.

Ankle edema is symmetrical.

The physician prescribed hydrochlorothiazide 25 mg/day to eliminate tibial edema.

Task

Evaluate the physician's treatment strategy.

[Case Study for Assessment of Competency PC-5: Case 5](#)

A 49-year-old man with ischemic heart disease, post-infarction cardiosclerosis, and stable angina (functional class II) has experienced increased blood pressure up to 150/90 mmHg and heart rate 80–90 bpm during the past month.

Task

Indicate the classes of antihypertensive drugs recommended for this patient.