CLINICAL PHARMACOLOGY

Self-study guide
For English medium students

Specialty “General Medicine”

Student’s name ________________________________

________________________________________________________________________

Faculty_________________________ group ____

Kharkov

2017
Clinical pharmacology. Self-study guide for 5 year English medium students (speciality “General Medicine”) / document compilers L.R. Bobronnikova I.I. Kniazkova


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It is approved on the meeting of Academic Council of Kharkov national medical university Protocol #5 from “30” August 2017

This self-study guide is intended for the 5thyear English medium students specializing in General Medicine/ The purpose of the guide is to improve the quality of students’ training in clinical pharmacology. Worksheet prepared in accordance with the program for clinical pharmacology according to the credit-modular system of training.
# TABLE OF CONTENTS

1. **Practical lesson N1**
   Topic 1. Subject and tasks of clinical pharmacology. Fundamental principles of pharmacokinetics and pharmacodynamics.
   Topic 2. Clinico-pharmacological characteristics of antihypertensive and hypertensive medical agents……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………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Practical lesson № 1
Subject and tasks of clinical pharmacology. Fundamental principles of pharmacokinetics and pharmacodynamics. Clinico-pharmacological characteristics of antihypertensive and hypertensive medical agents.

LEVEL 1. Answer briefly in writing form:

1. Give the definition of:

   **Pharmacokinetics** – ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

   1) Absorption - ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

   2) Bioavailability – ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

   3) Distribution - ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

   4) Elimination (excretion) - __________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

2. Basic Pharmacokinetic Parameters (describe):

   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

3. Pharmacodynamics - ________________________________________________________________

   1) Drug-drug interactions - __________________________________________________________
   ________________________________________________________________
2) Adverse Drug Effects

4. Basic Pharmacodynamic Parameters (describe):

4. Evidence based medicine basic parameters (describe):

- Placebo

- Clinical randomize multicenter trial

1) a prospective trial

2) a retrospective (case-control)

3) a double-blind trial

5. Pharmacogenetic

6. Give the definitions to the concepts:

- Antihypertensive drugs

- Optimal blood pressure
Target blood pressure ___________________  
______________________________________________________________________________

Hypotension______________________________________________________________

Orthostatic hypotension - __________________________________________________

7. Classification of antihypertensive drugs

______________________________________________________________________________

8. The ACE inhibitors mechanism of action:

______________________________________________________________________________

9. The Angiotensin II receptors agonists mechanism of action:

______________________________________________________________________________

10. Calcium antagonists of the dihydropyridine group mechanism of action:

______________________________________________________________________________
11. Indications for the use of II-imidazoline receptor agonists (moxonidine, rilmenidine):

12. Indications for the use of renin synthesis inhibitors:

13. Classification of diuretics

14. Indications for the beta-blockers in hypertension

15. Specify the medication that can cause hypotension in a patient

16. Specify groups of drugs used to treat hypotension. Give examples of their names and doses.

Complete the teaching table (1-2)
### Table 1

**Indications for use of the main groups of antihypertensive medications**

<table>
<thead>
<tr>
<th>Indication</th>
<th>ACE Inhibitors</th>
<th>Angiotensin II receptors agonists</th>
<th>Calcium antagonists</th>
<th>β-blockers</th>
<th>Diuretics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arterial hypertension</td>
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<td>Hypertensive crisis</td>
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<td>Ischemic heart disease, angina</td>
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<td>Disturbances of periferal blood circulation</td>
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<tr>
<td>Disturbances of cerebral circulation</td>
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<tr>
<td>Chronic heart failure</td>
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<td>Acute myocardial infarction</td>
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<td>Pulmonary edema</td>
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<tr>
<td>Heart rhythm disturbances, tachycardias</td>
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<tr>
<td>Heart rhythm disturbances, bradyarrhythmias</td>
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</table>

*Indicate the effect availability: +, ++, +++*

### Table 2

**Adverse effects of antihypertensive medications**

<table>
<thead>
<tr>
<th>Adverse effects</th>
<th>ACE Inhibitors</th>
<th>Angiotensin II receptors agonists</th>
<th>Calcium antagonists</th>
<th>β-blockers</th>
<th>Diuretics</th>
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</thead>
<tbody>
<tr>
<td>Hypotension</td>
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<td>Ortostatic collapse</td>
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<td>Tachycardia</td>
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<tr>
<td>Bradycardia</td>
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<td>Bronchospasm</td>
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<td>Dry cough</td>
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<td>Heart failure</td>
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<td>Constipation</td>
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<td>Urinary retention</td>
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<tr>
<td>Swelling of the legs and ankles</td>
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<td>Headache</td>
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<td>Dizziness</td>
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<td>Skin hyperemia</td>
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<tr>
<td>Hypoglycaemia</td>
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<tr>
<td>Angioedema</td>
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</table>
Amount of incorrect answers: _______. Mark for the 1 level: _________.

Level 2. Perform tests for self-control (for each questions, only one correct answer).
1. The main mechanism of most drugs absorption in GI tract is:
   A. Active transport (carrier-mediated diffusion)
   B. Filtration (aqueous diffusion)
   C. Endocytosis and exocytosis
   D. Passive diffusion (lipid diffusion)
2. Which route of drug administration is most likely to lead to the first-pass liver metabolism?
   A. Sublingual
   B. Oral
   C. Intravenous
   D. Intramuscular
3. A 67-year-old female patient suffering from the essential hypertension suddenly at night developed headache, dyspnea that quickly progressed to asphyxia. Objectively: the patient is pale, with sweaty forehead, AP- 210/140 mm Hg, heart rate - 120/min, auscultation revealed solitary dry rales and moist rales in the lower parts. The shins are pastose. What kind of emergency aid would be the most efficient in this case?
   A. Nitroglycerin and furosemide intravenously
   B. Enalapril and furosemide intravenously
   C. Digoxin and nitroglycerin intravenously
   D. Labetalol and furosemide intravenously
   E. Nitroglycerin intravenously and capoten internally
4. A 46-year-old woman who has been suffering from hypertension for 5 years was diagnosed with hypertensive crisis. She complains about palpitation, sense of head pulsation; heart rate is 100/min, AP is 190/100 mm Hg (haemodynamics is of hyperkinetic type). What medication from the listed below should be the medication of choice in this case?
   A. ACE inhibitor
   B. β-adrenoceptor blocker
   C. α-adrenoceptor blocker
   D. Diuretic
   E. Dihydropyridine calcium antagonist
5. For a patient with hypertension to decrease the arterial pressure Bisoprolol was administered. What is its mechanism of action?
   A. Alpha adrenoceptor blockade
   B. Indirect adrenomimetic action
   C. Beta adrenoreceptor blockade
   D. Spasmolitic
   E. ACE receptors blockade
6. What drug may cause constipation in a patient undergoing combined therapy for arterial hypertension?
   A. Verapamil
   B. Furosemide
   C. Trimetazidine
   D. Panangin
   E. Acetylsalicilic acid in low-dosage
7. A 48 years old patient within two days complains on strengthening of a headache in an occipital area and a blurred vision in the right eye. Objectively: BP is 220/130 mm Hg, the HR is 78 beats/min. During a direct ophthalmoscopy right eye retina hemorrhages and edema of the right optic nerve disc were revealed. Other results of physical examination are in normal values. In the blood and urine tests hematuria (2 +) and serum creatinine level - 2.1 mg/dl were detected. What optimal treatment should be prescribed for this patient?
A. Gradual reduction of diastolic pressure to 90-100 mm Hg for 2 days
B. Decrease in diastolic pressure to 90 mm Hg for 2-3 hours;
C. Reduction of systolic pressure to 120 mm Hg, for 2-3 hours;
D. Reduction of systolic pressure to 120 mm Hg, for 6-12 hours
E. Intracranial pressure studies before reducing blood pressure

8. A female patient suffering from bronchial asthma a hypertension was diagnosed. Which of the antihypertensive drugs listed below is contraindicated?
A. Verapamil
B. Hydrochlorothiazide
C. Propranolol
D. Captopril
E. Losartan

9. Risk factors associated with an increased risk of toxicity during the use of captopril include:
A. Bilateral stenosis of the renal artery
B. Congestive heart failure
C. COPD
D. Female sex
E. Bronchial asthma

10. To calculate the volume of distribution (Vd) the following should be considered:
A. Concentration of the substance in plasma
B. Concentration of the substance in the urine
C. Therapeutic width of the drug
D. Daily dose of the drug

---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | A | B | C | D | A | B | C | D | A | B | C | D | A | B | C | D | A | B | C | D |

Amount of incorrect answers: _______. Mark for the level 2: _________.

Level 3. Please solve next clinical situational tasks and write your answers:
Situational task 1. A patient 70 kg weigh, acetaminophen has a Vd = 70 L and CL = 350 mL/min. Calculate approximately the elimination half-life of the drug

Situational task 2. At the 34-year-old man during annual prophylactic medical examination at objective examination the high arterial pressure of 165/105 mm Hg was established. The measurement of blood pressure was repeated after 40 minutes, the result was 162/103 mm Hg. The physician asked the patient to come for a second appointment in a week,
and during the next appointment the following BP figures were determined: 170/102, 168/107, 175/108, 167/102 mm Hg.

**Question: 1.** To establish the diagnosis of hypertension what are the mandatory laboratory and instrumental studies you should conduct? Indicate the complete diagnosis for this patient.

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**Question: 2.** What antihypertensive drugs will be the drugs of choice in this situation? Explain why.

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**Situational task 3.** A 60-year-old patient came to the family physician for consultation about the increased blood pressure. Also, the patient complains of episodes of urinary retention. During an objective examination BP was 160/100 mm Hg and the presence of benign prostatic hyperplasia was also revealed.

**Question 1.** Which medication should be prescribed for this patient?

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**Question 2: What is the mechanism of action of this drug?**

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**Situational task 4.** A 65-year-old patient reported that he has dizziness and general weakness around last 6 months in the presence of upright position. He takes no medications and has no personal or family history of neurological diseases. An objective examination in the supine position his blood pressure is 160/100 mm Hg. and HR -. 72 beats / min. After he got the vertical position, his BP drops to 70/40 mm Hg. but pulse not changed. The results of neurological examination were normal.

**Question 1.** What mandatory laboratory and instrumental diagnostic methods are necessary to conduct for diagnosis in this case?
**Question 2.** Specify medication for the treatment of this patient? Explain your choice.

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Amount of incorrect answers: _______. Mark for the level 3: ________.

**Level 4. Write prescriptions for medicines:**

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<thead>
<tr>
<th>Medication</th>
<th>Prescriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lisinopril</td>
<td>Rp: D.t.d. S.</td>
</tr>
<tr>
<td>3. Irbesartan</td>
<td>Rp: D.t.d. S.</td>
</tr>
<tr>
<td>5. Torasemide</td>
<td>Rp: D.t.d. S.</td>
</tr>
</tbody>
</table>

Amount of incorrect answers: _______. Mark for the level 4: ________.

Overall mark for the class: __________  
Teacher Signature: __________

Student signature: __________
Practical lesson № 2

Topic 3. Clinico-pharmacological characteristics of antianginal and antiischemic medical agents

Topic 4. Clinico-pharmacological characteristics of medical agent affecting lipid metabolism

Level 1. Complete the teaching table (1-3)

### Table 1

<table>
<thead>
<tr>
<th>Group</th>
<th>BP</th>
<th>Systemic vascular resistance</th>
<th>Venous tone</th>
<th>Pulmonary artery pressure</th>
<th>Heart rate</th>
<th>AV, SA- conduction</th>
<th>Stroke volume</th>
<th>Myocardial contractility</th>
<th>Oxygen demand</th>
<th>Blood flow</th>
<th>Motility of the gastrointestinal tract</th>
<th>Bronchial tone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Organic nitrates</td>
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<tr>
<td>Nitroglycerine</td>
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<td>Isosorbidedinitrate</td>
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<tr>
<td>2. β-blockers</td>
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<td>Non-selective β1, β2</td>
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<td>3. Calcium antagonists</td>
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<td>Phenylalkylamines</td>
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<td>Dihydropyridines</td>
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<td>Benzothiazepines</td>
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<tr>
<td>Biphenyl piperazines</td>
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<td>4. Inhibition of the funny channel</td>
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<td>Ivabradine</td>
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</tbody>
</table>

Denote the effect availability: ↓ - decrease, θ - no effect, ↑ - increase

Table 2
## Indications for application of antianginal agents

<table>
<thead>
<tr>
<th>Indication</th>
<th>Nitrates</th>
<th>β-blockers</th>
<th>Calcium antagonists</th>
<th>Ivabradine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angina attacks prophylaxis</td>
<td></td>
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<tr>
<td>Acute attack of angina pectoris</td>
<td></td>
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<tr>
<td>Acute myocardial infarction</td>
<td></td>
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<tr>
<td>Pulmonary edema</td>
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<tr>
<td>Hypertension</td>
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<tr>
<td>Cardiac arrhythmias: tachyarrhythmias</td>
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<tr>
<td>Cardiac arrhythmias: bradyarrhythmias</td>
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<tr>
<td>Cerebrovascular accident</td>
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</tr>
</tbody>
</table>

Indicate the effect availability: +, ++, -

## Adverse effects of antianginal agents

<table>
<thead>
<tr>
<th>Side effect</th>
<th>Nitroglycerine</th>
<th>Propranolol</th>
<th>Bisoprolol</th>
<th>Verapamil</th>
<th>Nitidine</th>
<th>Ivabradine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypotension</td>
<td></td>
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<tr>
<td>Orthostatic collapse</td>
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<tr>
<td>Tachycardia</td>
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<td>Bradycardia</td>
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<td>Bronchospasm</td>
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<td>Heart failure</td>
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<tr>
<td>Constipation, urinary retention</td>
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<td>Swelling of feet and ankles</td>
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<tr>
<td>Headache, dizziness</td>
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<tr>
<td>Flushing of skin</td>
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<tr>
<td>Hypoglycemia</td>
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<td>Metgemoglobinemiya</td>
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<tr>
<td>Withdrawal syndrome</td>
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<tr>
<td>Tolerance</td>
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</table>

Indicate the effect availability: +, ++, -
1. Classification of lipid-lowering drugs

_____________________________________________________________________________
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2. The main effects of statins:

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_____________________________________________________________________________
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3. The main indications for statins prescription:

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4. Side effects of statins:

_____________________________________________________________________________
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5. Fibrates mechanism of action:

_____________________________________________________________________________
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7. Contraindications to the nicotinic acid:

_____________________________________________________________________________
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8. Effects of Omega-3 fatty acids

_____________________________________________________________________________
_____________________________________________________________________________
9. The main effects of ezetimibe

10. The prescription of statins in urgent situations (choice of drug, dose, purpose of administration)

11. Classification of anticoagulants:

12. Pharmacodynamics of heparin

13. Low molecular weight heparins

14. Side effects of heparin

15. Classification of antiplatelet agents
16. Mechanism of action of antiplatelet agents

17. Basic requirements for antithrombotic therapy

18. Indications for the antithrombotics prescription

19. Factors determining the effectiveness of antiplatelet therapy

20. New oral anticoagulants (NOA)

21. Classification of drugs that increase blood coagulability.

The number of wrong answers: ______. Teacher’s evaluation for the level 1 ________.
level 2. Perform tests for self-control (for each questions, only one correct answer)

1. 70 year old male patient with confirmed multi-vessel coronary vascular disease and stable angina of exertion III functional class also suffers from COPD [chronic obstructive pulmonary disease]. He was prescribed nifedipine for prophylaxis of angina attacks, but soon after the start of the drug application the complains of angina attacks increased. Choose an explanation:
   A. Nifedipine should not be used for angina attacks prophylaxis.
   B. Nifedipine - a calcium channel blocker, causes significant vasodilation, hypotension and reflex cardiac stimulation which leads to increased anginal episodes
   C. Nifedipine need to be used in combination with propranolol, since propranolol would block reflex tachycardia due to nifedipine's vasodilatory effects.

2. Calcium and sodium channel blocker useful in treating chronic stable angina not responsive to typical antianginal drugs:
   A. Diltiazem
   B. Bepridil (Vascor)
   C. Nifedipine
   D. Lisinopril

3. Choose from the list, an antianginal drug that can be administrated by inhalation:
   A. Isosorbidedinitrate
   B. Glyceryltrinitrate
   C. Amylnitrite
   D. Isosorbidemononitrate

4. Symptoms associated with organic nitrates:
   A. Bradycardia
   B. Hypotension
   C. Headache
   D. Hypertension
   E. B & C

5. Contraindication to the fibrates is:
   A. Urolithiasis
   B. Nonspecific ulcerative colitis
   C. Rheumatoid arthritis
   D. Myocardial infarction
   E. Cholelithiasis or indication on a cholestones in an anamnesis

6. To the side effects of nicotinic acid it should be included everything except:
   A. Arrhythmias
   B. Nausea, vomiting
   C. Bradycardia
   D. Vertigo
   E. Itching and redness of the skin.

7. In the case of rhabdomyolysis with statin therapy it is noted:
   A. Increased ESR
   B. Increased AST
   C. Increased ALT
   D. Increased CK
   E. Increased LDH

8. Which of the following does not refer to absolute contraindications to thrombolytic therapy?
   A. Age over 70 years
   B. First trimester of pregnancy
   C. Severe diabetic retinopathy
D. Hemorrhagic diathesis
E. Peptic ulcer disease
9. What level of diastolic blood pressure is prohibited to conduct thrombolytic therapy?
   A. 90 mm Hg
   B. 95 mm Hg
   C. 100 mm Hg
   D. 105 mm Hg
   E. 110 mm Hg
10. Which of the following statements regarding enoxaparin is incorrect?
   A. Subcutaneous injection is rapidly absorbed
   B. Do not administer in case of severe renal failure
   C. Can be used when body weight is above 150 kg
   D. Has a high antithrombotic activity against Xa factor
   E. Has a high antiaggregant activity

The number of wrong answers: _______. Teacher's evaluation for the level 2 _______.

Level 3. Please solved next clinical situational tasks and write your answer:

Situation task 1. A 60-year-old man comes into the office complaining of chest pains that primarily occur in the early morning and do not appear to be associated with stress or exercise. Following coronary angiography and positive stress-test with Ergonovine you determine that this patient has angina pectoris as a result of coronary artery spasm.

1. How would you treat the patient to alleviate the acute attacks when they occur?

2. How would you treat chronically to prevent their reoccurrence?

Situation task 2. A 72-year-old woman was taken to the emergency room with attacks of intense heart pain and the presence of a transient myocardial infarction without ST elevation (NSTEMI). In the history such compressive pain in the chest during exercise appeared approximately 1-2 times a day. She underwent coronary angiography and 2 stents were installed in places of critical narrowing of the coronary vessels.
Concomitant drug therapy of the patient includes atorvastatin 20 mg daily, clopidogrel 75 mg daily, aspirin 100 mg daily, carvedilol 6.25 mg twice daily. After objective examination nitroglycerin in an inhaled form for episodic admission in angina attacks was also prescribed. Two weeks after discharge from the hospital, she came for a follow-up examination. When examined complains about episodes of intense headache, heartburn, general weakness

**Question:** 1. *For which of the prescribed drugs are these side effects inherent?*

**Question 2.** *Can be in addition to this therapy prescribed verapamil and why?*

---

**Situational task 3.** Patient M., 45 years old on the background of good well-being, during the shoefelt an acute pain behind the sternum, cold sticky sweat, shortness of breath, cough, a sense of fear of death. In the anamnesis - a varicose disease. Objectively: the condition is severe, the body weight is significantly elevated (body mass - 120 kg, Body Mass Index (BMI) - Kettle index - 34 kg / m²), orthopnea, jugular vein distension. Skin is clean, cold, moist, purple-cyanotic. During lungs auscultation: breathing is weak, multiple moist rales in the lower lobes. RR - 30 per minute. Heart sounds are significantly muted, the S II over the pulmonary artery. The pulse= heart rate = 130 per minute, the galop rhythm. BP - 75/40 mm Hg. The tongue is dry, coated with white coating. The liver does not protrude under the edge of the costal arch. There are multiple varicose nodules on the shins. On the ECG - sinus rhythm with heart rate - 130 / min, deep S wave in I lead, deep Q wave in the III lead.

**Question:**
1. What is your preliminary diagnosis?

2. What can you see on the chest X-ray?

3. Assign anticoagulant therapy.

---

**Situational task 4.**
A healthy 75-year-old woman, who has a moderately active lifestyle, underwent a prophylactic examination, in which the total serum cholesterol content was found to be 5.1 mmol/L and HDL-70 mg/dl cholesterol. On the ECG no pathological changes were detected.

**Question:** What recommendations for the patient are the most correct?
Situational task 5. In a patient with angina pectoris and type 2 diabetes mellitus the level of TG is isolate increased.

Question: Which hypolipidemic therapy will be the most rational in this case and why?

_______________________________________________________________
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The number of wrong answers: _______. Teacher's evaluation for the level 3 ________.

4 level. Write prescriptions for medicines:

<table>
<thead>
<tr>
<th>Medication</th>
<th>Prescriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nitroglycerin (for sublingual use or aerosol)</td>
<td>Rp: D.t.d. S.</td>
</tr>
<tr>
<td>2. Verapamile</td>
<td>Rp: D.t.d. S.</td>
</tr>
<tr>
<td>5. Ivabradine</td>
<td>Rp: D.t.d. S.</td>
</tr>
</tbody>
</table>

The number of wrong answers: _______. Teacher's evaluation for the level 4 ________.

Overall teacher's evaluation for the class: __________

Signature of teacher: __________

Signature of student: __________
LEVEL 1. Answer briefly in writing form:

1. Give the definition of:
   Antibacterial medications

   Minimum inhibitory concentration (MIC)

   The value of minimum inhibitory concentration for assigning antibacterial medications

   Eradication

   Postantibiotic effect

   Basic requirements for the dosage regimen of antibacterial drugs

   Drugs with a dose-dependent effect

   Drugs with time-dependent effect
Please fill the next training table (1-3)

### Table 1

**Classification of antibacterial agents into bactericidal and bacteriostatic**

<table>
<thead>
<tr>
<th>Bactericidal</th>
<th>Bacteriostatic</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
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<td>2.</td>
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<td>3.</td>
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<td>4.</td>
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</tbody>
</table>

### Table 2

**Classification of antibacterial agents according to mechanism of action**

<table>
<thead>
<tr>
<th>Mechanism of action</th>
<th>Antibacterial agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhibition of cell wall synthesis</td>
<td>1.</td>
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<td>2.</td>
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<td>3.</td>
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<td></td>
<td>4.</td>
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<tr>
<td>Inhibition of DNA gyrase</td>
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<tr>
<td>Inhibition of RNA polymerase</td>
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<tr>
<td>Inhibition of protein synthesis</td>
<td>1.</td>
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<td></td>
<td>2.</td>
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<tr>
<td></td>
<td>3.</td>
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<td></td>
<td>4.</td>
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<tr>
<td>Inhibition of folic acid metabolism</td>
<td>1.</td>
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<td></td>
<td>2.</td>
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</tbody>
</table>

### Table 3

**Classes of Antibiotics and their Properties (summary of the types or classes of antibiotics and their properties including their spectrum and mode of action).**

<table>
<thead>
<tr>
<th>Chemical class</th>
<th>Examples</th>
<th>Spectrum (effective against)</th>
<th>Mode of action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example of filling</strong></td>
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<tr>
<td>Beta-lactams (penicillins and cephalosporins)</td>
<td>Penicillin G, Cephalothin</td>
<td>Gram-positive bacteria</td>
<td>Inhibits steps in cell wall (peptidoglycan) synthesis and murein assembly</td>
</tr>
<tr>
<td>Semisynthetic beta-lactams</td>
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<tr>
<td>Clavulanic Acid</td>
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<tr>
<td>Monobactams</td>
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<tr>
<td>Antibiotic Class</td>
<td>Example</td>
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<tr>
<td>Carboxypenems</td>
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<tr>
<td>Aminoglycosides</td>
<td>Streptomycin</td>
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<td></td>
<td>Gentamicin</td>
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<tr>
<td>Glycopeptides</td>
<td>Vancomycin</td>
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<td>Lincomycins</td>
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<td>Macrolides</td>
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<td>Polypeptides</td>
<td>Polymyxin</td>
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<td>Bacitracin</td>
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<tr>
<td>Polyenes</td>
<td>Amphotericin</td>
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<td></td>
<td>Nystatin</td>
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<tr>
<td>Rifamycins</td>
<td>Rifampicin</td>
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<tr>
<td>Tetracyclines</td>
<td>Tetracycline</td>
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<td></td>
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<tr>
<td>Semisynthetic tetracycline</td>
<td>Doxycycline</td>
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</tbody>
</table>
The number of wrong answers: _______. Teacher's evaluation for the level 1 ________.

2 level. Perform tests for self-control (for each questions, only one correct answer)
1. Young man 18 N., 18 years old, treated in the gastroenterology department with a firstly diagnosed duodenal ulcer. His test for Helicobacter pylori - positive. Gastric pH - 1.0. What is the optimum eradication therapy in this case?
   A. Cvamatel + amoksicylin + biseptol
   B. Clarithromycin + omeprazole + amoxicillin
   C. De-Nol + Trichopolom
   D. Omeprazole + oxacillin
   E. De-Nol + cimetidine

2. 10 years old girl is being treated in the cardiology department with a diagnosis of "Rheumatic disease, the active phase of Rheumatic heart disease." What etiotropic medication should be given in the first place?
   A. Ceftriaxone
   B. Ascorbic acid
   C. Videhol
   D. Strepsils
   E. Groprinazin
3. A 4 years old child is for the treatment of acute tonsillitis was administrated an antibacterial drug. After 2 weeks after treatment there was the yellow color of the teeth, which can not be removed with toothpaste. Which antibiotic might have caused this complication?
   A. Azithromycin
   B. Metronidazole
   C. Tetracycline
   D. Ceftriaxone
   E. Amikacin

4. The chemotherapy drug with bactericidal effect on streptococi, staphylococci, Bacillus and Clostridium. What spectrum of action belongs to this medicine?
   A. Antibacterial narrow spectrum
   B. Droad spectrum antifungal
   C. Antiviral
   D. Antibacterial broad-spectrum
   E. Antituberculous

5. Patient N., 32 years old, takes a massive antibiotic therapy and complains of abdominal pain, loose stools (4-6 times a day), general weakness. OBJECTIVE: satisfactory condition, blood pressure 120/70 mm Hg., heart rate 84 beats per minute. Abdominal palpation is soft, painful in the lower abdomen. The liver and spleen were not palpable. What type of drugs should be used in order to normalize intestinal microflora?
   A. Linnex
   B. Creon
   C. Essentiale
   D. Motilium.
   E. Imodium

6. The patient 27 years of age who abuses alcohol, was diagnosed right-sided lobar pneumonia. On chest XR was found infiltrative changes in the lower lobe in segments C6 and C10. Earlier bronchopulmonary diseases were not observed. Which antibiotic is most advisable to be administered in this case?
   A. Gentamicin
   B. Biseptolum
   C. Tetracycline
   D. Amoxycilin
   E. Ceporinum(Cefaloridinum)

7. At 46 years old male detected bilateral pneumonia with multiple cavities. Penicillin treatment was ineffective. It was sown Staphylococcus aureus, from the broncho-pulmonary lavage, which is resistant to methicillin. Which is the optimum antibacterial agent in this situation?
   A. Carbenicillin
   B. Ampicillin
   C. Claforan (cefotaxime)
   D. Tetracycline
   E. Biseptolum

8. A 6-year-old child with pneumonia was prescribed an antibiotic. After the treatment the child became deaf. Which antibiotic group might have caused this complication?
   A. Aminoglycosides
   B. Cephalosporins
   C. Macrolides
   D. Natural penicillin
   E. Semisynthetic penicillin
9. Patient E 27- years with acute tonsillitis in background of antibiotic treatment with aminopenicillin developed allergic reactions. What is the optimum alternative antibiotics to treat the patient in the future to reduce the chance of developing an allergic reaction?
   A. Cephalosporins
   B. Imipenem
   C. Protected aminopenicillin
   D. Semi-synthetic penicillins
   E. Macrolides

10. A 30 y.o. patient who suffers from acute left side pneumonia was prescribed ceftriaxone intravenously. The patient is prone to allergic reactions to painkillers. What kind of solution for dilution of antibiotic should use nurse to conduct tests for susceptibility to ceftriaxone?
   A. 0.9% sodium chloride solution
   B. 10% sodium chloride solution
   C. The water for injection
   D. 0.25% novocaine solution
   E. 1% solution of novocaine

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<th>1.</th>
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</table>

The number of wrong answers: _______. Teacher's evaluation for the level 2 __________.

3 level. Please solved next clinical situational tasks and write your answer:

Situational task 1. While on holiday in Spain, a 62-year-old man develops a cough, fever and breathlessness at rest. He is told that his chest x-ray confirms that he has right side segmental pneumonia. He is started on a seven-day course of oral antibiotics by a local physician and stays in his hotel for the remainder of his ten-day holiday. When he returns home, he is reviewed by his own GP who notices that he looks pale and sallow and is still breathless on exertion, but his chest examination no longer reveals any signs of pneumonia. A full blood count reveals a haemoglobin level of 6.7 g/dL (previously normal), normal white blood count and platelets, and a reticulocyte count of 4.1%.

Question: What other tests should you do and what antibiotics would be most likely to cause this clinical scenario?

___________________________________________________________________________
___________________________________________________________________________

Situational task 2. A 16-year-old student was admitted to an intensive care unit following a severe head injury in a road traffic accident. Four days after admission, he was still in need of mechanical ventilation and had developed a fever and raised leucocyte count. One of the nurses had noticed that the patient had purulent and slightly bloodstained tracheal secretions and had sent them to the diagnostic laboratory. The Gram stain report said: ‘Gram-positive cocci: further identification and sensitivities to follow’. Intravenous flucloxacillin was commenced, and fucidic acid added 2 days later when further results reached the intensive care unit. The patient had a further serious infection with Pseudomonas aeruginosa 2 weeks later but survived and eventually left hospital after almost a year.

Question: 1. What was the first infection?
**Question:** 2. Why was flucloxacillin chosen?

____________________________________________________________________

**Question:** 3. How reliable is tracheal suction as a specimen collection technique?

____________________________________________________________________

**Situational task 3.** A 48-year-old man with fever and a productive cough was admitted after he became increasingly short of breath. He had a temperature of 38.5°C, a pulse of 120 beats/min and a respiratory rate of 22 breaths/min. Chest examination revealed reduced expansion on the right, dullness to percussion, quiet breath sounds and dullness to percussion in the right midzone and green-coloured sputum. Chest X-ray showed a clearly demarcated opacity occupying the right middle lobe. Blood gases on arterial blood collected while the patient was breathing room air confirmed a hypoxia and respiratory acidosis.

**Question:** 1. Does this patient have a lobar pneumonia?

____________________________________________________________________

**Question:** 2. Will bacteriological investigations assist the immediate management of this infection?

____________________________________________________________________

**Question:** 3. Should ceftriaxone be used as a first choice of antibiotic in resistant *Streptococcus pneumoniae* infection?

____________________________________________________________________

**Situational task 4.** A 19-year-old, sexually active woman presents to the emergency room complaining of a 2-day history of urinary frequency, burning, and urgency. She denies vaginal discharge or itching, fever, chills, nausea, vomiting, back pain, abdominal pain, and hematuria. She has no history of UTI or a sexually transmitted disease. She recently began using a diaphragm for birth control, and reports that her last menstrual period occurred 3 weeks ago. She has only one sexual partner, who denies penile discharge or burning on urination. On physical examination, she is noted to be afebrile with a normal blood pressure and pulse. There is no costovertebral angle tenderness. Her abdomen is soft and there is mild suprapubic tenderness in response to palpation. A urinalysis reveals 1+ protein, 2+ leukocytes, and 1+ blood. The urine pH is 5.6. Gram’s staining of an unspun urine specimen reveals abundant polymorphonuclear leukocytes and moderate gram-negative rods. A clean-catch urine specimen is sent to the microbiology laboratory for culture.

**Question:** 1. What other therapeutic options would have been appropriate in this patient?

____________________________________________________________________

**Question:** 2. What other diagnostic or laboratory tests should have been performed?

____________________________________________________________________
Question: 3. What side effects of therapy should this woman know about?

Question: 4. What would be an appropriate analgesic for a patient with UTI who is experiencing severe urethral discomfort?

The number of wrong answers: ____. Teacher's evaluation for the level 3 _____.

4 level. Write out the prescription for these drugs in different forms:

<table>
<thead>
<tr>
<th>Medication</th>
<th>Prescriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2. Co-amoxiclav</strong></td>
<td>Rp: D.t.d. S.</td>
</tr>
<tr>
<td><em>(amoxicillin/clavulanic acid)</em></td>
<td></td>
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<tr>
<td><strong>3. Ceftriaxone</strong></td>
<td>Rp: D.t.d. S.</td>
</tr>
<tr>
<td><strong>4. Azithromycin</strong></td>
<td>Rp: D.t.d. S.</td>
</tr>
<tr>
<td><strong>5. Ketoconazole</strong></td>
<td>Rp: D.t.d. S.</td>
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</table>

The number of wrong answers: ____. Teacher's evaluation for the level 4 _____.

Overall teacher's evaluation for the class: __________ Signature of teacher: __________

Signature of student: __________

Practical lesson № 4.
Clinico-pharmacological characteristics of medicines that affect the bronchial patency.
Anti-inflammatory medical agents (steroidal and nonsteroidal).

1 LEVEL. Answer briefly in writing form:

1. Give the definition of:
### Nonsteroid anti-inflammatory drugs

- [ ]

### Beta 2 selective drugs

- [ ]

### Corticosteroids

- [ ]

### Leukotriene pathway inhibitors

- [ ]

## 2. Classification of COX-2 inhibitors:

- [ ]

## 3. Mechanism of bronchodilators action:

1. [ ]
2. [ ]
3. [ ]
4. [ ]
5. [ ]
6. [ ]
7. [ ]
8. [ ]

## 4. Mechanism of aerosol corticosteroids action:

1. [ ]
2. [ ]
3. [ ]
4. Indications to the use of Beta2 - agonists:
1. 
2. 
3. 
4. 
5. 

5. Indications for the use of antimuscarinic drugs:
1. 
2. 
3. 
4. 
5. 

6. Contraindications to the use of methylxanthines:
1. 
2. 
3. 
4. 
5. 

7. COX -1, COX-2 inhibitors classification:

8. Indications for COX-1, COX-2 inhibitors treatment:
1. 
2. 
3. 
4. 
5. 

9. Adverse effects of glucocorticoids
1) gastrointestinal effects:
2) renal effects:______________________________________________________________
___________________________________________________________________________
3)_________________________________________________________________________
4) central symptoms:_______________________________________________________________
_________________________________________________________________________
5) allergic reactions:_______________________________________________________________
10. Contraindications for glucocorticoid treatment:
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
11. Mechanisms of glucocorticoid action:
a) Impact on the immune system:
____________________________________________________________________________
____________________________________________________________________________
b) Effect on water and electrolyte metabolism:
____________________________________________________________________________
c) Effects on metabolism:
____________________________________________________________________________
d) Impact on CVS Impact on the system of the hypothalamus-pituitary-adrenal Effects on blood:
____________________________________________________________________________
12. Indications for NSAIDS:
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________
4. ___________________________________________________________________
5. ___________________________________________________________________
6. ___________________________________________________________________
7. ___________________________________________________________________
13. Contraindication for NSAIDS:
1. Tick the drug belonging to non-selective beta2-adrenomimics:
   A. Salbutamol
   B. Isoprenaline
   C. Salmeterol
   D. Terbutaline
   E. All of above

2. Select the side-effect characteristic for non-selective beta2-adrenomimics:
   A. Depression of the breathing centre
   B. Tachycardia
   C. Peripheral vasoconstriction
   D. Dry mouth
   E. All of above

3. Pick out the bronchodilator drug related to xanthine:
   A. Atropine
   B. Orciprenaline
   C. Adrenaline
   D. Theophylline
   E. All of above

4. Which of the following is the drug of choice for bronchial asthma attacks prevention?
   A. Salbutamol
   B. Cromolyn sodium
   C. Drotaverine
   D. Ambroxol
   E. Diphenhydramine hydrochloride

5. What complications can occur when assigning ASA patient with deficiency of glucose-6-phosphodiesterase?
   A. Anaphylaxis
   B. Lyell syndrome
   C. Trombocytopenic purple
   D. Intravascular hemolysis
   E. Asthma

6. Pick out the bronchodilator drug belonging to sympathomimetics:
   A. Isoprenaline
   B. Ephedrine
   C. Atropine
   D. Salbutamol
   E. All of above

7. The mechanism of methylxanthines action is:
   A. Inhibition of the enzyme phosphodiesterase

Amount of incorrect answers: _______. Mark for the 1 level: ________.
B. Beta2 -adrenoreceptor stimulation  
C. Inhibition of the production of inflammatory cytokines  
D. Inhibition of M-cholinoreceptors  
E. All of above  
8. Which of the following M-cholinoblocking agents is used especially as an anti-asthmatic?  
A. Atropine  
B. Ipratropium  
C. Platiphylline  
D. Metacin  
E. All of above  
9. Indicate the side effect of Theophylline:  
A. Bradycardia  
B. Increased myocardial demands for oxygen  
C. Depression of respiratory centre  
D. Elevation of the arterial blood pressure  
E. All of above  
10. Which of the following agents is a nonselective beta receptor agonist?  
A. Norepinephrine  
B. Terbutaline  
C. Isoproterenol  
D. Dobutamine  
E. All of above  

Amount of incorrect answers: _______. Mark for the 2 level: ________.

3 level. Please solved next clinical situational tasks and write your answer:  

**Situational task 1.** A 53-year-old woman who has been treated for rheumatoid arthritis for a long time complains about arterial pressure rise, gastric pain, heartburn.  
**Question:** What preparation has she taken?  
__________________________________________________________________________  
__________________________________________________________________________  
**Question:** What other side effects this drug can occur?  
__________________________________________________________________________  
__________________________________________________________________________  
__________________________________________________________________________  

**Situational task 2.** 3- days newborn, admitted to neonatal center with a diagnosis of pulmonary hypertension, premature closure of the arterial duct.  
**Question:** What COX inhibitor-drug was used during pregnancy could cause this complications?  
__________________________________________________________________________  

**Situational task 3.** A patient has an angina pectoris, he didn’t inform his doctor that he had attacks of COPD. Doctor administered him a medication, which taking resulted in less frequent attacks of angina, but attacks of cough became more frequent.
angina Question: Medication from which group was prescribed to the patients?

Question: What adverse effects of this group you know?

Situational task 4. A pregnant woman (III trimester) who became ill with influenza for 3 days, in order to reduce the temperature took aspirin 0.5 twice a day.
Question: Which drugs from Nsaids group could we use in pregnant woman?

Situational task 5. A 75 year old patient had in the dentists room a sudden dyspnea, weakness. The doctor gave him nitroglycerin, without any effect, then inhaled salbutamol.
Question: What is the mechanism of action of this drug?

Question: How many times per day could you prescribe this drug. Side effects.

Amount of incorrect aswers: _____. Mark for the 3 level: ______.

4 level. Write out the prescription for these drugs in different forms:

<table>
<thead>
<tr>
<th>Medication</th>
<th>Prescriptions</th>
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<tbody>
<tr>
<td>1. Salbutamol</td>
<td>Rp.: D.t.d. S.</td>
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<tr>
<td>2. Tiotropium bromide</td>
<td>Rp.: D.t.d. S.</td>
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<tr>
<td>3. Ibuprofen</td>
<td>Rp.: D.t.d. S.</td>
</tr>
<tr>
<td>4. Paracetamol</td>
<td>Rp.: D.t.d. S.</td>
</tr>
</tbody>
</table>
Practical lesson №5.
«Clinical pharmacological characteristics of the medical agents, which are used for the treatment of gastrointestinal tract and hepatobiliary system diseases»

**Level 1. Complete the teaching table (1-6)**

<table>
<thead>
<tr>
<th>5. Budesonide</th>
<th>Rp.:</th>
<th>D.t.d.</th>
<th>S.</th>
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The number of wrong answers: ____. Teacher's evaluation for the level 4 ____.

Overall teacher's evaluation for the class: __________

Signature of teacher: __________

Signature of student: __________
The pharmacological properties of the medical agents, which are used in gastrointestinal tract disorders

<table>
<thead>
<tr>
<th>Group</th>
<th>Inhibition of acid secretion in stomach</th>
<th>Neutralization of acid in stomach</th>
<th>Anti- H. pylori properties</th>
<th>Binds selectively to ulcers</th>
<th>Stimulation of mucus and bicarbonate secretion</th>
<th>Enhancement of mucosal blood flow</th>
<th>Stimulation of GIT motility</th>
<th>Prevention of vomiting</th>
<th>Relax the smooth muscles of GIT</th>
<th>Pain syndrome relief</th>
<th>Relief of constipation</th>
<th>Antidiarrheal action</th>
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Table 2

The pharmacological properties of the medical agents that influence the function of liver and pancreas
### Table 3

**Indications for application of the medical agents, which are used in gastrointestinal tract disorders**

<table>
<thead>
<tr>
<th>Group</th>
<th>Inhibition of viral replication</th>
<th>Inhibition of cell proliferation</th>
<th>Immunomodulation</th>
<th>Hepatocyte membrane stabilization</th>
<th>Stimulation of liver regeneration</th>
<th>Antioxidant action</th>
<th>Antifibrotic action</th>
<th>Bile-expelling action</th>
<th>Antidepressant action</th>
<th>Neuroprotective properties</th>
<th>Dissolution of cholesterol gallstones</th>
<th>Breakdown of proteins, fats, and carbohydrates</th>
<th>Promotion of nutrient absorption in GIT</th>
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<table>
<thead>
<tr>
<th>Indication</th>
<th>PPIs</th>
<th>Mucosal protective agents</th>
<th>Antacids</th>
<th>Prokinetics</th>
<th>Spasmolytics</th>
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<tr>
<td>Peptic ulcer disease</td>
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<td>H.pylori-associated ulcers</td>
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<td>NSAID-associated ulcers</td>
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<tr>
<td>Prevention of rebleeding from peptic ulcers</td>
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<tr>
<td>Nonulcer dyspepsia</td>
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<tr>
<td>Prevention of stress-related mucosal bleeding</td>
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<tr>
<td>Gastrinoma and other hypersecretory conditions</td>
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<tr>
<td>Impaired gastric emptying</td>
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<tr>
<td>Hyperperistalsis of GIT</td>
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<tr>
<td>Acute diarrhea (mild to moderate)</td>
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<tr>
<td>Chronic diarrhea (eg, in case of IBD or IBS)</td>
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<tr>
<td>Pain associated with spasms of smooth muscles</td>
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<tr>
<td>Constipation</td>
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</tbody>
</table>

Table 4

Indications for application of the medical agents that influence the function of liver and pancreas

Indicate the effect availability: +, ++, +++,
<table>
<thead>
<tr>
<th>Indication</th>
<th>α-interferons</th>
<th>Peginterferon</th>
<th>Lamivudin</th>
<th>Ribavirin</th>
<th>Silymarin</th>
<th>Essential phospholipids</th>
<th>S-adenosylmethionin</th>
<th>UDCA</th>
<th>Pancreatic enzymes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B</td>
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<td>Hepatitis C</td>
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<tr>
<td>Hairy cell leukemia</td>
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<tr>
<td>Multiple myeloma</td>
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<tr>
<td>Kaposi’s sarcoma</td>
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<tr>
<td>Melanoma</td>
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<td>Chronic myeloid leukemia</td>
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<td>HIV infection</td>
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<tr>
<td>Toxic liver injury</td>
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<tr>
<td>Non-alcoholic fatty liver disease</td>
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<tr>
<td>Liver cirrhosis</td>
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<tr>
<td>Cholangitis</td>
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<tr>
<td>Encephalopathy associated with liver failure</td>
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<tr>
<td>Depression</td>
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<tr>
<td>Non-calculous chronic cholecystitis</td>
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<tr>
<td>Gallstone disease (cholesterol stones)</td>
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<tr>
<td>Primary biliary cirrhosis</td>
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<tr>
<td>Gastritis with bile reflux</td>
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<tr>
<td>Insufficient exocrine function of the pancreas</td>
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</tbody>
</table>

Indicate the effect availability: +, ++, +++,
<table>
<thead>
<tr>
<th>receptor antagonists</th>
<th>protective agents</th>
<th>cs</th>
<th>ytics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cimetidine</td>
<td>Calcium carbonate</td>
<td>Al + Mg</td>
<td>Sucralfate</td>
</tr>
<tr>
<td>Other H2-receptor antagonists</td>
<td>Prostaglandin analogs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium bicarbonate</td>
<td>Hydride</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcium carbonate</td>
<td>Al + Mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sucralfate</td>
<td>Prostaglandin analogs</td>
<td></td>
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<tr>
<td>Colloidal bismuth compounds</td>
<td>Metoclopramide</td>
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</tr>
<tr>
<td>Domperidone</td>
<td>Neurotropic</td>
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<tr>
<td>Neutropic</td>
<td>Myotropic</td>
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</tr>
</tbody>
</table>

Diarrhea
Constipation
Risk of enteric infections
Headache
Abdominal pain
Bradycardia and hypotension
Tachycardia
Metabolic alkalosis
Black stool
Extrapyramidal effects
Mental status changes
Gynecomastia in men/Galactorrhea in women
Dry mouth
Blurred vision
Belching

**Table 6**

Adverse effects of the medical agents that influence the function of liver and pancreas

<table>
<thead>
<tr>
<th>Side effect</th>
<th>☑</th>
<th>☑</th>
<th>Nucleoside</th>
<th>Hepatoprotectors</th>
<th>☑</th>
<th>☑</th>
<th>☑</th>
<th>☑</th>
</tr>
</thead>
</table>

Indicate the effect availability: +, -
<table>
<thead>
<tr>
<th>Systemic &quot;flu-like&quot; symptoms</th>
<th>Analogues</th>
<th>Systemic &quot;flu-like&quot; symptoms</th>
<th>Analogues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bone marrow suppression</td>
<td>Lamivudin</td>
<td>Bone marrow suppression</td>
<td>Lamivudin</td>
</tr>
<tr>
<td>Neuropathy</td>
<td>Ribavirin</td>
<td>Neuropathy</td>
<td>Ribavirin</td>
</tr>
<tr>
<td>Autoimmune disorders</td>
<td>Silymarin</td>
<td>Autoimmune disorders</td>
<td>Silymarin</td>
</tr>
<tr>
<td>Nausea, vomiting, diarrhea</td>
<td>Essential phospholipids</td>
<td>Nausea, vomiting, diarrhea</td>
<td>Essential phospholipids</td>
</tr>
<tr>
<td>Injection site reactions, partial alopecia</td>
<td>S-adenosylmethionin</td>
<td>Injection site reactions, partial alopecia</td>
<td>S-adenosylmethionin</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td></td>
<td>Pancreatitis</td>
<td></td>
</tr>
<tr>
<td>Lactic acidosis</td>
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<td>Lactic acidosis</td>
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<tr>
<td>Emotional lability</td>
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<td>Emotional lability</td>
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<tr>
<td>Hemolysis</td>
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<td>Hemolysis</td>
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<tr>
<td>Teratogenic effect</td>
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<td>Teratogenic effect</td>
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<tr>
<td>Skin rash</td>
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<td>Skin rash</td>
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<tr>
<td>Abdominal pain</td>
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<td>Abdominal pain</td>
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</tr>
</tbody>
</table>

Indicate the effect availability: +, -

The number of wrong answers: _______. Teacher's evaluation for the level 1 __________.

2 level. Tests and assignments for self-assessment, basic level of knowledge: one choice questions (choose one correct answer/statement for each question):
1. Female 44 years old patient is worried about periodic pain in the epigastric region, which appears 1.5 hours after eating and at night. Objectively: heart rate is 70/min., BP 125/75 mm Hg., tenderness in the epigastric region. During Esophagogastroduodenoscopy duodenal ulcer up to 0.6 cm in diameter was found. The test for H. Pylori is positive. Which of the listed above antisecretory drugs will be an obligatory component of the patient's treatment regimen?
   A. Omeprazole
   B. Famotidine
   C. Pyrenzepine
   D. Atropine
   E. Maalox (aluminium oxide hydrated +magnesium hydroxide)
2. Adverse effects of ribavirin:
   A. Liversteatosis
   B. Pancreatitis
   C. Hemolytic anemia
D. Bleeding  
E. Peptic ulcer of the stomach and duodenum

3. A 7 years old child complains of the paroxysmal pain in the abdomen that occurs after a mental stress, the use of cold drinks, ice cream. After clinical and instrumental examination a diagnosis of was made: dyskinesia of the gallbladder, the hypertonic type. Which group should be prescribed primarily for the treatment?
A. Spasmolytics and choleretics  
B. Choleretics and cholekinetics  
C. Sedatives and cholekinetics  
D. Antioxidants  
E. Antibiotics

4. Which antacid may cause the following side effects: gastric distention, belching, metabolic alkalosis and liquid retention?
A. Sodium bicarbonate  
B. Magnesium hydroxide  
C. Aluminium hydroxide  
D. Aluminum-magnesium antacids  
E. Antacids with alginic acid

5. Steatorrhea, caused by insufficiency of exocrine pancreatic function can be successfully treated with
A. Misoprostol  
B. UDCA  
C. Lipase  
D. Secretin

6. Which drugs are the most effective ones for the prevention of NSAID-induced ulcers?
A. Antacids  
B. H2-receptor antagonists  
C. Prostaglandin analogs  
D. Proton pump inhibitors  
E. M-cholinolytics

7. The drug, which forms the viscous paste selectively adhering to ulcers in the stomach:
A. Maalox  
B. Sucralfate  
C. Famotidine  
D. Gastrozepin

8. Indications for the interferon-alpha are all the following, except:
A. Hepatitis B and C  
B. Kaposi's Sarcoma  
C. Primary biliary cirrhosis  
D. Chronic myeloid leukemia  
E. Hairy cell leukemia

9. The safest laxative for long term use is:
A. Magnesium citrate  
B. Lactulose  
C. Polyethylene glycol  
D. Phenolphthalein

10. The main groups of antidiarrheal drugs are the following, except one:
A. Opioid agonists  
B. Serotonin 5-HT4- agonists  
C. Colloidal bismuth compounds  
D. Caolin and pectin  
E. Bile salt binding resins
The number of wrong answers: _______. Teacher's evaluation for the 2 level ________.

3 level. Perform tests for self-control (for each questions, only one correct answer)

Situational task 1. A patient suffering from gastroesophageal reflux has taken a certain drug that "reduces acidity" from time to time over the past 5 years. This drug was recommended by a pharmacist. The following side effects are observed: osteoporosis, muscleasthenia, indisposition.

Question: What drug has such side effects?

________________________________________________________________________

________________________________________________________________________

Situational task 2. The 65 years old patient with long term anamnesis of diabetes mellitus type 2 was diagnosed with gastroparesis. The appropriate treatment was prescribed to eliminate the signs of gastroparesis. After several days of treatment he developed such symptoms as restlessness, drowsiness, insomnia, anxiety, and agitation. Lab data of glucose metabolism demonstrate no acute deviations.

Question: What drug could be the potential reason for such side effects?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Situational task 3. A 14-year-old boy periodically complains of pain in the epigastrium on an empty stomach, nausea and heartburn during 3 years. Gastroduodenoscopy: signs of gastroduodenitis and ulcer defect of the mucous membrane of the duodenum.

Question: What is the most effective medication to treat this child?

________________________________________________________________________

What is the mechanism of action of this drug?

________________________________________________________________________

________________________________________________________________________

Situational task 4. A 45 years old men, a liquidator of a breakdown at a nuclear power plant, who was irradiated complained about vomiting that occurs all of a sudden.

Question: What medication should be prescribed?

________________________________________________________________________

What is the mechanism of action of this drug?

________________________________________________________________________

________________________________________________________________________

Situational task 5. A 50-year-old man reports a 10-year history of chronic active hepatitis caused by hepatitis C virus. He was brought to the emergency room because of cachexia and disturbed mental status. Physical examination reveals palmar erythema, clubbing, jaundice, massive ascites. Patient has asterixis. Laboratory data reveals severe hypoalbuminemia and hyperbilirubinemia.
**Question:** What preparation should be used for the treatment?

_______________________________________________________________

**Question:** What is the mechanism of action of this drug?

_______________________________________________________________

The number of wrong answers: _______. Teacher's evaluation for the level 3 ________.

**4 level. Prescribe the recipes:**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Prescriptions</th>
</tr>
</thead>
</table>

Amount of incorrect answers: _______. Mark for the 4 level: ________.

Overall mark for the class: ________

Teacher Signature: ________

Student signature: ________

**APPROXIMATE LIST OF QUESTIONS TO FINAL CONTROL**

1. Classification of lipid-lowering drugs.
2. Mechanism of action, pharmacokinetics and pharmacodynamics, indications and contraindications for statins.
3. Mechanism of action, pharmacokinetics and pharmacodynamics, indications and contraindications for fibrates administration.
6. Group of medicines related to the anti-ischemic and antianginal drugs.
7. Mechanism of action, pharmacological effects, indications and contraindications to organic nitrates administration.
8. Mechanism of action, pharmacokinetics and pharmacodynamics, indications and contraindications to beta - blockers.
9. Mechanism of action, pharmacokinetics and pharmacodynamics, indications and contraindications to calcium channel blockers.
15. Classification of antihypertensive drugs.
16. Differentiated approach to antihypertensive therapy with concomitant diseases (diabetes, asthma, pregnancy, old age, pheochromocytoma, etc.).
17. The mechanism of antihypertensive action, pharmacological effects, side effects when prescribing calcium antagonists dosage.
18. The mechanism of antihypertensive action, pharmacological effects, side effects when prescribing beta -blockers. Dosage.
19. The mechanism of antihypertensive actions, pharmacological effects, indications and contraindications, side effects when prescribing angiotensin-converting enzyme inhibitor. Dosage.
20. The mechanism of antihypertensive action, pharmacological effects, indications and contraindications, side effects when prescribing angiotensin II receptor antagonists. Dosage.
22. Classification of antiarrhythmic medicines.
23. Differentiated approach to the administration of antiarrhythmic medications.
25. Cardiac effects of cardiac glycosides (digoxin).
26. Indications for cardiac glycosides.
27. Clinical and ECG signs of cardiac glycosides intoxication.
29. Classification of diuretics.
30. Mechanism of action, pharmacokinetics and pharmacodynamics, indications and contraindications for loop diuretics.
31. Mechanism of action, pharmacokinetics and pharmacodynamics, indications and contraindications for the purpose of thiazide and to thiazides similar agents. Dosage.
32. The mechanism of action and pharmacological effects of potassium sparing diuretics. Indications and contraindications for use. Dosage.
33. A differentiated approach to the choice of diuretic agents, depending on the presence of comorbidities (effects on lipid and carbohydrate metabolism).
34. Classification of medical agents affecting the bronchial patency.
35. Mechanism of action, pharmacokinetics and pharmacodynamics, indications and contraindications for β2 agonists administration, short-acting β2 agonists. Dosage.
37. Methylxanthines, mechanism of action, pharmacological effects, side effects. Dosage.
39. Systemic adverse events occurring with prolonged use of glucocorticoids.
40. Withdrawal effects of glucocorticosteroids.
42. Drugs interaction.
43. Types of side effects.
44. Classification of NSAIDs.
45. Mechanisms of action, pharmacological properties of NSAIDs.
46. Indications and contraindications. Side effects of NSAIDs.
47. Regime of NSAIDs dosing.
48. The most frequent mistakes in antimicrobial drugs prescribing.
49. Allergic reactions to administration of antibacterial agents. Clinical implications.
56. Medications that stimulate motility of the gastrointestinal tract. Classification.
57. Mechanism of action, pharmacokinetics and pharmacodynamics, indications and contraindications for the dopamine receptors selective blockers. Dosage.
58. Clinical and pharmacological characteristics of drugs which inhibit the digestive tract motility - loperamide. Dosage.
59. Medical agents with spasmylytic activity, mechanisms of action, pharmacological properties, indications, contraindications, dosage.
60. Medical agents with anti-secretory activity.
61. Classification, mechanism of action, pharmacokinetics and pharmacodynamics, indications and contraindications for the purpose of proton pump inhibitors. Dosage.
64. Cytoprotectors. Pharmacological features. Dosage.
67. Complications of drug therapy.

Notes
LIST OF ALL MEDICATIONS WHICH STUDENTS OF MEDICAL AND DENTISTRY FACULTIES MUST KNOW

ANTIBACTERIAL AGENTS
1. Benzylpenicillin -sodium
2. Oxacillin – sodium
3. Ampicillin – sodium
4. Carbenicillin
5. Clarithromycin
6. Gentamycin sulfate
7. Tetracycline hydrochloride
8. Doxycycline hydrochloride
9. Erythromycin
10. Azithromycin
11. Amoxicillin
12. Clavulanicacid
13. Rovamicin
14. Diflucan / Fluconazole
15. Levofloxacinc
16. Gatifloxacin
17. Moxifloxacin

ANTIVIRAL AGENTS
1. Interferon-alpha
2. Interferon-alpha (pegylated)
3. Ribavirin
4. Lamivudine
5. Rimantadine

ANTIPARASITIC AGENTS
1. Quinine sulfate
2. Primaquine
3. Albendazole
4. Vermox (Mebendazole)
5. Pyrantel

NONSTEROID ANTI-INFLAMMATORY AGENTS
- Acetylsalicylicacid
- Indometacin
- Diclofenac sodium
- Ibuprofen
- Nimesulid
- Meloxicam
- Celecoxb

GLUCOCORTICOIDS
- Cortisone Acetate
- Prednisolone
- Triamcinolone
- Dexamethasone
- Budesonide
- Methylprednisolone

IMMUNOMODULATORS AND ANTIRHEUMATIC DRUGS
1. Plaquenil
2. Levamisole
3. Azathioprine (Imuran)
4. Chlorbutin
5. D-penicillamine

CARDIAC GLYCOSIDE
1. Digoxin  
2. Digitoxin  
   **PERIPHERAL VASODILATOR**  
1. Nitroglycerine  
2. Molsidomine  
3. Nitroprusside Sodium  
   **ANGIOTENSIN-CONVERTING ENZYME (ACE) INHIBITORS AND ANGIOTENSIN II RECEPTOR ANTAGONISTS**  
2. Captopril  
3. Enalapril maleate  
4. Lisinopril  
5. Perindopril  
6. Ramipril  
7. Quinapril  
8. Losartan  
9. Irbesartan  
10. Olmesartan  
11. Telmisartan  
12. Valsartan  
   **CALCIUM CHANNEL-BLOCKING AGENT**  
2. Verapamil  
3. Diltiazem  
4. Nifedipine  
5. Amlodipine  
6. Nimodipine  
7. Lercanidipine  
   **HYPOLIPIDEMIC AGENTS**  
3. Simvastatin  
4. Atorvastatin  
5. Rosuvastatin  
6. Lovastatin  
7. Fenofibrate  
   **MEDICINES WHICH TAKE ACTION ON ADRENERGIC SYSTEM**  
1. Phentolamine  
2. Pyroxan  
3. Moxonidine  
4. Methyldopa  
5. Dopamine  
6. Dobutamine  
7. Prazosine  
   **DIURETICS**  
1. Hydrochlorothiazide  
2. Indapamide
3. Clopamide  
4. Furosemide  
5. Torasemide  
6. Ethacrynic acid  
7. Eplerenon (inspra)  
8. Diacarb  
9. Spironolactone  
10. Mannitol  

ANTIARRHYTHMIC DRUG  
1. Amiodarone  
2. Dronedarone  
3. Propafenone  
4. Novocainamide  

MEDICAL AGENTS FOR THE TREATMENT OF AIRWAY CONDUCTANCE ABNORMALITIES  
4. Orciprenalin (alupent)  
5. Fenoterol  
6. Izadrinehydrochloride  
7. Tiotropium bromide  
8. Efedrinhydrochlorid  
9. ComoglycateSodium  
10. NedocromilSodium  
11. Ketotifen  

MEDICAL AGENTS FOR THE TREATMENT OF DIGESTIVE SYSTEM DISEASES  
4. Almagele  
5. Bismuthsubcitrats  
6. Famotidine  
7. Allachole  
8. Flamine  
9. Cholosasum  
10. Chophytote  
11. Ursodeoxycholic acid  
12. Festale  
13. Pancreatine  
14. Digestal  
15. Plantaglucide  
16. Ademethionin  
17. Sodiumpicosulfate  
18. Loperamide  
19. Omeprazole  
20. Lansoprazole  
21. Rabeprazole  
22. Pantoprazole  
23. Esomeprazole  
24. Legalon  
25. Silibor  
26. Bifidum-bacterin  
27. Linex  
28. Mebeverine  
29. Metoclopramide  
30. Domperidone  
31. Prifinium bromide  
32. Ondasetron  

TISSUE METABOLISM ACTIVATORS
<table>
<thead>
<tr>
<th></th>
<th>Drug Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Solcoseryl</td>
</tr>
<tr>
<td>4</td>
<td>Aktovegin</td>
</tr>
<tr>
<td>5</td>
<td>Pentoxifylline</td>
</tr>
<tr>
<td>6</td>
<td>Thiotriazoline</td>
</tr>
</tbody>
</table>

**ANTICOAGULANT, ANTITHROMBOTIC, AND THROMBOLYTIC AGENTS**

<table>
<thead>
<tr>
<th></th>
<th>Drug Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Ethamsylate</td>
</tr>
<tr>
<td>4</td>
<td>Vikasol</td>
</tr>
<tr>
<td>5</td>
<td>Aminocapronic acid</td>
</tr>
<tr>
<td>6</td>
<td>Ticlopidine</td>
</tr>
<tr>
<td>7</td>
<td>Streptokinase</td>
</tr>
<tr>
<td>8</td>
<td>Alteplase</td>
</tr>
<tr>
<td>9</td>
<td>Heparin</td>
</tr>
<tr>
<td>10</td>
<td>Nadroparin</td>
</tr>
<tr>
<td>11</td>
<td>Enoxaparin</td>
</tr>
<tr>
<td>12</td>
<td>Fraxiparine</td>
</tr>
<tr>
<td>13</td>
<td>Fondaparin</td>
</tr>
</tbody>
</table>

**MEDICINES WHICH USED FOR THE TREATMENT FOR HEMOBLASTOSIS AND ANOTHER MALIGNANT TUMORS**

<table>
<thead>
<tr>
<th></th>
<th>Drug Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Methotrexate</td>
</tr>
<tr>
<td>2</td>
<td>Cyclophosphane</td>
</tr>
<tr>
<td>3</td>
<td>Mercaptopurine</td>
</tr>
<tr>
<td>4</td>
<td>Fluorouracil</td>
</tr>
<tr>
<td>5</td>
<td>Phosphazine</td>
</tr>
<tr>
<td>6</td>
<td>Procarbazine hydrochloride</td>
</tr>
<tr>
<td>7</td>
<td>Myelosan</td>
</tr>
<tr>
<td>8</td>
<td>Rubomycin hydrochloride</td>
</tr>
</tbody>
</table>

**MEDICATIONS FOR THE TREATMENT FOR PROFESSIONAL POISONING**

<table>
<thead>
<tr>
<th></th>
<th>Drug Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alloxim</td>
</tr>
<tr>
<td>2</td>
<td>Dipiroxim</td>
</tr>
<tr>
<td>3</td>
<td>Isonitrozone</td>
</tr>
<tr>
<td>4</td>
<td>Cuprenyl</td>
</tr>
<tr>
<td>5</td>
<td>Sodium thiosulfate</td>
</tr>
<tr>
<td>6</td>
<td>Pentacin</td>
</tr>
</tbody>
</table>
READING LIST FOR LEARNING:

5. База данных тестового контроля МОЗ Украины – Київ, 2011
### 1. GENERAL INFORMATION

<table>
<thead>
<tr>
<th>1. Patient’s initials</th>
<th>2. Number of history case/source documentation</th>
<th>3. Date of birth</th>
<th>4. Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>day</td>
<td>month</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Consequence of AR/LO</th>
</tr>
</thead>
<tbody>
<tr>
<td>recovery</td>
</tr>
<tr>
<td>recovery with sequelae</td>
</tr>
<tr>
<td>recovers</td>
</tr>
<tr>
<td>death not from AR</td>
</tr>
<tr>
<td>without changes</td>
</tr>
<tr>
<td>death probably from AR</td>
</tr>
<tr>
<td>unknown</td>
</tr>
<tr>
<td>death from AR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6. Onset of AR/LO (date, time)</th>
<th>7. End of AR (date, time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ / / / / / / / / / / / / / / / / /</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. Description of the AR/Specification of the LO of the MA</th>
</tr>
</thead>
<tbody>
<tr>
<td>(including laboratory and instrumental research data, which relate to AR)</td>
</tr>
</tbody>
</table>

#### II. INFORMATION ABOUT SUSPICIOUS medical agent (SMA), MANUFACTURER of SMA (for vaccines additionally see the reverse side of the map)

<table>
<thead>
<tr>
<th>10. SMA (tradename, drug form)</th>
<th>11. Manufacturer, country</th>
<th>12. Serial number</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>13. Indications (indicate code of ICD-10, if possible)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. Single dose</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>15. Multiplicity of intake</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ / / / / / / / / / / / / / / / / /</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>16. Way of administration</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>17. Beginning of SMA therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ / / / / / / / / / / / / / / / / /</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>18. End of SMA therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ / / / / / / / / / / / / / / / / /</td>
</tr>
</tbody>
</table>

#### III. INFORMATION ON RELATED MEDICINES (except used for correction of the result of AR)

|--------------------------------------------------------|-------------------------------------------------------|----------------|

<table>
<thead>
<tr>
<th>22. Multiplicity of intake</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ / / / / / / / / / / / / / / / / /</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>23. Way of administration</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>24. Beginning of therapy</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>25. End of therapy</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>26. Other important information (diagnosis, allergy, pregnancy with the indication of the term, etc.)</th>
</tr>
</thead>
</table>

#### V. RESOURCES OF CORRECTION

- Withdraw of SMA
  - Was the withdrawal of the SMA accompanied by the disappearance of the AR? □ yes □ no

- Reassignment of the SMA
  - Was there a renewal of the AR after the reappointment of the SMA? □ yes □ no

- Change in the dosageregime of the SMA (decrease/ increase, indicate how much):
  - Has there been a marked after the change in the SMA dose regime? □ yes □ no

- Correction of AR/LO wasn’t made

- Medicamental therapy AR/LO (indicate MA, dose regimen, duration of the indication):
V. CAUSAL-INVESTIGATIONARY RELATIONS BETWEEN CLINICAL MANIFESTATIONS OF AR AND SMA

<table>
<thead>
<tr>
<th>Certain</th>
<th>Probable</th>
<th>Possible</th>
<th>Uncertain</th>
<th>Notdefined</th>
<th>Notclassified</th>
</tr>
</thead>
</table>

VI. INFORMATION ABOUT THE COMMUNICATOR

27. FULL NAME OF CONTACT PERSON, tel/fax, email

28. Notification was given by

29. Name and location of the institution or applicant

30. Source of notification (p. 30-32 only for communicator)

31. Notification number assigned by the applicant

32. Date of receiving by the applicant

33. Type of notification

34. Date of completion

- Primary
- Current
- Final

The notification is filled in and provided at the GI "State Expert Center of the Ministry of Health of Ukraine", Department of Post-Registration Supervision, Ave. Ushinskogo, 40, Kiev, 03151; tel / fax: +38 044 4984358;

e-mail: vigilance@dec.gov.ua; The electronic form of notification is available at http://www.dec.gov.ua/
IIа. ADDITIONAL INFORMATION IN THE EVENT OF SUCCESSIVE ADVERSE REACTION TO VACCINES OR TUBERCULOSIS ALLERGENS

<table>
<thead>
<tr>
<th>Category of immunization or tuberculosis diagnostics</th>
<th>Category of adverse event after immunization or tuberculosis diagnostics</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Large-scale campaign</td>
<td>- Response to a vaccine</td>
</tr>
<tr>
<td>- Inoculation by age</td>
<td>- Programme mistake</td>
</tr>
<tr>
<td>- At school</td>
<td>- Coincidence in time</td>
</tr>
<tr>
<td>- Medical office for travelers</td>
<td>- Reaction due to injection / fear of injection</td>
</tr>
<tr>
<td>- Carrying out tuberculin diagnostics</td>
<td>- Unknown</td>
</tr>
<tr>
<td>- Other</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dose number (for vaccine)</th>
<th>Place of the vaccine introduction / tuberculosis allergens</th>
<th>Way of vaccine introduction / tuberculosis allergens</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The first</td>
<td>- Left shoulder</td>
<td>- Oraly</td>
</tr>
<tr>
<td>- The second</td>
<td>- Right shoulder</td>
<td>- Intramuscular</td>
</tr>
<tr>
<td>- The third</td>
<td>- Shoulder</td>
<td>- Intracutaneously</td>
</tr>
<tr>
<td>- The fourth</td>
<td>- (Without specifying)</td>
<td>- Subcutaneously</td>
</tr>
<tr>
<td>- The fifth</td>
<td></td>
<td>- Other</td>
</tr>
<tr>
<td>- &gt; The fifth</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Best before                                        |                                                                   |                                                   |
| - / / /                                           |                                                                   |                                                   |

- /
Kharkiv National Medical University  
Department of Clinical Pharmacology and Internal Medicine  
Research protocol of drugs efficiency and safety  
(according to supervision)  
Study and research work

Student___________________________________________________________
(Full name, year, group, department)
Supervisor________________________________________________________

POTOCOL  
of investigation of medical agent pharmacodinamic_____________________
Patient (Full name, age, body mass)_____________________________________
Clinical diagnosis: main disease__________________________________________
______________________________________________________________________
______________________________________________________________________
Concomitant disease___________________________________________________
______________________________________________________________________
Date of investigation from c ____________________ to _________________

1. Patient’s therapy (presentinprescriptionsof 5 themostimportantdrugsincludingthedrugwhichwaschosenfordetailanalysis)
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

2. Justificationofthe drug choice(international,trade names,chemical structure,particularities of drug introduction,pharmacokinetics, pharmacodynamics)
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

3. Expectedtherapeuticeffect___________________________________________
______________________________________________________________________
______________________________________________________________________

4. Possible adverse effects______________________________________________
______________________________________________________________________
______________________________________________________________________
5. List the signs that will be used to monitor the therapeutic efficacy of drugs:

<table>
<thead>
<tr>
<th>Objective</th>
<th>Before treatment</th>
<th>After treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C)</td>
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<td></td>
<td></td>
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<tr>
<td>E)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Laboratory and instrumental</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C)</td>
<td></td>
<td></td>
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<tr>
<td>D)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. List the symptoms that will control the side effects of drugs

<table>
<thead>
<tr>
<th>Adverse effects</th>
<th>Subjective</th>
<th>Presents of reaction in patient (yes, no)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C)</td>
<td></td>
<td></td>
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<tr>
<td>D)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E)</td>
<td></td>
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<thead>
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<td>E)</td>
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</table>

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<th>Laboratory and instrumental</th>
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<th></th>
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</thead>
<tbody>
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<td>D)</td>
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<td></td>
</tr>
<tr>
<td>E)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. Evaluation of combination therapy (consider co-administration of a drug that was evaluated with other drugs from Section 1: pharmacokinetic, pharmacodynamic, pharmaceutical compatibility)

____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

8. Conclusions and recommendations (efficiency of therapy, prognosis of further use, the possibility of replacing other drugs)

____________________________________________________________________________
Investigation was made by __________________  Protocol was checked by _______________
Manual

Clinical pharmacology
Self-study guide for 5 year English medium students
speciality “General Medicine”

Document compilers: L.R. Bobronnikova
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V.V.Zlatkina
V.D. Nemtsova
Yu.N.Shaposhnikova
A.S. Shalimova
I.A. Ilchenko