Edited by prof. Olesya P. Kikhtyak

Clinical pharmacology for physicians and surgeons

Primedia eLaunch

CLINICAL PHARMACOLOGY FOR PHYSICIANS AND SURGEONS

Edited by prof. Olesya P. Kikhtyak

Third Edition Supplemented
Of Methodical guide in clinical pharmacology: Textbook stud. of higher med. *institution*

A textbook for students
of higher medical institutions with the 4th level
of accreditation with English
as the language of instruction

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Textbook

FOREWORD

Since the time of Hippocrates, medical practice depended largely on the prescription of mixtures made of natural plants and animal substances. These preparations contained a number of pharmacologically active substances in variable amounts. In the early days people did not realise neither the mechanism of disease nor even the probable principle of medicine's action. Hence their indications were mostly empirical and were based on traditional experience and customs.

Nowadays we also use several drugs, which are derived from natural sources but awareness of professionals of their biochemical and pathophysiological properties has significantly developed. Advanced knowledge initiated the refinement process of drug synthesis with the well-established and predicted activity.

Achievements in medicine have led to a better understanding of disease processes, since a deep knowledge of aetiology, pathogenesis, and clinical features of different disorders makes it possible to choose the most appropriate drug. During the past decades, there is a burst of information that involves revolution in chemical processing and synthesis and a fair amount of drugs are entering the market. Clinical Pharmacology as a study of the use of drugs in disease treatment begins to take a special significance gradually superseding more radical treatment methods.

In *Clinical pharmacology for physicians and surgeons* we have attempted to promote a better understanding of integrity between pharmacology and pathology, whereas both namely create clinical pharmacology. Thus, clinical pharmacology, as an individual discipline studies general principles and treatment approaches taking into account aetiology aspects, pathogenesis, symptom complex fundamentals as well as high-priority diagnostic investigations.

Scientists and health professionals are all the time elaborating and introducing special therapy standards based on current requirements and demands which are directed towards the effective and responsible patient care. These schemes are based on aetiology, pathogenesis and certain symptoms of diseases or disorders. On the other side, medicamentous treatment should take into consideration adverse affects of drugs, their interaction (with the food or other constituents) and contraindications concerning concurrent pathologies or different physiological states, like lactation, pregnancy as well as rational combination with other drugs

This textbook presents the most common list of pharmacological groups with indicating of several most widespread drugs from these groups regarding the related pathological state. Each section reviews the pertinent physiology with anatomy, aetiology, pathogenesis, clinical picture and diagnosis, going before the

treatment plan discussion. The discussion of each pharmacological group concentrates on the mechanism of action, main therapeutic properties, side effects and drug interactions. Lists of tasks, multiple choice questions follow every theme with the aim to repeat the given material and to master the knowledge in a better way.

Undoubtedly, all material given in this book is not a dogma since we deal with the rapidly developing field of knowledge. However, we ourselves accept the full responsibility for the contents of the volume which was synthesised and adapted from the compiled bibliography the list of which presents the final part of the given book.

Suggestions for improvements will be warmly welcomed and carefully considered.

Professor Olesya P. Kikhtyak

Part 1
(medical faculty, fifth year of study in "Clinical pharmacology", class studies)

Plan and structure of the lesson:

#	Main stages of the lesson, their functions and content	Methods of study and assessment	Methodological materials	Timing
I	**The preparatory stage**			
1	Organizing the class.			1-3 min.
2	Defining educational goals.	1.Initial theoretical rapid survey	Tables, flow-charts	10%
	Assessment of the initial knowledge level (relevant to the topic):			
3	The subject and tasks of clinical pharmacology. The main principles of pharmacokinetics and pharmacodynamics. Clinical pharmacological characteristics of medications, which influence lipid metabolism. Clinical pharmacology of antiarrhythmic, antianginal, antiischemic and inotropic drugs. Clinical pharmacological characteristics of antihypertensive drugs. Clinical pharmacological characteristics of drugs influencing bronchial patency. Antiinflammatory drugs. Clinical pharmacological characteristics of hormone drugs. Clinical pharmacological characteristics of antibacterial drugs. Clinical pharmacological characteristics of drugs influencing digestive canal functions. Clinical pharmacological characteristics of drugs influencing hepatobiliary system and pancreas.	2.Level 1 testing	Oral questions, Level 1 testing	

II	**The main stage**			
	1.To learn the modern classification of medications relevant to the topic 2. To learn the clinical pharmacological characteristics of the relevant drugs 3. To study the modern usage principles of the outlined medications. 4. To know how according to the clinical and laboratory data and additional methods of examination to assess the patient's condition and to assign the adequate therapy, as well as to evaluate the therapy efficiency criteria relevant to the topic. 6. To learn the rules of writing prescriptions for medications for the treatment of the illnesses relevant to the topic.	Practical training for solving typical and non typical professional tasks.	1. Medical histories 2. Tables, slides, instructions and prospectuses for medications	60%
III	**The final stage**			
	1. Assesment and correction of the professional skills and knowledge level 2. Summing up the class 3. Home task: the topic of the next lesson	Individual control of the practical skills and their results	Phonendoscopes, tonometers, medical histories	30% 2-3min 1-3min

1.1 The subject and tasks of clinical pharmacology. The main principles of pharmacokinetics and pharmacodynamics. Clinical pharmacological characteristics of medications, which influence lipid metabolism.

Subject: clinical pharmacology
Year of study: 5
Faculty: medical
Number of hours: 4

1.Topicality. Clinical pharmacology is the science of drugs and their clinical use. It is based on the science of pharmacology and focuses on the application of pharmacological principles and methods in the real world. Clinical pharmacology fills the gap between laboratory science and medical practice. Its main objective is to enhance the safety of use, maximise the drug efficiency and minimise the side effects or toxic effects.

The main branches of clinical pharmacology are:

- Pharmacokinetics – studies what happens to the drug in the body, namely: absorption, distribution, metabolism, excretion.
- Pharmacodynamics – studies what effect drugs have on the body and how it happens. This includes not just the cellular and molecular aspects, but also the relevant clinical laboratory or instrumental parameters.
- Correct prescribing – includes using the right medication, at the right dose, with the right way and frequency of administration and stopping the drug use at the right time.
- Adverse drug effects – studies the drugs effects, which are not connceted with the therapeutic effect, which can be unwanted or harmful.
- Toxicology of drugs – is the study of symptoms, mechanisms, detection and treatment of poisoning with the help of medications.
- Drug interactions – the increase or decrease of drug action, or emergence of a new nontypical effect of a medication, caused by the simultaneous administration of another drug.
- Drug implementation – in case of clinical pharmacology it means mainly clinical trial of drugs with the aim of studying their safety and efficiency, having enough information about the quality of the new drug and proved preclinical safety.

Starting from the mid 1950s the spread of circulatory system diseases in most countries worldwide became an epidemic. They are the most common cause in the death rate of Ukrainian citizens (around 62,5%), which is far more common than death caused by malignant tumors. The rate of circulatory system diseases occurrence is rising annually. Economic losses due to temporal disability and premature death caused by the cardiovascular pathology reach more than several billion hryvnyas yearly. Moreover, extensive costs are given by the government for treatment and rehabilitation of this category of patients.

Atherosclerosis is the essence of ischemic heart disease and its effective treatment, especially the primary and the secondary prevention, are among the central priorities of the modern pharmacotherapy and clinical pharmacology. One of the main causes of atherosclerosis development are dyslipidemias, thus their correction with the lipid lowering drugs is an important clinical task for the doctor. Furthermore, the wide use of drugs for lipid metabolism correction and

their long lasting (often lifelong) administration today calls on the doctors of any specialization to be well familiar with this group of drugs.

2. Educational aim. To acquaint the students with the content, subject matter and the main parts of clinical pharmacology, as well as clinical pharmacological characteristics and principles of choosing the medications that influence lipid metabolism.

3. Pedagogical aim. To teach students to understand correctly the necessity of the primary and secondary prevention of ischemic heart disease and of timely dyslipidemias treatment. To draw the doctor's-to-be attention to the economic losses at the state and world scale caused by IHD related disabilities and death, and to the real effectiveness of the modern lipid lowering drugs. To teach the rational use of the drugs influencing lipid metabolism. To focus the student's attention at the dosage, intake and prescription rules. To highlight the importance of the Ukrainian scientist's contribution into the development and introduction of the new medications.

4. Interdisciplinary integration:

Subjects	**Knowledge**	**Skills**
1.Preceding :		
normal anatomy	cardiovascular system structure	
normal physiology	cardiovascular system physiology	
pathological physiology	etiology and pathogenesis of cardiovascular system diseases	
pathological anatomy	morphological changes during cardiovascular system diseases	
pharmacology	classification, pharmacodynamics and pharmacokinetics of lipid lowering drugs	to write the relevant prescriptions
2. Following:		

internal diseases Interdisciplinary integration: clinical pharmacology of drugs used for cardiovascular failure treatment	main clinical manifestations of ischemic heart disease: stenocardia, myocardial infarction, arterial hypertension, collapse and other emergency states	to perform clinical examinations of the patients, to prescribe the relevant additional examinations.
	effect peculiarities of statines, fibrates, niacins, bile acid sequestrants, omega-3 polyunsaturated fatty acids	to write the relevant prescriptions

5. Theme content:

- Definition of clinical pharmacology as a subject.
- The main parts of clinical pharmacology.
- Pharmacodynamics: definition, content, main principles, practical value.
- Pharmacokinetics: definition, content, main principles, practical value.
- Ways of administration of the medications into the body.
- Distribution, biotransformation, accumulation and excretion of medications.
- Mechanism of action of medications.
- The notion of side effects and toxic effects of medications.
- Drugs interaction, polypragmasia.
- The notion of clinical research and its stages. The levels of evidence in medicine. The importance in the daily practice of doctors.
- Clinical classification of dyslipidemias, the notion of the optimum level of lipids and lipoprodeides in blood.
- General clinical pharmacological characteristics of lipid lowering drugs.
- Classification of lipid lowering drugs.
- Clinical pharmacological characteristics of inhibitors of 3-hydroxy-3-methylglutaryl-coenzyme α-reductase (HMG-CoA-reductase) – statines.
- Clinical pharmacological characteristics of bile acid sequestrants.
- Clinical pharmacological characteristics of nicotine acid as a lipid lowering drug.
- Clinical pharmacological characteristics of Fibric acid derivatives (fibrates).

- Clinical pharmacological characteristics of omega-3 polyunsaturated fatty acids.
- Goal levels of lipidogram parameters during the treatment with lipid lowering drugs.
- Principles of drugs used for dyslipidemia treatment choice.

6. Class plan and structure (see introduction).

7. Methodological materials for the class.

7.1 ***Materials for the preparatory stage of class – assessment questions:***

- Define the terms:
- ✓ Clinical pharmacology
- ✓ Pharmacikinetics
- ✓ Pharmacodynamics
- ✓ Side effects of drugs
- ✓ Toxic effects of drugs
- ✓ Drugs interaction
- ✓ Therapeutic effect.
- What is pharmacokinetics? What and why does it study?
- What is pharmacodynamics? What and why does it study?
- Why is clinical research conducted? What is its aim and how to assess its results?
- Modern classification of lipid lowering drugs.
- Name the possible side effects of statines.
- What changes in lipid profile may occur as a result of using statines?
- What are the modern approaches to statines dosage?
- Name the main side effects and contraindications for use of nicotine acid.
- Which conditions complicate the wide use of nicotine acid for treatment and primary or secondary prevention of IHD?
- Name the indications for use of fibrates.
- Side effects and contraindications for use of fibrates.
- Name the factors and peculiarities of fibrates, which limit their wide use in pharmacotherapy.
- Indications for use of bile acid sequestrants.
- Name the main groups and dosage of lipid lowering drugs, which are used in complex treatment of patients with 2 type diabetes.
- What is the role of omega-3 polyunsaturated fatty acids for modern treatment and primary or secondary prevention of IHD?

7.2. ***Methodological materials for the main stage of the class:***
To analyze basing on the real clinical examples the indications and contraindications for use of drugs influencing lipid metabolism, their compatibility and possible side effects as well as the possibilities of use in various clinical situations.

7.3. ***Materials for assessment at the final stage of the class – situational tasks:***
1.Mechanism of drug action is explored by:
A) pharmacokinetics
B) pharmacogenetics
C) pharmacoeconomics
D) pharmacodynamics
E) pharmacognosy

2. Therapeutic window is the dosages of a medication (therapeutic serum concentrations) between:
A) TD_{50} curve and ED_{50}
B) ED_{50} and $T_{1/2}$
C) the amount that gives an effect (effective dose) and the amount that gives more adverse effects than desired effects
D) the amount that gives minimal adverse effects and the amount that gives more adverse effects
E) the amount that gives minimal effect and the amount that gives full therapeutic effect

3. Therapeutic index is the ratio of:
A) LD_{50} over the ED_{50}
B) ED_{50}over the LD_{50}
C) bioavailability over drug dose
D) apparent volume of distribution over elimination rate constant
E) total clearance over nonrenal (extrarenal) clearance

4. Therapeutic drug monitoring means:
A) trough concentration under steady-state condition
B) measurement of medication concentrations in blood
C) the process of chemical alteration of drugs in the body
D) amount of untoward effects following treatment
E) development of expected desired effects

5. Therapeutic dose is not related to:
A) patient's age

B) rout of administration
C) desired therapeutic effect
D) organs of elimination
E) treatment costs

6. Mean therapeutic doses mentioned in manuals is obtained by the following way:
A) calculation of pharmacokinetic features
B) clinical investigations
C) experimental investigations
D) experimental data adopted for human body
E) calculation of pharmacodynamic features

8. THE LIST OF DRUGS TO BE STUDIED FOR THE FINAL MODULAR TEST

Name in English	**Name in Latin**	**Drug forms**
Atorvastatin	Atorvastatinum	tab. 10 mg
Nicotinic acid	Acidum Nicotinicum	flac. 1%; tab. 50 mg
Rosuvastatin	Rozuvastatinum	tab. 10, 20 mg
Simvastatin	Simvastatinum	tab. 10, 20 mg
Fenofibrate	Fenofibratum	cap. 0,1 g

9. RECOMMENDED LITERATURE (see at the end of methodological instructions).

1.2. Clinical pharmacology of antiarrhythmic, antianginal, antiischemic and inotropic drugs
Subject: clinical pharmacology
Year of study: 5
Faculty: medical
Number of hours: 4

1. Topicality. Treatment and prevention of cardiovascular diseases (CVD) is one of the main tasks of the medical practice. Often help is needed for the patients with ischemic heart disease (IHD) and arrhythmia. Acute myocardial infarction is a serious IHD complication, which can lead to death or disability. The heart rhythm disorders cause deterioration of geodynamics and development of heart failure. Apart from knowing the etiological and pathogenic peculiarities of the

illness, as well as the accompanying conditions, their seriousness and other points, it is also necessary to possess the deep understanding of medications action for their proper use. The proper medical practice requires comprehensive awareness of indications and contraindications of drugs, which is based on the knowledge of their pharmacodynamics and pharmacokinetics. In the everyday work a doctor should not only know how to diagnose various types of IHD and arrhythmia, but also to provide adequate and qualified medical treatment.

2. Educational aim. To acquaint the students with the clinical pharmacological characteristics of antianginal and antiarrhythmic drugs and the basics of their rational use.

3. Pedagogical aim. To draw the doctor's-to-be attention to the necessity of deep study of the main cardiovascular diseases taking into consideration the importance of antianginal and antiarrhythmic drugs in their treatment.

4. Interdisciplinary integration:

Subject	**Knowledge**	**Skills**
1. Preceding:		
normal anatomy	Cardiovascular system structure	
normal physiology	cardiovascular system physiology	
pathological physiology	etiology and pathogenesis of cardiovascular system diseases	
pathological anatomy	morphological changes during cardiovascular system diseases, especially during arrhythmias	
pharmacology	drugs for cardiovascular diseases treatment, namely drugs for ischemic heart disease and arrhythmia treatment. Classification of antianginal and antiarrhythmic drugs	to write prescriptions for the relevant drugs
2. Following:		

internal diseases	main clinical manifestations of heart disorders	to perform clinical examinations of the patients, to prescribe the relevant additional examinations.
general surgery	main clinical manifestations of heart disorders	to perform clinical examinations of the patients, to prescribe the relevant additional examinations.
3. Interdisciplinary integration: clinical pharmacology of antianginal and antiarrhythmic drugs for treatment of cardiovascular pathology.		
Organic nitrates, β-adreno blockers, calcium antagonists. Membrane stabilizing potassium channels blockers.	peculiarities of action of antianginal and antiarrhythmic drugs for treatment of cardiovascular pathology, their compatibility and side effects.	to write prescriptions for the relevant drugs

5. Theme content:

- Modern classification of antianginal and antiarrhythmic drugs.
- Clinical symptoms and diagnostic criteria of stenocardia and myocardial infarction.
- Types of arrhythmia and conduction disorders, their differential diagnostic features.
- Clinical pharmacological characteristics of antianginal drugs
- Clinical pharmacological characteristics of membrane stabilizing drugs
- Clinical pharmacological characteristics of drugs used for the treatment of stable and unstable forms of stenocardia.
- Modern pharmacotherapy of acute myocardial infarction.
- Clinical pharmacological characteristics of antiarrhythmic drugs with the membrane stabilizing and local anesthesia effect.

- Clinical pharmacological characteristics of antiarrhythmic effect of class III drugs.
- Antiarrhythmic effect mechanism of β-adreno blockers and slow potassium channels blockers.
- Treatment of arrhythmias with potassium ions containing drugs.
- The main contraindications for use of antianginal and antiarrhythmic drugs.

6. Class plan and structure (see introduction).

7. Methodological materials for the class.

7.1 ***Materials for the preparatory stage of class – assessment questions:***

- Modern classification of antianginal and antiarrhythmic drugs.
- Name the mechanism of action of antianginal and membrane stabilizing drugs.
- Which antiarrhythmic properties do β-adreno blockers possess?
- What is the action mechanism and pharmacokinetics of antiarrhythmic drugs of class III?
- Name the main pharmacodynamic effects of slow potassium channels blockers antiarrhytmic action.
- Name the main clinical pharmacological approaches to the treatment of unstable stenocardia.
- Name the main clinical pharmacological approaches to the first aid and principles of myocardial infarction treatment.
- Name the main clinical pharmacological approaches to arrhythmia treatment.
- Which are the side effects of antiarrhythmic drugs use?
- Indications and contraindications for use of antiarrhythmic drugs.

7.2. ***Methodological materials for the main stage of the class:***

To analyze basing on the real clinical examples the indications and contraindications for use of antiarrhythmic drugs, their compatibility and possible side effects.

7.3. ***Materials for assessment at the final stage of the class – situational tasks:***

1. Therapeutic doses of cardiac glycosides cause the following:
   A) negative chronotropic effect
   B) negative bathmotropic action
   C) negative inotropic effect
   D) positive dromotropic action
   E) negative diuretic effect

2. Negative chronotropic effect of cardiac glycosides …
A) causes increased oxygen consumption of myocardium
B) causes incomplete relaxation of myocardium during diastole
C) is most evident in digitalis drugs
D) is determined by decreased effect of nervus vagus
E) causes incomplete recovery of energy recourses of myocardium

3. Cardiac glycosides are able to:
A) decrease daily diuresis
B) improve cardiac blood supply
C) decrease cardiac contractility and minute volume
D) precipitate hypertension in lesser circuit
E) xanthopsia

4. Choose the optimal rout of strophanthine administration:
A) intramuscular
B) rectal
C) oral
D) intravenous
E) subcutaneous

5. Choose the optimal rout of digitoxin administration:
A) intramuscular
B) subcutaneous
C) inhalation
D) intravenous
E) oral

6. Negative dromotropic action of cardiac glycosides means:
A) improvement of atrioventricular and sinoauricular conductivity
B) inhibition of atrial and ventricular activation
C) reduction of P-Q interval on ECG
D) reduction of S-T interval on ECG
E) reduction of heart rate

8. THE LIST OF DRUGS TO BE STUDIED FOR THE FINAL MODULAR TEST

Name in English	Name in Latin	Drug forms
Isosorbide mononitrate	Isosorbidum mononitratum	cap., tab. 40; 60 mg
Isosorbide dinitrate	Isosorbidum dinintratum	tab. 20, 40 mg
Nitroglycerin	Nitroglycerinum	tab.5 mg; flac.1% –5 ml; ointment 1%
Molsidomine	Molsidominum	tab. 2 mg
Amlodipine	Amlodipinum	tab. 5; 10 mg
Verapamil	Verapamilum	tab. 40; 80 mg
Diltiazem	Diltiazem	tab. 30; 60 mg
Nifedipine	Nifedipinum	cap. 10; 20 mg
Ethacyzin	Aethacizinum	tab. 25; 50 mg
Amiodarone	Amiodaronum	tab. 200 mg
Lidocain	Lidocainum	amp. 0.5; 1; 2; 5; 10 %
Propafenone hydrochloride	Propafenonum hydrochloridum	tab. 150 mg
Sotalol	Sotalol	tab. 80; 160 mg
Procainamide	Procainamidum	tab.0,25 g, 10 % - 5 ml
Digoxin	Digoxinum	tab. 0.125; 0,25 мг, amp. 0,025% - 1 ml
Dobutamine	Dobutaminum	flac. 5 %- 55 ml; flac. 0,1; 0,25
Dopamine	Dopaminum hydrochloridum	amp. 50; 200 mg №5
Strophanthin	Strophanthinum	amp. 0.025 % - 1 ml
Atenolol	Atenololum	tabl. 0,1; 0,05 g
Bisoprolol	Bisoprololum	tabl. 2.5; 5; 10 g
Doxazosin	Doxazosinum	tabl. 2; 4 mg
Carvedilol	Carvedilolum	tabl. 12,5; 25; 50 mg
Metoprolol	Metoprololum	tabl. 50 mg
Nebivolol	Nebivololum	tabl. 5 mg

9. RECOMMENDED LITERATURE (see at the end of methodological instructions).

1.3. Clinical pharmacological characteristics of antihypertensive drugs.

Subject: clinical pharmacology
Year of study: 5
Faculty: medical
Number of hours: 4

1. Topicality. Cardiovascular diseases are a serious medical problem and the main cause of death in the most economically developed countries. They occur more often among the large city residents than among the people living in the rural area. According to WHO, arterial hypertension is found in 15-20% of adult citizens, and 30-40% among the senior citizens. More than one third of the working-age population of Ukraine suffers from arterial hypertension and it is one of the main causes of developing atherosclerosis and its clinical manifestations: ischemic heart disease, myocardial infarction, cerebrovascular pathology, brain strokes. At the same time the combination of arterial hypertension with ischemic heart disease, which happens in more than 60% of patients, increases highly the danger of developing myocardial infarction, stroke and heart failure, which in its turn endangers the life of the patients. The rational antihypertensive therapy largely improves the prognosis for the patients with arterial hypertension. The correct use of the modern antihypertensive drugs decreases the occurrence of myocardial infarction, brain stroke, diabetes, nephropathy and heart failure.
The modern medicine possesses a large arsenal of antihypertensive drugs, which has naturally complicated the choice of the most adequate ones for patients. The emergence of new antihypertensive drugs not only complicates the choice of the drug according to the clinical pathogenic variant and stage of the hypertonic disease, but also makes it harder to evaluate the efficiency of prescribing hypotensive drugs.

2. Educational aim. To acuquaint the students with the clinical pharmacological characteristics and principles of choice of drugs influencing vascular tone.

3. Pedagogical aim. To teach the students to be ready for the adequate medical action in case of chronic process exacerbation or emergency in outpatient and inpatient care units. To draw the doctor's-to-be attention to the possibility of patients developing the symptoms of cardiovascular failure, hypertonic crisis, coma etc., and to teach them the rational use of drugs influencing vascular tone. To focus their attention on the dosage, rule of use and writing the correct prescriptions. To highlight the importance of the Ukrainian scientist's contribution into the development and introduction of the new medications.

4. Interdisciplinary integration:

Subjects	Knowledge	Skills
1.Preceding :		
normal anatomy	cardiovascular system structure	
normal physiology	cardiovascular system physiology	
pathological physiology	etiology and pathogenesis of cardiovascular system diseases	
pathological anatomy	morphological changes during cardiovascular system diseases	
pharmacology	classification, pharmacodynamics and pharmacokinetics of vasodilators and vasoconstrictors	to write the relevant prescriptions
2. Following:		
internal diseases	main clinical manifestations of ischemic heart disease: stenocardia, myocardial infarction, arterial hypertension, collapse and other emergency states	to perform clinical examinations of the patients, to prescribe the relevant additional examinations.
Interdisciplinary integration: clinical pharmacology of drugs used for cardiovascular failure treatment	effect peculiarities of cardiac glycosides and hypotensive drugs.	writing the relevant prescriptions

5. Theme content:

- Arterial hypertension classification.
- Modern classification of drugs lowering vascular tone.

- Clinical pharmacological characteristics of centrally-acting drugs: central α2-adrenoreceptors agonists.
- Clinical pharmacological characteristics of centrally-acting drugs: imidazoline-I1-receptor agonists.
- Clinical pharmacological characteristics of ganglionic blocker.
- Clinical pharmacological characteristics of sympatholytics.
- Clinical pharmacological characteristics of α-adreno blockers.
- Clinical pharmacological characteristics of β-adreno blockers.
- Clinical pharmacological characteristics of cardiononselective β-adrenoreceptor blockers without own sympathomymetic activity.
- Clinical pharmacological characteristics of cardiononselective β-adrenoreceptor blockers with own sympathomymetic activity.
- Clinical pharmacological characteristics of cardiononselective β1-adreno blockers without intrinsic sympathomymetic activity.
- Clinical pharmacological characteristics of cardiononselective β1-adreno blockers with intrinsic sympathomymetic activity.
- Clinical pharmacological characteristics of α- and β-adrenoreceptors blockers (α1-, β1 and β2-adrenolytics) of mixed action.
- Clinical pharmacological characteristics of calcium antagonists (blockers of slow calcium channels).
- Clinical pharmacological characteristics of angiotensin converting enzyme inhibitors (ACEi).
- Clinical pharmacological characteristics of angiotensin II receptor blockers of the first type.
- Clinical pharmacological characteristics of arterial vasodilators.
- Clinical pharmacological characteristics of drugs with mostly myotropic action.
- The principles of choice of medications used for treatment of arterial hypertension.

6. Class plan and structure (see introduction).

7. Methodological materials for the class.

7.1 ***Materials for the preparatory stage of class – assessment questions:***

- Name the main pharmacokinetic and pharmacodynamic effects of action of central α2-adrenoreceptors and central imidazoline-I1-receptor agonists.
- Which side effects may occur during the use of α2-adrenoreceptors agonists?
- Which side effects may occur during the use of imidazoline-I1-receptor agonists?

- Name the possible side effects and contraindications for use of ganglionic blockers.
- Name the possible side effects of sympatholytics (guanitidine and reserpine).
- Which extravascular effects are typical of α-adreno blockers (influence on metabolism, rheology, urodynamics and sexual function of men)?
- Modern classification of β-adreno blockers according to the selectivity of action.
- Name the main side effects and contraindications for use of β-adreno blockers.
- What groups of β-adreno blockers are defined?
- Name the indications for use of arterial vasodilators - minoxidine and hydralazine.
- Side effects and contraindications for use of angiotensin converting enzyme inhibitors (ACE-i).
- Indications for use of angiotensin II receptor antagonists.
- Name the main groups and dosage of drugs used in case of hypertonic crisis.

7.2. ***Methodological materials for the main stage of the class:***
To analyze basing on the real clinical examples the indications and contraindications for use of drugs influencing vascular tone, their compatibility and possible side effects, as well as peculiarities of use in case of emergency.

7.3. ***Materials for assessment at the final stage of the class – situational tasks:***

1. Angiotensin-converting-enzyme inhibitors (ACE inhibitors) are able to decrease:
   A) angiotensin I formation
   B) angiotensin II formation
   C) angiotensin III formation
   D) angiotensin IV formation
   E) bradykinin formation

2. Choose effect which is typical to ACE inhibitors.
   A) increase in arterial vessel tone
   B) increase in venomotor tone
   C) decline in diuresis
   D) decrease in cardiac hypertrophy
   E) decrease in vascular wall hypertrophy

3. One of the following ACE inhibitors may be prescribed intravenously.
   A) spirapril

B) moexipril
C) fosinopril
D) perindopril
E) lisinopril

4. Concomitant use with ACE inhibitors is contraindicated for:
A) β-adrenolytics
B) Ca channel blockers
C) Potassium-containing medicines
D) thiazide diuretics
E) prazosin

5. One of the following signs is not typical to side effects of ACE inhibitors.
A) allergic reactions
B) micro- and macropsia
C) cough
D) hypotension
E) hyperkalemia

6. ACE inhibitors should not be used in one of the following conditions.
A) diabetic nephropathy
B) hypertension
C) congestive heart failure, systolic dysfunction (treatment aim)
D) congestive heart failure, systolic dysfunction (aim of prophylaxis)
E) postinfarction cardiosclerosis

8. THE LIST OF DRUGS TO BE STUDIED FOR THE FINAL MODULAR TEST

Name in English	Name in Latin	Drug forms
Hydrochlorothiazide	Hydrochlorothiazidum	tab. 25 mg; 100 mg
Indapamide	Indapamidum	tab.1,5; 2,5 mg
Spironolactone	Spironolactonum	tab.25; 50; 100 mg
Torasemide	Torasemidum	amp.10 мг, tab. 10 mg
Furosemide	Furosemidum	tab. 40 mg, amp. 20 mg
Ivabradine	Ivabradinum	tab. 5; 7,5 mg
Enalapril	Enalaprilum	tab. 5; 10; 20; 40 mg
Captopril	Captoprilum	tab. 12,5; 25; 50; 100 mg
Lisinopril	Lisinoprilum	tab. 10; 40 mg
Perindopril	Perindoprilum	tab. 4; 8 mg
Ramipril	Ramiprilum	tab. 12,5; 25; 5; 10 mg

Fosinopril	Fosinoprilum	tab. 10; 40 mg
Valsartan	Valsartanum	tab. 80 mg, 160 mg
Irbesartan	Irbesartanum	tab. 75; 150 mg
Candesartan	Candesartanum	tab. 4.8; 16 mg
Losartan	Losartanum	tab. 10; 40 mg
Telmisartan	Telmisartanum	tab. 80 mg
Methyldopa	Alpha methyldopa	tab. 250 mg
Clonidine	Clonidinum	tab. 0.075; 0,15 mg; amp. 0,01% -1 ml

9. RECOMMENDED LITERATURE (see at the end of methodological instructions).

1.4. Clinical pharmacological characteristics of drugs influencing bronchial patency. Antiinflammatory drugs.

Subject: clinical pharmacology
Year of study: 5
Faculty: medical
Number of hours: 4

1. Topicality. In their everyday practice doctors often see patients suffering from acute and chronic broncho-obstructive diseases. The number of such patients is growing every year. The main danger in this case lies in the probability of developing asthma status. The study of pharmacotherapeutic action of drugs, which improve respiratory drainage patency, enables doctors to provide qualified medical help.

Inflammation is one of the pathological conditions, which is typical of most diseases. Antiinflammatory drugs are widely used with different somatic pathologies, which are characterized by inflammatory process, including bronchopulmonary disease.

2. Educational aim. To acquaint the students with the clinical pharmacological characteristics and principles of choice of drugs influencing bronchial patency, as well as of steroidal and nonsteroidal antiinflammatory drugs; basic long-acting immune modifying drugs.

3. Pedagogical aim. To draw the doctor's-to-be attention to the possibility of patients developing the sympthoms of acute respiratory failure, which is accompanied by acute bronchial obstruction, to teach the rational use of bronchodilators and antiinflammatory drugs taking into consideration the dosage,

possible side effects and prescription rules. To define the role of Ukrainian scientists in this sphere.

4. Interdisciplinary integration:

Subjects	Knowledge	Вміти Skills
1.Preceding : • normal anatomy	• bronchopulmonary system structure	
• normal physiology	• bronchopulmonary system physiology	
• pathological physiology	• etiology and pathogenesis of bronchopulmonary system diseases • the notions of inflammation, allergy, etiology and pathogenesis of inflammation and allergy processes	
• pathological anatomy	• morphological changes during bronchopulmonary system diseases	
• pharmacology	• classification and pharmacodynamics of bronchodilators and antiinflammatory drugs	• to write the relevant prescriptions
2. Following: • internal diseases	• main clinical manifestations and use of broncholytics and antiinflammatory drugs in case of acute and chronic pulmonary diseases	• to perform clinical examinations of the patients, to prescribe the relevant additional examinations.
• general surgery	• main clinical manifestations of asthma status, acute respiratory failure in case of surgical	• to perform clinical examinations of the patients, to prescribe the relevant additional examinations.

	pathology and peculiarities of prescribing broncholytics and antiinflammatory drugs	
3.Interdisciplinary integration: • clinical pharmacology of α- and β-adrenostimulators, β-adrenostimulators, M-cholinomimetics, methylxanthines, expectorants, mucolytics and antiinflammatory drugs	• peculiarities of action of α- and β-adrenostimulators, β-adrenostimulators, M-cholinomimetics, methylxanthines, expectorants, mucolytics and antiinflammatory drugs	• to write the relevant prescriptions

5. Theme content:

- Modern classification of bronchodilators.
- Clinical pharmacological characteristics of α- and β-adrenostimulators.
- Clinical pharmacological characteristics of β-adrenostimulators.
- Clinical pharmacological characteristics of M-cholinomimetics.
- Clinical pharmacological characteristics of methylxanthines.
- Clinical pharmacological characteristics of expectorants.
- Clinical pharmacological characteristics of mucolytics.
- Principle of bronchodilators choice.
- Peculiarities of bronchodilators use.
- Methods of efficiency and safety evaluation of using drugs, which cause elevation of blood pressure.
- Modern classification of antiinflammatory drugs.
- Classification of nonsteroidal antiinflammatory drugs according to their chemical structure.
- Clinical pharmacological characteristics of nonsteroidal antiinflammatory drugs.
- Side effects of nonsteroidal antiinflammatory drugs.
- Clinical pharmacological characteristics of steroidal antiinflammatory drugs.

6. Class plan and structure (see introduction).

7. Methodological materials for the class.

7.1 ***Materials for the preparatory stage of class – assessment questions:***

- Where are α- and β-receptors localized and which pharmacodynamic effects occur during their stimulation?
- Name the mechanism of α- and β-receptors stimulators action.
- Indications for use of β-adrenomimetics of short and long lasting action.
- Name the main pharmacodynamic effects of teofilin.
- Name the mechanism of action, side effects and contraindications for use of mucolytics.
- Mechanism of action and pharmacodynamics of M-cholinoblocker – troventol.
- Name the main schemes of asthma status pharmacotherapy.
- Side effects of nonsteroidal drugs.
- Peculiarities of prescribing, dosage, side effects of steroidal anti-inflammatory drugs.
- Clinical pharmacological characteristics of basic long-acting immune modifying anti-inflammatory drugs.
- Contraindications for use of anti-inflammatory drugs.

7.2. ***Methodological materials for the main stage of the class:***

To analyze basing on the real clinical examples the indications and contraindications for use of various drugs with bronchodilatory action, and the peculiarities of anti-inflammatory drugs use; their compatibility and possible side effects, as well as peculiarities of use in medical practice.

7.3. ***Materials for assessment at the final stage of the class – situational tasks:***

1. Choose the effect which is not caused by epinephrine.
   A) bronchodilation
   B) increase in mucociliary clearance
   C) elevation of blood pressure
   D) increase the strength of contraction of heart muscle
   E) decrease in skeletal muscle tonus

2. Name the most common rout of administration of epinephrine in the case of bronchial obstruction.
   A) intramuscularly
   B) intravenously
   C) intra-arterial
   D) subcutaneously
   E) inhalation

3. One of the adverse effects mentioned below is not common for epinephrine.
A) cardiac insufficiency
B) urinary retention
C) promotion of preterm delivery
D) aggravation of bronchial obstruction
E) silent lung disease

4. Choose the long-acting β_2 selective adrenomimetic.
A) ipratropium bromide
B) isoproterenol
C) formoterol
D) ketotifen
E) bamipine

5. Effect of inhaled β_2 selective adrenomimetics appears:
A) immediately
B) after 1-2 min
C) after 3–5 min
D) after 10 min
E) after 20–30 min

6. Advantages of dry powder inhalers over pressurized metered-dose inhalers include all of the following, except:
A) lower jetting velocity
B) propellant is not required
C) larger lung deposition
D) shaking the inhaler before use is not needed
E) lower bronchial resistance…….

8. THE LIST OF DRUGS TO BE STUDIED FOR THE FINAL MODULAR TEST

Name in English	Name in Latin	Drug forms
Epinephrine	Epinephrinum	amp. 0,18 % 1 ml №10
Ambroxol	Ambroxolum	tab. 30 mg; amp. 0,75%
Acetylcysteine	Acetylcysteinum	tab. 100 mg; cap.200; 400 mg
Euphyllin	Euphyllinum	tab. 150 мг; amp. 2,4%
Tiotropium bromide	Tiotropium bromidum	aerosol 18 μg
Nedocromil sodium	Nedocromilum natricum	aerosol 1 dose - 2 mg

Salbutamol	Salbutamolum	aerosol 200 dose; tab. 2;4 mg
Salmeterol	Salmeterolum	aerosol 25 μg -120/doses
Fenoterol	Fenoterolum	aerosol 0,1 mg
Beclometasone dipropionate	Beclometasonum dipropionatum	aerosol 50, 100, 250 μg /dose flac. 200 doses
Montelukast	Montelukastum	tab. 10 mg
Hydrocortisone	Hydrocortisonum	amp.100; 500 mg; ointment 0,1;1;5 %; cream 0,1%
Dexamethasone	Dexamethasonum	tab.500 mg; amp. 4 mg – 1 ml
Diclofenac sodium	Natrium diclofenacum	tab. 25, 50 mg
Meloxicam	Meloxicamum	tab. 7,5; 15 mg; supp. 7,5; 15 mg
Methylprednisolone	Methylprednisolonum	tab. 4,8 mg; amp. 0,4 %
Nimesulide	Nimesulidum	tab. 100 mg; flac. 1%
Prednisolone	Prednisolonum	tab. 5 mg; amp. 25; 30 mg – 1ml
Rofecoxib	Rofecoxibum	tab. 25; 50 mg
Celecoxib	Celecoxibum	cap. 100; 200 mg
Paracetamol	Paracetamol	tab. 325, 500 mg, cap.500 mg

9. RECOMMENDED LITERATURE (see at the end of methodological instructions).

1.5. Clinical pharmacology of hormone drugs.

Subject: clinical pharmacology
Year of study: 5
Faculty:
medical
Number of hours: 4

1. Topicality. Endocrine organs diseases are a serious problem nowadays, since diabetes possesses the third place among the most spread diseases in the world and endocrine pathology is becoming more and more common. Some of the endocrine diseases are chronic life-long illnesses, so the doctors of all specializations will face such patients in their everyday practice. The therapeutic diagnostic approach to this group of patients is a priority in endocrinology, as it defines the course of the disease character and thus its qualified and timely treatment. Today thyroid pathologies increase can be seen not only in endemic regions, such as Prykarpattya, but all over the world. Special attention to this problem was drawn after Chornobyl disaster. Scientific observations prove thyroid cancer occurrence increase, reveal the tendency to younger age of patients and to the combinations of different forms of thyroid pathology in one patient. Adrenal hormones take

active part in supporting the body's homeostasis, play an important role in extreme conditions and many pathological processes, influence enzyme activity and ensure the balance of chemical reactions, which are the basis of living process. The knowledge of clinical pharmacological peculiarities of these substances enables the rational choice in any clinical situation and thus their maximum effective and safe use.

2. Educational aim: To know clinical pharmacology of drugs used in endocrinology. To learn the modern principles of pharmacotherapy of the main digestive system organs. To know how to analyze, basing on a clinical example, the indications and contraindications for the use of drugs and their side effects and compatibility; to learn the methods of drugs choice and if needed to be able to interchange them.

3. Pedagogical aim: To draw the doctor's-to-be attention to the peculiarities of diagnosing and pharmacotherapy of endocrine system diseases. To highlight the importance of the Ukrainian scientist's contribution into the development and introduction of the new medications into endocrinologic practice.

4. Interdisciplinary integration:

Subjects	**Knowledge**	**Skills**
1. Preceding :		
• normal anatomy	• structure and topography of endocrine organs and target organs	
• normal physiology	• endocrine system physiology	
• pathological anatomy	• morphological changes during endocrine system diseases	
• pathological physiology	• etiology and pathogenesis of endocrine system diseases	• to model the development of some pathology on the cell level, organ level and body level
• pharmacology	• classification, pharmacodynamics and pharmacokinetics of the relevant groups of drugs	• to write the relevant prescriptions
2.Following:		

• faculty therapy • hospital therapy	• the main clinical diagnostic criteria of endocrine organs diseases; endocrine diseases treatment principles	• to perform clinical examinations of the patients, to prescribe the relevant additional examinations and therapy plan.
• faculty surgery • hospital surgery	Preoperative preparation of a patient and postoperative period after removing pancreas, thyriod, pituitary adenoma and adrenal tumors	• to perform clinical examinations of the patients, to prescribe the relevant additional examinations and therapy plan.
3.Interdisciplinary integration:		
• clinical pharmacology of antimicrobal drugs • interaction of drugs	• clinical pharmacological peculiarities of the relevant drugs; • potential variants and consequences of drugs interaction in endocrinology	• to write the relevant prescriptions

5. Theme content:

- Clinical pharmacological characteristics of steroidal drugs.
- Side effects of steroidal drugs.
- Peculiarities of prescribing, dosage, side effects of steroidal antiinflammatory drugs.
- Classification of drugs used for hormonal replacement therapy: estrogens, androgens. Antiestrogens, antiandrogens. Drugs for treatment of male and female menopause.
- Clinical pharmacological peculiarities and rational use of hormonal contraceptives.
- Clinical pharmacology of insulins.
- Peroral hypoglycemic drugs. Classification, mechanism of action, indications for use.
- Thyroid hormones drugs. Indications, contraindications, side effects, complications, modern possibilities of this type of therapy.
- Antithyroid drugs, peculiarities of use, side effects, complications.

- Clinical pharnmacological approach to drug choice in case of major endocrine system diseases.

6. Class plan and structure (see introduction).

7. Methodological materials for the class.

7.1 ***Materials for the preparatory stage of class – assessment questions:***

- Which side effects are characteristic of steroidal antiinflammatory drugs?
- Withdrawal syndrome and ways of fighting it.
- Classification of the main pituitary tropic hormones and the mechanism of their interaction.
- What does the clinical pharmacological approach to the choice of antidiabetic therapy of 2 type diabetes include?
- Name the modern schemes of insulin therapy according to the duration of insulin action.
- Clinical pharmacological approach to the correction of hypothyreosis caused by operative therapy.
- Which drugs are used for hypothyreosis treatment?
- Modern possibilities of hormonal replacement therapy of male and female menopause.
- Peculiarities of use of hormonal contraceptives.
- Which groups of drugs are the main in pangipopituitary syndrome treatment?
- What does the clinical pharmacological approach to the choice of drugs in endocrine obesity treatment include?
- Which groups of drugs are used in diabetic coma treatment?

7.2. ***Methodological materials for the main stage of the class:***

To analyze basing on the real clinical examples the indications and contraindications for use of various drugs in case of endocrine system, pancreas, thyroid, pituitary, adrenals diseases; their compatibility and possible side effects.

7.3. ***Materials for assessment at the final stage of the class – situational tasks:***

1. The major action of insulin is
A) Conversion of glucose to glycogen
B) Proteolysis
C) Conversion of fatty acids to glucose
D) Glycogenolysis
E) Gluconeogenesis

2. One of the main causes of hypoglycaemia is
A) Unaccustomed exercise

B) Stress
C) Weight loss
D) Weight gain
E) Diarrhoea

3. Which of the following is not correct for oral hypoglycaemic drugs?
A) Stimulation of insulin synthesis
B) Reduction of carbohydrate absorption
C) Inhibition of gluconeogenesis
D) Stimulation of insulin release
E) Anorexigenic effect

4. Beta-blockers in the presence of hypoglycaemia may interact as follows
A) Mask tachycardia
B) Mask bradycardia
C) Increase sweating
D) Upset pulmonary circulation
E) Formation of antibodies and immune complexes

5. Mechanism of sulphonylureas' action includes
A) Beta cells' stimulation to secrete insulin
B) Stimulating beta cells to synthesise insulin
C) Inhibiting beta cell to secrete insulin
D) Beyond pancreatic activity
E) Inhibiting insulin resistance

6. Choose insulin without peak of action
A) Glargine
B) Actrapid
C) Novorapid
D) Protaphane
E) NPH

8. THE LIST OF DRUGS TO BE STUDIED FOR THE FINAL MODULAR TEST

Name in English	Name in Latin	Drug forms
Insulin glargine	Insulin glargine	flac. 10 ml, cart. 3 ml (1 ml–100 IU)
Insulin glulisine	Insulin glulisine	flac. 10 ml, cart. 3 ml (1 ml–100 IU)

Insulin actrapid	Insulin actrapid	flac. 10 ml, cart. 3 ml (1 ml–100 IU)
Insulin isophane	Insulin isophane	flac. 10 ml, cart. 3 ml (1 ml–100 IU)
Glibenclamide	Glibenclamidum	tab. 5 mg
Gliclazide	Gliclazidum	tab. 60 mg
Glimepiride	Glimepiridum	tab. 2, 3, 4, 6 mg
Metformin	Metforminum	tab. 500, 850, 1000 mg
Levothyroxine	Levothyroxinum	tab. 25, 50, 75, 100, 125 mg.
Methimazole	Methimazole	tab. 5 mg
Testosterone undecanoate	Testosteronum undecanoatum	amp. 4 ml-1000 mg
Oxytocin	Oxytocinum	amp. 5 IU 1 ml
Progesterone	Progesteronum	tab. 100 mg,
Estradiol	Estradiolum	tab. 50 mg
Diane 35	Diane 35	№21
Lindynette	Lindynette	№ 21
Novynette	Novynette	№ 21
Cyproterone	Cyproteronum	tab. 100 mg, amp. 300 mg

9. RECOMMENDED LITERATURE (see at the end of methodological instructions).

1.6. Clinical pharmacology of antibacterial drugs.

Subject: clinical pharmacology
Year of study: 5
Faculty: medical
Number of hours: 4

1. Topicality. The number of various antimicrobial drugs has risen recently, which enhances the treatment opportunities of different diseases of bacterial origin. However the choice of an effective and safe antibacterial drug remains a difficult task, which is caused first of all by the increase of bacterial flora resistance, and impossibility of defining, in some cases, the causative agent of the disease and its sensitivity to antibacterial drugs; another cause is the increase in number of patients with chronic pathologies and various immunodeficiencies. The growing number of medical manipulations for diagnosis and treatment also facilitates the occurrence and development of infections caused by the nontypical microflora and/or its nontypical location. The insufficient information about the indications, action mechanism and side effects of drugs of this group limits its prescription

possibilities, while, on the other hand, we can see its uncontrolled careless use. Thus there is a need of deep comprehensive study of clinical pharmacology of antibacterial drugs.

2. Educational aim: To acquaint the students with the modern antibacterial therapy and its use in main infectious diseases. To define the principles of rational dosage, optimal administration mode, duration of use and principles of changing drugs in the course of treatment with antimicrobial drugs.

3. Educational aim: To use in medical practice the principles of ethics and deontology; to help the students form clinical thinking; to learn the achievements of Ukrainian scientists in antimicrobial therapy.

4. Interdisciplinary integration:

Subjects	Knowledge	Skills
1.Preceding :		
• normal anatomy	• anatomy of internal organs	
• normal physiology	• physiology of internal organs	
• pathological physiology	• etiology and pathogenesis of bacterial diseases	
• pathological anatomy	• morphological changes during bacterial diseases	
• microbiology	• characteristics of bacteria	
• pharmacology	• pharmacology of antimicrobial drugs	• to write the relevant prescriptions
2. Following:		
• internal diseases	• indiactions, contraindications and dosage of antimicrobal drugs in the internal diseases clinic	• to perform clinical examinations of the patients, to prescribe the relevant additional examinations.

• surgery 3.Interdisciplinary integration: • clinical pharmacology of antiinflammatory and antihistamine drugs	• indiactions, contraindications and dosage of antimicrobal drugs in surgical pathology • peculiarities of use of antiinflammatory and antihistamine drugs	• to perform clinical examinations of the patients, to prescribe the relevant additional examinations. • to prescribe a rational combination with the drugs of other groups • to write the relevant prescriptions

5. Theme content:

- The main principles of the modern antibacterial therapy.
- Modern classification of antibiotics.
- The role of antibiotics during infectious and pyoinflammatory diseases.
- The choice of antiinflammatory drugs according to the sensitivity of microorganisms, process localization and seriousness of the disease.
- Side effects of antibacterial drugs.
- Contraindications for use of antibacterial therapy.
- Clinical pharmacological characteristics of antibiotics.
- The choice of antibacterial drugs depending on pharmacokinetics.
- Interaction of antimicrobial drugs.
- Dosage mode of antimicrobial drugs.
- Antibacterial therapy efficiency evaluation criteria.
- Age peculiarities of antibacterial therapy.
- Antibiotic resistance and ways of fighting it.

6. Class plan and structure (see introduction).

7. Methodological materials for the class.

7.1 ***Materials for the preparatory stage of class – assessment questions:***

- What does the notion of antimicrobial drugs include?
- Classification of antibacterial drugs (according to groups and mechanism of action).
- Classification of antibacterial drugs.

- Principles of antibiotics choice taking into consideration the nature of agent, character and location of pathological process.
- The meaning of allergological anamnesis.
- Defining sensitivity to an antibiotic. The meaning of antibiotics gram.
- Name the examples of antibiotics side effects and ways of their prevention.

7.2. ***Methodological materials for the main stage of the class:***
To analyze basing on the real clinical examples the indications and contraindications for use of various drugs in case of endocrine system, pancreas, thyroid, pituitary, adrenals diseases; their compatibility and possible side effects.

7.3. ***Materials for assessment at the final stage of the class – situational tasks:***

1. Bacteriostatic antibiotics are able to:
   A) damage the function of cytoplasmic membrane of microorganisms
   B) inhibit synthesis of cytoplasmic membrane of microorganisms
   C) inhibit synthesis of proteins on ribosomes in a microorganism
   D) inhibit DNA synthesis in microorganisms
   E) inhibit synthesis of DNA-hydrolase in microorganisms

2. Broad spectrum bactericidal antibiotic is the most suitable in the following case:
   A) as initial drug in an acute suppurative process
   B) severe infectious diseases with doubtful etiology
   C) treatment of infections caused by chlamydia
   D) supportive treatment of infectious disease
   E) treatment of an intercurrent infection

3. Point the data that is not used in the empirical choice of antibacterial drugs.
   A) clinical appearance
   B) epidemic situation
   C) sensitivity of microorganisms to the antibacterial drug
   D) patient's complains
   E) drug's features

4. Choose the antibacterial drug effectiveness of which is higher in the acid environment (pH 5,0-6,5)
   A) fosfomycin
   B) erythromycin
   C) gentamicin
   D) lincomycin

E) azithromycin

5. The drug of choice in the treatment of gastric thrush, caused by Candida albicans is:
A) clotrimazole
B) fluconazole
C) levorinum
D) natamycin
E) amphotericin B

6. The drug of choice in the treatment of infections caused by Bacillus aeruginosa is:
A) ampicillin
B) amikacin
C) azithromycin
D) amoxicillin + clavulanate
E) cefuroxime

8. THE LIST OF DRUGS TO BE STUDIED FOR THE FINAL MODULAR TEST

Name in English	Name in Latin	Drug forms
Azithromycin	Azithromycinum	tab. 125; 500 mg; cap. 250 mg
Amikacin	Amikacinum	amp. 50; 125; 250; 500 mg – 1 ml
Amoxicillin	Amoxicillinum	tab. 250; 500 mg
Acyclovir	Acyclovirum	tab. 200, 400, 800 mg
Benzylpenicillin	Benzylpenicillinum	flac. 25000; 50000; 1 mln. IU
Vancomycin	Vancomycinum	flac. 500; 1000 mg
Gentamicin	Gentamicinum	amp. 10; 20; 40 mg - 1 ml; ointment 0,1%; aerosol 0,1 %
Doxycycline	Doxycyclinum	cap., tab. 50; 100; 200 mg
Imipenem	Imipenemum	flac. 500 mg
Interferon alfa	Interferonum alfa	sol. 10, 18, 25, 30, 60 mln. IU
Clarithromycin	Clarithromycinum	tab. 250 mg; flac. 500 mg
Clindamycin	Clindamycinum	cap. 75; 150; 300 mg; amp. 2;4 ml
Levofloxacin	Levofloxacinum	tab. 250; 500 mg; flac. 5 mg/ml - 100 ml
Rifampicin	Rifampicinum	cap.150; 300 mg; amp. 125 mg – 1,5 ml; 250 mg –3 ml; 500 mg – 10 ml
Ribavirin	Ribavirinum	cap. 100, 200 mg

Streptomycin	Streptomycinum	flac. 500; 1000 mg
Sulfadimethoxine	Sulfadimethoxinum	tab. 200; 500 mg
Sulfasalazine	Sulfasalasinum	tab. 500 mg
Tetracycline	Tetracyclinum	cap. 250; 500 mg
Tobramycin	Tobramycinum	amp.10; 20; 40 mg –1 ml; ointment 0,3%
Fluconanazole	Fluconanazolum	cap. 50, 100, 150 mg
Cefalexin	Cephalexinum	tab. 50; 250; 1000 mg; cap. 250; 500 mg
Cefepime	Cefepimum	flac. 500 mg; 1; 2 g
Cefotaxime	Cefotaximum	flac. 250; 500 mg; 1; 2 g
Ceftriaxone	Ceftriaxonum	flac. 250; 500 mg; 1; 2 g
Cefuroxime	Cefuroximum	flac. 250; 750; 1500 mg; tab. 125; 250; 500 mg
Ceftazidime	Ceftazidimum	flac. 0,5, 1,2 g
Ciprofloxacin	Ciprofloxacinum	tab. 250; 500; 750 mg; amp. 10; 20 mg – 1 мл

9. RECOMMENDED LITERATURE (see at the end of methodological instructions).

1.7. Clinical pharmacological characteristics of drugs influencing digestive canal functions. Clinical pharmacological characteristics of drugs influencing hepatobiliary system and pancreas.

Subject: clinical pharmacology
Year of study: 5
Faculty: medical
Number of hours: 4

1. Topicality. Digestive organs diseases (chronic gastritis, ulcer, enterocolitis, cholecystitis, chronic hepatitis etc) are widely spread and thus are not only of medical but also of social significance. The modern idea of etiology, pathogenesis and clinical course of the mentioned diseases enable the use of a range of various drugs and their combinations. Among them are medications belonging to different pharmacological classes but largely increasing the efficiency of treatment of different gastrointestinal diseases (antibacterial, psychotropic and hormone drugs, immunomodulators). For example, the conservative treatment of gall bladder and biliary tract pathology includes fighting infections (antimicrobial therapy), dyskinetic disorders correction and bile composition normalization (bile-expelling drugs of different action type), and sometimes – attempts of dissolution of bile

concrements (lithotripsy with the help of medications). The main group includes the drugs directly influencing digestive system organs function. The possibilities of such treatment have risen recently due to the introduction into medical practice a range of modern pharmacological agents – proton-pump inhibitors, prokinetics, synthetic analogies of prostaglandines, a whole group of pro- and prebiotics, new antiemetic drugs etc. The knowledge of clinical pharmacological peculiarities of these substances enables the rational choice in any clinical situation and thus their maximum effective and safe use.

2. Educational aim: To know the clinical pharmacology of drugs used in gastroenterology. To learn the modern principles of pharmacotherapy of the main digestive organs diseases. To know how to analyze, basing on a clinical example, the indications and contraindications for use of drugs and their side effects and compatibility; to learn the methods of drugs choice and if needed to be able to interchange them.

3. Pedagogical aim: To draw the doctor's-to-be attention to the peculiarities of diagnosing and pharmacotherapy of digestive system organs diseases. To highlight the importance of the Ukrainian scientist's contribution into the development and introduction of the new medications into gastroenterologic practice.

5. Interdisciplinary integration:

Subjects	**Knowledge**	**Skills**
1. Preceding:		
• normal anatomy • topographic anatomy	• structure and topography of digestive organs	
• normal physiology	• digestive system physiology	
• pathological anatomy	• morphological changes during gastrointestinal, liver, bile excretory routes and pancreas diseases	
• pathological physiology	• etiology and pathogenesis of digestive system diseases	• to model the development of some pathology on

		the cell level, organ level and body level
• pharmacology	• classification, pharmacodynamics and pharmacokinetics of relevant drugs	• to write the relevant prescriptions
2.Following: • faculty therapy • hospital therapy	• main clinical diagnostic criteria of digestive organs diseases; • digestive organs treatment principles	• to perform clinical examinations of the patients, to prescribe the relevant additional examinations and therapy plan.
• faculty surgery • hospital surgery	• preoperative preparation of a patient and postoperative period during gastrointestinal and hepatobiliary zone diseases	• to perform clinical examinations of the patients, to prescribe the relevant additional examinations and therapy plan.
3.Interdisciplinary integration: • clinical pharmacology of antimicrobial drugs • interaction of drugs	• clinical pharmacological peculiarities of relevant drugs; • potential variants and consequences of drugs interaction in gastroenterology	• to write the relevant prescriptions

5. Theme content:

- Classification of drugs correcting secretory and motor function of digestive organs.
- Clinical pharmacology of antacids with neutralizing action.
- Drugs changing secretory function of stomach, modern possibilities of such therapy.
- Clinical pharmacological peculiarities and rational use of gastroprotectors.
- Clinical pharmacology of emetic and antiemetic drugs.
- Drugs influencing gastrointestinal motorics.

- Drugs regulating intestinal microflora, their rational use.
- Clinical pharmacology of bile-expelling drugs. Drugs enhancing dissolution of bile concrements.
- Clinical pharmacological peculiarities of hepatoprotectors.
- Clinical pharmacology of enzyme and antienzyme drugs.
- Clinical pharmacological approach to drug choice in case of main digestive organs diseases.
- Interaction of drugs influencing digestive organs function.
- Drugs causing digestive system damage. Prognosis and prevention of such influence.

6. Class plan and structure (see introduction).

7. Methodological materials for the class.

7.1 ***Materials for the preparatory stage of class – assessment questions:***

- Pharmacokinetics of antacids with neutralizing action and their interaction with other drugs.
- Which side effects are characteristic of H_2-receptors blockers?
- What does the clinical pharmacological approach to the choice of drugs in type B chronic gastritis treatment include?
- Name the modern drugs with active prokinetic action and indications for their use.
- Clinical pharmacological approach to the correction of intestinal dysbacteriosis caused by antibiotic therapy.
- What drugs and with what aim are used in case of unspecified ulcerative colitis?
- Tell the difference in pharmacological action of choleretics and cholekinetics. What are the contraindications for use of bile-expelling drugs?
- Modern possibilities of gallstone disease conservative treatment.
- Peculiarities of hepatoprotectors use in clinical practice.
- Which group of drugs is the basis for treatment of chronic active hepatitis of viral etiology?
- What does the clinical pharmacological approach to the choice of drugs in chronic pancreatitis treatment include?
- What group of drugs is used in liver coma treatment?

7.2. ***Methodological materials for the main stage of the class:***

To analyze basing on the real clinical examples the indications and contraindications for use of various drugs in case of gastrointestinal, liver, bile

excretory routes and pancreas diseases; their compatibility and possible side effects.

7.3. ***Materials for assessment at the final stage of the class – situational tasks:***

1. Drugs used in treating peptic ulcer include
A) Histamine H_2-receptor antagonists
B) Cytotoxic drugs
C) Beta-blockers
D) Antiplatelet drugs
E) Sulphonamides

2. What group of drugs is not used in the treatment of peptic ulcer?
A) Glucocorticoids
B) Selective and non-selective M-cholinoceptor antagonists
C) Histamine H_2 –receptor antagonists
D) Gastrin-receptor antagonists
E) Proton pump inhibitors

3. Which drug is active against Helicobacter pylori and elevates gastrin level?
A) Omeprazole
B) Cimetidine
C) Calcium carbonate
D) Misoprostol
E) Sucralfate

4. The onset of omeprazole action is
A) 1 hour
B) 2 hours
C) 3 hours
D) 15 min
E) 30 min

5. The effects of omeprazole typically persist over
A) 3 days
B) 2 days
C) 1 day
D) 4 days
E) 36 hours

6. Characterise esomeprazole and omeprazole in ulcer therapy

A) Potency of esomeprazole against Helicobacter pylori is higher than that of omeprazole
B) Potency of omeprazole against Helicobacter pylori is higher than that of esomeprazole
C) Their action against Helicobacter pylori is equal
D) Their action is synergistic, thus they may be used concurrently
E) Their action over Helicobacter pylori is antagonistic

8. THE LIST OF DRUGS TO BE STUDIED FOR THE FINAL MODULAR TEST

Name in English	**Name in Latin**	**Drug forms**
Atropine sulphate	Atropinum sulfuricum	amp. 0,1 %; tab. 0,5 mg
Bismuth subnitrate	Bismuthum subcitratum	tab. 0,12
Domperidone	Domperidonum	tab. 10 mg
Drotaverine hydrochloride	Drotaverinum hydrochloridum	tab. 40 mg; amp. 2% – 2 ml
Lactulose	Lactulosum	syrup 200 ml
Loperamide	Loperamidum	tab. 2 mg
Mebeverine hydrochloride	Mebeverinum hydrochloridum	tab. 200 mg
Metoclorpramide	Metoclorpramidum	tab. 10 mg; amp. 2 ml
Omeprazole	Omeprazolum	cap. 20 mg
Pirenzepine	Pirenzepinum	tab. 25; 50 mg; amp. 0,5%
Prifinium bromide	Prifinium bromidum	tab. 30 mg, syrup
Rabeprazole	Rabeprazolum	tab. 20 мг
Sucralfate	Sucralfatum	tab. 500; 1000 mg
Famotidine	Famotidine	tab. 20; 40 mg;flac. 0,02 g
Ademethyonine	Ademethyoninum	flac. 400 ml
Essentiale Forte N	Essential forte N	cap. 300 mg; amp. 250 mg –5 ml
Octreotide	Octreotide	amp. 100
Pancreatin	Pancreatinum	tab. 0.25
Silimarin	Silimarinum	tab. 0,04
Ursodesoxycholine acid	Acidum ursodeoxycholicum	cap. 250 mg
Cholagol	Cholagolum	flac. 10 ml
Citrarginine	Citrarginine	amp. 10 ml

9. RECOMMENDED LITERATURE (see at the end of methodological instructions).

Part 2
(medical faculty, fifth year of study in "Clinical pharmacology", self-education)

2.1. Clinical pharmacological characteristics of drugs influencing blood coagulation.

Subject: clinical pharmacology
Year of study: 5
Faculty: medical
Number of hours: 1

1. Topicality. Under normal conditions blood clotting happens when blood vessels are damaged, it stops bleeding thus having a protective function. Intravascular coagulation is a pathological process and happens during hemostasis system regulation disorder. The structure of a clot is a network of fibers of insoluble enzyme fibrin and formed elements of blood immobilized in the fibrin fiber. Maintaining the liquid state of blood within vessels and resistance to intravascular coagulation is provided by the anticoagulant blood system. Fibrin clots, which are created in the vessels, are ruined by the enzymes of fibrinolytic system.

Thromboembolic complications mainly happen in case of cardiovascular diseases. To the drugs influencing adhesion, aggregation and fibrinolysis belong: anticoagulants, antiaggregants and fibrinolytics. There are preventive and therapeutic types of antithrombotic medical therapy. In case of acute thrombosis, emboly and myocardial infarction thrombolytic drugs are widely used. Heparin is commonly prescribed in subacute phase of thrombosis and for its prevention. Laboratory control of blood coagulation and fibrinolytic systems is compulsory.

2. Educational aim. To get acquainted with the drugs used for treatment of thromboemboly. To know how to differentiate typical and nontypical clinical manifestations of thromboemboly, to interpret the laboratory data results. To learn the methods of prevention and treatment of thrombosis, thromboemboly and complicated myocardial infarction with the help of medications influencing blood coagulation system.

3. Materials for independent preparation for classes.

3.1. Basic knowledge and skills necessary for learning the topic (interdisciplinary integration).

Subjects	Knowledge	Skills
1. Normal physiology 2. Pathological physiology 3. Pathological anatomy	Blood physiology, etiology and pathogenesis of blood diseases Morphological changes during cardiovascular system diseases	
4. Pharmacology	Parmacodynamics and pharmacokinetics of drugs influencing blood coagulation system	To write the relevant prescriptions
5. Internal diseases 6. Surgery 7. Endocrinology 8. Cardiology 9. Hematology	Clinical manifestations and treatment of diseases, which require prescribing drugs influencing blood coagulation system	To perform clinical examinations of the patients, to prescribe the relevant additional examinations. To write the relevant prescriptions

3.2. Theme content:

1. Classification of drugs influencing blood coagulation system.
2. Drugs influencing fibrinolysis.
3. Anticoagulants of direct and indirect action, their classification and clinical pharmacological action.
4. Antiaggregants (inhibitors of cyclooxygenase, adenylate cyclase, thromboxane synthase), their classification and clinical pharmacological action.
5. Angioprotectors, their classification and clinical pharmacological action.
6. Antithrombotic medications with hemorheologic properties (dextran, hemodes), their classification and clinical pharmacological action.
7. Procoagulants of local and complete action. Their clinical pharmacological action.
8. Drugs enhancing clot destruction.
9. Etiology, pathogenesis, clinics, diagnosing, prevention and treatment of thrombosis.
10. Preventive measures and treatment of patients with myocardial infarction, lung artery embolization and brain artery thrombosis.

3.3. Recommended literature (see at the end of methodological instructions).

3.5. Materials for self- assessment:

A. Questions for self-assessment:

1. Enumerate the main symptoms of thrombosis.
2. Where does thromboemboly most often occur?
3. What are the reasons for thromboemboly development?
4. Name the anticoagulants of direct action.
5. Name the anticoagulants of indirect action.
6. Name the fibrinolytic drugs.
7. Enumerate the drugs which improve rheologic properties of blood.
8. The mechanism of angioprotectors action.

Materials for independent work in class:

4.1. The list of tasks to be performed at the practical class:

- to learn the skills of collecting information for anamnesis for a motivated choice of the optimal treatment taking into consideration blood hemostasis disorder. To know how according to clinical and laboratory data to approve the rational type of pharmacotherapy.
- to learn the modern principles of thromboemboly pharmacotherapy. – to chose the appropriate group of drugs and the drug itself for treatment, taking into consideration the peculiarities of pharmacodynamics and pharmacokinetics.

4.2. Instructions for studying the topic:

№	Tasks	Instructions	Comments
1.	To carry out the patient's treatment with drugs which decrease clot formation and prevent blood coagulation.	To find out during the examination: the peculiarities of the patient's allergological anamnesis; recent or current unwanted side effects of drugs influencing blood coagulation.	
2.	To evaluate the possible interaction and side	To evaluate: Clinical examination results.	To pay attention to: Clinical

	effects of medications. To define the treatment scheme for different side effects manifestations of drugs influencing blood coagulation	Results of additional examinations. The possibility of drugs interaction during the treatment. To write the relevant prescriptions.	manifestations of antiaggregant drugs side effects in anamnesis. The rules of preventing interaction of anticoagulant drugs with other medications.

4.3. Tests and tasks for assessment:

#1. Which of the list of drugs has the direct effect as anticoagulant?
A) Sincumar
B) Heparin
C) Dipiridamole
D) Urokinase
E) Acetylsalicylic asid

#2. Which drug belongs to anticoagulants of indirect effect?
A) Heparin
B) Dipiridamole
C) Urokinase
D) Acetylsalicylic asid
E) Neodicumarin

#3. Choose the drug with fibrinolitic effect.
A) Heparin
B) Pentoxifylline
C) Streptodecase
D) Acetylsalicylic asid
E) Neodicumarin

#4. Choose the drug which does not belong to anticoagulants:
A) Acetylsalicylic asid
B) Fibrinolysin
C) Dipiridamole
D) Pentoxifylline
E) Ticlopidine

#5. One of the drugs given bellow belongs to low molecular weight heparins:
A) Sulodexide

B) Streptokinase
C) Heparin
D) Ticlopidine
E) Indobufen

Task 1. Patient M., 56 years old, admitted to the vascular surgery department in hospital because of subacute thrombophlebitis of lower extremities after usage of low molecular weight heparin (fraxiparine) in the following dose 0,3 ml subcutaneously during 14 days. After treatment course dyspepsia in the form of heartburn, nausea, epigastric pain developed. What was thw the sause of such problems? How are you going to change the treatment approach?

Task 2. Patient N., 62 years old, complains on heardache, ringing in the ears, bad hearing, mental confusion, frequent nausea and vomiting. Because of ischemic heart disease patient takes aspirin in the dose of 500 mg/day. What is the cause of recrudescence? Describ your new treatment tactics.

5. Materials for independent work:

- Clinical meaning of using the drugs which increase thrombosis.
- Use of drugs enhancing clot destruction in complex treatment of myocardial infarction.

2.2 Clinical pharmacological characteristics of antiarrhythmic drugs.

Subject: clinical pharmacology
Year of study: 5
Faculty: medical
Number of hours: 1

1. Topicality. Treatment and prevention of cardiovascular diseases (CVD) including ischemic heart disease (IHD) and heart disorders is one of the current tasks of cardiology. One of the most frequent causes of death and disability in our society is acute myocardial infarction. When arrhythmia occurs the hemodynamic conditions are disturbed and cardiovascular failure develops. Early diagnosing of any form of IHD and arrhythmia helps to prevent the development of different types of acute or chronic heart failure. For proper use of medications it is necessary to possess the right diagnosis, definite indications and adequately chosen drugs. The study of pharmacotherapeutic action of antiarrhythmic drugs enables the doctors to give patients proper and qualified help in emergencies.

2. Educational aim. To acquaint the students with the clinical pharmacological characteristics of antianginal and antiarrhythmic drugs. To draw the doctor's-to-be attention to the cardiovascular system pathologies and teach them the rational use of antiarrhythmic drugs taking into consideration mode of dosage, preventive measures and rules of writing out prescriptions.

3. Materials for independent preparation for classes.

3.1. Basic knowledge and skills necessary for learning the topic (interdisciplinary integration).

Subjects	Knowledge	Skills
1.Normal anatomy	The structure of cardiovascular, respiratory, urogenital systems.	
2.Normal physiology	Physiology of cardiovascular, respiratory, urogenital systems.	
3.Pathological anatomy	Iatrogenic pathology of cardiovascular system organs.	
4.Pathological physiology	Cardiovascular system disorders caused by medications.	
5.Pharmacology	Drugs for treatment of cardiovascular system diseases.	To write relevant prescriptions
6.Internal diseases	Main clinical manifestations of interaction and side effects of drugs in medical practice.	To perform clinical examinations of the patients, to prescribe the relevant additional examinations.
7.General surgery	Surgical aspects of interaction and side effects of some drugs combinations	To perform clinical examinations of the patients, to prescribe the relevant additional examinations.

3.2. Theme content:

1. Modern classification of antiarrhythmic drugs.
2. Clinical pharmacological characteristics of antianginal drugs.
3. Clinical pharmacological characteristics of β-blockers.
4. Clinical pharmacological characteristics of blockers of slow calcium channels.
5. Clinical pharmacological characteristics of membrane stabilizing drugs.
6. Clinical pharmacological characteristics of F-channel blockers.
7. Clinical pharmacological characteristics of antiarrhythmic drugs of different groups.

3.3. Recommended literature (see at the end of methodological instructions).

3.5. Materials for self- assessment:

A. Questions for self-assessment:

1. What is the mechanism of action and pharmacokinetics of Ia class antiarrhythmic drugs?
2. What is the mechanism of action and pharmacokinetics of Ib class antiarrhythmic drugs?
3. What is the mechanism of action and pharmacokinetics of Ic class antiarrhythmic drugs?
4. What is the mechanism of action and pharmacokinetics of II class antiarrhythmic drugs?
5. What is the mechanism of action and pharmacokinetics of III class antiarrhythmic drugs?
6. What is the mechanism of action and pharmacokinetics of antiarrhythmic drugs of different groups?

Materials for independent work in class:

4.1. The list of tasks to be performed at the practical class:

- to carry out the treatment of the patient taking into consideration the main pharmacotherapy principles for antiarrhythmic drugs by choosing the safest and the most effective medications according to information about their pharmacodynamics, pharmacokinetics, possible side effects and interaction;

- to analyze the prescriptions in order to find out the incompatible administration and predict the possible drugs interaction taking into consideration the clinical condition of the patient.

4.2. Instructions for studying the topic:

№	Tasks	Instructions	Comments
1.	To carry out the patient's treatment from the pharmacological anamnesis and possible prescription of antiarrhythmic drugs	To find out during the examination: the peculiarities of the patient's pharmacological anamnesis.	
2.	To define the scheme of IHD treatment with antiarrhythmic drugs	To evaluate: Clinical examination results. Results of additional examinations. The possibility of antiarrhythmic drugs prescription. To write out the relevant prescriptions.	To pay attention to: Clinical manifestations antiarrhythmic drugs. The rules of preventing interaction of drugs.

4.3. Tests and tasks for assessment:

#1. Which of the following β-adrenoblockators has both vasodilative and membrane stabilizing effects, and possesses internal adrenomimetic effect ?
A) Nebivolol
B) Atenolol
C) Bisoprolol
D) Labetalol
E) Bopindolol

#2. Which of the following β-adrenoblockators is selective?
A) Bopindolol
B) Bisoprolol
C) Oxprenololum
D) Sotalol
E) Nadolol

#3. Combined prescribing of β-adrenoblockators with verapamil or amiodaronum may cause
A) Severe dyspepsia, diarrhea
B) Decrease of blood coagulation, bleeding
C) Bradycardia, decrease of miocard contractions
D) Ricochet hypertension
E) Paroxysmal tachycardia
#4. To antiarythmia medicine belong all except
A) Membrane stabilizing medicine
B) β-adrenoblockators
C) Inhibitors of repolarisation
D) Blockators of the slow calcium channels
E) Cardiac glycosides

#5. Choose the medicine, which vividly prolong the potential of action
A) Chinidinum, procainamide, disopyramidum
B) Lidocaine, trimecaium, pyromecainum
C) Nebivolol, metoprolol, atenolol
D) Aethacizium, ajmalinum, propafenone
E) Amiodaronum, bretylium

Task 1. After myocardial infarction patient developed ventricular arrhythmia Cardiac rhythm had been normalized after injection of antiarrythmic drug with local anaethtetic activity. What was this drug? (panangin, verapamil, lidocainum, propranolol, benzocaine)

Task 2. Patient B., 58 years old, takes medication (digoxin 0,0005 mg/day) because of ischemic heart disease, atherosclerotic cardiosclerosis, chronic cardiac insufficiency II B stage. After 20 days of treatment course nausea, vomiting, irregular pulse, yellow vision. What is your diagnosis? How will you change the treatment?

5. Materials for independent work:

- Clinical meaning of F-channel blockers in modern arrhythmia treatment.
- The main pharmacokinetic and pharmacodynamic interactions of antiarrhythmic drugs.
- Prevention and predicting of antiarrhythmic drugs unwanted effects.

2.3. Clinical pharmacological characteristics of antiallergic drugs.

Subject: clinical pharmacology
Year of study: 5
Faculty: medical
Number of hours: 1

1. Topicality. Doctors are facing the patients' allergic reactions more and more often. The number of such patients is growing significantly annually. The most dangerous is the development of a sudden severe reaction – anaphylactic shock. Antiallergic drugs inhibit action of histamine and other biologically active substances, which are emitted as a result of sensibilization reaction (antigen-antibody). That is why the study of pharmacotherapeutic action of drugs blocking H1-receptors enables the doctors to give qualified help to the patients with allergic diseases and emergency help in case of anaphylaxis.

2. Educational aim. To acquaint the students with clinical pharmacological characteristics of antiallergic drugs. Taking into consideration the clinical manifestations and additional examination results, to learn the skills of general patient examination and adequate medical help to the patients with clinical symptoms of anaphylactic shock and immediate or delayed allergic reactions.

3. Materials for independent preparation for classes.

3.1. Basic knowledge and skills necessary for learning the topic (interdisciplinary integration).

Subject	Knowledge	Skills
1. Pathological physiology	Etiology and pathogenesis of allergic diseases	
2. Pathological anatomy	Morphological changes during allergic diseases	
3. Pharmacology	Classification and pharmacodynamics of antihistamine drugs	to write the relevant prescriptions to perform clinical examinations of the patients,
4. Internal diseases		

5. General therapy 6. Clinical pharmacology of antihistamine drugs	Main clinical manifestations of immediate and delayed allergic reactions, bronchial asthma Main clinical manifestations of asthma status, acute respiratory failure, lung swelling Peculiarities of action of 1,2 and 3 generation antihistamine drugs	to prescribe the relevant additional examinations. to perform clinical examinations of the patients, to prescribe the relevant additional examinations. to write the relevant prescriptions

3.2. Theme content:

1. Modern classification of antihistamine drugs.
2. Clinical pharmacological characteristics of antihistamine drugs
3. Principles of antihistamine drugs choice.
4. Peculiarities of antihistamine drugs use.
5. Methods of efficiency and safety evaluation of using antihistamine drugs.

3.3. Recommended literature (see at the end of methodological instructions).

3.5. Materials for self- assessment:

A. Questions for self-assessment:

1. Name the H1-receptors blockers mechanism of action.
2. Indications for use of antihistamine drugs.
3. Name the difference in the main pharmacodynamic effects of antihistamine drugs of different generations.
4. Name the side effects and contraindications for prescribing. Where are H1-receptors located and what pharmacodynamic effects occur during their stimulation?
5. Name the main schemes of pharmacotherapy of immediate allergic reactions.
6. Name the main schemes of pharmacotherapy of delayed allergic reactions.

Materials for independent work in class:

4.1. The list of tasks to be performed at the practical class:

- to carry out the treatment of the patient taking into consideration the main pharmacotherapy principles for antihistamine drugs by choosing the safest and the most effective medications according to information about their pharmacodynamics, pharmacokinetics, possible side effects and interaction;

- to analyze the prescriptions in order to find out the incompatible administration and predict the possible drugs interaction taking into consideration the clinical condition of the patient.

4.2. Instructions for studying the topic:

№	Tasks	Instructions	Comments
1.	To carry out the patient's treatment taking into consideration the allergological anamnesis and possible interaction and side effects of drugs	To find out during the examination: the peculiarities of the patient's allergological anamnesis. Recent or current unwanted side effects of drugs	To pay attention to: manifestations of side effects of drugs in anamnesis. The rules of preventing interaction of drugs with other medications. Writing the relevant prescriptions
2.	To define the scheme of treatment of different side effects (desensibilization, symptomatic and desintoxication therapy)	To evaluate: Clinical examination results. Results of additional examinations. The possibility of drugs interaction during the treatment. To prescribe the adequate treatment of drug interaction side effects.	

4.3. Tests and tasks for assessment:

#1. Patient uses loratadine (Claritin) beacause of allergic dermatitis. To what group of drugs does it medicament belong?
A) Histamine H2-receptor antagonist
B) Glucocorticoids
C) Membrane stabilizing agents
D) Leukotriene receptor antagonist
E) Histamine H1-receptor antagonist

#2. Mechanism of H1-receptor antagonists may be described by the following assertions, exept:
A) Histamine inhibition
B) Suppression of biologically active matters
C) Possess cholinolytic effect

D) Characterised by sedative activity
E) Abilities of serotonin effects

#3. Which of the following drugs does not have sedative effect?
A) Diphenhydramine (Dimedrol)
B) Promethazine (Diprazinum)
C) Chloropyramine (Suprastin)
D) Clemastine (Tavegil)
E) Promethazine (Pipolphen)

#4. Which drug from the list given below fall under the third generation of antiallergics?
A) Ketotifen (Zaditen)
B) Clemastine (Tavegil)
C) Loratadine (Claritin)
D) Terfenadine (Triludan)
E) Cetirizine (Reactine)

#5. One women with seasonal vasomotor rhinitis (her occupation – dispatcher) came to the hospital and put the question to a doctor. She wanted to know which antihistaminic drug does not have untoward effects on CNS. Choose correct amswer.
A) Promethazine (Pipolphen)
B) Diphenhydramine (Dimedrol)
C) Loratadine (Claritin)
D) Clemastine (Tavegil)
E) Chloropyramine (Suprastin)

Task 1. Patient M., 45 years old, used aspirin, metamizole because of influenza. Later patient developed rhinedema, white papulae on face, upper and lower extremities (transformed in roseolae), itching, and swelling. What is the mater? What are you going to do?

Task 2. Patient D., 62 years old, attended to dentist's office. Dentist injected Lidocaton (Epinephrine/Lidocaine Hydrochloride). After 10 minites patient felt weekness, nausea, dizziness, paleness, mental confusion, breathlessness, cold sweat, hypotension, and collaps with filiform pulse. What is your diagnosis? How are you going to help this patient?

5. Materials for independent work:

- Clinical meaning of using drugs metabolism inducers and blockers.

- Interaction of drugs with herbs.
- Classification of allergic reactions.
- Drugs addiction. Abstinence syndrome.
- Classification of allergic reactions.
- Immediate and delayed allergic reactions. Their manifestations in therapeutic clinics.

2.4. Interaction of drugs, types of side effects, complications of medicamental therapy.

Subject: clinical pharmacology
Year of study: 5
Faculty: medical
Number of hours: 1

Drugs interaction – is the change of pharmacological effect of one or more medications when they are administered simultaneously or successively. There are the following types of drugs interaction: pharmaceutical, pharmacodynamic and pharmacokinetic, and according to the final result there are synergistic and antagonistic types of interaction. All types of pharmacodynamic interaction occur in the places of drug influence localization in the body. As a result of pharmacodynamic interaction the increase of both the main and side effects of a drug may occur. Thus the rational combination of drugs is the basis of effective pharmacotherapy of various diseases.

Side effects – are adverse, dangerous for human body reactions, which occur after use of medications for illness prevention, diagnosing or treatment, as well as correction or modifying of vital functions (WHO 2000). A number of factors enhances the increase of side effects occurrence: irrational and ungrounded use of various drugs, increase in self treatment or prescription of drugs or biologically active additives by nonprofessionals, as well as drugs prescription without taking into consideration clinical parameters: sex, age, seriousness and duration of the main disease and its complications, accompanying diseases and the main pharmacological parameters: dosage, way of administration, peculiarities of interaction. Therefore the study of the causes, mechanism of development and prevention of unwanted effects is an important issue in medicine.

2. Educational aim. To have the idea of the fact that drugs in some combinations may cause side effects and side actions; to know the most spread and common potentially dangerous combinations. Taking into consideration the

clinical manifestations and additional examinations data, to learn the skill of general examination of a patient and of adequate medical help with the aim of correcting the unwanted effect of drugs on the patient's body.

3. Materials for independent preparation for classes.

3.1. Basic knowledge and skills necessary for learning the topic (interdisciplinary integration).

Subjects	Knowledge	Skills
1.Normal anatomy	The structure of cardiovascular, respiratory, urogenital, digestive systems.	
2.Normal physiology	Physiology of cardiovascular, respiratory, urogenital, digestive systems.	
3.Pathological anatomy	Iatrogenic pathology of cardiovascular, respiratory, urogenital systems and gastrointestinal tract.	
4.Pathological physiology	Cardiovascular, respiratory, urogenital, digestive systems disorders caused by medications.	To write relevant prescriptions To perform clinical examinations of the patients, to prescribe the relevant additional examinations.
5.Pharmacology	Drugs for treatment of cardiovascular respiratory, urogenital, digestive systems diseases.	To perform clinical examinations of the patients, to prescribe the relevant additional examinations.
6.Internal diseases	Main clinical manifestations of interaction and side effects of drugs in medical practice.	
7.General surgery	Surgical aspects of interaction and side	

	effects of some drugs combinations.	

3.2. Theme content:

1. Advantages and disadvantages of combined pharmacotherapy.
2. The main types of drugs interaction during simultaneous use.
3. Pharmaceutic interaction characteristics.
4. The principles of pharmacodynamic drugs interaction.
5. The peculiarities of pharmacokinetic interaction at various stages.
6. Drugs interaction with food components.
7. Drugs interaction with alcohol and tobacco smoke.
8. The importance of drugs interaction in dental practice.
9. The modern definition of the term side effects of drugs.
10. Epidemiology of side effects.

3.3. Recommended literature (see at the end of methodological instructions).

3.5. Materials for self- assessment:

A. Questions for self-assessment:

1. Classification of side effects according to predictability, localization, clinical progress seriousness, type and etiopathogenetic peculiarities.
2. Toxic effects of drugs.
3. Side effects caused by the pharmacological peculiarities of drugs.
4. Allergic reactions.
5. Pseudoallergic reactions.
6. Idiosyncrasy and medical addiction.
7. Diagnosing and treatment of drugs side effects.

Materials for independent work in class:

4.1. The list of tasks to be performed at the practical class:

- to carry out the treatment of the patient taking into consideration the allergic anamnesis, main pharmacotherapy principles of certain diseases by choosing the safest and the most effective medications according to information about their pharmacodynamics, pharmacokinetics, possible side effects and interaction;
- to analyze the prescriptions in order to find out the incompatible administration and predict the possible drugs interaction taking into consideration the clinical condition of the patient.

4.2. Instructions for studying the topic:

№	Tasks	Instructions	Comments
1.	To carry out the patient's treatment taking into consideration the allergological anamnesis and possible interaction and side effects of drugs	To find out during the examination: the peculiarities of the patient's allergological anamnesis. Recent or current unwanted side effects of drugs To evaluate: Clinical examination results. Results of additional examinations. The possibility of drugs interaction during the treatment. To prescribe the adequate treatment of drug interaction side effects. To write relevant prescriptions.	To pay attention to: manifestations of side effects of drugs in anamnesis. The rules of preventing interaction of drugs with other medications. Writing the relevant prescriptions
2.	To define the scheme of treatment of different side effects (desensibilization, symptomatic and desintoxication therapy)		

4.3. Tests and tasks for assessment:

#1. Drug-food interaction depends on:
A) Physical and chemical nature of medicaments.
B) Dosage form of drug.
C) Sort and amount of food
D) Interval between meals and drugs
E) All of the above.

#2. A lot of drugs may mitigate clinical effect of antihypertensive medicaments. One of the below does not have such effect.
A) Nikethamide (Cordiamin).
B) Phenylephrine (Mesaton)
C) Ephedrine
D) Diazepam (Valium)

E) Caffeine.

#3. Patient N., 40 years old, suffers from quinsy. At the same time this patient takes iron supplements. Which of the drugs given below should not be used in this case?
A) Doxycycline
B) Cefalexin
C) Ampiox (ampicillin + oxacillin)
D) Spiramycin
E) Ofloxacin

#4. Choose the most hepatotoxic combination of drugs:
A) Doxycycline + Diclofenac
B) Cefalexin + Furosemide
C) Paracetamol + Ampiox
D) Paracetamol + Chloramphenicol (Levomycetin)
E) Paracetamol + Metamizole (Analgin)

#5. Which group of drugs following long-term treatment displays oto-, nephron-, and neurotoxisity?
A) Penicillins
B) Aminoglycosides
C) Cephalosporins
D) Macrolides
E) Fluoroquinolones

Task 1. Patient X., 45 years old, used analgesics after tooth extraction. Suddenly patient has felt dyspepsia with heartburn, nausea, sour eructations, and epigastric pain. Last month and this one patient takes prednisolone because of rheumatoid arthritis. What does it cause such problems? What will you do in this case?

Task 2. Patient D. 62 years old takes glyburide 20 mg/day because of diabetes mellitus type 2. After physical exercises patient has felt trembling, sweating, blurred vision. What is the problem? What should you advice?

5. Materials for independent work:

- Clinical meaning of using drugs metabolism inducers and blockers.
- Interaction of drugs with herbs.
- Classification of allergic reactions.
- Drugs addiction. Abstinence syndrome.

Appendix

Drugs use efficiency and safety evaluation form
(according to curation data)

Patient's full name_____
_____
Age_____
Date of application_____
Duration of hospital treatment previous to curation_____

Diagnosis:
Main:_____
_____
_____
_____
_____
_____
Complications:_____
_____
_____
_____
_____

Accompanying:_____
_____
_____
_____
_____

Curator: st._____**year**
_____**faculty**
_____
_____
Lecturer: _____

Evaluation of patients condition dynamics during the treatment.
Health history.

Life anamnesis_____
_____
_____
_____
_____

Previous illnesses
_____
_____
_____
_____
_____
_____

Operations, trauma
_____
_____
_____
_____

Injuries _____
_____

Professional
risks_____
_____
_____

Cardiovascular system
Patient's complaints

Complaints	At time of application	During curation
Heart pains: during day (frequency)		
at night		
presence of permanent pains		
number of nitroglycerin pills per day		
Type of pain: sharp pains		
pressing pain		
Peculiarities of occurrence: during exercise		
other causes (specify)		

Complaints about heart rhythm disorders (frequency of occurrence)		
missing heartbeats		
atrial fibrillation attacks (tachy-, normo-, brady-, attack, constant form)		
constant form of atrial fibrillation (tachy-, normo-, brady-)		
Bradycardia Брадикардія (frequency of occurrence)		
Weakness		
Dyspnea: during exercise		
at rest		
Chocking attacks		
Swelling		
Blood pressure fluctuations		

Illness anamnesis

Beginning of symptoms manifestation, illness development dynamics_____
_____
_____
_____
_____

Complications:
acute myocardial infarction_____ acute cerebrovascular accident _____
_____
_____
_____
_____

Peculiarities of recent dynamics
_____
_____
_____
_____

Examination data

Blood pressure		
Heart rate		
Heart rhythm: correct		
extrasystole, rate per 1 minute		
atrial fibrillation (tachy-, normo-, brady)		

Hheart murmurs		
Swellings: absent		
location		
mucosa color: pink		
cianosis		

Extra examinations data

Echocardiogram (in dynamics) _____
_____
_____
_____
_____
_____

Blood coagulation

_____
_____
_____
_____

Cholesterol _____β-lipoproteides
_____HDL_____LDL _____
Echocardiogram _____
_____
_____
_____
_____

5. Consultations

Oculist _____
_____
_____
_____
_____
_____

Respiratory system

1. Patient's complaints

Complaints	At time of application	During curation
Cough: frequency of attacks		
phlegm in cough		
Type of phlegm: mucus		

purulent		
Time of occurrence: in the morning		
during the day		
at night		
Wheeze: absent		
dry		
Chest pains during breathing		
Weakness		
Dyspnea		
Choking attacks in case of broncho-obstructive syndrome: frequency during the day		
frequency at night		
number of broncholytics inhalations per day		

Anamnesis_____
_____
Previous illnesses _____
_____
_____
Operations, trauma _____
_____
_____
_____
Injuries _____
_____
Professional risks_____
_____

Examination data

Respiratory rate		
Wheeze: absent		
dry		
moist		
single		
multiple		
crepitation		
Weak breathing (location)		
Percussion date: lung sound		
dull sound		

Extra examinations data

Radioscopy (radio- or fluoroscopy)

_____
_____
_____
_____
_____
_____
_____
_____
_____

Spirography _____

_____
_____
_____
_____
_____
_____
_____

Gastrointestinal tract

1. Patient's complaints

Скарги		At time of application	During curation
Pains:	absent		
	in epigastrium		
	in right hypochondrium		
	in left hypochondrium		
	in umbilical area		
	around all the abdomen		
	other		
Time and peculiarities of:	before meal		
	after meal		
	irrespective of meal		
	during the day		
	at night		
Character of:	acute		
	dull		
	cutting		

prickly		
Nausea		
Vomiting (times a day)		
Bitter taste in the mouth		
Character of stool constipation		
diarrhea		
Bloating		

Anamnesis

Beginning of symptoms manifestation, illness development dynamics

_____
_____
_____
_____

Complications:

_____
_____
_____
_____
_____
_____

Peculiarities of recent dynamics _____
_____
_____
_____

Examination data

Tenderness to palpation: absent		
in epigastrium		
in pyrrolo-duodenal zone		
in right hypochondrium		
in left hypochondrium		
in umbilical area		
in pubic area to the left, right		
around all the abdomen		
Positive symptom		

Extra examinations data
Complete blood count: Erythrocytes_____Hemoglobin _____ Leukocytes _____ Erythrocyte sedimentation rate (ESR)_____
_____
_____
_____
Hepatic complex
_____
_____
_____
_____
_____
Ultrasound of liver, gall bladder, pancreas
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Musculoskeletal system
Patient's complaints

Complaints	At time of application	During curation
Pains in joints: constantly		
during exercise		
Pains location: all large joints		
small joints		
separate joints (specify)		
spine (specify the segment)		
Severity of pain according to the 5(10) points scale		
Stiffness of joints in the morning (duration)		
Swelling of joints (specify which)		

Anamnesis

Beginning of symptoms manifestation, illness development dynamics

_____
_____
_____
_____

Complications: _____
_____
_____
_____

Peculiarities of recent dynamics _____
_____
_____

Examination data

Joints deformation (specify which)		
Swelling of joints (specify which)		

Extra examination data

Radioscopy _____
_____
_____
_____
_____
_____
_____

Consultation of orthopedist-traumatologist

_____
_____

Urinary system

Patient's complaints

Complaints	At time of application	During curation
Enuresis		
Urinating difficulty		
Frequent urinating: absent		
during the day		
at night (number of times)		
Pains in kidney area		

Anamnesis

Beginning of symptoms manifestation, illness development dynamics

_____
_____
_____
_____

Complications: _____
_____
_____

Peculiarities of recent dynamics _____
_____
_____

Examination data

Pasternatsky's symptom: negative		
positive to the left, right		

Extra examination data

Complete urine analysis: _____
_____
_____
_____

Hepatic complex _____
_____
_____
_____
_____

Ultrasound of kidneys, urinary bladder, prostate _____
_____
_____
_____
_____
_____

Consultation of urologist _____
_____
_____
_____
_____
_____

Cerebral blood flow and central nervous system condition Patient's complaints

Complaints	At time of application	During curation
Dizziness		
Headache: location		
time of occurence		
Sleepiness		
Insomnia		
Parkinsonism manifestation		
Unsteadiness of gait		

Anamnesis

Beginning of symptoms manifestation, illness development dynamics _____

_____

_____

_____

_____

_____

_____

Complications:_____

_____

_____

_____

Peculiarities of recent dynamics _____

_____

_____

_____

Extra examinations data

Radioscopy_____

_____

Ultrasound of brain vessels _____

_____

_____

_____

_____

_____

_____

Neuropathologist's conclusion _____

_____

_____

Peripheral blood circulation condition
Patient's complaints

Complaints	At time of application	During curation
Heavy feet		
Pain in the calf muscles: while walking		
at rest		
Distance covered before the muscle pain		
Болі у стопах		
Похолодання, мерзлякуватість ніг		
Судоми у литкових м'язах		

Anamnesis
Beginning of symptoms manifestation, illness development dynamics
_____
_____
_____
_____
Complications: _____
_____

Peculiarities of recent dynamics _____
_____
_____

Examination data

Varicose vascular lesion		
Feet skin color		
Trophic disorders		

Extra examinations data
Rheovasography of the lower extremities vessels
_____
_____
_____
_____
_____

Consultation of surgeon
_____

Diagnosis:

Main**:**

Complications of the main illness

Accompanying:

TREATMENT PLAN

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Characteristics of the drugs administered to the patient

А) Justification of administration.

Drug, dosage form, dosage and number of intake	Aim of administration
А) Influence on the main illness	
Б) Influence on the accompanying illnesses	

Б)Administered drug safety evaluation

Drug	Main side effects	Safety criteria (methods of control)	Patient's possession
1	1. 2. 3. 4.		
2	1. 2. 3. 4.		
3	1. 2. 3. 4. 5.		
4	1. 2. 3. 4.		
5	1. 2. 3. 4.		
6	1. 2. 3. 4.		
7	1.		

	2. 3. 4. 5.		
8	1. 2. 3. 4.		

Side effects noticed in two or more drugs, which may increase during joint administration:

1._____
2._____
3._____
4._____
5._____
6._____

Interaction of drugs administered to the patient (Pharmacodynamics)

№	Drug	1	2	3	4	5	6	7	8	9	10
1		X									
2			X								
3				X							
4					X						
5						X					
6							X				
7								X			
8									X		
9										X	
10											X

«+» - the combination is effective and safe
«+/-» - therapeutic effect is enhanced during interaction, but side effects may increase (specify)

1._____
_____
2._____
_____

3._____
_____
4._____
_____
«-» - the combination is irrational (specify why, from your point of view)
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Conclusion according to the results of drugs interaction in the treatment of the chosen patient.

Efficiency of administered drugs

Positive dynamics:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Negative dynamics (reasons):

_____
_____

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Without changes (reasons):

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Б) Justification
Administration_____
_____
_____
_____
_____
_____
_____
_____

В) Safety_____
_____
_____
_____
_____
_____

Γ) Rationality of combination

_____
_____
_____
_____
_____
_____
_____

Outpatient treatment recommendations

Drug	Intake scheme+justification
Constant intake at home	
Duration of treatment started in hospital	

9. List of references

_____
_____
_____
_____
_____
_____
_____
_____

National Classification Management Documentation code _ _ _ _ _ _ _
All-Ukrainian classification of enterprises and organizations code_ _ _ _ _ _ _

Ministry of Health of Ukraine		MEDICAL DOCUMENTATION FORM №_ _ _ _ _ _ _ _ _ _ _ _ _ Approved by order of the Ministry of Health of Ukraine _ _ _ _ _ _ _ _ _ _ №_ _ _ _ _ _ _ _ _ _

REPORT ON SIDE REACTIONS / EFFECTS (SR / SE) OF DRUGS (D)

I. INFORMATION ABOUT THE PATIENT AND SR/SE (number of medical history or outpatients record)

1. Full name	2. Place of birth	3. Age	4. Sex	Start of SR/SE			7. Start of SR/SE (underline the necessary)
				day	month	year	A-recovery without consequences B-recovery with consequences C-without change D- death as a result of drug administration E-death, probably due to drug F-cause of death unknown

6. Description of SR/SE

II. INFORMATION ABOUT THE SUSPECTED DRUG (SD)

<table>
<tr><td colspan="5">8.Suspected drug (name, manufacturer, country)</td><td>16. Was the withdrawal of the drug accompanied by the disappearing of SR/SE?

Yes No Don’t know</td></tr>
<tr><td>9. Single dose</td><td>10. Daily dose</td><td colspan="2">11. Frequency of intake</td><td>12. Way of administration</td><td>17. Did the SR/SE repeat after second administration of the drug?
Yes No Don’t know</td></tr>
<tr><td colspan="5">13. Indications for SD prescription</td><td rowspan="3">Clinical diagnosis</td></tr>
<tr><td colspan="4">14. Date of administration from-to</td><td rowspan="2">15. Duration of therapy before the start of SR/SE</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="6">III. ACCOMPANYING DRUGS AND ANAMNESIS</td></tr>
<tr><td colspan="6">18. Accompanying drugs and dates of administration (except the drugs for SR/SE correction)</td></tr>
<tr><td colspan="6">19. Other data from anamnesis (illnesses, allergy, pregnancy, harmful habits), chemical toxicants, ionizing radiation, adverse effects of Chornobyl tragedy</td></tr>
</table>

IV. MEANS OF SR / SE CORRECTION (underline the necessary)

Withdrawal of SD Without correction

Decrease of SD dose Withdrawal of accompanying drug (specify which)

Drug therapy of SR/SE
(which drugs were used)

V. ADDITIONAL DATA

Specific data of clinical, laboratory, radiological and autopsy studies, including determining the concentration of drug in the blood / tissues, if any, and related SR / SE (specify standards and dates)

_____
_____
_____
_____
_____
_____

VI. INFORMATION RELATED TO SD AND SR/SE

Has the patient used the SD before? Yes No Don't know

If yes, which SR/SE occurred – the same or different
Yes No Don't know

If different – specify which

Have other drugs caused similar SR/SE?
If yes – which drugs Yes No Don't know

Has the patient had similar clinical manifstations of SR/ SE not related to drug use? Yes No Don't know

Could other factors influence the development of SR/SE (systematical illnesses, drug addiction, environment, chemical toxicants, ionizing radiation, adverse effects of Chornobyl tragedy, allergy)?

Yes No Don't know

If yes, specify which

VII. DRUG STATUS (underline the necessary)

Clinical tests Use in medical practice

VIII. OTHER PECULIARITIES OF CLINICS, TREATMENT OF CONSEQUENCES

_____
_____
_____
_____
_____
_____

Date_____ Signature_____

List of abbreviations: D-drug; SR – side reaction; SD – suspected drug

Note. Reports are sent to the State Pharmacological Center of the Ministry of Health of Ukraine at Kyiv, 03680. str. Narodnoho Opolchennya, 5. M.D. Strazhesko Institute of Cardiology Academy of Medical Sciences of Ukraine, Clinical Pharmacology department – Pharmacological Supervision department of State Pharmacological Center of the Ministry of Health of Ukraine tel/fax (044) 249 70 01.

LIST OF TESTS FOR FINAL MODULAR ASSESMENT

Theme 1

1. Mechanism of drug action is explored by:
A) pharmacokinetics
B) pharmacogenetics
C) pharmacoeconomics
D) pharmacodynamics
E) pharmacognosy

2. Therapeutic window is the dosages of a medication (therapeutic serum concentrations) between:
A) TD_{50} curve and ED_{50}
B) ED_{50} and $T_{1/2}$
C) the amount that gives an effect (effective dose) and the amount that gives more adverse effects than desired effects
D) the amount that gives minimal adverse effects and the amount that gives more adverse effects
E) the amount that gives minimal effect and the amount that gives full therapeutic effect

3. Therapeutic index is the ratio of:
A) LD_{50} over the ED_{50}
B) ED_{50}over the LD_{50}
C) bioavailability over drug dose
D) apparent volume of distribution over elimination rate constant
E) total clearance over nonrenal (extrarenal) clearance

4. Therapeutic drug monitoring means:
A) trough concentration under steady-state condition
B) measurement of medication concentrations in blood
C) the process of chemical alteration of drugs in the body
D) amount of untoward effects following treatment
E) development of expected desired effects

5. Therapeutic dose is not related to:
A) patient's age
B) rout of administration
C) desired therapeutic effect

D) organs of elimination
E) treatment costs

6. Mean therapeutic doses mentioned in manuals is obtained by the following way:
A) calculation of pharmacokinetic features
B) clinical investigations
C) experimental investigations
D) experimental data adopted for human body
E) calculation of pharmacodynamic features

7. Find correct definition to presystemic metabolism (first pass metabolism).
A) drug inactivation in the systemic circulation
B) drug inactivation in kidneys
C) drug inactivation in the liver after systemic circulation
D) enzymatic cleavage in the gastrointestinal lumen, gut wall, by bacterial enzymes, and in the liver
E) enzymatic cleavage in the gastrointestinal lumen

8. Advantages of parenteral rout of administration does not include one of the following:
A) rapid onset of action
B) low risk of overdosing
C) precise dosing
D) absence of influence on gastrointestinal tract
E) 100% bioavailability

9. Acetylsalicylic acid absorption is much faster when pH is:
A) 2,0
B) 3,0
C) 3,5
D) 4,5
E) 1,5

10. Atropine absorption is much faster when pH is:
A) 2,0
B) 3,0
C) 3,5
D) 4,5
E) 1,5

11. Choose the statement which should not be followed in the case of endolymphatic administration of the drugs
A) endolymphatic administration is contraindicated in trophic lesions of the legs
B) high concentrated solutions should be avoided
C) solution should be cooled prior to administration
D) repeated endolymphatic administration of the drug should be performed to different sites
E) endolymphatic administration is contraindicated on sites where skin is damaged

12. Bioavailability means:
A) high dose in blood
B) good penetration of active drug form into the target organs from systemic circulation
C) amount of inactive form of drug after liver metabolism
D) the certain proportion of administered drug that gains systemic circulation in unchanged form or as an active metabolite
E) sufficient penetration of active form of drug into the target organs from portal circulation

13. If bioavailability after oral drug administration less than 30%, one of given below is correct:
A) high probability of adverse effects resulted in drug interaction
B) low probability of adverse effects resulted in drug interaction
C) better to prescribe drug intramuscularly or intravenously if it is possible
D) doctor should increase the dose of such drug and continue its administration
E) doctor should increase frequency of drug administration
14. Protein binding is not related with the following:
A) therapeutic window
B) liver disease
C) renal insufficiency
D) bilirubin level in blood
E) pregnancy

15. One of the assertions given below is correct if ability of drug to bind proteins in blood exceeds 80 %:
A) drug does not leave systemic circulation
B) to take it into account when choose the dose of such drug
C) effect of this drug is lower in hypoproteinemia
D) toxic effect of such drug may be treated by dialysis
E) fast penetration into tissues is characteristic for such drug

16. Aparrent volume of distribution determines:
A) ratio between drug dose and plasma drug concentration
B) ratio between drug absorption and bioavailability
C) drug distribution between systemic circulation and muscles
D) amount of drug that reach the systemic circulation
E) relationship between bioavailability and excretion

17. What does it mean if apparent volume of distribution less than 0,15 l/kg?
A) drug is found in extracellular fluids
B) drug is found in blood
C) drug is found in tissues
D) drug is almost all eliminated
E) drug is found in fat

18. Biotransformation of drugs usually generates:
A) more lipophilic compounds
B) more hydrophilic metabolites
C) more active substances
D) pure compounds
E) inert matter

19. Choose one of the drugs which is not inhibit biotransformation of others.
A) clarithromycin
B) indomethacin
C) tetracycline
D) diphenyl
E) fluconazole

20. Choose one of the drugs which is not accelerate biotransformation of others.
A) phenobarbital
B) diltiazem
C) rifampicin
D) diphenhydramine
E) prednisolone

21. Week acid drugs are excreted easily in the:
A) neutral urine
B) alkaline urine
C) acid urine
D) hydrophilic urine

E) hydrophobic urine

22. Clearance of creatinine is necessary to measure in the following case:
A) hepatic insufficiency
B) renal failure
C) bronchial insufficiency
D) heart failure
E) adrenal insufficiency

23. In the case of renal failure drug adjustment is carry out taking into account the following:
A) biochemical laboratory
B) measurement of diuresis
C) clearance of creatinine
D) drug elimination
E) renal excretion of drug

24. In the case of hepatic insufficiency drug adjustment is carry out taking into account the following:
A) enterohepatic cycle
B) total clearance
C) apparent volume of distribution
D) evaluation of clinical, paraclinical and laboratory data
E) extrarenal clearance

25. Frequency of drug administration is based on the following knowledge:
A) half-life of the drug
B) maximum drug concentration in blood
C) fluctuation in the amount of drug in the body
D) elimination rate constant
E) glomerular filtration rate

26. After what half-lives steady-state concentration of drug is achieved?
A) 1-2 $T_{1/2}$
B) 3-5 T ½
C) 6-8 T ½
D) 9-11 T ½
E) 12-24 T ½

27. How do you understand elimination rate constant?
A) amount of drug, disposed in urine per day

B) amount of drug, disposed in feces per day
C) it is equivalent to the fraction of a substance that is removed per unit time measured at any particular instant
D) twofold reduction in drug concentration per day
E) twofold reduction in drug concentration during 12 hours

28. Risk of adverse effects is low in the following cases:
A) long-term of drug use
B) impairment of organs where biotransformation takes place
C) elderly patients
D) simultaneous use of less than 4 drugs
E) simultaneous use of drugs with the same adverse reactions

29. Pharmacokinetic interactions include one of the following:
A) drug action on receptors
B) enhancement of pharmacologic effect
C) attenuation of pharmacological effects
D) alteration of drug concentration of one drug by the prior or concurrent administration of another
E) influence of drug on another one following the same rout of administration

30. Name methods used to evaluate drug safety and effectiveness:
A) laboratory studies
B) imaging technology
C) physical examination
D) recording patient symptoms
E) all of the above
31. One of the following drugs inhibits tetracycline absorption.
A) sodium bicarbonate
B) calcium-containing drugs
C) potassium-containing medicines
D) phosphorus-containing compounds
E) magnesium-containing drugs

32. Which drug induces cytochrome P450 in the liver?
A) probenecid
B) epinephrine
C) norepinephrine
D) phenobarbital
E) dopamine

33. Which drug induces bilirubin biotransformation?
A) serotonin
B) epinephrine
C) norepinephrine
D) phenobarbital
E) dopamine

34. Choose the valid type of drug-drug interaction.
A) interaction during liver metabolism
B) ionic interaction
C) chemical interaction
D) atomic interaction
E) molecular interaction

35. Enzyme activity may be induced by one of the following drugs.
A) serotonin
B) epinephrine
C) norepinephrine
D) griseofulvin
E) dopamine

36. Which group of drug may decrease synthesis of vitamin K?
A) antimicrobial drugs
B) antacids
C) potassium-containing medicines
D) sodium-containing medicines
E) cimetidine
37. Cholestyramine decreases absorption of:
A) clindamycin
B) potassium-containing medicines
C) sodium bicarbonate
D) magnesium-containing drugs
E) phosphorus-containing compounds

38. One of the following drug delays absorption of local anesthetics.
A) phenobarbital
B) antacids
C) acetylsalicylic acid
D) norepinephrine
E) cimetidine

39. Anticoagulant activity of warfarin in altered by one of the following drug:
A) probenecid
B) epinephrine
C) norepinephrine
D) phenobarbital
E) dopamine

40. One of the following drugs increases in myocardial sensitivity to epinephrine.
A) serotonin
B) potassium-containing medicines
C) magnesium-containing drugs
D) diuretics
E) dopamine

41. Tetracyclines are not absorbed well if form an insoluble complex with:
A) calcium
B) sodium
C) potassium
D) phosphorus
E) oxygen

42. One of the following drug increases permeability of penicillins into cerebrospinal fluid.
A) euphyllin
B) epinephrine
C) norepinephrine
D) phenobarbital
E) dopamine

43. Give the definition of drug absorption.
A) the process of drug movement from the site of application toward the systemic circulation
B) the process of drug movement from gastrointestinal tract toward the systemic circulation
C) the process of chemical modification of the drug
D) qualitative analysis of the serum concentration-time curve
E) area under the concentration curve

44. Choose the valid type of drug-drug interaction.
A) interaction during GI absorption

B) ionic interaction
C) chemical interaction
D) atomic interaction
E) molecular interaction

45. One of the following drug enhances biotransformation of vitamin D.
A) serotonin
B) epinephrine
C) norepinephrine
D) phenobarbital
E) dopamine

46. In emergency states we should take into account one of the following:
A) changes in drug absorption time
B) changes in drug absorption ammount
C) blood pH
D) gastric pH
E) urine pH

47. Prednisolone binds with one of the following proteins:
A) globulin
B) albumin
C) fibrinogen
D) prealbumin
E) prothrombin

48. One of the given below enhances glucocorticoid metabolism.
A) serotonin
B) epinephrine
C) norepinephrine
D) diphenin
E) dopamine

49. One of the given below enhances thyroxine metabolism.
A) serotonin
B) epinephrine
C) norepinephrine
D) diphenin
E) dopamine

50. One of the given below increases blood concentration of acetylcholine.

A) serotonin
B) epinephrine
C) norepinephrine
D) proserin
E) dopamine

51. Pharmacological agents are used in therapeutics to
A) kill agents caused inflammatory, etc.
B) cure disease
C) aggravate symptoms
D) eliminate pathogenetic factors
E) stimulate or inhibit hormone production

52. What drug's action do you know?
A) action on DNA
B) action on cells
C) action on specific receptor
D) action on viruses
E) action on mediators

53. Bioavailability is the
A) proportion of administered drug that reaches the systemic circulation in unchanged form
B) bioavailability is the kind of susceptibility of body tissues to the given drug
C) proportion of administered drug that reaches the systemic circulation
D) proportion of administered drug that reaches the systemic circulation in changed form
E) ability of administered drug to reach its target of action

54. First-pass metabolism is
A) metabolism which takes place in the liver
B) metabolism which takes place in the gastrointestinal tract
C) the metabolism of a drug that occurs en route from the gut lumen to the systemic circulation
D) renal metabolism
E) the metabolism of a drug that occurs in the systemic circulation

55. Choose the pharmacological group, which produces action on ion channels
A) antiarrhythmic drugs
B) $beta_2$ –adrenoreceptor blockers
C) sulfonamides

D) antipsychotic drugs
E) biguanides

56. Drug that binds to specific receptor (or enzyme) blocking it and its action is reversible is called
A) non-competitive antagonist
B) competitive antagonist
C) competitive agonist
D) non-competitive agonist
E) antagonist

57. Drug that binds to specific receptor (or enzyme) and activates it is called
A) competitive antagonist
B) agonist
C) non-competitive antagonist
D) competitive agonist
E) non-competitive agonist

58. Drug that binds to specific receptor (or enzyme) blocking it and its action is irreversible is called
A) non-competitive antagonist
B) competitive antagonist
C) competitive agonist
D) non-competitive agonist
E) antagonist

59. Which pharmacological groups are able to impair functions of cellular membrane and derange DNA synthesis?
A) antibacterial and antineoplastic agents
B) general anaesthetics and antineoplastic drugs
C) antiarrhythmic agents and general anaesthetics
D) $beta_2$ –adrenoreceptor blockers
E) antibacterial and anticonvulsant drugs

60. Absorption is the …
A) abstract concept, which determines where is a drug distributed
B) chemical processing of drugs before they will leave an organism
C) elimination of drugs from the body
D) process that defines the drug entrance into the systemic circulation from the site of administration or application
E) disposition of a drug throughout the body from the general circulation

61. Distribution is the …
A) process that defines the drug entrance into the systemic circulation from the site of administration or application
B) abstract concept, which determines where is a drug distributed
C) chemical processing of drugs before they will leave an organism
D) disposition of a drug throughout the body from the general circulation
E) elimination of drugs from the body

62. Volume of distribution is the …
A) disposition of a drug throughout the body from the general circulation
B) elimination of drugs from the body
C) chemical processing of drugs before they will leave an organism
D) process that defines the drug entrance into the systemic circulation from the site of administration or application
E) abstract concept, which determines where is a drug distributed

63. Biotransformation is the
A) process that defines the drug entrance into the systemic circulation from the site of administration or application
B) elimination of drugs from the body
C) disposition of a drug throughout the body from the general circulation
D) abstract concept, which determines where is a drug distributed
E) chemical processing of drugs before they will leave an organism

64. Phase 1 of the biotransformation embraces
A) coupling between the prodrug metabolite with one of the several acids: glucuronic, sulphuric, acetic or amino acid.
B) modification of the drug molecule into endogenous substances
C) gastrointestinal tract, kidneys and other tissues
D) conversion of the prodrug substance to a more polar metabolite
E) chemical processing of drugs before they will leave an organism

65. Phase 2 of the biotransformation embraces
A) coupling between the prodrug metabolite with one of the several acids: glucuronic, sulphuric, acetic or amino acid.
B) conversion of the prodrug substance to a more polar metabolite
C) activity of cytochrome P-450
D) oxidation process and to a lesser extent reduction or hydrolysis
E) microsomal and nonmicrosomal metabolising systems

66. Which characteristic is correct relatively to impaired renal function?
A) decrement of drug concentration in blood
B) increased elimination of drugs
C) decreased clearance of drugs
D) enhance in protein binding capacity
E) fewer doses should be avoided

67. The subjects of pharmacokinetics are all except:
A) route of administration of the drug
B) biotransformation of active substance
C) distibution of active substance within the organism
D) binding of the active substance with plasma albumins
E) adverse effects of the drug

68. Which of the following is not the subject for pharmacodynamics?
A) Mechanism of action
B) Duration of effect
C) Adverse effects
D) Phases of metabolism
E) Affinity

69. After administration of the drug following reactions could be observed except:
A) therapeutic action
B) idiosyncrasy
C) tolerance
D) tachyphylaxis
E) reabsorption

70. The duration of therapeutic effect depends on:
A) route of administration
B) frequency of administration
C) form of the drug
D) elimination route
E) no correct answer

71. The ratio of quantity of drug reaching systemic blood flow and total amount of introduced drug in different forms, or manufactured by different producers is referred to as:
A) pharmacokinetics
B) pharmacodynamics

C) pharmacoeconomics
D) bioavailability
E) bioequivalence

72. The main groups of hypolipidemic drugrs are all except of:
A) statins
B) fibrates
C) barbiturates
D) bile acids sequestrants
E) niacine and its derivatives

73. Statins are all drugs except of:
A) Lovastatine
B) Simvastatine
C) Atorvastatine
D) Somatostatine
E) Pravastatine

74. The main route of nicotinic acid elimination (about88% of the dose) is:
A) kidney excretion.
B) liver elimination.
C) sweat glands.
D) breast milk.
E) salivary glands.

75. … drugs increase activity of lipoprotein-lipases, promote catabolism as well as decrease the synthesis of LDL, increase excretion of cholesterol with bile (which group?).
A) statins.
B) fibrates.
C) barbiturates.
D) sequestrants of bile acids.
E) niacine.

76. Interaction of nicotinic acid with which group of drugs leads to rapid blood pressure drop?
A) myotropic spasmolytics
B) antidepressants
C) antihypertensuve drugs
D) statins
E) fibrates

77. The bioavailability is used for:
A) fitting the dose in case of enteral administration
B) calculation of the costs of treatment
C) fitting the optimal frequency of drug administration
D) calculation of the dose in case of IV administration
E) calculation of the dose in case of s/c administration

78. The process of passage of drug from the location of introduction into bloodstream and/or lymphatic system is:
A) reabsorption
B) absorption
C) endocytosis
D) hemosorption
E) exocytosis

79. The mechanism of transport requiring energy consumption and often performed against the gradient of concentration is:
A) pinocytosis
B) endocytosis
C) active transport
D) filtration through the pores
E) passive diffusion

80. The proteins of blood plasma, which bind drugs are all except of:
A) albumines
B) glycoproteins
C) gamma-globulins
D) caseines
E) acidic α_1 – glycoprotein

Theme 2

81. To the inotrope medication belong all except:
A) cardiac glycosides
B) beta 1-adrenoreceptors stimulators
C) inhibitors of phosphodiesterase
D) β-adrenoblockators
E) mast cell stabilizers

82. Cardiac glycosides have the following effect:

A) positive inotropic effect, negative dromotropic and chronotropic effects
B) negative inotropic effect, positive dromotropic and chronotropic effects
C) positive inotropic, dromotropic and chronotropic effects
D) negative inotropic, dromotropic and chronotropic effects
E) positive inotropic and dromotropic and negative chronotropic effects

83. Cardiac glycosides may be divided into:
A) polar, non-polar, mixed
B) polar, non-polar, neutral
C) polar, non-polar
D) subpolar, polar, non-polar
E) small, large, medium

84. Polar cardiac glycosides are
A) hydrophobic compounds
B) hydrophilic compounds
C) lipophilic compounds
D) amphiphillic compounds
E) fat-soluble compounds

85. Non-polar cardiac glycosides are
A) hydrophobic compounds
B) hydrophilic compounds
C) lipophilic compounds
D) amphiphillic compounds
E) fat-soluble compounds

86. Positive inotropic effect means:
A) increased refractoriness of atrioventicular node
B) decreased automatism of sinoatrial node
C) increased power and speed of myocardial contraction
D) decreased power and speed of myocardial contraction
E) decreased cardiac output

87. Which property of cardiac glycosides appears in subtoxic dosage?
A) positive inotropic effect
B) negative dromotropic effect
C) negative chronotropic effect
D) positive bathmotropic effect
E) negative bathmotropic effect

88. Negative dromotropic effect means
A) increased refractoriness of atrioventicular node
B) decreased automatism of sinoatrial node
C) increased power and speed of myocardial contraction
D) decreased power and speed of myocardial contraction
E) decreased cardiac output

89. Negative chronotropic effect means
A) increased refractoriness of atrioventicular node
B) decreased automatism of sinoatrial node
C) increased power and speed of myocardial contraction
D) decreased power and speed of myocardial contraction
E) decreased cardiac output

90. The mechanism of cardiac glycosides action lies in:
A) suppression of Na^+/K^+-ATPase leads to the accumulation of Na^+ and Ca^{2+} in cardiomyocytes
B) decreased accumulation of Ca^{2+}, increased Na^+ ions pressure in cardiomyocytes
C) Na^+/K^+-ATPase cardiomyocytes activation leads to accumulation of Na^+ and suppresses emition of Ca^{2+}
D) Na^+/K^+-ATPase cardiomyocytes suppression leads to decreased content of Na^+ and Ca^{2+} within cells
E) decreased activity of actin and myosin fibres

91. To the polar cardiac glycosides belong
A) Strophanthin, Digoxin
B) Isolanidum, Digoxin
C) Methyldigoxin, Acethyldigoxin
D) Strophanthin, Corglicone
E) Digitoxin, Dioxin

92. To the non-polar cardiac glycosides belong all except
A) Strophanthin, Digoxin
B) Isolanidum, Digoxin
C) Methyldigoxin, Acethyldigoxin
D) Strophanthin, Corglicone
E) Digitoxin, Dioxin

93. Contraindications to prescribing cardiac glycosides are all except

A) severe inflammatory and dystrophic myocardiac changes with the rhythm disorder
B) progressing atrio-ventricular block
C) ventricular paroxysmal tachycardia
D) strong bradycardia
E) acute and chronic heart failure

94. Indications to prescribing cardiac glycosides:
A) severe inflammatory and dystrophic myocardiac changes with the rhythm disorder
B) progressing atrio-ventricular block
C) ventricular paroxysmal tachycardia
D) strong bradycardia
E) acute and chronic heart failure

95. Indications to prescribing cardiac glycosides
A) severe inflammatory and dystrophic myocardiac changes with the rhythm disorder
B) progressing atrio-ventricular block
C) ventricular paroxysmal tachycardia
D) strong bradycardia
E) atrial flutter

96. There are such periods in treatment with cardiac glycosides:
A) the period of exhaustion and the period of digitalis saturation
B) the period of digitalization and the period of supportive therapy
C) acute and chronic digistalis periods
D) the period of digitalis saturation and the period of adaptative therapy
E) the periods of digistalis cumulation and withdrawal from the body

97. It is characteristic of cardiac glycosides
A) high therapeutic index
B) low therapeutic index
C) low cumulation ability
D) the ability of quick withdrawal with the help of plasmapheresis
E) practically do not bind with blood protein

98. To the symptoms of digitalis intoxication belong all except
A) atrio-ventricular block
B) anorexia
C) perception of things in yellow and green shades of colour

D) maniac depressive syndrome
E) hypertonic crysis

99. To Beta-1-adrenomimetics belongs
A) Isodibut
B) Amrinone
C) Dobutamine
D) Oxprenolol
E) Dioxin

100. To inhibitors of phosphodiesterase belongs
A) Isodibut
B) Amrinone
C) Dobutamine
D) Oxprenolol
E) Dioxin

101. β-adrenoblockators fall into the following groups except
A) blockators of β_1- and β_2-adrenoreceptors
B) selective blockators of β_1- adrenoreceptors
C) combined blockators of β- and α-adrenoreceptors
D) blockators of α_1- and α_2-adrenoreceptors
E) not connected with blocking of adrenoreceptors

102. β-adrenoblockators have the following peculiarities except
A) negative inotropic effect
B) negative chronotropic effect
C) negative bathmotropic effect
D) positive inotropic effect
E) negative dromotropic effect

103. Which effect is not characteristic of β-adrenoblockators?
A) lowering arterial pressure
B) blocking of β-адренорецепторів in the vessels inhibits vasodilatation
C) relative increase of α-адренорецепторів in vessels
D) increased lipolys
E) development of Raynaud's syndrome

104. Which statement is false for β-adrenoblockators?
A) lower insulin emission from the β-cells of islets of Langerhans
B) depress the gluconeogenesis in liver

C) lower lipolys
D) may lead to the development of hyperglycemic coma
E) activate glycogenolysis in liver

105. Which of the following medicines have internal adrenomimetic effect?
A) Labetalol, Pindolol, Oxprenololum
B) Atenolol, Betaxolol
C) Bisoprolol, Carvedilol, Practolol
D) Metoprolol, Nadolol
E) Nebivolol, Propranolol, Tymolol

106. Which of the following β-adrenoblockators have the effect of membrane stabilizing?
A) Atenolol
B) Bopindolol
C) Labetalol
D) Nebivolol
E) Esmolol

107. Which of the following β-adrenoblockators have the effect of membrane stabilizing?
A) Betaxolol
B) Carvedilol
C) Sotalol
D) Metoprolol
E) Celiprolol
108.
Which of the following β-adrenoblockators have the effect of membrane stabilizing?
A) Bisoprolol
B) Propranolol
C) Nadolol
D) Talinolol
E) Tymolol

109. Which of the following β-adrenoblockators have the vasodilative effect?
A) Betaxolol
B) Sotalol
C) Carvedilol
D) Metoprolol
E) Nadolol

110. Which of the following β-adrenoblockators have the vasodilative effect?
A) Nebivolol
B) Alprenolol
C) Atenolol
D) Bisoprolol
E) Bopindolol

111. Which of the following β-adrenoblockators have the vasodilative effect?
A) Metoprolol
B) Labetalol
C) Atenolol
D) Oxprenololum
E) Propranolol

112 Which of the following β-adrenoblockators has both vasodilative and membrane stabilizing effects, and possesses internal adrenomimetic effect ?
A) Nebivolol
B) Atenolol
C) Bisoprolol
D) Labetalol
E) Bopindolol

113. Which of the following β-adrenoblockators is selective?
A) Bopindolol
B) Bisoprolol
C) Oxprenololum
D) Sotalol
E) Nadolol

114. Which of the following β-adrenoblockators is selective?
A) Pindolol
B) Propanolol
C) Nebivolol
D) Nadolol
E) Labetalol

115. Which of the following β-adrenoblockators is selective?
A) Atenolol
B) Bopindolol
C) Pindolol

D) Oxprenololum
E) Labetalol

116. Which of the following β-adrenoblockators is selective?
A) Alprenolol
B) Sotalol
C) Propanolol
D) Metoprolol
E) Labetalol

117. To the lipophilic β-adrenoblockators belongs
A) Atenolol
B) Sotalol
C) Nadolol
D) Carvedilol
E) Bisoprolol

118. To hydrophilic β-adrenoblockators belongs
A) Atenolol
B) Carvedilol
C) Bisoprolol
D) Propranolol
E) Metoprolol

119. To amphiphillic β-adrenoblockators belongs
A) Carvedilol
B) Metoprolol
C) Propranolol
D) Bisoprolol
E) Atenolol

120. The first displays of hypotensive effect on the background of peroral use of β-adrenoblockators are denoted:
A) during the first hours after taking
B) on 2-nd – 5-th days
C) on 10-th – 12-th days
D) after the second week after the prescription
E) in the evening after morning use

121. The choice medicine from the group of β-adrenoblockators for pheochromocytoma is:

A) Metoprolol
B) Propranolol
C) Labetalol
D) Bisoprolol
E) Nebivolol

122. Which β-adrenoblockator does not lower the frequency of heart contractions in calm conditions?
A) Carvedilol
B) Metoprolol
C) Atenolol
D) Pindolol
E) Bopindolol

123. The choice medicine from the group of β-adrenoblockators for depression is:
A) selective β-adrenoblockators
B) selective β-adrenoblockators with internal adrenomimetic activity
C) non-selective β-adrenoblockators
D) combined β-adrenoblockators
E) β-adrenoblockators of durable action

124. Prescribing which β-adrenoblockators should be avoided for tyreotoxicosis?
A) selective β-adrenoblockators
B) non-selective β-adrenoblockators
C) selective β-adrenoblockators with internal adrenomimetic activity
D) combined β-adrenoblockators
E) β-adrenoblockators of durable action

125. The choice medicine from the group of β-adrenoblockators for sugar diabetes is:
A) selective β-adrenoblockators
B) non-selective β-adrenoblockators
C) selective β-adrenoblockators with internal adrenomimetic activity
D) combined β-adrenoblockators
E) β-adrenoblockators of durable action

126. Combined prescribing of β-adrenoblockators with verapamil or amiodaronum may cause
A) severe dyspepsia, diarrhea
B) decrease of blood coagulation, bleeding

C) bradycardia, decrease of miocard contractions
D) ricochet hypertension
E) paroxysmal tachycardia

127. To antiarythmia medicine belong all except
A) membrane stabilizing medicine
B) β-adrenoblockators
C) inhibitors of repolarisation
D) antagonists of the slow calcium channels
E) cardiac glycosides

128. Choose the medicine, which vividly prolong the potential of action
A) Chinidinum, Procainamide, Disopyramidum
B) Lidocaine, Trimecaium, Pyromecainum
C) Nebivolol, Metoprolol, Atenolol
D) Aethacizium, Ajmalinum, Propafenone
E) Amiodaronum, Bretylium

129. Choose the medicine, which do not influence the potential of action or decrease it
A) Chinidinum, Procainamide, Disopyramidum
B) Lidocaine, Trimecaium, Pyromecainum
C) Nebivolol, Metoprolol, Atenolol
D) Aethacizium, Ajmalinum, Propafenone
E) Amiodaronum, Bretylium

130. Choose the medicine, which do not influence the potential of action or slightly prolong it
A) Chinidinum, Procainamide, Disopyramidum
B) Lidocaine, Trimecaium, Pyromecainum
C) Nebivolol, Metoprolol, Atenolol
D) Aethacizium, Ajmalinum, Propafenone
E) Amiodaronum, Bretylium

131. Choose the medicine, which inhibits repolarisation:
A) Chinidinum, Procainamide, Disopyramidum
B) Lidocaine, Trimecaium, Pyromecainum
C) Nebivolol, Metoprolol, Atenolol
D) Aethacizium, Ajmalinum, Propafenone
E) Amiodaronum, Bretylium

132. Choose the medicine, which significantly decreases the frequency of heart contractions:
A) Bretylium
B) Disopyramidum
C) Lidocaine
D) Propranolol
E) Chinidinum

133. Choose the medicine, which significantly decreases the frequency of heart contractions:
A) Propafenone
B) Chinidinum
C) Lidocaine
D) Aetmozinum
E) Sotalol

134. Choose the medicine, which significantly increases Q – T interval
A) Amiodaronum
B) Bretylium
C) Lidocaine
D) Mexiletine
E) Propanolol

135. Which of the following medicines is effective both for supraventricular and ventricular arrhythmias?
A) Bretylium
B) Amiodaronum
C) Lidocaine
D) Mexiletine
E) Aetmozinum

136. Which of the following medicines is effective both for supraventricular and ventricular arrhythmias?
A) Mexiletine
B) Aetmozinum
C) Bretylium
D) Sotalol
E) Lidocaine

137. First class antianginal madicines (of antiarrhytmia group) have the following mechanism of action:

A) blocking quick natrium channels in a cell
B) quicken the entrance of calcium into a cell
C) increase potassium ions emission from a cell
D) do not influence natrium channels
E) do not influence potassium channels

138. Class Ia medicines are more effective for:
A) combination of supraventricular and ventricular arrhythmias
B) ventricular arrhythmia
C) supraventricular arrhythmia
D) extrasystolias of various genesis
E) absence of arrhythmia

139. Class Ib medicines are more effective for:
A) combination of supraventricular and ventricular arrhythmias
B) ventricular arrhythmia
C) supraventricular arrhythmia
D) extrasystolias of various genesis
E) absence of arrhythmia

140. To the medicines, which can be injected intravenously belong all except
A) Procainamide
B) Lidocaine
C) Propanolol
D) Amiodaronum
E) Mexiletine
141. Durable prescription of Amiodaronum to patients may cause:
A) iatrogenic thyrotoxicosis
B) iodine thyrotoxicosis
C) secondary hypothyreosis
D) De Quervai's thyroiditis
E) thyroid autonomy

142. Verapamil belongs to the group of derivatives from:
A) Dihydropyridin
B) Fenilalkilamin
C) Benzodiazepine
D) Benzoic acid
E) Phenylalanine

143. Nifedipine belongs to the group of derivatives from:

A) Dihydropyridin
B) Fenilalkilamin
C) Benzodiazepine
D) Benzoic acid
E) Phenylalanine

144. Diltiazem belongs to the group of derivatives from:
A) Dihydropyridin
B) Fenilalkilamin
C) Бензотіазепіну
D) Benzoic acid
E) Phenylalanine

145. Selective blockators of calcium channels work according to the following mechanism:
A) block T (transient)-channels and L (long lasting)-channels
B) block L (long lasting)-channels
C) block small calcium channels
D) block T (transient)-channels
E) block all possible calcium channels

146. Non-selective blockators of calcium channels work according to the following mechanism:
A) block T (transient)-channels
B) block small calcium channels
C) block T (transient)-channels and L (long lasting)-channels
D) block L (long lasting)-channels
E) block all possible calcium channels

147. Which of the following medicines decreases the frequency of heart contractions most?
A) Isradipine
B) Nifedipine
C) Nitrendipine
D) Amlodipine
E) Verapamil

148. Which of the following medicines decreases the frequency of heart contractions most?
A) Isradipine
B) Dilitazem

C) Nifedipine
D) Nitrendipine
E) Amlodipine

149. Which of the following medicines may increases the frequency of heart contractions?
A) Isradipine
B) Dilitazem
C) Nifedipine
D) Nitrendipine
E) Amlodipine

150. Which of the following medicines blocks calcium channels in the blood vessels of the brain most?
A) Amlodipine
B) Verapamil
C) Dilitazem
D) Cinnarizine
E) Nitrendipine

151. Which of the following medicines are not used to influence calcium channels in the blood vessels of the brain?
A) Cinnarizine
B) Flunarizin
C) Nicardipine
D) Nimodipine
E) Dilitazem

152. Which toxic effect after prescribing Dihydropyridin derivatives is most likely?
A) diarrhea
B) arterial hypertension
C) hypoglykemia
D) swelling
E) hypothermia

153. The choice of the dosage of calcium channel blockator is made the following way:
A) the treatment should be started and carried out with an average therapeutic dosage recommended for the illness
B) gradually from less to more effective

C) from double therapeutic dosage during the first three days with the following decrease of the dosage to the average therapeutic
D) initial loading dose should last not less than a week
E) the frequency of medicine use is gradually increased during the day

154. For Raynaud's syndrome the following medicine should be preferably used
A) Bepridil
B) Nifedipine
C) Verapamil
D) Propranolol
E) Enalapril

155. The danger of combining Dilitazem or Verapamil with β-adrenoblockators lies in the following:
A) excessive development of positive inotropic, chronotropic and dromotropic effects
B) excessive development of negative inotropic, chronotropic and dromotropic effects
C) excessive development of positive chronotropic effect
D) excessive development of positive chronotropic and dromotropic effects
E) excessive development of negative chronotropic effect

156. Which medicine cannot be combined with the blockators of calcium channels due to the high risk of heart stop?
A) Enalapril
B) Losartan
C) Nitroglycerin
D) Amiodaron
E) Cimetidin

157. Choose the medicine used for treatment of heart failure:
A) antidepressants
B) corticosteroids
C) derived sulfonilureas
D) biguanides
E) aldosterone antagonists

158. Choose the statement which is false for chinidine
A) the slow withdrawal happens in case of liver cirrhosis
B) chinidine is prescribed for cardiac fibrillation
C) the contraindication for use is heart failure

D) the main indication for use is cardiomegaly
E) depresses heart stimulation with catecholamines

159. the mechanism of chinidin action includes
A) the increase of impulse conduction through atrioventicular node
B) the depression of automatism of the sinus-atrioventicular node
C) stimulation of impulse flow through the Purkinje's fibres
D) increase of ectopiac rhythm drivers activity
E) possible increase of minute heart volume and artherial pressure

Theme 3

160. Angiotensin-converting-enzyme inhibitors (ACE inhibitors) are able to decrease:
A) angiotensin I formation
B) angiotensin II formation
C) angiotensin III formation
D) angiotensin IV formation
E) bradykinin formation

161. Choose effect which is typical to ACE inhibitors.
A) increase in arterial vessel tone
B) increase in venomotor tone
C) decline in diuresis
D) decrease in cardiac hypertrophy
E) decrease in vascular wall hypertrophy
162. One of the following ACE inhibitors may be prescribed intravenously.
A) Spirapril
B) Moexipril
C) Fosinopril
D) Perindopril
E) Lisinopril

163. Concomitant use with ACE inhibitors is contraindicated for:
A) β-adrenolytics
B) Ca channel blockers
C) potassium-containing medicines
D) thiazide diuretics
E) Prazosin

164. One of the following signs is not typical to side effects of ACE inhibitors.

A) allergic reactions
B) micro- and macropsia
C) cough
D) hypotension
E) hyperkalemia

164. ACE inhibitors should not be used in one of the following conditions.
A) diabetic nephropathy
B) hypertension
C) congestive heart failure, systolic dysfunction (treatment aim)
D) congestive heart failure, systolic dysfunction (aim of prophylaxis)
E) postinfarction cardiosclerosis

165. Usage of angiotensin II type 1 receptor blockers is contraindicated in one of the following condition.
A) acute myocardial infarction
B) renovascular hypertension
C) essential hypertension
D) chronic heart failure (treatment aim)
E) chronic heart failure (aim of prophylaxis)

166. β-Adrenoblockers may be combined with:
A) Clonidine
B) Reserpine
C) Pilocarpine
D) Losartan
E) Verapamil

167. One sign of the given below does not typical to β-adrenoblockers.
A) bradycardia
B) bronchial spasm
C) impotence
D) claudication
E) decrease in intra-uterine tone in pregnant women

168. Point indication to use β-adrenoblockers.
A) hypertension
B) effort angina pectoris
C) acute heart failure
D) hypothyroidism
E) premature delivery

169. Name pharmacological effect which is typical for calcium channel blockers
A) decline of automaticity in pacemaker cells
B) increase platelet aggregation
C) increase smooth muscle tone in brain vessels
D) increase myocardial contractility
E) promote oxyhemoglobin dissociation

170. One of the following side effects occurs fore often than others regarding use of calcium channel blockers.
A) cardiac failure
B) parkinsonism
C) headache
D) constipation
E) bigeminy or trigeminy

171. One of the following condition does not require usage of calcium channel blockers.
A) essential hypertension
B) hypertensive crisis with paroxysmal supraventricular tachycardia
C) Prinzmetal's angina
D) alleviation of stuttering
E) ventricular tachyarrhythmia

172. One pair of drugs from given below is appropriate in the case of hypokinetic crises.
A) Perindopril, Amiodarone
B) Nifedipine, Captopril
C) Hydralazine, Lovastatin
D) Hydrochlorothiazide, Doxazosin
E) Propranolol, Clonidine

173. When transient ischemic attack may occur one of given below may be the drug of choice.
A) Isradipine
B) Amlodipine
C) Felodipine
D) Nimodipine
E) Nitrendipine

174. In what case we should not use glucagon?

A) congestive heart failure with severe bradycardia
B) heart failure, atrioventricular heart block, ventricular fibrillation
C) intoxication following taking β-adrenolytics or calcium channel blockers
D) severe hyperglycemia
E) postoperative and perioperative rise in cardiac output

175. Choose the rate of dopamine infusion
A) less than 1 μ/kg/min
B) 1-2 μ/kg/min C) 3-5 μ/kg/min
D) 8-10 μ/kg/min
E) more than 10 μ/kg/min

176. Administration of dopamine should be tapered quickly if at the same time patient uses:
A) Nitroprusside Sodium
B) Dobutamine
C) Nialamide
D) Nitroglycerine
E) Almagel A (algeldrate + benzocaine + magnesium hydroxide)

177. Dopamine should not be used in the case when patient has:
A) lung edema
B) cardiogenic shock and hypovolemic shock
C) lesser circuit hypertension in newborn
D) traumatic shock, septic shock
E) aortic stenosis, cardiac tamponade

178. What statement is not correct relatively to dopamine mimetics?
A) Dobutamine stimulates β_1-adrenergic receptors and dopamine receptors
B) Dobutamine is available only for parenteral administration 1-2 μ/kg/min
C) Dobutamine is a sympathomimetic drug used in the treatment of heart failure and cardiogenic shock
D) Ibopamine is a sympathomimetic used in ophthalmology (it induces mydriasis) and some times in the treatment of congestive heart failure
E) Dopexamine, a dopamine analog developed for IV use in the treatment of heart failure and low cardiac output states

179. What statement is not correct regarding α-adrenoblockers?
A) Proroxan has been used as an antihypertensive and in the treatment of Meniere's disease, motion sickness, and allergic dermatitis

B) side effects of Prazosin do not include orthostatic hypotension, syncope, and nasal congestion
C) the primary application for Phentolamine is for the control of hypertensive emergencies, most notably due to pheochromocytoma
D) Labetalol and carvedilol block α and β adrenergic receptors
E) Cadralazine is an antihypertensive of the hydrazinophthalazine chemical class

180. What drug is not included in the group of K+ATP channel agonists?
A) Minoxidil
B) Nicorandil
C) Pinacidil
D) Ribomunyl
E) Cromakalim

181. Choose incorrect effect for clonidine.
A) smooth muscle relaxation
B) sedative
C) increase cardiac output and heart rate
D) somniferous
E) pain relieving

182. Reserpine may be combined with:
A) cardiac glycosides
B) tricyclic antidepressants
C) β-adrenolytics
D) diuretics
E) Clonidine-like compounds

183. Find side effect for reserpine.
A) extrapyramidal disorder
B) tachycardia
C) inhibition of unconditioned reflexes (sucking, swallowing) and breathing in newborn
D) decreased libido
E) hyperacid gastritis

184. Angiotensinamide should not be used in one of the following states.
A) cardiogenic shock and hypovolemic shock with rhythm disturbance
B) circulatory collapse
C) traumatic shock, postoperative shock
D) refractory hypotension after cardiopulmonary bypass

E) myocardial infarction

185. Note uncommon side effect for HMG-CoA reductase inhibitors (statins).
A) hepatotoxicity
B) nephrotoxicity
C) rhabdomyolysis
D) thrombocytopenia
E) photosensitization

186. Maximum daily dose of epinephrine equal to:
A) 5 mg
B) 10 mg
C) 15 mg
D) 20 mg
E) 25 mg

187. Single IV dose of ephedrine equal to:
A) 2 mg
B) 5 mg
C) 7 mg
D) 25 mg
E) 50 mg

188. Available dose in tablet of telmisartan equal to:
A) 1 mg
B) 2 mg
C) 80 mg
D) 100 mg
E) 300 mg

189. In what case we may prescribe epinephrine?
A) hyperthyroidism
B) hypothyroidism
C) hypertension
D) prostatic hyperplasia
E) cerebral atherosclerosis

190. Adverse effects of epinephrine include all of the given below, except:
A) trembling
B) dyspnea
C) redness of face

D) sweating
E) hypotension

191. Single IV dose of phenylephrine hydrochloride equal to:
A) 1-5 mg
B) 5-10 mg
C) 15-20 mg
D) 20-25 mg
E) 50-100 mg

192. Single intramuscularly dose of etafedrine equal to:
A) 1-2 mg
B) 2-5 mg
C) 7-10 mg
D) 10-12 mg
E) 15-20 mg

193. Maximum dose of midodrine equal to:
A) 5 mg
B) 10 mg
C) 12 mg
D) 30 mg
E) 100 g

194. Absolute contraindications to the use of norepinephrine include all of the given below, except:
A) complete heart block (third-degree AV block)
B) senility (old age)
C) halothane anesthesia
D) hypotension from blood volume deficits
E) mesenteric or peripheral vascular thrombosis

195. Relative contraindications to the use of norepinephrine include all of the given below, except:
A) advanced atherosclerosis
B) hypertension
C) thyrotoxicosis
D) sleeplessness
E) prostatic hyperplasia with urinary retention

196. Side effects of norepinephrine include all of the given below, except:

A) bradycardia
B) arrhythmia
C) skin necrosis
D) tachycardia
E) urinary difficulty

197. Side effects of dopamine include all of the given below, except:
A) trembling
B) headache
C) heavy breathing
D) palpitation
E) sluggishness

198. What drug following it concomitant use with dopamine may provoke ventricular arrhythmias?
A) calcium-containing drug
B) somnifacient drug
C) sedative
D) general anesthetic
E) antiemetic

199. Bioavailability of guanfacine equal to:
A) 10-15 %
B) 20-30 %
C) 50-60 %
D) 70-80 %
E) 80-100 %

200. High bioavailability is typical to:
A) clonidine
B) guanfacine
C) moxonidine
D) rilmenidine
E) methyldopa

201. Onset of action of rilmenidine equal to:
A) 1-2
B) 5-6
C) 10 min
D) 30 min
E) 60 min

202. What drug has the longest duration of action?
A) Methyldopa
B) Guanfacine
C) Moxonidine
D) Clonidine
E) Imechinum

203. What duration of action of azamethonium bromide following IV administration?
A) 20-30 min
B) 1-2 hours
C) 2-4 hours
D) 5-6 hours
E) 10-12 hours

204. Single dose of hexamethonium benzosulfonate in mg equal to:
A) 1-2
B) 6-75
C) 8-40
D) 15-90
E) 100-200

205. Choose the absolute contraindication for ganglioblockers.
A) glaucoma
B) pheochromocytoma
C) hypotension
D) advanced liver failure
E) thrombosis

206. Choose the relative contraindication for ganglioblockers.
A) glaucoma
B) sleeplessness
C) advanced liver failure
D) severe cerebral atherosclerosis with coronary
E) subarachnoid hemorrhage

207. Duration of action of reserpine equal to:
A) 1-2 hours
B) 2-4 days
C) 2-4 weeks

D) 5-6 weeks
E) more than 6 weeks

208. All drugs, given below are α-adrenoblockers, except:
A) Teratozin
B) Tamsulosin
C) Phentolaminum
D) Reserpine
E) Alfuzosin

209. Drugs used in heart failure
A) antidepressants
B) corticosteroids
C) sulfonylureas
D) biguanides
E) diuretics

210. Risk of hypertension is associated with increased morbidity from
A) progressive chronic renal failure
B) Cushing disease
C) ketoacidosis
D) inflammatory bowel disease
E) chronic active hepatitis

211. Mechanism of quinidine includes
A) increasing conduction
B) reducing the maximal rate of depolarisation
C) stimulating spontaneous phase 4 diastolic depolarisation in automatic cells
D) abating the effective refractory period of atrial, ventricular and Purkinije fibres
E) enhancing the maximal rate of depolarisation

212. Glyceryl trinitrate is the drug that has following characteristics
A) leads to direct constriction of smooth muscle
B) group of drugs affecting afterload
C) group of drugs affecting preload
D) leads to an exertion in left ventricular and diastolic pressure
E) enhances pulmonary congestion

213. Procainamide is administered
A) intravenously, 50-100 mg every 5 minutes to a total dose of 1000 mg
B) 750-1000 mg 3 hourly orally

C) intravenously, 25-50 mg every 5 minutes to a total dose of 500 mg
D) 50-100 mg 3 hourly orally
E) 150-300 mg 3 hourly orally

214. Sodium nitroprusside is the drug that has following characteristics
A) may be used in patients with impaired renal function
B) may be used during long period of the time
C) is not useful in acute cardiac failure
D) effects on preload
E) effects on preload and afterload

215. Using of vasodilators during the long-term is limited by
A) death anxiety
B) receptor resistance
C) constipation
D) reflex compensatory mechanisms
E) sleep apnoea

216. Pharmacological group which produces action on ion fluxes
A) $beta_2$ –adrenoreceptor blockers
B) antiarrhythmic drugs
C) sulfonamides
D) antipsychotic drugs
E) biguanides

217. Mechanism of disopyramide includes:
A) reducing the maximal rate of depolarisation
B) accelerating conduction
C) shortening the effective refractory period of ventricular and Purkinije fibres
D) exerting spontaneous phase 4 diastolic depolarisation in automatic cells
E) shortening the effective refractory period of atrial fibres

218. Mechanism of lignocaine includes:
A) accelerated conduction in ventricular muscle
B) general anaesthetic activity
C) slowed conduction velocity in Purkinije fibres
D) rapid conduction velocity in Purkinije fibres
E) local and general anaesthetic activity

219. One of the correct postulates in the treatment of the acute left ventricular failure is

A) give 10 mg morphine i.v.
B) lay the patient
C) give anticonvulsant
D) give phosphodiesterase blockers
E) give beta$_2$ –agonists

220. Tocainide is administered by the following route and dose
A) intravenously, 500-750 mg over 30 minutes followed by 600-800 mg orally
B) the maintenance dose is 4200-5000 mg daily in divided doses
C) intravenously, 200-400 mg over 30 minutes followed by 600-800 mg orally
D) 50-100 mg 3 hourly orally
E) 150-300 mg 3 hourly orally

221. Cardiogenic shock includes
A) polydipsia
B) hypertension
C) polyuria
D) constipation
E) hypotension

222. Stable angina pectoris is characterised by the next sign
A) increase sweating
B) attacks are unpredictable
C) attacks are predictable
D) anaemia
E) adynamia

223. Use of beta-adrenergic receptor antagonist is appropriate in the following clinical situation
A) diabetes mellitus
B) bronchial obstruction
C) hypotension
D) mitral valve prolapse
E) hypothyroidim

Theme 4

224. Choose the medicine of the adrenomimetcs group, which is not selective:
A) Salbutamol
B) Fenoterol
C) Orciprenaline

D) Terbutaline
E) Formoterol

225. All the following sympatomimetics have prolonged action except:
A) Orciprenaline
B) Clenbuterol hydrochloride
C) Salmeterol
D) Formoterol
E) None of the mentioned

226. Choose the beginning of Sulbutamol effect in inhalations:
A) during the first minute
B) during the second minute
C) during the third minute
D) during the 4^{th}-5^{th} minutes
E) during the 10^{th} minute

227. At which concentration of theophylline in blood may coma develop?
A) 10 mg/l
B) 20 mg/l
C) 30 mg/l
D) 40 mg/l
E) 50 mg/l

228. Which is the pharmacocinetics peculiarity of theophylline in newly born?
A) fermentative oxidation is decreased
B) the speed of elimination is decreased
C) fermentative oxidation is increased
D) elimination is increased
E) fermentative oxidation and elimination speed are decreased

229. What triggers withdrawal of theophylline from the human body?
A) Hyperthyreosis
B) Taking the medicine in the morning
C) Cor pulmonale
D) Liver cirrhosis
E) Smoking

230. Which antibiotics group enhances the increase of theophylline concentration in blood?
A) Fluoroquinolones

B) Linkozamides
C) Penicillins
D) Rifampicinum
E) Cephalosporins

231. All groups of medicines enhance the increase of theophylline concentration in blood except:
A) H_2-histamineblockastors
B) Barbituric acid derivatives
C) Macrolides
D) Fluoroquinolones
E) β-adrenoblockators

232. All groups of medicines enhance the decrease of theophylline concentration in blood except:
A) Barbituric acid derivatives
B) Isoniazid
C) Peroral contraceptives
D) Linkozamides
E) Macrolides

233. Choose the mechanism, which does not take part in broncholytic action of theophylline:
A) Activates the contraction of smooth muscle cells of the respiratory tract
B) Activates histamine release from the lung cells
C) Inhibits catecholamine release from the nerve endings
D) Blocks the adenosine receptors of the cells
E) Inhibits the release of inflammation mediators

234. Is it right that when influencing the gastrointestinal tract theophylline causes:
A) Decrease in small and large intestine motorics
B) Acute condition of ulcer
C) Increase of the gastric secretion
D) Decrease of the gastric secretion
E) Increase of the plasma concentration of gastrin

235. With which medication are inhibitors of phosphodiesterase incompatible?
A) Fluoroquinolones
B) Calcium salts
C) Diuretics
D) H_2-histamineblockastors

E) Thiamine chloride

236. Clinical effects caused by inhibitors of phosphodiesterase are displayed in all cases except:
A) Stimulated breathing centre
B) Liver tract dilatation
C) Decrease of the force and frequency of heart contractions
D) Diuretic effect stimulation
E) Bronchospasm decrease

237. During which disease the use of inhalation forms of M-cholinobacters is most effective?
A) Chronic obstructive bronchitis
B) Pneumosclerosis
C) Bronchial asthma
D) Lung emphysema
E) Bronchoectatic disease

238. Bioacessibility of Ipratropium bromide during inhalation makes up:
A) 10%
B) 20%
C) 30 %
D) 80%
E) 100%

239. To stop the bronchial asthma attack the medicine, which should be used is:
A) Orciprenaline
B) Salmeterol
C) Formoterol
D) Terbutaline
E) Salbutamol

240. For stopping infrequent attacks of bronchospasm of any genesis usually are prescribed:
A) α- and β-adrenostimulators
B) Nonselective β-adrenostimulators
C) Selective adrenostimulators of short term action
D) Selective adrenostimulators of long term action
E) M-cholinobacters

241. Which medicine has sedative and antigistamine effect?

A) Cromoglocic acid
B) Cromolyn sodium
C) Nedocromil sodium
D) Chloropyramine
E) Fexofenadine hydrochloride

242. Choose the inhalation glucocorticoids
A) Beclometasoni dipropionas
B) Prednisolone
C) Betamethasone
D) Dexamethasone
E) Fluocinolone acetonide

243. Contraindications for prescribing inhalation glucocorticoids are all except:
A) Lung tuberculosis
B) Fungal infections
C) Bacterial infections
D) Viral infections
E) Chronic hepatitis

244. Which is the biotransformation of Fluticasone during the first passing of through the liver?
A) 60%
B) 70%
C) 80%
D) 90%
E) 100%

245. During the lasting use of inhalation glucocorticoids all unwanted effects may develop except:
A) Braking glucose tolerance
B) Depression of the hypothalamus- hypophyse- glandula suprarenalis system
C) Development of gynecomastia
D) Development of osteoporosis
E) Growth hold-up in children

246. Which expectorant is contraindicated during accute condition of ulcer for a patient with chronic obturative bronchitis?
A) Terpinhydrate
B) Potassium iodine
C) Sodium hydrocarbonate

D) Chemotripsine
E) Bromhexinum

247. Which medication normalizes cell formation of bronchial secretion and surfactant synthesis?
A) Glycyrrhiza root
B) Ammonii chloridum
C) Ambroxol
D) Acetylcysteine
E) Ipecacuanha medicines

248. A patient with chronic diffuse bronchitis has displays of chronic rhinitis. Which expectorant is contraindicated in this case?
A) Terpene oil
B) Natrii iodidum
C) Ribonucleasaum
D) Ambroxol
E) Bromhexinum

249. Expectorants of which group are contraindicated for weak patients, who are not able to expectorate actively?
A) Medicines of reflector action
B) Medicines of resorbtion action
C) Proteolytic enzymes
D) Mucoregulatory agent
E) Acetylcysteine

250. Which of the following expectorants may enhance bronchial obstruction?
A) Bromhexinum
B) Trypsinum
C) Thermopsis medicines
D) Ambroxol
E) Acetylcysteine

251. Choose anticough medicine, which is not a narcotic?
A) Codeinum
B) Dimemorfan acetylcysteine
C) Butamirate
D) Dekstrometomorfan
E) Ethylmorphine

252. Which clinical effects are not characteristic of narcotic anticough medicines?
A) Have a depressing effect on the cough centre in medulla oblongata
B) Have analgetic effect
C) Have a depressing effect on the breating centre
D) May cause dryness in mucous of respiratory tracts
E) Cause physical addiction

253. How much respiratory secretion does a healthy person produce a day?
A) 10 ml
B) 20 ml
C) 50 ml
D) 100 ml
E) 200 ml

254. Which of the following medications is not expectorant?
A) Glaucine
B) Potassium iodine
C) Althaea officinalis (Marshmallow) root
D) Ipecacuanha (vomiting root)
E) Acetylcysteine

255. Which anticough medications are contraindicated for the patients with bronchopulmonary pathology and glaucoma?
A) Codeinum
B) Noskapin
C) Anti cough tablets based on Thermopsis mollis
D) Benzoate
E) Glaucine

256. In the treatment of asthmatic status first of all should be used:
A) Atropine
B) Cromoglicic acid
C) Prednisolone
D) Salbutamol
E) Theophylline

257. To the selective Beta-2 agonists of long action belong
A) Fluticasone
B) Salmeterol
C) Salbutamol
D) Fenoterol

E) Terbutaline

258. For airway obstruction is used:
A) Salbutamol
B) Fenoterol
C) Teopek
D) Theophylline
E) Epinephrine

259. Which group of antibacterial medications increases theophylline concentration in blood during their simultaneous use?
A) Fluoroquinolones
B) Penicillins
C) Cephalosporins
D) Aminoglycosides
E) Sulfanilamides

260. In case of pulmonary hypertension for a patient with bronchial asthma is indicated:
A) Verapamil
B) Nifedipine
C) Digoxin
D) Cromoglicic acid
E) Beclometasone

261. For bronchial asthma on the background of chronic bronchitis is indicated:
A) Ipratropium bromide
B) Epinephrine
C) Ephedrine
D) Ketotiphen
E) Hlorpiramin

262. Which inhalation medicine has the most disposition to glucocorticoid receptors of human lungs?
A) Beclometasoni dipropionas
B) Budesonide
C) Flunisolide
D) Triamcinolone acetate
E) Fluticasone propionate

263. Which glucocorticoid medicine most enhances myopathy development when

used for a long time?
A) Dexamethasone
B) Triamcinolone acetate
C) Betamethasonum
D) Methylprednisolonum
E) Prednisolonum

264. Mineralocorticoid effect (increased excretion of potassium and inhibition of sodium excretion) is characteristic of:
A) Prednisolonum
B) Triamcinolone
C) Dexamethasone
D) Methylprednisolonum
E) Hydrocortisone

265. Which statement is true for glucocorticoids?
A) Do not influence carbohydrate exchange
B) Are not insulin antagonists
C) Enhance insulin effect
D) Enhance the effect of sugar-lowering sulfanilamides
E) Enhance biguanides effect

266. Which statement is true for glucocorticoids intake? Their effect is:
A) Quick, but food decreases their absorbtion by 70%
B) Gradually along the whole intestine, overall by 70%
C) Gradually during 2-3 hours the food hinders absorbtion
D) Quick, but food decreases their absorbtion by 50%
E) Fully and quickly is absorbed along the whole intestine

267. The unwanted effect of glucocorticoids on the musculoskeletal system is:
A) Myopathy
B) Osteoporosis
C) Osteosclerosis
D) Vessel syndrome
E) Osteoporosis of hand phalanges

268. Which dose of glucocorticoids used for a long time is safe in terms of developing secondary glandula suprarenalis failure:
A) 6-8 mg/day of Prednisolonum
B) 0,5-1,5 mg/day of Prednisolonum
C) 2,5-5 mg/day of Prednisolonum

D) 2 mg/day of Prednisolonum
E) 0,1 – 0,5 mg/day of Prednisolonum

269. The risk factor of developing secondary glandula suprarenalis failure after lasting intake of glucocorticoids is:
A) Intake of unfluorided medicines (Prednisolonum, Methylprednisolonum, Hydrocortisone)
B) Intake of fluorided medicines (Triamcinolone acetate, Dexamethasone, Betamethasonum)
C) Depends on the dose, and not on the medicine
D) Depends on the manufacturer of the medicine
E) Depends on the period of intake

270. What is not considered a prevention medicine for developing secondary glandula suprarenalis failure after intake of glucocorticoids?
A) The intake of medicines in the morning according to their circadian rhythm
B) Using alternating therapy
C) Gradual decrease of the dose when cancelling the use of medicine
D) Not using fluoride glucocorticoids
E) Not using glucocorticoids in large doses

271. Puls therapy is prescribed:
A) In acute emergency cases
B) For quick effect with the possibility of further use of low supporting dose
C) For prevention of secondary glandula suprarenalis failure
D) For the patients with serious illnesses in large up to 1000mg doses of Prednisolonum a day
E) For the treatment of chronic illnesses of bronchopulmonary system

272. During pulse therapy is used:
A) Prednisolonum
B) Triamcinolone
C) Dexamethasone
D) Betamethasonum
E) Methylprednisolonum

273. The mechanism of glucocorticoid action in case of bronchial asthma lies in:
A) Antibodies production depressing
B) Blocking of biologically active substances activity
C) Powerfull broncholitic effect
D) The decrease of bronchial mucous swelling

E) The improvement of mucociliaric transport

274. Which glucocorticoid has the least depressing effect on glandula suprarenalis?
A) Hydrocortisone
B) Betamethasonum
C) Triamcinolone acetate
D) Beclometasone
E) Dexamethasone

275. Which glucocorticoid has the least ulcerogenic action?
A) Methylprednisolonum
B) Betamethasonum
C) Triamcinolone
D) Fluticasone
E) Dexamethasone

276. The early side effect of glucocorticoid shows during the development of:
A) Chronic pancreatitis
B) Steroid stomach ulcer
C) Osteoporosis
D) Cushing syndrome
E) Glaucoma

277. Which clinical effect is not characteristic of glucocorticoids:
A) Antiinflammatory
B) Antiallergic
C) Antishock
D) Analgetizing
E) Immunodepressing

278. Nonsteroid antiinflammatory medicines (NAM) are indicated in cases of all syndromes except:
A) Nonjoint inflammatory diseases (miositis, tendovaginitis, synovitis)
B) Rheumatoid artritis
C) Dermatomiositis
D) Dysmenorrhoea
E) Rheumatism

279. In comparison with indometacin the acetylsalicylic acid has more explicit:
A) Analgetic effect

B) Prostaglandin synthesis depression
C) Antiagregatic effect on thrombocytes
D) Antifever effec
E) Fagocitosis activation

280. It is characteristic of indometacin:
A) The maximum concentration in blood plasma after one intake is determined after 3 hours
B) The bind with plasma protein is 88-90%
C) The concentration in plasma is by 20-40 times lower than in the synovial liquid
D) The concentration of the medicine in the synovial liquid is higher than the concentration in blood plasma
E) Is fully metabolized in the organism and withdrawn through the kidneys

281. To the side effects of indometacin belongs:
A) Headache
B) Nausea and vomiting
C) The disturbed carbohydrate exchange
D) Eyesight deterioration
E) Gastralgia

282. The pharmacocinetis properties of Piroxicam do not include:
A) The maximum concentration is reached after 1-2 hours.
B) The maximum concentration is reached after 5-7 days
C) The concentration in the synovial liquid is 40 – 50 % of blood concentration
D) After one intake the effectiveness of the medicine lasts for 24 hours
E) Is metabolized in the liver and withdrawn through the kidneys

283. It is not characteristic of Piroxicam:
A) Antiinflammatory activity is by 20 times larger than that of Phenylbutazonum
B) Analgetic effect for polyarthritis is two times stronger than that of Ibuprofen
C) One intake ensures lasting inhibition of thrombocytes aggregation
D) Antiaggregant activity is not larger than the activity of Acetylsalicylic acid
E) Antifever activity is larger than the activity of Acetylsalicylic acid

284. All this is characteristic of diclofenac except:
A) The medicine inhibits thrombocytes aggregation
B) It has less analgetic effect than indometacin
C) It is not worse than indometacin by its anti-inflammatory effect
D) The side effects of CNS are less frequent than of indometacin

E) Has the same amount of side effects as indometacin as for GIT

285. The simultaneous use of Acetylsalicylic and Ascorbic acids leads to:
A) The lowering of Acetylsalicylic acid clinical effect
B) Disturbing of the carbohydrates tolerance
C) The increase of Acetylsalicylic acid concentration in blood plasma due to lower speed of its withdrawal through kidneys
D) The increase of Acetylsalicylic acid concentration due to the disturbed liver metabolism
E) The decrease of Acetylsalicylic acid concentration due to disturbed absorbtion in GIT

286. Which medicine of the analgetic-antipiretic group and Nonsteroid anti-inflammatory drugs can be used by the pregnant:
A) Indometacin
B) Acetylsalicylic acid
C) Paracetamol
D) Metamizole sodium (analgin)
E) Diclofenac

287. Which medicine is indicated in case of severe podagra attack?
A) Allopurinol
B) Aethamidum
C) Diclofenac sodium
D) Benzbromarone
E) Celecoxib

288. Which side effect does Misoprostol used with Artrotec combined with Diclofenac correct?
A) Bleeding
B) Ulcerogenic, because it inhibits HCI secretion in stomach
C) Aplastic anemias
D) Swelling syndrome
E) Cytopenia

289. Which medicine is the most effective for the treatment of Behterev's disease
A) Ibuprofen
B) Ketoprofen
C) Diclofenac sodium (indometacin)
D) Phenylbutazone
E) Nimesulid

390. The indications for prescribing the basis medications to the patients with rheumathoid arthritis:
A) The course of RA is badly controlled by NSAID, the activity of the process lasts for 1 month
B) The disease is progressing: the new joints are captured, there is some obvious cartilage destruction (the decrease of intercartilage space), bone erosion during x-ray examining
C) Vivid pain syndrome
D) High rheumatoid factor titre
E) Duodenal ulcer

391. The main mechanism of NSAID effect is:
A) Influence on releasing hormones
B) Antibacterial
C) Antigistamine
D) Inhibition of antigen-antibody reaction
E) Antiprostaglandin

392. Gepatotoxic effect is present in all NSAID except:
A) Indometacin
B) Acetylsalicylic acid
C) Diclofenac sodium
D) Phenylbutazone
E) Ibuprofen

393. The most gepatotoxic is:
A) Indometacin
B) Paracetamol
C) Diclofenac
D) Piroxicam
E) Rofecoxib

394. The medicine, which is the most Nephrotoxic:
A) Rofecoxib
B) Celecoxib
C) Ibuprofen
D) Neproxen
E) Nimesulid

296. In case of combined prescribing of which medications is toxic effect of

salicilates possible?
A) Glucocorticoids
B) Barbiturates
C) Antacids
D) Sodium hydrogen carbonate
E) Ascorbic acid

297. Which NAM medications often cause cytopenia?
A) Tiaprofenic acid
B) Diclofenac sodium
C) Celecoxib
D) Phenylbutazone
E) Meloxicam

298. A patient with acute bronchitis was vomiting after taking an expectorant. Which medicine could cause that?
A) Terpinhydrate
B) Bromhexinum
C) Ambroxol
D) Thermopsis
E) Potassium iodide

299. Which broncholitic medication may cause a hypertonic crisis?
A) Salbutamol
B) Fenoterol
C) Theophylline
D) Isoprenaline hydrochloride
E) Ephedrine hydrochloride

300. After taking Isoprenalin for bronchial asthma a patient had pain behind sternum. Which is the mechanism of this complication?
A) β-1-adrenoreceptors stimulation
B) β-1-adrenoreceptors depression
C) α-1-adrenoreceptors stimulation
D) α-1-adrenoreceptors depression
E) M-cholinoreceptors stimulation

301. The indication for prescribing gold medications as basis anti-inflammatory is:
A) Quickly progressing rheumathoid arthritis
B) Juvenile rheumatoid arthritis

C) Lupus erythematosus
D) Rheumocarditis
E) Psoriasis

302. Cyclophosphamide as an immunodepressant for basis anti-inflammatory effect should be chosen in all cases axcept:
A) Psoriasis
B) Systemic vasculitis
C) Rheumatoid arthritis
D) Lupus erythematosus
E) Scleroderma

303. Which specific immunosuppressor, which is used for basic anti-inflammatory therapy, influences T-helpers selectively?
A) Gold salts
B) Penicillamine
C) Cyclosporin
D) Cyclophosphamide
E) Azathioprine

304. The indications for using Penicillamine as a basis anti-inflammatory medicine, are all except:
A) Palindromic rheumatism
B) Juvenile rheumatoid arthritis
C) Systemic scleroderma
D) Chronic hepatitis
E) Dermatomyositis

Theme 5

305. All of the following medications are types of insulin, except:
A) Aspart (Novolog)
B) Glargine (Lantus)
C) Lispro (Humalog)
D) Glulisin (Apidra)
E) Exenatide (Byetta)

306. Insulin therapy has all of the following effects, except:
A) Increases concentration of free fatty acids in blood plasma
B) Stimulates glucose uptake by tissues

C) Inhibits lipolysis
D Activates protein synthesis

307. Insulin preparations can have the following durations of action:
A) Fast and long
B) Fast, medium and long
C) Polar, non-polar, neutral
D) Very fast, fast, medium and long
E) Subpolar, polar, non-polar

308. The insulin that does not have a peak of action is:
A) Glulisin (Apidra)
B) Glargine (Lantus)
C) Isophane (Protaphane)
D) Biphasic Insulin N 70/30
E) Aspart (Novolog)

309. Insulin formulation that has a very fast onset of action is:
A) Glargine (Lantus)
B) Soluble human (Humodar)
C) Lispro (Humalog)
D) Human Isophane (Фармасулін HNP)
E) Detemir (Levemir)

310. Oral hypoglycemic agents include all of the following, except:
A) Sulfonylureas
B) Biguanides
C) Phosphodiesterase inhibitors
D) Thiazolidinediones
E) Alpha-glucosidase inhibitors

311. Which of the following medications is not one of the sulfonylurea derivatives?
A) Gliclazide
B) Glimepiride
C) Gliquidone
D) Glibenclamide
E) Avandia

312. Which of the following medications belongs to the sulfonylurea derivatives:
A) Nateglinide

B) Pioglitazone
C) Glimepiride
D) Repaglinide
E) Metformin

313. Please, choose an appropriate therapy for treatment of patients with type II diabetes and obesity:
A) Actrapid and protaphane
B) Metformin and glimepiride
C) Glibenclamide and protaphane
D) Glibenclamide and glibomet
E) Gliclazide and actrapid

314. Please, choose the best therapy for treatment of diabetes in a patient with coexisting coronary artery disease:
A) Glimepiride
B) Acarbose
C) Rosiglitazone
D) Glibenclamide
E) Metformin

315. Which side effects are not commonly seen with sulfonylureas?
A) Hypoglycemia
B) Headache
C) Dizziness
D) Diaphoresis
E) Gastrointestinal disturbances

316. Sulfonylureas are contraindicated in all of the following patients, except:
A) Patients with type I diabetes mellitus
B) Patients with renal insufficiency
C) Patients with liver disease
D) Pregnant patients
E) Patients with arterial hypertension

317. Metformin is contraindicated in all of the following situations, except:
A) Increased BMI
B) Tendency to develop lactic acidosis
C) Diarrhea and other gastrointestinal disturbances
D) Pregnancy
E) Breast feeding

318. All of the following are indications for acarbose use, except:
A) Monotherapy for type II diabetes
B) Monotherapy for type I diabetes
C) Combination therapy with insulin for type I diabetes
D) Combination therapy with glimepiride for type II diabetes
E) Combination therapy with insulin for type II diabetes

319. All of the following qualities apply to nateglinide, except:
A) Short half-life
B) Minimal risk for developing hypoglycemia
C) Metabolized by liver
D) Restores early insulin secretion
E) Excreted by kidneys

320. One of the indications for prescribing nateglinide is:
A) Depletion of pancreatic beta-cells
B) Significant postprandial hyperglycemia
C) Tendency to develop lactic acidosis
D) Resistance to sulfonylureas
E) Insulin resistance

321. All of the following are true with respect to thiazolidinediones, except:
A) They influence insulin resistance
B) They result in frequent episodes of hypoglycemia
C) They slow down progression of renal disease and development of hypertension.
D) They decrease blood level of free fatty acids
E) They improve metabolism

322. All of the following are true with respect to alpha-glucosidase inhibitor, except:
A) It inhibits intestinal alpha-glucosidase
B) It decreases enzymatic conversion of oligo- to monosaccharides
C) It lowers postprandial glucose
D) It causes gastrointestinal disturbances.
E) It may cause development of hypertension.

323. Alpha-glucosidase inhibitors are contraindicated in all of the following cases, except:
A) Diabetic ketoacidosis

B) Liver cirrhosis
C) Hypertension
D) Large abdominal hernias
E) Ulcerative colitis

324. Activity of alpha-glucosidase inhibitors is decreased by all of the following medications, except:
A) Enzymes
B) Adrenergic blockers
C) Oral contraceptive agents
D) Thiazide diuretics
E) Isoniazid

325. All of the following medications augment activity of sulfonylureas, except:
A) Anabolic steroids
B) ACE inhibitors
C) Salicylates
D) Loop diuretics
E) Tetracyclines

326. All of the following augment activity of biguanides, except:
A) MAO inhibitors
B) ACE inhibitors
C) Beta blockers
D) Delayed calcium channel blockers
E) Tetracyclines

327. What is typically seen with biguanide use?
A) Increased glucose uptake by muscle tissue
B) Decreased basal insulin level
C) Decreased intestinal glucose absorption
D) Gastrointestinal disturbances
E) Decreased lactate level

328. Which of the following medications does not have hypoglycemic effects (does not augment insulin activity)?
A) Loop diuretics
B) Somatostatin analogues
C) MAO inhibitors
D) ACE inhibitors
E) Beta- blockers

329. Which of the following medications does not have hypoglycemic effects (does not augment insulin activity)?
A) Glicised (Glicinum)
B) Salicylates
C) Sulfanilamide
D) Ethanol
E) Fluoxetine

330. Which of the following medications does not have hyperglycemic effects (does not decrease insulin actions)?
A) Calcium channel blockers
B) Beta 2 agonists
C) Pentoxifylline
D) H2 histamine receptor blockers
E) Isoniazid

331. Which of the following medications does not have hyperglycemic effects (does not decrease insulin action)?
A) Calcitonin
B) Morphine sulfate
C) Nicotine
D) Betadin
E) Thyroid hormones

332. Insulin should be prescribed under all of the following circumstances, except:
A) Status post pancreatectomy
B) Type II diabetes with diabetic foot syndrome
C) Type I diabetes
D) Gestational diabetes
E) Type II diabetes

333. All of the following are possible side effects of insulin use, except:
A) Hypoglycemic coma
B) Insulin resistance
C) Weight loss
D) Weight gain
E) Lipodystrophy at injection sites

334. What insulin dose is used for coma secondary to diabetic ketoacidosis?

A) 0,1 U/кg/hr
B) 1 U/кg/hr
C) 80-100 U/24 hours
D) 40-60 U/24 hours
E) 100-200 U/24 hours

335. Thyroid hormones have all of the following qualities, except:
A) They activate synthesis of RNA and amino acids
B) They increase basal metabolism
C) They inhibit erythropoesis
D) They increase heat production
E) They stimulate insulin breakdown

336. Thyroid hormones have all of the following qualities, except:
A) They stimulate gluconeogenesis
B) They acrivate central respiratory center
C) They inhibit pituitary TSH (thyroid stimulating hormone) synthesis
D) They inhibit gluconeogenesis
E) They increase basal metabolism

337. All of the following are side effects associated with thyroid hormone use, except:
A) Heat intolerance
B) Weight gain
C) Hyperhydrosis
D) Irritability
E) Insomnia

338. All of the following are side effects associated with thyroid hormone use, except:
A) Weight loss
B) Tachycardia
C) Decreased tendon reflexes
D) Diarrhea
E) Tachyarrythmia

339. Thyroid medications are contraindicated in all of the following circumstances, except:
A) Chronic heart failure
B) Untreated hyperthyroidism
C) Untreated adrenal insufficiency

D) Acute coronary syndrome
E) Decompensated tachyarrhythmia

340. Thyroid hormone doses should be increased when used concurrently with:
A) Estrogens
B) Clofibrate
C) 5 methylfluorouracil
D) Androgens
E) Tamoxifen

341. All of the following are true about anti-thyroid medications, except:
A) They inhibit iodine transport into a follicle
B) They alter thyroid hormone synthesis
C) They inhibit release of thyroid hormones
D) They activate synthesis of thyroid peroxidase
E) They destroy thyroid gland follicles

342. All of the following are side effects associated with thionamide use, except:
A) Arterial hypertension
B) Agranulocytosis
C) Nausea
D) Arthralgia
E) Toxic hepatitis

343. Activity of thionamide is potentiated by all of the following, except:
A) Anticoagulants
B) Beta blockers
C) Sulfasalazine
D) ACE inhibitors
E) Theophylline

344. Which of the following endocrine side effects is not typically seen with glucocorticoid use?
A) Development of Cushing syndrome
B) Increased virility in male patients
C) Delayed growth and development of pediatric patients
D) Decreased carbohydrate tolerance
E) Disturbances in ovulatory/menstrual cycles

345. Which of the following electrolyte/fluid regulation abnormalities is not seen with glucocorticoid use?

A) Sodium retention
B) Fluid retention
C) Arterial hypertension
D) Heart failure
E) Potassium retention

346. Which of the gastrointestinal side effects is not usually seen with glucocorticoid use?
A) Peptic ulcer disease
B) Gastrointestinal bleeding
C) Hemorrhoids
D) Pancreatitis
E) Abdominal bloating

347. Which of the musculoskeletal side effects is not usually seen with glucocorticoid use?
A) Muscle weakness
B) Increase in muscle mass
C) Osteoporosis
D) Pathologic fractures of long bones
E) Spine compression fractures

348. Which of the following is not true with respect to glucocorticoid use?
A) They augment actions of anticoagulants
B) They augment actions of antiplatelet agents
C) They augment actions of hypoglycemic agents
D) They decrease efficacy of hypoglycemic agents
E) They increase side effects associated with anabolic steroids use.

349. All of the following doses of iodine containing agents are used to prevent iodine deficiency in the following patients, except:
A) Breastfeeding mothers 200 mcg/24 hours
B) Pregnant women 200 mcg/24 hours
C) Teenagers and adults 100-200 mcg/24 hours
D) Children 50-100 mcg/24 hours
E) People with intellectual work 300 mcg/24 hours

350. When glucocorticoids are prescribed using “twice a day” dosing, the doses should be divided in the following manner:
A) Half in the morning and half in the evening
B) Two thirds in the morning and one third in the afternoon

C) One third in the morning and two thirds in the evening
D) Half in the morning and half in the afternoon
E) One third in the afternoon and two thirds in the evening

351. You have just diagnosed lactic acidosis and associated coma. What is the first medication that should be administered in this situation?
A) 8.5% Sodium Bicarbonate drip
B) 20-25 U of short-acting insulin IV (intravenous)
C) 40-60 U of short-acting insulin SQ (subcutaneous)
D) 50-10 cc of 40% glucose
E) 400-500 cc of 5% glucose

352. Which of the following medications has the longest duration of action?
A) Glibenclamide
B) Gliquidone
C) Repaglinide
D) Metformin
E) Gliclazide MR

353. Which of the anti-hypertensive agents listed below is the agent of choice for treatment of diabetic kidney disease?
A) Rezerpin
B) Adelphane
C) Crystepin
D) Haemiton
E) Lisinopril

354. Patient developed thyrotoxic crisis. Which of the following medications should be used in this case?
A) Methimazole 50-60 mg may be prescribed through a nasogastric tube (should be crushed first)
B) 40-60 U of short-acting insulin SQ
C) 40-60 cc if 40% glucose solution
D) 8.5% Sodium Bicarbonate drip
E) 400 cc of 0.9% of sodium chloride

355. Which of the following medications should be used in the case of hypoglycemic coma?
A) 20 U of insulin SQ
B) 40-80-100 cc of 40% glucose solution
C) 20 U of insulin IV

D) 500 cc of 5% glucose solution IV
E) 500 cc of 0.9% of sodium chloride IV

356. Which of the following medications are used in the treatment of pheochromocytoma?
A) Ganglion blockers
B) Slow calcium channel blockers
C) Alpha blockers
D) Beat blockers
E) Chloditanum

357. In what trimester should pregnant women with adrenal insufficiency take higher doses of glucocorticoids?
A) First
B) Second
C) Third
D) First and second
E) First and third

358. Which of the following medications is contraindicated in Addison's disease?
A) Prednisolone
B) Dexamethasone
C) Fludrocortisone Acetate
D) Adrenocorticotropic hormone
E) Hydrocortisone

359. Patient developed rhinitis and conjunctivitis while undergoing treatment for diffuse toxic goiter. Which of the following medications could have caused these side effects?
A) Reserpin
B) Propranolol
C) Mercazolilum
D) Lugol's solution
E) Prednisolone

360. Which of the following medications should be used in a patient with autoimmune thyroiditis who has a large goiter and high titer of anti-thyroid antibodies?
A) Thyroxin
B) Prednisolone

C) Suprastin
D) Verapamil
E) Propranolol

361. Which of the following side effects can be associated with anti-diuretic hormone (ADH) analogues?
A) Depression
B) Increased irritability
C) Decreased vision
D) Seizures
E) Headache

362. What is a 24 hour requirement of insulin in an adult person?
A) 10-20 U
B) 20-30 U
C) 30-40 U
D) 40-60 U
E) 100-120 U

363. Which medication is an agent of choice for treatment of diffuse toxic goiter?
A) Lithium carbonate
B) Lithium gluconate
C) Thiamazole
D) Glucocorticoids
E) Propranolol

364. Which of the following medications should be prescribed for a patient with type II diabetes and co-existing chronic pyelonephritis?
A) Glibenclamide
B) Metformin
C) Gliquidone
D) Gliclazide
E) Rosiglitazone

365. Indications for prescribing sulfonylurea for diabetes include:
A) Type I diabetes
B) Type II diabetes with normal body weight
C) Type II diabetes with increased body weight
D) Type II diabetes with weight loss
E) Diabetic nephropathy

366. They following class of medications is the treatment of choice for diabetic nephropathy:
A) Angioprotectors
B) ACE inhibitors
C) Non-selective beta blockers
D) Selective beta blockers
E) Alpha blockers

367. Patient has chronic adrenal insufficiency. Which medication should be prescribed first?
A) 25 mg of hydrocortisone IM (intramuscularly)
B) 500 cc of 5% glucose solution
C) 4% of sodium bicarbonate 2.5 cc/kg
D) 5% ascorbic acid solution
E) 500 cc of 0.9& sodium chloride solution

368. Which of the following treatments is appropriate for a patient with diffuse toxic goiter during the third trimester of pregnancy?
A) Subtotal thyroid gland resection
B) Treatment with radioactive iodine
C) Lugol's solution
D) Propylthiouracil
E) Prednisolone

369. Thyroid hormone analogue overdose can be associated with:
A) Tremors
B) Increased irritability
C) Nightsweats
D) Weight loss
E) All of the above

370. Patient with toxic multinodular goiter developed hyperthermia and sore throat while undergoing medical therapy. Which medication could have caused these side effects?
A) Potassium and magnesium aspartate
B) Propranolol
C) Mercazolilum
D) Prednisolone
E) Dimedrolum

371. Which of the following medications should be used to stabilize arterial blood pressure in a patient with diabetes and lactic acidosis coma?
A) Phenylephrine
B) Adrenalin
C) Glucagon
D) Hydrocortisone
E) Cordiaminum

372. Which of the following medications is most efficient at increasing glucose uptake by peripheral tissues?
A) Pentoxifylline
B) Chlorpropamide
C) Nicotinic acid
D) Metformin
E) Solcoseryl

373. Overdose by thyroid hormones during childhood leads to:
A) Delayed sexual development
B) Early sexual maturation
C) Heart rhythm abnormalities
D) Acceleration of growth and bone differentiation
E) Deceleration of growth and bone differentiation

374. Overdose by thyroid hormones in elderly patients most commonly leads to:
A) Increased irritability
B) Atrial fibrilation
C) Aggression
D) Psychosis
E) Psychomotor excitation

375. Which of the following medications is most appropriate for treatment of arterial hypertension in patients with benign prostatic hypertrophy?
A) Amlodipine
B) Atenolol
C) Diltiazem
D) Doxazosin
E) Losartan

376. Which of the following combinations should not be used for treatment of hypertension in patients with erectile dysfunction?
A) Dosartan + torasemide

B) Lisinopril + furosemide
C) Doxazosin + tadanafil
D) Nimodipine + sildenafil
E) Metoprolol + spironolactone

377. Which of the testosterone formulations has the longest duration of action?
A) Testosterone proprionate
B) Testosterone enantat
C) Testosterone cypionate
D) Testosterone undecanoat
E) Testosterone phenylproprionat

378. Which of the following combinations should be used in the setting of hypogonadism with decreased testicular size?
A) Fludrocortisone + testosterone proprionate
B) Chorionic gonadotropin + testosterone undecanoat
C) Doxazosin + sildenafil
D) Metoprolol + sildenafil
E) Chorionic gonadotropin + spironolactone

379. Which of the following medications is the treatment of choice for hyperprolactinemia?
A) Chloditanum
B) Cabergoline
C) Bromocriptine
D) Clomiphen
E) Mesterolone

380. Which of the following medications does not have anti-androgen properties?
A) Spironolactone
B) Cabergoline
C) Cimetedine
D) Cyproterone
E) Ketoconazole

381. Which of the following medications is used most frequently for stimulation of ovulation?
A) Cabergoline
B) Fludrocortisone
C) Cyproterone

D) Clomiphen
E) Dydrogesterone

382. Which of the oral contraceptives listed below has anti-androgen properties?
A) Mersolon
B) Novinet
C) Lindynet
D) Logest
E) Diane 35

383. Which of the following side effects is not usually seen with overdose of calcitriol (vitamin D3) during treatment of hypoparathyroidism?
A) Hypercalcemia
B) Arterial hypertension
C) Metallic taste
D) Hypocalciuria
E) Myalgia

384. All of the following are contraindications for prescribing calcium supplements and vitamin D3, except:
A) Hypercalcemia
B) Arterial hypertension
C) Hypercalciuria
D) Sarcoidosis
E) Chronic kidney disease.

Theme 6

385. Choose the mechanism of bacteriostatic antibiotics action:
A) disturb the function of the microorganisms cytoplasmic membrane
B) inhibit microbe wall synthesis
C) inhibit protein synthesis on the microorganisms ribosome level
D) inhibit DNA microorganisms synthesis
E) inhibit DNA-gyraze microorganisms synthesis

386. Bactericide antibiotic of wide-range action should be prescribed:
A) as a starting medicine in case of acute purulent process
B) in case of severe inflammatory disease of unknown etiology
C) for the treatment of infections, caused by Chlamydia

D) at the finishing stage of infectious disease treatment
E) for viral disease treatment

387. Chose the data, which is not used for the empiric antibiotic choice
A) data of smear microscopic examination, colored according to Gram
B) clinical picture of disease
C) epidemic situation
D) organism's sensitivity to the antibiotic
E) patient's pharmacological anamnesis data

388. Chose the antibiotic, whose effectiveness is higher in acid environment (pH 5,0-6,5):
A) Fosfomycin
B) Erythromycin
C) Gentamicin
D) Lincomycin
E) Natural Penicillin

389. The medicine for the treatment of the candidiasis of gastrointestinal tract, caused by Candida ablicans, is:
A) Clotrimazole
B) Fluconazole
C) Nystatin
D) Natamycin (Pimafucin)
E) Amphotericin B

390. The medicine for the treatment of the diseases, caused by Chlamydia, is
A) Ampicillin
B) Amikacin
C) Azithromycin
D) Amoxicillin/clavulanate acid (Amoksilav)
E) Cefuroxim

391. The medicine for the treatment of the diseases, caused by Pseudomonas aeruginosa, is:
A) Benzylpenicillin
B) Amoxicillin/clavulanate acid (Amoksilav)
C) Clarithromycin
D) Vancomycin
E) Cefuroxim

392. The medicine for the treatment of infections, caused by methicillin-resistant staphylococcus aureus, is:
A) Amoxicillin/clavulanate acid (Amoksilav)
B) Imipenem/cilastatin (tienam)
C) Cefotaxim (klaforan)
D) Aztreonam
E) Teicoplanin

393. The medicine for the treatment of infections, caused by mycoplasmas in babies, is:
A) Sparfloxacin
B) Tetracyclinum
C) Tobramycium
D) Spiramycin
E) Chloramphenicol (Laevomycetinum)

394. Enterococcus is no affected by:
A) Cephalosporins
B) Penicillins
C) Aminoglycosides
D) Rifampicin
E) Glycopeptides

395. The correction of dosage for the patients with liver failure is necessary for prescribing:
A) Amoxicillin
B) Oxacillin
C) Carbenicillin
D) Ampicillin
E) Phenoxymethylpenicillin

396. Carbopenemes have an effect on:
A) Chlamydia
B) Mycoplasmas
C) Corynebacterium
D) Listeria
E) Methicillin-resistant staphylococcus aureus

397. For empiric treatment of purulent osteomyelitis should be used:
A) Netilmicin
B) Aztreonam

C) Ceftibuten (Cedax)
D) Chloramphenicol (Laevomycetinum)
E) Lincomycin

398. Actively and in high concentrations is withdrawn with gall:
A) Tobramycium
B) Erythromycin
C) Vancomycin
D) Chloramphenicol (Laevomycetinum)
E) Clindamycin

399. Chose the antibiotic for ureter infections treatment:
A) Linezolid (Zyvox)
B) Amoxicillin/clavulanate acid (Amoksilav)
C) Cephalexinum
D) Chloramphenicol (Laevomycetinum)
E) Fusidinum

400. Chose the antibiotic of wide dose regime:
A) Cephalosporin of the II generation
B) Marcolides of the III generation
C) Aminopenicillins
D) Cetolides
E) Fosfomycin

401. Chose the antibiotic of limited dose regime:
A) Cephalosporins of the II generation
B) Chloramphenicol (Laevomycetinum)
C) Linkozamides
D) Tetracyclinum
E) Ristomycin

402. Chose the antibiotic of strict dosing:
A) Fosfomycin
B) Azithromycin
C) Piperacillin
D) Ceftriaxone (rofecin)
E) Amoxicillin/clavulanate acid (Amoksiklav)

403. The antibiotic, which can cause ototoxic effect, is:
A) Meropenem

B) Aztreonam
C) Gentamicin
D) Ceftazidime (Fortum)
E) Spectinomycin

404. The antibiotic, which can cause nephrotoxic effect, is:
A) Roxithromycin
B) Vancomycin
C) Fosfomycin Trometamol (monural)
D) Fusidinum
E) Rifampicinum

405. The antibiotic, which can cause hematotoxic effect, is:
A) Mupirocin
B) Cefalotin (Keflin)
C) Fusafungine (Bioparox)
D) Amoxicillin
E) Chloramphenicol (Laevomycetinum)

406. The antibiotic, which can cause hepatotoxic effect, is:
A) Benzylpenicillin
B) Bacitracin
C) Telithromycin (Ketek)
D) Tetracycline
E) Fosfomycin

407. Photosensibilisation is not caused by:
A) Tetracycline
B) Oxytetracycline
C) Metacycline
D) Doxycycline
E) Minocycline

408. Chose the antibiotics, which most frequently cause allergic reactions:
A) Macrolydes
B) Penicillins
C) Aminoglycosides
D) Ketolydes
E) Fusidinum

409. The medicines for treatment of the uncomplicated outpatient/community-acquired pneumonia of pneumococcal etiology are:
A) Amoxicillin or Azytromicin
B) Benzylpenicillin or Gentamicin
C) Ampicillin or Tetracycline
D) Cefotaxime or Fosfomycin
E) Rifampicinum or Aztreonam

410. The medicine for the treatment of pseudomembranous colitis is:
A) Aztreonam
B) Amikacin
C) Chloramphenicol (Laevomycetinum)
D) Vancomycin
E) Fosfomycin

411. Chose the antibiotic, which may be used only through inhalation:
A) Gramicidium
B) Bacitracin
C) Spectinomycin
D) Mupirocin
E) Fusafungine

412. Chloramphenicol (Laevomycetinum) has influence on:
A) Staphylococcus
B) Corynebacterium
C) Enterococcus
D) Haemophilus influenzae b
E) Pseudomonas aeruginosa

413. Doxycycline has influence on:
A) Staphylococcus
B) Chlamydia
C) Enterococcus
D) Haemophilus influenzae b
E) Corynebacterium

414. Mupirocin has influence on:
A) Chlamydia, mycoplasmas
B) Staphylococcus, streptococcus
C) Escherichia coli, proteus
D) Gonococcus, meningococcus

E) Clostridia, bacteroids

415. To the combined sulfanilamide medicine do not belong:
A) Co-trimoxazole
B) Salazosulfapyridazinum
C) Salazopyridazinum
D) Sulfapyridazium

416. Chose the sulfanilamide medicine, which is used in case of pneumocistic pneumonia:
A) Salazopyridazinum
B) Co-trimoxazole
C) Sulfadimethoxinum
D) Sulfalene
E) Norsulfazolum

417. Sensitive to sulfanilamides are:
A) Enterococcus, gardnerella
B) Mycoplasmas, Chlamydia (except trachoma agents)
C) Pseudomonas aeruginosa
D) Staphylococcus, streptococcus
E) Clostridia, bacteroids

418. Chose the sulfanilamide medicine, which is used only for gastrointestinal infections:
A) Aethazolum
B) Phthalylsulfathiazole (Phthalazolum)
C) Norsulfazolum
D) Sulphamethoxazole
E) Co-trimoxazole

420. Chose the sulfanilamide medicine, which is used for ureter infections:
A) Sulfacylum
B) Co-trimoxazole (Bactrim)
C) Norsulfazolum
D) Salazodimethoxintun
E) Aethazolum

421. Chose the sulfanilamide medicine, which enters blood in high concentration and active mode:
A) Sulfadimezinum

B) Sulfazoxasol
C) Sulfalene
D) Sulfazinum
E) Sulphamethoxazole

422. Chose the unwanted effects, which are not characteristic of sulfanilamide medicine:
A) Methaemoglobiaemia, hemolytic anemia
B) allergic reactions
C) neutropenia, leukopenia, trombocitonemia, anemia
D) neuritis, ataksia, vertigo
E) hearing deterioration

423. Chose the indications for prescribing Nitroxoline:
A) chronical bronchitis
B) skin and subcutaneous tissue infections
C) ureter infections
D) exudative pleuritis
E) endocarditis

424. Microorganisms highly sensitive to nalidixic and oxolin acids are:
A) gram positive cocci
B) gram negative cocci
C) gram positive rods
D) gram negative rods
E) protozoa

425. The unwanted effect, which may be caused by Chinolones of the II generation:
A) hepatotoxic
B) nefrotoxic
C) hematotoxic
D) ototoxic
E) cardiotoxic

426. Mechanism of Fluoroquinolones action:
A) inhibit microbe wall synthesis
B) break cytoplasmic membrane synthesis of the microorganisms
C) inhibit protein synthesis on the microorganisms ribosome level
D) create complexes with the nucleic acids and this way block the named acids
E) inhibit DNA-gyraze microorganisms

44. Fluoroquinolones have influence on:
A) Neisseria
B) Treponema pallidum
C) MRSA
D) Enterococcus faecium
E) Pseudomonas mallei

427. Chose the Fluoroquinolone, which needs dosing regime correction for the patients with liver conditions:
A) sparfloxacine
B) Pefloxacin
C) Ofloxacin
D) Norfloxacin
E) Ciprofloxacin

428. Chose the Fluoroquinolone, which has the most effect on pneumococcus:
A) Ciprofloxacin
B) Ofloxacin
C) Norfloxacin
D) Perfloxacin

429. Absorption of Fluoroquinolones in the gastrointestinal tract is decreased, when used combined with:
A) Erythromycin
B) Amoxicillin/clavulanate acid
C) Nonsteroid anti-inflammatory drugs
D) Iron medicine
E) Phosphothiaminum

450. Chose the anti infection medicine, which increases infection resistance of the microorganisms:
A) Salazodimethoxintun
B) Amoxicillin/clavulanate acid
C) Ciprofloxacin
D) Sulperason
E) Furaginum

451. Nitrofurans do not influence:
A) proteus
B) Escherichia coli
C) Shigella

D) Salmonella
E) Meningococcus

452. The side effect absent in use of Nitrofurans is:
A) cholestasis, chronic hepatitis
B) photosensibilisation
C) arterial hypertension
D) antabuse class action
E) neurotoxicosis

453. Nitromidazols do not influence:
A) protozoa
B) anaerobes
C) campylobacter
D) mycoplasmas
E) gardnerella

454. Chose the medicine, which does not influence the influenza virus:
A) Remantadin
B) Aciclovir
C) Algirem
D) Oseltamivir (Tamiflu)
E) Adaprominum

455. Chose the medicine, which belongs to the Interferonogens:
A) Reaferonum
B) Viferonum
C) Velferonum
D) Imunoferonum
E) Cicloferonum

456. Chose the anti fungal medicine, which belongs to the Polienic antibiotics:
A) Natamycin
B) Griseofulvinum
C) Terbinafine
D) Ciclopiroxolamine
E) Naftifine

457. Side effects not characteristic of Amphotericin B (funzizon) are:
A) nephrotoxicity, hepatotoxicity
B) hematotoxiciry, cardiotoxicity

C) hypoglycemia, hypomagnesiumia
D) dyspepsic syndromes (anorexia, diarrhea)
E) muscle pains, cramps, fever

458. Chose antimalaria medicines, which have schizontotropic, histoschizontotropic and hamontotropic effects at the same time:
A) Mefloquine, Dapsone
B) Chingaminum, Chininum
C) Bigumalum, Chloridium
D) Chinocidum, Primaquine
E) Halfan, Mepron

459. In case of intestinal and extra-intestinal invasive amebiasis is not indicated:
A) Emetinum
B) Tinidazole
C) Dihydroemetinum
D) Metronidazolum
E) Enteroseptol

460. In case of premuscle injection of Emetinum do not occur:
A) nephritis
B) nausea, vomiting, diarrhea
C) myocarditis, pericarditis
D) tachycardia, heartache
E) hives

461. Chose the anti helminth medicine, which does not influence the Nematode:
A) Levamisole (Decaris)
B) Phenasalum (Niclosamide)
C) Mebendazole (Vermox)
D) Pyrantelum pamoas (Combantrin)
E) Pyrvinium Embonate (Pyrvinium)

462. Chose the medicine, which is effective in case of cysticercosis:
A) Albendazole
B) Mebendazole
C) Filixanum
D) Aminoacrichinum
E) Phenasalum

463. Which of the following medicines does not belong to the Fluoroquinolones:

A) Ciprofloxacin
B) Ofloxacin
C) Norfloxacin
D) Pefloxacin
E) Oxacillin

464. Which of the following antibacterial medicines does not belong to the macrolydes group?
A) Oleandomycin
B) Roxithromycin
C) Erythromycin
D) Spiramycin
E) Kanamycin

465. To the group of Tetracyclines belong all except:
A) Morphocyclin
B) Metacyclin
C) Doxycyclin
D) Lincomycin
E) Minocyclin

466. To the group of Penicillins belong all except:
A) Doxycyclin
B) Amoxicillin
C) Amoxicillin/clavulanate acid
D) Oxacillin
E) Ampicillin

467. To the group of Cephalosporins belong all except:
A) Cefotaxim
B) Cefuroxim
C) Tobramycium
D) Cefoperazone
E) Cephalexinum

468. Bactericide effect have all the following antibiotics except:
A) Aminoglycosides
B) Marcolides
C) Penicillins
D) Cephalosporins
E) Polymyxins

469. To the group of Aminoglycosides belong all the following antibiotics except:
A) Monomycin
B) Amikacin
C) Gentamicin
D) Rifampicinum
E) Streptomycin

470. To the side effects, which develop when using antibacterial medications belong all except:
A) Anginoneurotic swelling, eosinophilia
B) Liver aminotransferase bilirubin normalisation
C) Hives, photodermatosis
D) Polyneuritis, pleksitis
E) Glomerulonephritis, nephrotic syndrome

471. Which sulfanilamide medicine has the shortest period of action?
A) Norsulfazolum
B) Sulfazinum
C) Sulfapyridazium
D) Sulfadoxine
E) Sulfadimethoxinum

472. Into the foetus blood and amniotic liquid penetrate in small amounts all the following antibiotics except:
A) Laevomycetinum
B) Tetracyclinum
C) Cephalosporin
D) Lincomycin
E) Gentamicin

473. Which antibacterial medicine belongs to Aminoglycosides?
A) Benzylpenicillin sodium salt
B) Laevomycetinum
C) Ceftriaxon
D) Roxithromycin
E) Gentamicin

474. A patient has slow running infectious endocarditis. Which succession of treatment tactics will be correct?

A) Prescribing antibiotic
B) Prescribing sulfanilamides
C) Examining blood for hemoculture and defining the agent
D) Examining blood for hemoculture and defining the agent and prescribing antibiotic
E) Prescribing anti-inflammatory medicine and examining blood for hemoculture

475. A patient has type 2 sugar diabetes, third stage diabetic nephropathy, chronic pyelonephritis. Which antibacterial medicine will be correct in this case?
A) Aminoglycosides
B) Cephalosporins
C) Sulfanilamides
D) Polymyxins
E) 8-oxiquinoline derivatives

476. Which of the following antibacterial medicines can be prescribed to a pregnant woman on her II trimester?
A) Laevomycetinum
B) Tetracyclinum
C) Rifampicinum
D) Gentamicin
E) Ampicillin

477. Which antibacterial medicine belongs to the Cephalosporins of the IV generation?
A) Cefotaxim
B) Cephazolin
C) Cefamandole
D) Ceftriaxone
E) Cefepime

478. Chose the microorganisms, which are not influenced by sulfanilamides:
A) Tuberculosis microbacteria
B) Chlamydia
C) Salmonella
D) Gonococcus
E) Staphilococcus

479. Chose the microorganisms, which are highly sensitive to sulfanilamides effect:
A) Spirochaetes

B) Pseudomonas aeruginosa
C) Tuberculosis microbacteria
D) Anaerobes
E) Streptococcus

Theme 7

480. Which antacid medication may cause diarrhea?
A) Sodium hydrocarbonate
B) Magnesium trisilicate
C) Aluminium hydroxide
D) Bismuth carbonate
E) Calcium carbonate

481. Which antacid medication may cause constipation?
A) Aluminium hydroxide
B) Magnesium trisilicate
C) Calcium phosphate
D) Bismuth carbonate
E) Magnesium hydroxide

482. Salt antacid medications:
A) Enhance absorption of many antibiotics
B) Activate solubility of iron medication
C) May cause nephrocalcinosis
D) May cause bowel bleeding
E) Cause agranulocytosis

483. Blockators of H_2-histaminereceptors
A) Have positive effect on peptic ulcers treatment
B) Are not effective for esophagus reflex
C) Decrease the effectiveness of salt antacid use
D) Effect stomach cancer symptoms
E) Do not cause constipation

484. Choose the properties of cimetidine
A) The most effective antisecretory action
B) The duration of action of around 12 hours
C) Is prescribed 150 mg twice a day or 300 mg before sleep
D) Cause agranulocytosis
E) Causes gynekomastia and galactorea

485. How does Metoclopramide influence the function of the large intestine?
A) Activates and causes diarrhea
B) Activates without causing diarrhea
C) Inhibits and causes constipation
D) Inhibits without causing constipation
E) Does not have any influence

486. Which M-cholinoblocker may be prescribed to the patient with ulcer combined with the prostate hyperplasia?
A) Atropin
B) Methacinum
C) Platyphylline
D) Pirenzepine (Gastozepin)
E) Belladonna tincture

487. To which of the following antibacterial medicine is Helicobacter pylori most sensitive?
A) Aciclovir
B) Sulfanilamide
C) Nitrofuran
D) Macrolid
E) Polymixin

488. Which laxatives affect the large intestine?
A) Fenolftaliin
B) Cortex Frangula
C) Senna alexandrina leaves
D) Isapheninum
E) Bisacodyl

489. Which laxatives affect the small intestine?
A) Bisacodyl
B) Oil vaseline
C) Magnesium Sulphate
D) Karlovy Vary salt
E) Almond butter

490. Which medicine enhance softening of faeces?
A) Almond butter
B) Fenolftaliin
C) Regulax

D) Bisacodyl
E) None of the above

491. How can the possibility of laxation be prevented during antibiotics treatment?
A) To inject simultaneously vitamins of group B and Calcium carbonate
B) To inject hormonal anti-inflammatory medicine
C) To prescribe Calcium nedicine
D) To inject simultaneously vitamins A, E, C.
E) To prescribe simultaneously medicine containing Lactobacillus

492. In case of flatulence a specific effect has medicine based on:
A) Atropine, platyphylline
B) Papaverinum, drotaverine
C) Magnesium Sulphate
D) Simethicone, dimethicone
E) Tutsan

493. Choleretic action has:
A) Adursal
B) Allocholum
C) Magnesium Sulphate
D) Xylitol
E) Sorbitol

494. The mechanism of cholecinetics action includes:
A) Increase of gall bladder tone
B) Increase of bile duct tone
C) Increase of bile hydrofility
D) Stimulation of bile-forming
E) Prevention of gallstones formation

495. Silymarin action mechanism is connected with:
A) Free radicals binding
B) Aterogeneous lipid forming decrease
C) Hypoglycemic effect
D) Lipid peroxidation process inhibiting
E) Effect on phosphoenzyme lipids

496. Indications for prescribing Ademetionine (Heptral) are:
A) Chronic pancreatitis

B) Dyspepsia in newly born
C) Duodenal ulcer
D) Toxic hepatitis combined with depression
E) Liver cirrhosis

497. The sure prevention of ulcer recurrence may be gained with the help of:
A) Antiheliobacter medicines
B) Blockators of H_2-histamine receptors
C) Inhibitors of proton pump
D) M-cholinoblockators
E) Cytoprotective medicine

498. Metoclopramidum is contraindicated in case of:
A) Sugar diabetes
B) Hypertonic disease
C) Liver cirrhosis
D) Pregnancy (2 trimester)
E) Phaeochromocytoma

499. Which antiemetic may cause hyperprolactinaemia when used for a lasting period of time?
A) Metoclopramidum
B) Domperidone (motilium)
C) Granisetron
D) Tropisetron
E) None of the mentioned

500. Which medicine of the Prostaglandin family is used as gastroprotector?
A) Prostacyclin
B) Thromboxane
C) Misoprostol
D) Vasoprostan
E) Alprostadil

501. Which laxatives affect all parts of intestine?
A) Senna alexandrina leaves
B) Fenolftaliin
C) Oil vaseline
D) Bisacodyl
E) Guttalax

502. Increases absorption of medicine in stomach and intestines
A) Hyperacid state
B) Normacid state
C) Anacid state
D) Does not depend on stomach PH
E) Increase of bile acid secretion

503. Which medicine should be prescribed for constipation treatment of the pregnant?
A) Oil vaseline
B) Isapheninum
C) Bisacodyl
D) Castor oil
E) Magnesium Sulphate

504. The antibiotics, which accumulate in bile best are:
A) Cefaloridium
B) Ampicillin
C) Laevomycetinum
D) Oxacillin
E) Polymyxini M

505. Blockators of H_2-histamine receptors
A) Are effective for peptic ulcer treatment
B) Do not prevent peptic ulcer recurrence
C) Are not effective for esophagus reflux
D) Do not relieve stomach cancer symptoms
E) Their effect lessens when simultaneously used with antacids

506. Which of the following medicines has the local effect on peptic ulcer?
A) Atropine
B) Bismuth chelate
C) Cimetidine
D) Omeprazole
E) Famotidine

507. During the difficult unspecified ulcerative colitis the most effective medicine is:
A) Antibiotics therapy
B) Massive rehydration
C) Prednisolon I/V
D) Omeprazole

E) Atropine

508. The following statements are true for the patients with liver cirrhosis except:
A) Decreases system bioacessibility of medicines, which have the property of "primary liver barrier"
B) Increases system bioacessibility of medicines, which have the property of "primary liver barrier"
C) There are no restrictions for diuretic use
D) MAO inhibitors are safer than tricyclic antidepressants
E) Antibiotics with kidney elimination way are safe

509. Choose ferment medicines, which contain the largest amount of lipase
A) Festal
B) Enzystal
C) Panzynorm forte
D) Mezym forte
E) Kreon 10000.

510. Choose the significant advantage of omeprazole compared to H_2-blockators
A) Medicine cost
B) Absence of "withdrawal syndrome "
C) Depression of Hydrochloric acid secretion
D) Cytoprotective action
E) Convenience of use

511. For treatment of ulcer disease, associated with Helicobacter pylori, is used:
A) Metronidazole
B) Clarithromycin
C) Bismuth subcitrate
D) Amoxicillin
E) All the mentioned medicines

512. To which group of medicines does "Essenciale H" belong:
A) Medicines containing aminoacids
B) Medicines containing essential phospholipidis
C) Combined medicines
D) Cholagogic medicines
E) Phytomedicines

513. Choose the medicine, which slows down intestinal transit during diarrhea

A) Bisacodyl
B) Loperamide
C) Metoclopramide
D) Ranitidin
E) Drotaverine (no-spa)

514. Which of the following ferment medicines also contains pepsin and Hydrochloric acid?
A) Festal
B) Enzystal
C) Panzynorm forte
D) Kreon 10000.

515. Which should be the recommendation for optimal use of antacid medications by the patient?
A) Immediately after meals
B) 30 minutes prior to meals
C) During meals
D) 1 hour after meals
E) 2 hours after meals

516. Choose the side effect, which is characteristic of cisapride:
A) Extrapyramidal disorders
B) Bronchospasm
C) Feeling of intensified gastrointestinal (Gl)
D) Hyperprolactinemia
E) Asthenic syndrome

517. Proton pump inhibitors are not used for:
A) Gastroesophageal reflexive disease
B) Irritated bowel syndrome
C) Stomach and duodenal ulcer
D) Zollinger-Ellison syndrome
E) Gastropathy induced by Nonsteroid anti-inflammatory drugs

518. Procinetic properties, caused by dophamin receptors block, have all of the following medications axcept:
A) Cisapride
B) Metoclopramide
C) Domperidon

D) Sulpiride
E) Bromopride

519. Which influence does cimetidine have on endocrine system?
A) Anti-estrogenic effect
B) Antiandrogenic effect
C) Antigonadotrop action
D) Vasosperine secretion inhibition
E) Vasosperine secretion stimulation

520. Dimeticonand/or simeticon are included in the combined antacids in order to:
A) Increase the medication adhesion to the mucous membrane of the stomach
B) Enhance gustatory properties
C) Prolong antacid action
D) Decrease intestinal gas generation
E) Quicken stomach contents evacuation

521. The most effective medication for prevention of gastropathy induced by Nonsteroid anti-inflammatory drugs is considered
A) Omeprazole
B) Pirenzepine
C) Bismuth subcitrate (De-Nol)
D) Ranitidin
E) Misoprostol

522. Choose the most active of the antisecretor medications inhibitor of cytochrome P-450:
A) Cimetidine
B) Omeprazole
C) Famotidinum
D) Pirenzepine
E) Pantoprazolum

523. Which medication has the effect of prolonged antirecurrence for patients with viral hepatitis B?
A) Engerix (vaccine against hepatitis B)
B) Ademetionine (Heptral)
C) Aciclovir
D) Interferon alfa 2-e
E) Esenciale-H

524. Choose the medication, which possesses the strongest antisecretor effect:
A) Platyphylline
B) Pirenzepine
C) Pantoprazolum
D) Ranitidin
E) Misoprostol

525. Name the most effective medication, which is used in complex treatment of severe pancreatitis:
A) Octreotide (Sandostatin)
B) Pirenzepine (gastrocepinum)
C) Aprotinin (Contrykal)
D) Ranitidin
E) Dexametason

526. To the medications, which depress the helicobacter infection belong all except:
A) Bismuth subcitrate
B) Metronidazolum
C) Furazolidone
D) Ranitidin
E) Clarithromycin

527. To the antacids, absorbed by the gastrointestinal belongs:
A) Aluminium hydroxide
B) Sodium hydrocarbonate
C) Calcium carbonate
D) Magnesium carbonate
E) “Maaloks”

528. Among blockators of H_2-receptors the most side-effects has:
A) Roxatidine
B) Nizatidine
C) Famotidinum
D) Ranitidin
E) Cimetidine

529. Choose the side effects of carbenoxolone, caused by its mineralocorticoid properties:
A) Hypoglicemia

B) Natrium and liquid holdback
C) Swelling
D) Arterial hypertension
E) All mentioned

530. Which medication should be used in case of atonic constipations?
A) Metoclopramide
B) Domperidon
C) Cisapride
D) Prozerin
E) Magnesium Sulphate

531. Name the optimal daily dose of ursodeoxycholic acid (ursofalc) for dissolvement of bile concrements:
A) 5mg/kg
B) 10 mg/kg
C) 20 mg/kg
D) 35 mg/kg
E) 50 mg/kg

532. Side effect characteristic of "Festal" is:
A) Diarrhea
B) Nausea, vomiting
C) Meteorism
D) Alergic reactions
E) None of the mentioned

533. Laxatives of stimulating type should be used
A) In the morning
B) In the evening
C) At night
D) Three times a day
E) At any time

534. Absorption of fat-soluble vitamins is impossible without:
A) Pepsin
B) Chymotrypsinum
C) Bile
D) Pancreatitis lipasa
E) Pancreatitis amilasa

535. The synthetic analogs of prostaglanditis (misoprostol) have the following effects except:
A) Antisecretory action
B) Reparant
C) Slime forming stimulation
D) Bicarbonats secretion
E) Antiheliobacter

536. Which medication depresses metabolism of other medication during simultaneous use?
A) Pirenzepine
B) Domperidon
C) Famotidine
D) Cimetidine
E) Omeprazolum

537. In clinical conditions antisecretory action of Omeprazolum lasts for:
A) 2-4 hours
B) 8-10 hours
C) 16-20 hours
D) 24 hours
E) Up to 3 days

538. A patient has chronic pancreatitis with vivid displays of insufficient outside secretory function of pancreas. Which group of medications plays the most significant role in the treatment?
A) Miotropic spasmolytics
B) Blockators of H_2-receptors
C) Fermental medicines
D) Anticholinesteras medications
E) Intestinal microflora normalisators

539. Which M-cholinobacter may be prescribed to a patient suffering from ulcer combined with glaucoma?
A) Pirenzepine
B) Methacinum
C) Platyphylline
D) Atropin
E) Belladonna tincture

560. A patient has been diagnosed with chronic gastritis A and low secretory function. The use of which medication is pathogenetically proved?
A) M-cholinoblockators
B) Procinetics
C) Medications, which contain gastric juice elements
D) Intestinal microflora normalisators
E) Medications based on pancreatin

561. For blockators of H_2-receptors all the following statements are true except:
A) Lowering of basal and stimulated secretion of HCl
B) Dependence of the main effect on the dose
C) Higher efficiency in case of duodenal ulcer
D) Substantial influence on gastric motorics
E) Do not influence secretion of bicarbonates and slime

562. The average treatment dose of famotidin in case of ulcer disease is:
A) 10 mg/day
B) 20 mg/day
C) 40 mg/day
D) 60 mg/day
E) 80 mg/day

563. Which medication is effective in case of nausea and vomiting of vestibular genesis?
A) Metoclopramide
B) Sulpiride
C) Domperidon
D) Granisetron
E) Tropisetron

564. Which role does hemicelluloses included in “Festal” play?
A) Splitting of plant fibers
B) Protein splitting
C) Fat splitting
D) Carbohydrate splitting
E) Potention of other ferments action

565. In case of diarrhea syndrome the following medications are used except:
A) Antibacterial medicines
B) Blockators of H_2-receptors
C) Bacterial medicines

D) Adsorbing medications
E) Motorics regulators

566. Which group of medications is not used in intestinal dysbacteriosis treatment?
A) Antibacterial medicines
B) Imunomodulators
C) Fermental medications
D) Anticholinesteras medications
E) Intestinal microflora normalisators

567. Which group of medicines is the basis for medication treatment of Zollinger-Ellison syndrome?
A) Antibacterial medicines
B) Blockators of H_2-receptors
C) Proton pump inhibitors
D) M-cholinoblockators
E) Spasmolytics

568. In mucoviscidosis treatment (displays from the digestive organs) the following groups of medications are used:
A) Antacids
B) Antisecretory medications
C) Fermental medications
D) Lactulose
E) Nonsteroid anti-inflammatory drugs

569. In which case is the conservative treatment of gallstone disease contraindicated?
A) Accompanying liver diseases (hepatitis, cirrhosis)
B) Early stage of gallstone disease
C) Presence of pure cholesterine concrements
D) In case of concrements size of 15 mm
E) In case of maintained contraction function of gallbladder

570. The basis for medication treatment of the chronic virus hepatitis C is:
A) Aciclovir
B) Zidovudine
C) Hepatoprotectors
D) Alfa interferon+Ribavirin
E) Remantadinum

571. In case of alcohol steatohepatitis the following medications are used except:
A) Esenciale-H
B) Glucocorticoids
C) Ademetionine
D) Ursodeoxycholic acid
E) Vitamin medications

572. In case of toxic hepatitis, caused by paracetamol overdose, aetiologic therapy consists in:
A) N-acetylcysteine
B) Essential phospholipids
C) Medications on sylimarine
D) Glucocorticoids
E) Vitamin medications

573. For treatment of excessive bacterial overgrowth in the small intestine syndrome are not used:
A) Tetracycline
B) Ampicillin
C) Metronidazole
D) Other antibacterial medicines of wide range
E) Fermental medicines

574. In the treatment of carcinoid syndrome are not used:
A) Octreotide (sandostatin)
B) Cyproheptadine (peritol)
C) Lactulose
D) Loperamide
E) 5-fluorouracil

575. Which medication belongs to the ones, which are not used for Kron disease exacerbation treatment?
A) Sulfasalazine
B) Octreotide (sandostatin)
C) Ciprofloxacinum
D) Metronidazole
E) Prednisolon

576. Which group of medications is used for treatment of diabetes mellitus?
A) Biguanides

B) M-cholinoblockators
C) Miotropic spasmolytics
D) Motorics inhibitors
E) Antidepressants

577. Which if the following medicines is effective for treatment of pseudomembranous colitis caused by antibiotics therapy?
A) Sulfasalazine
B) Loperamide
C) Ciprofloxacinum
D) Metronidazole
E) Prednisolon

578. Which of the following medications does not belong to those, which are used for local treatment of proctitis?
A) Camomile tea
B) Diclofenak Sodium
C) Colargol
D) Methyluracilum
E) Lidocaine

579. Which of the following medications is effective for the treatment of bulimia nervosa?
A) Fluoxetine
B) Ranitidin
C) Omeprazolum
D) Diazepam
E) Apomorphine

LIST OF QUESTIONS FOR THE FINAL MODULAR TEST

- Modern classification of lipid lowering drugs.
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, contraindications of statins, side effects, doses.
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, contraindications of fibrates, side effects, doses.
- Omega-3 polyunsaturated fatty acids. Mechanism of action, prescribing peculiarities.
- Classification of dyslipidemia. Differential approach to treat dyslipidemia.
- Modern classification of antianginal and antiischemic drugs.
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, contraindications of nitrates, side effects, doses.
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, contraindications of beta adrenergic blockers, side effects, doses.
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, and contraindications of Ca channel blockers, side effects, doses.
- Classification of Ca channel blockers. Prescription drug information.
- Classification of beta adrenergic blockers. Prescription drug information.
- Antiplatelety drugs. Classification. Mechanism of action, side effects, doses.
- Thrombolytic agents. Indications, contraindications. Algorithm for use.
- Anticoagulant medicines. Classification. Mechanism of action, side effects, doses.
- Classification of antihypertensive drugs.
- Usage of antihypertensive drugs in different clinical settings (diabetes mellitus, bronchial asthma, pregnancy, old age, pheochromocytoma etc.)
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, contraindications of ACE-inhibitors, side effects, doses.
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, contraindications of AT II type 1 receptor blockers, side effects, doses.
- Combined treatment of hypertension.
- Classification of antiarrhythmic drugs, prescribing peculiarities.
- Classification of cardiac glycosides, doses. Cardial effectss of glycosides, indications, side effects.
- Inotropic agents, indications, contraindications.
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, and contraindications of diuretics, side effects, doses (loop, thiazides, thiazide-like, potassium sparing diuretics).
- Classification of diuretics.

- Usage of diuretics in different clinical settings (influence on lipid and carbohydrate metabolism).
- Classification of drugs influencing bronchial patency.
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, and contraindications of β_2 agonists (short and long acting), side effects, doses.
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, and contraindications of methylxanthines, side effects, doses.
- Inhaled corticosteroids, advantages, side effects, regimen, doses, guidelines for tapering or withdrawal of corticosteroids.
- Mechanism of action, regimen and doses of antitussives, drug-drug interaction, side effects.
- Classification of nonsteroidal antiinflammatory drugs.
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, and contraindications of nonsteroidal antiinflammatory drugs, side effects, regimen, doses.
- The most common errors in antibiotic therapy.
- Allergic reactions following antibiotic therapy, clinical picture.
- Penicillins: classification, spectrum of activity, mechanism of action, treatment features, doses.
- Cephalosporins: classification, spectrum of activity, mechanism of action, treatment features, doses.
- Carbapenems: classification, spectrum of activity, mechanism of action, treatment features, doses.
- Aminoglycosides: classification, spectrum of activity, mechanism of action, treatment features, doses.
- Fluoroquinolones: classification, spectrum of activity, mechanism of action, treatment features, doses.
- Macrolides: classification, spectrum of activity, mechanism of action, treatment features, doses.
- Classification of drugs correcting secretory and motor function of digestive organs.
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, and contraindications of selective dopamine receptor antagonists, side effects, doses.
- Classification of drugs influencing gastrointestinal motorics (Loperamide, doses)
- Spasmolytics: classification, spectrum of activity, mechanism of action, treatment features, doses.
- Drugs changing secretory function of stomach, modern possibilities of such therapy.

- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, and contraindications of proton-pump inhibitors, side effects, doses.
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, and contraindications of histamine H_2 receptor antagonists, side effects, doses.
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, and contraindications of antacids, side effects, doses.
- Clinical pharmacological peculiarities and rational use of gastroprotectors.
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, and contraindications of hepatoprotectors, side effects, doses.
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, and contraindications of pancreatic enzymes, side effects, doses.
- Mechanism of action, pharmacodynamics, pharmacokinetics, indications, and contraindications of anti-allergy medication, side effects, doses.
- Classification of insulins, indications, contraindications, side effects, doses.
- Oral hypoglycemic drugs. Classification, mechanism of action, indications for use.
- Classification of drugs used for hormonal replacement therapy: estrogens, androgens. Antiestrogens, antiandrogens. Drugs for treatment of male and female menopause.
- Clinical pharmacological peculiarities and rational use of hormonal contraceptives.
- Thyroid hormones drugs. Indications, contraindications, side effects, complications, modern possibilities of this type of therapy.
- Antithyroid drugs, peculiarities of use, side effects, complications.

List of methodological literature and textbooks

1. *Basic and Clinical Pharmacology 15e*. McGraw-Hill Education, 2020.
2. Bespalov, Anton, та ін., редактори. *Good Research Practice in Non-Clinical Pharmacology and Biomedicine*. Springer International Publishing, 2020, https://doi.org/10.1007/978-3-030-33656-1.
3. Cannello, Pedro J., та ін. *Clinical Pharmacology*. DI Press, 2022.
4. Catala, Angel, та Usama Ahmad, редактори. *Molecular Pharmacology*. IntechOpen, 2020, https://doi.org/10.5772/intechopen.89926.
5. Ferro, Albert, та Kerry Layne. *100 Cases in Clinical Pharmacology, Therapeutics and Prescribing, First Edition*. Taylor & Francis Group, 2020.
6. Francisco Rodríguez-Landa, Juan, та Jonathan Cueto-Escobedo, редактори. *Behavioral Pharmacology - From Basic to Clinical Research*. IntechOpen, 2020, https://doi.org/10.5772/intechopen.77701.
7. Hock, Franz J., та Michael R. Gralinski, редактори. *Drug Discovery and Evaluation: Methods in Clinical Pharmacology*. Springer International Publishing, 2020, https://doi.org/10.1007/978-3-319-56637-5.
8. Huang, S.-M., Lertora, J. J. L., Vicini, P. та J, A. J. A., (2021). *Principles of clinical pharmacology*. Elsevier Science & Technology Books.
9. Layne, Kerry, та Albert Ferro. *100 Cases in Clinical Pharmacology, Therapeutics and Prescribing*. Редактор Janice Rymer, CRC Press, 2020, https://doi.org/10.1201/9780429030093.
10. McCuistion, Linda E., та ін. *Pharmacology Online for Pharmacology: A Nursing Process Approach*. Elsevier - Health Sciences Division, 2020.
11. McKay, Gerard A., та ін. *Lecture Notes - Clinical Pharmacology and Therapeutics*. Wiley & Sons, Incorporated, John, 2020.
12. *Medical Pharmacology*. Independently Published, 2020.
13. Panigrahi, Ghanshyam. *Experimental Pharmacology -- II*. Nirali Prakashan, 2020.
14. *Pharmacology*. Creative Media Partners, LLC, 2022.

15. Prabhakar, Hemanshu, та ін., редактори. *Pharmacology in Clinical Neurosciences*. Springer Singapore, 2020, https://doi.org/10.1007/978-981-15-3591-8.
16. Simmons, Mark. *Pharmacology: An Essential Textbook*. Thieme Medical Publishers, Incorporated, 2020.

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