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NATIONAL UNIVERSITY OF PHARMACY

Clinical Pharmacy

Educational and methodological manual

Manual for students of pharmaceutical
and medical higher schools

Edited by I.A. Zupanets, I.S. Chekman

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C 49 **Clinical Pharmacy:** (educational and methodological manual): manual for student of higher schools / I.A. Zupanets, I.S. Chekman, S.B. Popov et al., edited by I.A. Zupanets, I.S. Chekman. — Kharkiv : NUPh : Golden Pages, 2010. — 184 p.

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The manual is aimed to train the students of the pharmaceutical higher schools and pharmaceutical departments of medical higher schools of the education IIIrd-IVth accreditation levels in «Pharmacy» speciality for the final certification in Clinical Pharmacy.

The theoretical minimum, the questions to the course examination and state certification in Clinical Pharmacy for students of speciality 7.110201 «Pharmacy» are presented.

The manual contains the examples of examination cards, the criteria for assessing knowledge and the list of the literature recommended.

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PREFACE

The manual contains the materials for training for the final control of knowledge in Clinical Pharmacy subject for foreign students of speciality 7.110201 «Pharmacy».

The first part describes the content of «Clinical Pharmacy» discipline according to the syllabus of «Pharmacy» speciality, which is based on the curriculum approved by the Ministry of Public Health of Ukraine Order №36 from 21.01.2004 (as amended by the Orders №446 of 01.08.2007) and №259 of 17.05.2008, respectively.

According to the Order of the Ministry of Public Health of Ukraine №148 from 22.03.2004 «About measures for implementation of the Bologna Declaration in higher medical and pharmaceutical education for 2004–2005» and the Order of Ministry of Public Health of Ukraine №492 from 12.10.2004 «About Amendments and Additions to the Guidelines in developing curricula of disciplines» the syllabus is structurized in modules, topic modules and topics. It also sets specific goals for each topic module — requirements to knowledge and skills of students.

The second part represents the questions of the final control of students' knowledge in clinical pharmacy:

- questions of the final control of modules for foreign students of full-time form of education in «Pharmacy» speciality according to the requirements of the credit-modular system of the educational process organization;
- questions to the State examination for students of «Pharmacy» speciality of full-time form of education.

The criteria of knowledge assessment and examples of cards for state certification are given.

In addition, this section presents the requirements to coursework with the algorithm (plan), as well as conditions of the practice in clinical pharmacy.

Section «Standards of training» includes the list of issues to be considered during laboratory studies for teaching students of the specialty, as well as the minimum knowledge that students must master to get positive assessment in «Clinical Pharmacy» discipline.

This section provides the basic symptoms and syndromes in internal disease clinic, the list of nosologic units, the main approaches to treatment of diseases with the pharmacotherapeutic group of drugs designation, the list of medicines registered in Ukraine under the international name (trade names, brand medicines, combined medicines are listed under the original name in brackets). The volume of the information required for clinical pharmacology of medicines is given in the corresponding tables specifying the minimal knowledge on approaches to evaluation of the effectiveness and safety of the therapy, which includes the dynamics of patient's subjective complaints, clinical indexes, laboratory and instrumental researches. As pharmaceutical care is the final part of clinical pharmacy, the list of the knowledge required for this section with indication of OTC-drugs are given in the standards of training. The list of the recommended literature completes each topic.

The authors are also grateful in advance for all comments and suggestions as for structure and the content of the manual.



THE CONTENT OF THE SYLLABUS FOR «CLINICAL PHARMACY» DISCIPLINE



The syllabus is made according to the requirements of the credit-modular system of organization of the educational process (Order of the Ministry of Public Health of Ukraine № 492 of 12.10.2004), curriculum of speciality: 7.110201 «Pharmacy» (Order of the Ministry of Public Health of Ukraine №446 of 01.08.2007)

The program was confirmed at the meeting of the Scientific-methodical commission «Pharmacy» (protocol №19 of 7.11.2008)



MODULE 1

GENERAL QUESTIONS ON CLINICAL PHARMACY.

CLINICAL PHARMACY IN CARDIOLOGY, RHEUMATOLOGY, PULMONOLOGY, NEPHROLOGY

Topic module 1.

The basic principles of clinical pharmacy and clinical pharmacology. Clinical pharmacy in cardiology

Specific goals: to learn the definition, the purpose and problems of clinical pharmacy, to learn the basic principles of clinical pharmacology, good clinical practice; to be able to determine the type of adverse drug reactions; to learn the basic symptoms and syndromes, which are typical for the cardiovascular system diseases; to be able to determine the symptoms when self-treatment is possible; to learn the approaches to medicinal treatment of the cardiovascular system diseases; to learn the clinical characteristics of modern medicines used for treating the cardiovascular system diseases; to be able to determine the optimal medicines for treating the cardiovascular system diseases, their medicinal forms, routes of administration and dose regimen; to be able to determine criteria of efficiency and safety for the medicinal therapy selected.

Topic 1. Basic principles of clinical pharmacy and clinical pharmacology. Adverse drug reactions. Principles of appropriate clinical practice

The content of clinical pharmacy and its tasks. The relationship of clinical pharmacy with related subjects. The role of clinical pharmacy in the system of pharmaceutical education. The world experience of clinical pharmacy development. Ethics and deontology in medicine and pharmacy. Deontological aspects of «pharmacist — doctor»,

«pharmacist — patient», «pharmacist — visitor of a chemist's» relationships. The role of a pharmacist in carrying out the rational medicinal therapy, increase of its efficiency and safety.

Definitions of the concepts «chemical name», «international non-proprietary name», «trade name» of a medicine. Original (brand) and generic medicines — definition of the concept, advantages and disadvantages, requirements to generic medicines. The modern concept of self-treatment. OTC-drugs. The role of a pharmacist in the self-treatment system. The concept of pharmaceutical care.

Principal aspects of medical documentation: the dispensary record, the hospital record of an in-patient, the list of medical prescription.

Introduction to clinical pharmacology. Kinds of medicinal therapy. Clinical aspects of pharmacodynamics, pharmacokinetics of drugs, definition of the concepts of «clinical effect», «side effect». Modern methods of assessment of pharmacological action of drugs in clinical pharmacology. Clinical efficiency of drugs. Selectivity of drug action and its clinical value. The factors affecting the clinical efficiency of drugs. Peculiarities of a human body (physiological peculiarities, the age periods, the presence of an concomitant pathology, etc.), which affect the pharmacokinetics and pharmacodynamics of drugs. Modern methods of drug therapeutic action control. Clinical pharmacological tests. Concept of «width of the therapeutic action», «therapeutic index», «minimal dose», «maximal dose», «course dose» in clinical pharmacology. Principles of control of the efficiency and safety of drug administration. The importance of clinical, laboratory and instrumental methods of patient's examination as criteria of efficiency and safety of medicinal therapy. Methodical approaches to the choice of adequate methods of efficiency control of the prescribed drugs of different pharmacological groups.

Drug monitoring, its importance. Therapeutic and toxicological monitoring; importance for clinical practice.

Interaction of the combined application of drugs: types of interaction (pharmaceutical, pharmacokinetic, pharmacodynamic) and the character of interaction manifestation (antagonistic, synergistic —

potentiation, summation, additive, sensitive). Clinical manifestations of drug interaction. Combined medicines, their advantages and disadvantages.

Classification of types of adverse drug reactions (pathogenetic, by character of occurrence, forecasting, localization of manifestations, by character of the course, severity). Mechanisms of occurrence and methods of forecasting of possible development of negative effects of drugs. Dependence of negative effects on the dose, route and regimen of administration. The concept of toxicodynamics and toxicokinetics of drugs. Clinical manifestations of negative effects of drugs. The basic undesirable phenomena of drug administration («a rebound» phenomenon, tolerance to therapy, drug dependence, etc.). The concept of placebo. Placebo-effectors. Negative placebo-effectors as a group of risk of adverse drug reaction development.

Drug effect on clinical laboratory indices and results of functional tests. Typical changes in the general analysis of blood, urine, the biochemical analysis of blood in case of various drugs administration. Ways of possible effect of drugs on laboratory indices. Chemical and pharmacological interference. Drug effect on functional tests results. Undesirable consequences of incorrect interpretation of laboratory research results. Ways of drug action reduction on results of clinical and laboratory researches. The role of a pharmacist in the process of increasing the diagnostic importance of clinical and instrumental methods of the patient's examination.

Prevention of occurrence and ways of correction of drug negative effects. The role of a pharmacist in decreasing the undesirable drug effect.

The medicinal anamnesis: definition of the concept, rules and technique of collecting, importance for increasing of the medicinal therapy efficiency.

Psychological aspects of mutual relations between a pharmacist and a patient. Compliance. Factors affecting the patients' compliance during the medicinal therapy, ways increasing compliance. The concept «quality of life» concerning patients with chronic diseases and

disorders of general state. Drug effect on life duration, the life forecast and quality of life of patients. Importance of pharmaceutical care for improvement of patient's quality of life and population's level of health.

Good clinical practice (GCP) is international rules and standards of carrying out clinical trials of drugs. Phases and types of clinical trials. Ethical aspects and the acts that regulate the performance of clinical studies. The role of a pharmacist in carrying out clinical trials of drugs.

Topic 2. Clinical pharmacy in cardiology

Symptoms and syndromes of basic diseases of the cardiovascular system: dyspnea, orthopnea, acrocyanosis, palpitation, headache, pain syndrome, intermittent claudication syndrome, edematous syndrome, dislipoproteinemia, arterial hypertension.

The cardiovascular system diseases requiring the obligatory intervention of a doctor (atherosclerosis, ischemic heart disease /angina pectoris, acute myocardial infarction, cardiosclerosis*, essential arterial hypertension, symptomatic arterial hypertension, hypertensive crisis, chronic heart failure, abnormalities of the heart rhythm). Approaches to medicinal treatment of the cardiovascular system diseases.

Clinical pharmacology of anti-anginal and hypotension drugs: nitrates and nitrate-like drugs, β -adrenoblockers, antagonists of calcium, blockers of peripheral adrenoreceptors, hypotension drugs of central action, blocker of ACE, blockers of angiotensin II receptors, diuretics.

Clinical pharmacology of hypolipidemic drugs (inhibitors of GMG-CoA reductase, fibrin acid derivatives, nicotinic acid and its derivatives).

Clinical pharmacology of anti-coagulants, antiaggregants, fibrinolytics.

Clinical pharmacology of drugs, which improve cerebral circulation; angioprotectors and antioxidants; drugs of metabolic action.

Combined drugs for arterial hypertension treatment.

Clinical pharmacology of heart glycosides, non-glycosides of positive inotropic agents. The problem of efficiency and safety of cardiac

* It is studied as a definition.

glycosides application. Clinical manifestations of cardiac glycosides intoxication, its treatment and prevention.

Clinical pharmacology of antiarrhythmic drugs.

Approaches to the rational choice of drugs for treating the cardiovascular system diseases. Simultaneous application of drugs used in cardiovascular system diseases; interaction with drugs of other pharmacological groups; peculiarities of drug application in case of accompanying pathology. Drugs having a negative effect on the safety of the cardiovascular system.

The adverse effects of drugs used in cardiology. Forecasting, clinical manifestations, prevention and ways of elimination.

Modern special dosage forms used in cardiology (retard, with the modified release of an active substance), their clinical and biopharmaceutical peculiarities, rules and conditions of their rational use.

Criteria of efficiency and safety of medicinal therapy in cardiology.

Principles of pharmaceutical care of the cardiological profile patients receiving drugs according to doctor's prescription. OTC drugs used in cardiology.

Topic module 2.

Clinical pharmacy in rheumatology, pulmonology, nephrology

Specific goals: to learn the basic symptoms and syndromes that are characteristic for systemic diseases of the connective tissue, exchange dystrophic diseases of joints, diseases of respiratory and urinary systems; to be able to determine symptoms, when self-treatment is possible; to learn approaches to medicinal treatment of systemic diseases of the connective tissue, exchange dystrophic diseases of joints, diseases of respiratory and urinary systems; to learn the clinical and pharmacological characteristics of modern drugs used for treating the systemic diseases of the connective tissue, exchange dystrophic diseases of joints, diseases of respiratory and urinary systems; to be able to determine optimal drugs for treating systemic diseases of the connective tissue, exchange dystrophic dis-

eases of joints, diseases of respiratory and urinary systems; to be able to determine medicinal forms, routes of administration and dose regimen of drugs; to be able to determine criteria of efficiency and safety of medicinal therapy selected.

Topic 3. Clinical and pharmaceutical aspects of antibacterial drugs application in clinic of internal diseases

The main principles of antibacterial (AB) therapy.

Clinical pharmacology of benzylpenicillin drugs with short and prolonged action, semisynthetic penicillins, cephalosporins, tetracyclines, aminoglycosides, macrolides, fluoroquinolones and chemotherapeutic AB drugs of other groups. Pharmacokinetic peculiarities of AB drugs of different pharmacological and chemical groups. Prevention of antibiotics resistance.

Adverse effects of AB drugs. Specific adverse effects of AB drugs of different groups. Forecasting, clinical manifestations, prevention and ways of elimination. Simultaneous administration of AB drugs. The interaction of AB drugs with drugs of other pharmacological groups. Principles of the rational choice of AB drugs for visceral diseases of infectious origin. The choice of an optimal routes of administration and dose regimen. The conditions affecting the clinical effect of AB drugs.

Topic 4. Clinical pharmacy in rheumatology

Symptoms and syndromes in the basic systemic diseases of the connective tissue and exchange dystrophic diseases of joints: pain in joints and muscles, morning constraint, deformation of joints, «butterfly» symptom, acne rash, fever, tofus, chorea, articular syndrome, Raynaud's syndrome, dysfunction of joints, gouty attack.

Systemic diseases of the connective tissue and exchange dystrophic diseases of joints requiring obligatory intervention of a doctor (osteoarthritis, gout, osteoporosis; rheumatism / acute rheumatic fever, chronic rheumatic heart disease/, systemic lupus erythematosus, rheumatoid arthritis, systemic sclerosis*). Dysfunctional

* It is studied as a definition.

condition of the locomotor system, which can be treated with OTC drugs in terms of responsible self-treatment with the advisory help of a pharmacist.

Approaches to medicinal treatment of locomotor system diseases.

Bicillinoprevention and bicillinotherapy in treatment of acute rheumatic fever and chronic rheumatic heart disease.

Clinical pharmacology of steroid and non-steroid anti-inflammatory drugs; basic anti-inflammatory drugs (derivatives of quinoline, cytostatics, medicines of gold), including drugs suppressing proliferation of the connective tissue.

Clinical pharmacology of metabolism correctors of the connective tissue (chondroprotectors), drugs of uricosuric actions; drugs affecting the structure and mineralization of the bone tissue (calcium drugs, etc.).

Approaches to the rational choice of drugs for treating the locomotor system diseases. Simultaneous administration of drugs used for the locomotor system diseases; interaction with drugs of other pharmacological groups; peculiarities of drug application in case of accompanying pathology. Drugs with a toxic effect on the condition of joints (chondrotoxic drugs).

Adverse reactions of drugs used for treating the locomotor system diseases. Forecasting, clinical manifestations, prevention and ways of elimination. The concept of NSAID-gastropathy. Reye's syndrome.

Modern special dosage forms used for treating the locomotor system diseases (soft dosage forms and solutions for intra-articular administration), their clinical and biopharmaceutical peculiarities, principles of the rational use.

Criteria of efficiency and safety of medicinal therapy for treating the locomotor system diseases.

Principles of pharmaceutical care of patients with pathology of the locomotor system that receive drugs according to doctor's prescription. OTC drugs for articular and muscular pain.

Topic 5. Clinical pharmacy in pulmonology

Symptoms and syndromes of the respiratory organs diseases: cough, dyspnea, thorax pain, fever, cyanosis, bronchoobstruction syndrome, respiratory distress syndrome.

The respiratory system diseases requiring obligatory intervention of a doctor (pneumonia, acute bronchitis, chronic bronchitis, bronchial asthma, chronic obstructive diseases of lungs / chronic obstructive bronchitis, emphysema of lungs*, illness of smokers' small respiratory tracts*, pleurisy*, bronchectatic disease*, lung abscess*). Dysfunctional condition of respiratory organs , can be treated with OTC drugs in terms of responsible self-treatment with the advisory help of a pharmacist. Approaches to medicinal treatment of the respiratory organs diseases.

Clinical pharmacology of antimicrobial drugs for the respiratory organs diseases (penicillins, cephalosporins, carbapenems, macrolides, fluoroquinolones). Approaches to the rational choice of AB drugs for the respiratory organs diseases.

Clinical pharmacology of bronchodilators (β_2 -adrenomimetics, cholinolytics, derivatives of xanthine).

Clinical pharmacology of mucolitics, expectorants, anticough drugs of the central and peripheral action.

Clinical pharmacology of corticosteroids (systemic, inhalation), stabilizers of membranes of mastocytes.

Approaches to the rational choice of drugs for treating the respiratory organs diseases. Simultaneous administration of drugs used for the respiratory organs diseases; interaction with drugs of other pharmacological groups.

Peculiarities of drugs application for respiratory system diseases in case of accompanying pathology. Drugs with a negative affect on the respiratory organs.

Combined drugs for treating bronchoobstructive syndrome.

Adverse effects of drugs used to treating the respiratory system diseases. Forecasting, clinical manifestations, prevention and ways of elimination.

* It is studied as a definition.

Modern special dosage forms used for treating the respiratory system diseases (the dosed aerosol and powder inhalers, spacers, nebulizers, etc.), their clinical and biopharmaceutical peculiarities, rules and conditions of the rational use.

Criteria of efficiency and safety of medicinal therapy in pulmonology.

Principles of pharmaceutical care for symptomatic treatment of respiratory organs dysfunction. OTC drugs for symptomatic treatment of respiratory organs dysfunction.

Topic 6. Clinical pharmacy in nephrology

Symptoms and syndromes of basic diseases of kidneys and urinary ways: Pasternatsky's symptom, pain syndrome, uric syndrome, nephrotic syndrome, edematous syndrome, syndrome of arterial renal hypertension, renal anemic syndrome, dysuric syndrome, syndrome of the chronic renal failure.

Diseases of kidneys and urinary ways requiring obligatory intervention of a doctor (acute kidney damages: acute pyelonephritis, acute glomerulonephritis; chronic renal disease: chronic pyelonephritis, chronic glomerulonephritis; infections of the urinary tract: acute cystitis, chronic cystitis; urolithiasis). Complications of renal diseases: symptomatic arterial hypertension (renoparenchymatous and renovascular one), chronic renal failure, renal anemia. Approaches to medicinal treatment of diseases of kidneys and urinary tract.

Clinical pharmacology of main drugs for treating infectious and immune-inflammatory diseases of kidneys and urinary tract (AB drugs/ β -lactams, fluoroquinolones, aminoglycosides, derivative of 8-oxychinoline, nitrofuranes, steroid and non-steroid anti-inflammatory drugs, immunosuppressants, direct anticoagulants, antiaggregants, uroantiseptics, urolytics, spasmolytics, analgesics, diuretics, hypoasotemics).

Approaches to the rational choice of AB drugs for infectious diseases of kidneys and urinary tract. Approaches to the rational choice of drugs for treating diseases of kidneys and urinary tract. The simultaneous administration of drugs affecting the function of kidneys

and urinary tract; interaction with drugs of other pharmacological groups. Peculiarities of drugs used in nephrology in case of accompanying pathology. Drugs with toxic effect on the condition of kidneys. The influence of functional condition of kidneys on the clinical efficiency of drugs, correction peculiarities of the dose regimen and administration.

Principles of treatment of kidney diseases complications: use of anti-hypertensive, detoxication drugs, recombinant erythropoietins.

Adverse effects of drugs used for treating the urinary system diseases. Forecasting, clinical manifestations, prevention and ways of elimination.

Criteria of efficiency and safety of medicinal therapy in nephrology.

Principles of pharmaceutical care of patients with diseases of kidneys and urinary tract. OTC drugs used for the urinary system diseases.

MODULE 2

CLINICAL PHARMACY IN GASTROENTEROLOGY, HEPATOLOGY, HEMATOLOGY, ENDOCRINOLOGY, ALLERGOLOGY

Topic module 3.

Clinical pharmacy in gastroenterology, hepatology, hematology

Specific goals: to learn the basic symptoms and syndromes, which are characteristic for diseases of digestive organs and the hemopoietic system; to be able to determine symptoms when the responsible self-treatment is possible; to learn approaches to medicinal treatment of diseases of digestive organs and the hemopoietic system; to learn clinical and pharmacological characteristics of modern drugs used for treating diseases of digestive organs and the hemopoietic system; to be able to determine optimal drugs for treating diseases of digestive organs and the hemopoietic system; to be able to determine medicinal forms, routes of administration and dose regimen of drugs; to be able to determine criteria of efficiency and safety of medicinal therapy selected.

Topic 7. Clinical pharmacy in gastroenterology

Symptoms and syndromes of basic diseases of the gastro-intestinal tract: appetite disorder, eructation, heartburn, nausea, vomiting, constipation, diarrhea, flatulence; syndromes of gastric dyspepsia, intestinal dyspepsia, exocrinous pancreatic impairment, insufficiency of digestion (maldigestion) and absorption (malabsorption), polyhyponutrition, astenoneurotic, painful, anemic; dysbacteriosis.

Diseases of GIT and pancreas requiring obligatory intervention of a doctor (gastritis and duodenitis; chronic Helicobacter-associated

gastritis; stomach ulcer, duodenal ulcer, chronic pancreatitis, dyspepsia, non-infectious gastroenteritis and colitis*). Complications of diseases of GIT organs: bleeding, penetration, perforation, malignancy, stenosis, vitamin B₁₂-deficiency anemia. Disorders of digestion, can be treated with OTC drugs in terms of responsible self-treatment with the advisory help of a pharmacist. Approaches to medicinal treatment of diseases of GIT and pancreas.

Clinical pharmacology of drugs used for treating hypoacid conditions. Drugs of replacement and stimulating therapy.

Clinical pharmacology of antacids and anti-secretion drugs (antacids, selective M₁-anticholinergic drugs, blockers H₂-histamine receptors, H⁺, K⁺-ATF inhibitors).

Clinical pharmacology of drugs which increase protective properties of the mucous membrane of the stomach and promote its regeneration (reparants and gastrocytoprotectors).

Clinical pharmacology of drugs for *Helicobacter pylori* eradication (AB drugs of group of macrolides, penicillins, tetracyclines, nitroimidazol derivatives). Combined drugs.

Clinical pharmacology of drugs, which increase the tonus and stimulate motility of GIT (agonists of acetylcholine, antagonists of dopamine receptors), as well as antiemetic, antidiarrheal and laxative drugs.

Clinical pharmacology of polyenzymatic drugs.

Drugs for elimination of the pain syndrome in diseases of GIT (spasmolytics).

Approaches to the rational choice of drugs in diseases of GIT and pancreas. Simultaneous administration of drugs affecting the function of GIT and pancreas; interaction with drugs of other pharmacological groups. Peculiarities of drug administration in gastroenterology in case of accompanying pathology. Drugs that have a toxic effect on condition of GIT and pancreas. The influence of the functional condition of the stomach, intestines and pancreas on clinical efficiency of drugs.

Adverse effects of drugs in diseases of GIT and pancreas. Forecasting, clinical manifestations, prevention and ways of elimination.

* It is studied as a definition.

Modern special dosage forms used for treating diseases of GIT and pancreas (suspensions, gels for intake, tablets for chewing, capsules with minimicrospheres, etc.), their clinical and biopharmaceutical peculiarities, rules and conditions of the rational use.

Criteria of efficiency and safety of medicinal therapy in gastroenterology.

Principles of pharmaceutical care of patients with the gastroenterological profile. OTC drugs in diseases of the GIT and pancreas.

Topic 8. Clinical pharmacy in hepatology

Symptoms and syndromes of basic diseases of the hepatobiliary system: skin itch, fever, ascites; pain syndrome, jaundice syndrome, cholestasis, portal hypertension, hepatic impairment, intestinal dyspepsia, hepatolienal syndrome, hemorrhagic syndrome, laboratory syndromes (cytolysis, cholestasis, hepatic-cellular insufficiency).

Diseases of the hepatobiliary system requiring obligatory intervention of a doctor (chronic hepatitis, cirrhosis, cholelithiasis, chronic cholecystitis). Disorders of the functional condition of the hepatobiliary system, which can be treated with OTC drugs in terms of responsible self-treatment with the advisory help of a pharmacist. Approaches to medicinal treatment of the diseases of liver and gall-bladder.

Clinical pharmacology of hepatoprotectors, choleretics, cholekinetics, cholelytics, vitamins.

Clinical pharmacology of immunodepressive (corticosteroids) and hypoammoniemic drugs.

Clinical pharmacology of drugs for treating viral and bacterial infections of the hepatobiliary system (α -interferons, nucleotide analogues; penicillins, tetracyclines, cephalosporins, fluoroquinolones).

Clinical pharmacology of desintoxication therapy agents (enterosorbents, combined infusion solutions).

Clinical pharmacology of drugs for elimination of the pain syndrome (myotropic spasmolytics, M-anticholinergic drugs).

Approaches to the rational choice of drugs in diseases of the hepatobiliary system. Simultaneous administration of drugs affecting the

function of the hepatobiliary system; interaction with drugs of other pharmacological groups; peculiarities of drug administration in case of accompanying pathology. Drugs that have a toxic effect on the liver condition. The influence of the functional condition of liver on the bioavailability and clinical efficiency of drugs.

Adverse effects of drugs used in hepatology. Forecasting, clinical manifestations, prevention and ways of elimination.

Modern special dosage forms used for treating diseases of the hepatobiliary system, their clinical and biopharmaceutical peculiarities (combined infusion solutions), rules and conditions of the rational use.

Criteria of efficiency and safety of medicinal therapy in hepatology.

Principles of pharmaceutical care of patients with pathology of the hepatobiliary system. OTC drugs in diseases of the hepatobiliary system.

Topic 9. Clinical pharmacy in hematology

Syndromes of basic diseases of the hemopoietic system: circulatory hypoxic, sideropenic, hematologic, neurologic, hemorrhagic, asthenoneurotic.

Diseases of the hemopoietic system requiring obligatory intervention of a doctor (types of anaemia /iron-deficiency, megaloblastic — vitamin-B₁₂ — and folic acid deficiency anemia, hemolytic/; hemablastosis*/acute leukemia; myeloleukemia, chronic lymphatic leukemia; erythremia/). Approaches to medicinal treatment of the hemopoietic system diseases.

Clinical pharmacology of drugs of iron and other antianemic drugs.

Clinical pharmacology of drugs stimulating or inhibiting erythropoiesis and leukopoiesis.

Approaches to the rational choice of drugs in the hemopoietic system diseases. Simultaneous administration of drugs affecting hemopoiesis; interaction with drugs of other pharmacological groups; peculiarities of administration in case of accompanying pathology.

* It is studied as a definition.

Principles of the rational use of iron drugs and vitamins of group B. Drugs that have a toxic effect on the condition of the hemopoietic system.

Adverse effects of drugs used in hematatology. Forecasting, clinical manifestations, prevention and ways of elimination.

Modern special dosage forms of iron drugs (drops, solutions for oral administration, capsules, etc.), their clinical and biopharmaceutical peculiarities, rules and conditions of the rational use.

Criteria of efficiency and safety of medicinal therapy in hematology.

Principles of pharmaceutical care of patients with pathology of the hemopoietic system.

Topic module 4.

Clinical pharmacy in endocrinology, allergology

Specific goals: to learn the basic symptoms and syndromes, which are characteristic the endocrine system diseases and allergic conditions; to be able to determine symptoms when responsible self-treatment is possible; to learn approaches to medicinal treatment of the endocrine system diseases and allergic conditions; to learn clinical and pharmacological characteristics of modern drugs used in treating the endocrine system diseases and allergic conditions; to be able to determine optimal drugs for treating the endocrine system diseases and allergic conditions; to be able to determine medicinal forms, routes of administration and dose regimen of drugs; to be able to determine criteria of efficiency and safety of medicinal therapy selected; to know clinical signs of medicinal illness, the way of preventon and approaches to treatment.

Topic 10. Clinical pharmacy in endocrinology

Symptoms and syndromes of basic diseases of the endocrine system: polydipsia, polyphagia, polyuria, exophthalmus, goiter, hyperglycemia syndrome, hypoglycemia syndrome, hyperthyrosis syndrome, hypothyroidism syndrome, iodine deficiency syndrome.

Endocrine diseases (diabetes mellitus type I and II, hyperthyroidism, hypothyroidism) requiring compulsory medical intervention.

Typical complications of diabetes mellitus (hypo- and hyperglycemic coma, diabetic polyneuropathy, diabetic nephropathy, diabetic retinopathy, diabetic foot syndrome). The states and conditions (the syndrome of iodine deficiency, pregnancy, period of growth, residence in endemic unfavourable areas), when it is possible to use OTC drugs in terms of responsible self-treatment with the advisory help of a pharmacist. Approaches to medicinal treatment of the endocrine system diseases.

Clinical pharmacology of insulin drugs. Approaches to the rational choice of insulin drugs. Possible complications of insulin therapy.

Clinical pharmacology of oral hypolipidemic drugs (sulfonylcarbamide derivatives, biguanides, thiasolidindions, metglytinides, inhibitors of α -glucosidase). Approaches to the rational choice. The interaction of oral hypoglycemic drugs with drugs of other pharmaceutical groups. Peculiarities of oral hypoglycemic drugs application in case of concomitant pathology. Drugs affecting the level of glycemia.

Principles of treatment of diabetes complications: use of insulin antagonists, antihypertensive, hypoglycemic drugs, angioprotectors, antiaggregants, peripheral vasodilatators, vitamins.

Clinical pharmacology of hormone drugs of the thyroid gland, antithyroid drugs, iodine drugs.

Adverse effects of drugs used in endocrinology. Forecasting, clinical manifestations, prevention and ways of elimination.

Modern dosage forms used for treating diseases of the endocrine system, their clinical and biopharmaceutical peculiarities, rules and conditions of their rational use.

Criteria of efficiency and safety of medicinal therapy in endocrinology.

Principles of pharmaceutical care of patients with the endocrinological profile. Algorithm of actions of a pharmacist and pharmaceutical care while dispensing drugs for treating iodine deficiency.

Topic 11. Clinical pharmacy in allergology

Symptoms and syndromes of allergy: itch, hyperemia, edema of skin and mucous membranes, skin rash, dyspnea, sneezing, rhinorrhea,

lacrimation, bronchospasm, decrease of arterial pressure, tachycardia, hyperemia; skin syndrome, edematous syndrome, respiratory syndrome, syndrome of acute cardiovascular failure, asthenoneurotic syndrome.

Diseases of allergic origin (acute and chronic urticaria, asteno-neurotic edema, allergic rhinitis, allergic conjunctivitis, anaphylactic shock) requiring the obligatory intervention of a doctor. Symptoms and syndromes of allergic origin, which can be treated with OTC drugs in terms of responsible self-treatment with the advisory help of a pharmacist. Approaches to medicinal treatment of allergic conditions.

Clinical pharmacology of drugs used for treating allergy (corticosteroids, antihistamines drugs, bronchodilators, drugs of calcium, stabilizers of mastocytes membranes, agonists of α - and β -adrenoreceptors). Detoxication therapy.

Approaches to the rational choice of drugs in diseases of the allergic origin. Simultaneous administration of antiallergic drugs; interaction with drugs of other pharmacological groups; peculiarities of anti-allergic drugs administration in case of accompanying pathology.

Adverse effects of drugs used in allergology. Forecasting, clinical manifestations, prevention and ways of elimination.

Modern dosage forms used in diseases of the allergic origin, their clinical and biopharmaceutical peculiarities, rules and conditions of the rational use.

Criteria of efficiency and safety of medicinal therapy in allergology.

Principles of pharmaceutical care of allergic patients, OTC drugs used in diseases of the allergic origin.

Drug disease. Difference from other conditions caused by drug administration (overdose, intoxication, dysbacteriosis, etc.). The causes of occurrence, basic clinical variants of manifestation of drug disease. Syndromes of drug disease (Lyell's syndrome, Stevens-Johnson syndrome). Polyprogmasia as the cause of medicinal therapy complications. Pharmacological characteristics of drugs, which cause drug disease more often. Prevention and medicament approaches to elimination of drug disease manifestations. The role of a pharmacist in drug disease prevention.

MODULE 3

PHARMACEUTICAL CARE WHILE DISPENSING OTC DRUGS

Topic module 5.

General principles of pharmaceutical care.

Pharmaceutical care while dispensing OTC drugs

for symptomatic treatment of indigestion,

dysfunction of the nervous system activity,

skin lesions and local disorders of blood circulation

Specific goals: to learn the basic concepts, definitions and principles of pharmaceutical care; to acquire skills in differentiation of threatening for life symptoms of indigestion, dysfunctions of the nervous system activity, skin lesions and local disorders of blood circulation when responsible self-treatment is possible; to learn clinical and pharmaceutical characteristic of OTC drugs for symptomatic treatment of indigestion, dysfunctions of the nervous system activity, skin lesions and local disorders of blood circulation; to learn the algorithm of action of a pharmacist when choosing and dispensing OTC drugs for symptomatic treatment of disorders of indigestion, dysfunctions of the nervous system activity, skin lesions and local disorders of blood circulation; to acquire skills in carrying out the pharmaceutical care and information work for a chemist's shops visitors.

Topic 12. General principles of pharmaceutical care

Definition and the basic concepts of pharmaceutical care. The place of pharmaceutical care in the general system of public health services for the population. Relationship of a pharmacist and other medical workers (doctor, nurse, etc.) when carrying out pharmaceutical

care. The algorithm of action of a pharmacist when carrying out the appropriate pharmaceutical care for chemist's shops visitors, patients while dispensing OTC drugs for symptomatic treatment of harmless for life health disorders. The algorithm of presentation of the appropriate drug information to visitors of chemist's/patients by a pharmacist while carrying out pharmaceutical care.

Practical functions of a pharmacist that are necessary for care realization (procedure of drug anamnesis gathering, working out the plan of monitoring of adverse drug reactions, preventive actions in possible manifestations of adverse drug reactions, etc.).

OTC-drugs. Criteria according to which medicines are classified as prescription or OTC drugs. Normative and legislative acts concerning OTC drugs dispensing.

The concept of generic and therapeutic replacement. The pharmacist's competence when choosing OTC drugs for responsible self-treatment and in replacement of OTC drugs.

Pharmaceutical care as the pharmacist's responsibility for efficiency of the medicinal therapy to the individual visitor of chemist's shop/patient. Categories of the population requiring special attention during responsible self-treatment. Approaches to pharmaceutical care of elderly and old people, teenagers, newborns, pregnant women and women in the period of lactation. Physiological factors stipulating the peculiarities of pharmacokinetics and pharmacodynamics of drugs in pregnant women. Modern dosage forms for children, their advantages, peculiarities of administration. Possible effect of drugs on the course of pregnancy, delivery and lactation.

Categories of problems which arise during the patient's intake of drugs; problems belonging to the competence of a pharmacist and a doctor, algorithm of their definition.

Topic 13. Pharmaceutical care while dispensing OTC drugs for symptomatic treatment of indigestion

The basic symptoms of indigestion (heartburn, constipation, diarrhea, flatulence, dysbacteriosis), which can be treated with OTC drugs

in terms of responsible self-treatment. «Threatening» symptoms of indigestion when the intervention of a doctor is necessary (the algorithm of choosing patients for obligatory examination of a doctor).

Directions and remedies of symptomatic medicinal therapy of heartburn, constipation, diarrhea, flatulency, dysbacteriosis. The algorithm of carrying out pharmaceutical care for visitors of chemist's shops/patients with indigestion symptoms. The algorithm of the appropriate information presentation by a pharmacist about OTC drugs for treating indigestion while carrying out pharmaceutical care for visitors of chemist's shops/patients.

Modern dosage forms for treating indigestion and peculiarities of their use. The interaction of OTC drugs used for symptomatic treatment of indigestion with food, alcohol; peculiarities of their application in various age periods; requirements for storing drugs at home. Criteria of efficiency of therapy with OTC drugs used for symptomatic treatment of indigestion.

Non-medicamental methods of elimination of indigestion symptoms.

Topic 14. Pharmaceutical care in symptomatic treatment of disorders of the nervous system activity

The basic symptoms of disorders of the nervous system activity (anxious conditions, asthenia, insomnia), which can be treated with OTC drugs in terms of responsible self-treatment. «Threatening» symptoms of disorders of the nervous system activity when the intervention of a doctor is necessary (the algorithm of choosing patients for obligatory examination of a doctor).

Approaches and remedies of symptomatic medicinal therapy of anxious conditions, asthenia, insomnia. The algorithm of carrying out pharmaceutical care for visitors of chemist's shops/patients with symptoms of disorders of the nervous system activity. The algorithm of the appropriate information about OTC drugs presentation by a pharmacist for treating disorders of the nervous system activity while carrying out pharmaceutical care for visitors of chemist's shops/patients.

Modern dosage forms for treating disorders of the nervous system activity and peculiarities of their use. The interaction of OTC drugs used for symptomatic treatment of disorders of the nervous system activity with food, alcohol; peculiarities of their administration in various age periods; requirements for storing drugs at home. Criteria of efficiency of therapy with OTC drugs used for symptomatic treatment of disorders of the nervous system activity.

Non-medicamental methods of elimination of symptoms of the nervous system activity disorders.

Topic 15. Pharmaceutical care in symptomatic treatment of skin lesions

Lesions of integuments: microtraumas (cuts, abrasions, scratches), thermal and chemical damages of surface skin layers (burns, frostbite), acne (acne rash), infectious damages (herpes of lips, mycoses, scabies, pediculosis), seborrhea, etc., which can be treated with OTC drugs in terms of responsible self-treatment. «Threatening» symptoms of skin lesions requiring obligatory examination of a doctor.

The algorithm of carrying out pharmaceutical care for visitors of chemist's shops/patients with symptoms of skin lesions. Approaches to symptomatic treatment of skin lesions. OTC drugs used for skin lesions. The algorithm of the appropriate information about OTC drugs presentation by a pharmacist when carrying out pharmaceutical care for visitors of chemist's shops/patients for symptomatic treatment of skin lesions.

Topic 16. Pharmaceutical care of patients with local disorders of the blood circulation

Local disorders of the blood circulation: varicose veins of the lower extremities, hemorrhoid. Symptoms, which are typical for local blood circulation disorders that can be treated with OTC drugs in terms of responsible self-treatment. «Threatening» symptoms of varicose veins of the lower extremities and hemorrhoid requiring obligatory examination of a doctor (the algorithm of choosing patients for obligatory examination of a doctor).

The algorithm of carrying out pharmaceutical care for visitors of chemist's shops/patients with complaints of local disorders of the blood circulation.

The algorithm of the appropriate information about OTC drugs presentation by a pharmacist about OTC drugs for treating local blood circulation disorders while carrying out pharmaceutical care for visitors of chemist's shops/patients.

Modern dosage forms for treating local disorders of the blood circulation and peculiarities of their use. The interaction of OTC drugs used for symptomatic treatment of local disorders of the blood circulation with food, alcohol; peculiarities of their administration in various age periods; requirements for storing drugs at home. Criteria of efficiency of OTC drugs therapy used for symptomatic treatment of local disorders of the blood circulation.

Non-medicamental methods of elimination of symptoms of blood circulation local disorders.

Topic module 6.

Pharmaceutical care while dispensing OTC drugs for symptomatic treatment of cold, articular and muscular pain, headache, elimination of vitamin deficiency

Specific goals: to acquire skills in differentiation of threatening for life symptoms of cold, articular and muscular pain, headache, vitamin deficiency, when responsible self-treatment is possible; to learn clinical and pharmaceutical care of OTC drugs for symptomatic treatment of cold, articular and muscular pain, headache, elimination of vitamin deficiency; to learn the algorithm of action of a pharmacist when choosing and dispensing OTC drugs for symptomatic treatment of cold, articular and muscular pain, headache, elimination of vitamin deficiency; to acquire skills in carrying out pharmaceutical care for visitors of chemist's shops and information work; to learn clinical and pharmacological aspects of drug interaction with food and alcohol.

Topic 17. Pharmaceutical care while dispensing OTC drugs for symptomatic treatment and prevention of cold

The basic symptoms of cold (cough, rhinitis, sore throat, fever, etc.), which can be treated with OTC drugs in terms of responsible

self-treatment. «Threatening» symptoms of cold when the intervention of a doctor is necessary (the algorithm of choosing patients for obligatory examination of a doctor).

Approaches and remedies of symptomatic medicinal therapy of colds. The algorithm of carrying out pharmaceutical care of the visitors of chemist's shops/patient with cold symptoms. The algorithm of presentation of the appropriate information about OTC drugs by a pharmacist for treating cold when carrying out pharmaceutical care of visitors of chemist's shops/patients.

Modern dosage forms for treating cold and peculiarities of their use. The interaction of OTC drugs used for symptomatic treatment of colds with food, and alcohol; peculiarities of their administration in various age periods; requirements for storing drugs at home. Criteria of efficiency of the therapy with OTC drugs used for symptomatic treatment of cold.

Non-medicamental methods of elimination of symptoms of cold.

Approaches to prevention of colds. The algorithm of carrying out pharmaceutical care of visitors of chemist's shops/patient while choosing drugs for prevention of colds. The algorithm of presentation the appropriate information about OTC drugs by a pharmacist for cold prevention when carrying out pharmaceutical care of visitors of chemist's shops/patients. Modern dosage forms for cold prevention, peculiarities of their use.

Non-medicamental methods of cold prevention.

Topic 18. Pharmaceutical care while dispensing OTC drugs for symptomatic treatment of articular and muscular pain

Basic symptoms of the musculoskeletal system dysfunction (articular and muscular pain), which can be treated with OTC drugs in terms of responsible self-treatment. «Threatening» symptoms of the musculoskeletal system dysfunction when intervention of a doctor is necessary (the algorithm of choice of patients for an obligatory examination of a doctor).

Directions and remedies of symptomatic medicinal therapy of pain in muscles and joints. The algorithm of carrying out pharmaceutical care for visitors of chemist's shops/patients with symptoms of the musculoskeletal system dysfunction. The algorithm of presenta-

tion the appropriate information about OTC drugs by a pharmacist for treating pain in muscles and joints while carrying out pharmaceutical care for visitors of chemist's shops/patients.

Modern dosage forms for treating dysfunction of the musculoskeletal system (creams, gels) and peculiarities of their use. The interaction of OTC drugs used for symptomatic treatment of pain in muscles and joints with food and alcohol; peculiarities of their administration in various age periods; requirements for storing drugs at home. Criteria of efficiency of OTC drugs therapy used for symptomatic treatment of dysfunction of the musculoskeletal system.

Non-medicamental methods of elimination of pain in muscles and joints.

Topic 19. Pharmaceutical care while dispensing OTC drugs for symptomatic treatment of headache

The concept about primary (migraine, strain headache) and a secondary (symptomatic) headache. Pathological conditions and diseases accompanied with headache. Factors, which promote headache development.

Types of headache, which can be treated with OTC drugs in terms of responsible self-treatment. «Threatening» symptoms of headache requiring intervention of a doctor (the algorithm of choosing patients for obligatory examination of a doctor).

Approaches and remedies of symptomatic medicinal therapy of headache. The algorithm of carrying out pharmaceutical care for visitors of chemist's shops/patients with headache. The algorithm of appropriate information about OTC drugs presentation by a pharmacist for treating headache while carrying out pharmaceutical care for visitors of chemist's shops/patients.

Modern dosage forms for treating headache (quick-soluble tablets, capsules of the prolonged action, etc.) and peculiarities of their use. The interaction of OTC drugs used for symptomatic treatment of headache with food and alcohol; peculiarities of their administration in various age periods; requirements for storing drugs at home. Criteria of efficiency of the therapy with OTC drugs used for symptomatic treatment of headache.

Non-medicamental methods of headache elimination.

Topic 20. Pharmaceutical care while dispensing OTC drugs for elimination and prevention of vitamin deficiency

Pathological conditions and factors promoting development of vitamin deficiency. «Threatening» symptoms of vitamin deficiency requiring intervention of a doctor (the algorithm of choosing patients for obligatory examination of a doctor).

Approaches and remedies of elimination and prevention of vitamin deficiency. The algorithm of address choice of OTC vitamin-containing drugs, the dosage forms and the routes of administration. The algorithm of the appropriate information about OTC drugs presentation by a pharmacist for elimination and prevention of vitamin deficiency when carrying out pharmaceutical care for visitors of chemist's shops/patients.

Modern dosage forms for elimination and prevention of vitamin deficiency (gels, syrups, drops, etc.) and peculiarities of their use. The interaction of OTC vitamin-containing drugs with food, alcohol; peculiarities of their use for different groups of population (newborns, children, teenagers, elderly and old people, individuals with concomitant pathologies, pregnant and breast-feeding women). Requirements for storing vitamin-containing drugs at home. Criteria of efficiency of therapy with OTC drugs for elimination and prevention of vitamin deficiency. Signs of vitamin overdose, ways of its prevention and treatment.

Topic 21. The interaction of drugs with food and alcohol

The interaction of drugs and food, clinical and pharmacological aspects of interaction. The major factors, which are important for interaction of drugs and food. The ways of a possible effect of food on pharmacological properties of drugs.

Clinical and pharmacological aspects of using alcohol in medicine. Clinical and pharmacological characteristics of alcohol. The interaction of ethanol with drugs. Clinical and pharmacological aspects of chronic alcohol abuse.

The role of a pharmacist and the place of pharmaceutical care in prevention of undesirable interaction of drugs with food and alcohol.



QUESTIONS OF THE FINAL CONTROL IN CLINICAL PHARMACY



THE LIST OF QUESTIONS FOR TRAINING STUDENTS FOR THE FINAL MODULAR CONTROL

**For students in «Pharmacy» speciality
of full-time form of education**

Module 1. General questions in clinical pharmacy. Clinical pharmacy in cardiology, rheumatology, pulm- onology, nephrology

The general questions in clinical pharmacy

1. Definition of the concepts of «chemical name», «international nonproprietary name», «trade name» of drugs.
2. The factors affecting the clinical efficiency of drugs.
3. Clinical and pharmacological characteristics of various ways of drug administration.
4. Basic pharmacokinetic parameters, their practical importance. Visceral diseases that affect pharmacokinetic indices essentially.
5. Anatomical and physiological peculiarities of the human body in different age periods (newborns, children, teenagers, elderly and old people), which have an effect on pharmacokinetics and pharmacodynamics of medicines.
6. Anatomical and physiological peculiarities of the organism of a woman during pregnancy, which have an effect on pharmacokinetics and pharmacodynamics of medicines products.
7. Medicinal monitoring. Factors, that cause the necessity of carrying out the medicinal monitoring.
8. Bioavailability of drugs. The clinical importance of bioavailability. Factors affecting the bioavailability value.
9. Bioequivalent drugs. Categories of drugs, which bioequivalence studies are conducted for.

10. Bioequivalence. Clinical methods of bioequivalence determination. Therapeutic non-bioequivalence of drugs, its causes.
11. Selectivity of drug action. Factors that have an effect on the selectivity of medicines.
12. Brand drugs. Advantages of brands and disadvantages of generics.
13. Generic drugs. Requirements for generics.
14. Criteria of drug efficiency. Groups of the efficiency criteria.
15. Criteria of drug safety. Groups of the safety criteria.
16. Interaction of drugs. Types of interaction. Clinical importance of drug interaction.
17. Pharmacodynamic and pharmacokinetic synergy. Possibilities of its use in clinical practice.
18. Pharmacodynamic and pharmacokinetic antagonism. Ways of prevention of drug antagonism.
19. Pharmaceutical interaction of drugs. Positive and negative sides.
20. Combined drugs. Advantages and disadvantages of combined drugs.
21. Types of adverse reactions and complications of medicinal therapy.
22. Toxic complications caused by an absolute or relative overdose of drugs, pharmacological properties of drugs.
23. Allergic reactions, idiosyncrasy, withdrawal syndrome as the manifestation of a adverse drug reactions.
24. The concept of placebo, placebo-effectors. Negative placebo-effectors as a group of risk for developing adverse drug reactions.
25. Effects of drugs on clinical and laboratory values and the results of functional tests. Possible mechanisms of action and the way of its prevention.
26. Medicinal anamnesis. The importance of medicinal anamnesis collection for the rational therapy.
27. Compliance. Major factors affecting on compliance.
28. Phases of clinical approbation, goals and tasks of each stage.

Fundamentals of clinical medicine

29. Symptoms and syndromes of atherosclerosis.
30. Symptoms and syndromes of stable angina of effort.
31. Symptoms and syndromes of acute myocardial infarction.
32. Symptoms and syndromes of essential arterial hypertension
33. Types of symptomatic arterial hypertension. Peculiarities of clinical manifestations.
34. Differences of clinical symptomatology of hypertension disease of the Ist, IInd and III^d stages.
35. Hypertensive crisis. Differences of clinical symptomatology of hypertensive crises of the Ist and IInd order.
36. The basic symptoms of chronic heart failure.
37. The basic symptoms of abnormalities of the heart rate.
38. Symptoms and syndromes of rheumatism (acute rheumatic fever, chronic rheumatic heart disease).
39. Symptoms and syndromes of rheumatoid arthritis.
40. Symptoms and syndromes of systemic lupus erythematosus.
41. Symptoms and syndromes of osteoarthritis.
42. Symptoms and syndromes of gout.
43. Symptoms and syndromes of osteoporosis.
44. Syndrome of bronchoobstruction, clinical manifestations.
45. Syndrome of respiratory insufficiency, clinical manifestations.
46. Symptoms and syndromes of pneumonia.
47. Symptoms and syndromes of acute bronchitis.
48. Symptoms and syndromes of chronic bronchitis.
49. Symptoms and syndromes of chronic obstructive bronchitis.
50. Symptoms and syndromes of bronchial asthma.
51. Symptoms and syndromes of acute pyelonephritis.
52. Symptoms and syndromes of chronic pyelonephritis.
53. Symptoms and syndromes of acute glomerulonephritis.
54. Symptoms and syndromes of chronic glomerulonephritis.
55. Symptoms and syndromes of cystitis.
56. Symptoms and syndromes of urolithiasis.
57. Chronic renal failure, basic clinical manifestations.

Clinical pharmacology

58. Clinical and pharmacological approaches to treatment of atherosclerosis.
59. Clinical and pharmacological approaches to treatment of stable angina of effort.
60. Clinical and pharmacological approaches to treatment of acute myocardial infarction.
61. Clinical and pharmacological approaches to treatment of essential arterial hypertension.
62. Clinical and pharmacological approaches to treatment of symptomatic arterial hypertension.
63. Clinical and pharmacological approaches to treatment of hypertensive crises of the Ist and IInd order.
64. Clinical and pharmacological approaches to treatment of chronic heart failure.
65. Clinical and pharmacological approaches to treatment of rheumatism (acute rheumatic fever, chronic rheumatic heart disease).
66. Clinical and pharmacological approaches to treatment of rheumatoid arthritis.
67. Clinical and pharmacological approaches to treatment of systemic lupus erythematosus.
68. Clinical and pharmacological approaches to treatment of osteoarthritis.
69. Clinical and pharmacological approaches to treatment of gout.
70. Clinical and pharmacological approaches to treatment of osteoporosis.
71. Clinical and pharmacological approaches to treatment of pneumonia.
72. Clinical and pharmacological approaches to treatment of acute bronchitis.
73. Clinical and pharmacological approaches to treatment of chronic bronchitis.
74. Clinical and pharmacological approaches to treatment of chronic obstructive bronchitis.

75. Clinical and pharmacological approaches to treatment of bronchial asthma.
76. Clinical and pharmacological approaches to treatment of acute pyelonephritis.
77. Clinical and pharmacological approaches to treatment of chronic pyelonephritis.
78. Clinical and pharmacological approaches to treatment of acute glomerulonephritis.
79. Clinical and pharmacological approaches to treatment of chronic glomerulonephritis.
80. Clinical and pharmacological approaches to treatment of cystitis.
81. Clinical and pharmacological approaches to treatment of urolithiasis.
82. Clinical and pharmacological approaches to treatment of chronic renal failure.
83. Clinical pharmacology of hypolipidemic drugs.
84. Clinical pharmacology of antianginal drugs of nitrate group.
85. Clinical pharmacology of β -adrenoblockers.
86. Peculiarities of using β -adrenoblockers for IHD.
87. Peculiarities of using β -adrenoblockers for arterial hypertension.
88. Clinical pharmacology of calcium antagonists.
89. Peculiarities of using calcium antagonists for IHD.
90. Peculiarities of using calcium antagonists for arterial hypertension.
91. Clinical pharmacology of ACE inhibitors.
92. Peculiarities of using ACE inhibitors for arterial hypertension and chronic heart failure.
93. Clinical pharmacology of diuretics.
94. Peculiarities of using diuretics in arterial hypertension and chronic heart failure.
95. Clinical pharmacology of cardiac glycosides.
96. Clinical pharmacology of anticoagulants and antiaggregants.

97. Clinical pharmacology of steroid anti-inflammatory drugs.
98. Clinical pharmacology of non-steroid anti-inflammatory drugs.
99. Clinical pharmacology of basic anti-inflammatory drugs, including drugs that suppress proliferation of the connective tissue.
100. Clinical pharmacology of metabolism correctors of the connective tissue.
101. Clinical pharmacology of drugs of uricosuric action.
102. Clinical pharmacology of drugs affecting the structure and mineralization of the bone tissue.
103. Principles of the rational antibiotic therapy for organs of the respiratory system.
104. Clinical pharmacology of bronchodilators.
105. Clinical pharmacology of inhaled corticosteroids.
106. Clinical pharmacology of stabilizers of mastocytes membranes.
107. Clinical pharmacology of expectorants and mucolytic agents.
108. Principles of the rational antibiotic therapy of diseases of the urinary system organs.
109. Peculiarities of using immunosuppressants for treating immuno-inflammatory diseases of kidneys.
110. The influence of the functional state of kidneys on clinical efficiency of drugs.
111. Changes of pharmacodynamics and pharmacokinetics of drugs in case of chronic renal failure.
112. Criteria of efficiency of atherosclerosis treatment and safety of medicinal therapy.
113. Criteria of efficiency of treatment of stable angina of efforts and safety of medicinal therapy.
114. Criteria of efficiency of acute myocardial infarction treatment and safety of medicinal therapy.
115. Criteria of efficiency of essential arterial hypertension treatment and safety of medicinal therapy.

116. Criteria of efficiency of symptomatic arterial hypertension treatment and safety of medicinal therapy.
117. Criteria of efficiency of treatment of hypertensive crises of the Ist and IInd order and safety of medicinal therapy.
118. Criteria of efficiency of treatment of chronic heart failure and safety of medicinal therapy.
119. Criteria of efficiency of rheumatism treatment (acute rheumatic fever, chronic rheumatic heart disease) and safety of medicinal therapy.
120. Criteria of efficiency of rheumatoid arthritis treatment and safety of medicinal therapy.
121. Criteria of efficiency of systemic lupus erythematosus treatment and safety of medicinal therapy.
122. Criteria of efficiency of osteoarthritis treatment and safety of medicinal therapy.
123. Criteria of efficiency of gout treatment and safety of medicinal therapy.
124. Criteria of efficiency of osteoporosis treatment and safety of medicinal therapy.
125. Criteria of efficiency of pneumonia treatment and safety of medicinal therapy.
126. Criteria of efficiency of acute bronchitis treatment and safety of medicinal therapy.
127. Criteria of efficiency of chronic bronchitis treatment and safety of medicinal therapy.
128. Criteria of efficiency of treatment of chronic obstructive bronchitis and safety of medicinal therapy.
129. Criteria of efficiency of bronchial asthma treatment and safety of medicinal therapy.
130. Criteria of efficiency of acute pyelonephritis treatment and safety of medicinal therapy.
131. Criteria of efficiency of a chronic pyelonephritis treatment and safety of medicinal therapy.
132. Criteria of efficiency of acute glomerulonephritis treatment and safety of medicinal therapy.

133. Criteria of efficiency of chronic glomerulonephritis treatment and safety of medicinal therapy.
134. Criteria of efficiency of cystitis treatment and safety of medicinal therapy.
135. Criteria of efficiency of urolithiasis treatment and safety of medicinal therapy.
136. Criteria of efficiency of treatment of chronic renal failure and safety of medicinal therapy.

Module 2. Clinical pharmacy in gastroenterology, hepatology, hematology, endocrinology, allergology

Fundamentals of clinical medicine

137. Symptoms and syndromes of chronic atrophic gastritis (type A).
138. Symptoms and syndromes of chronic Helicobacter-associated gastritis (type B).
139. Symptoms and syndromes of stomach ulcer.
140. Symptoms and syndromes of duodenal ulcer.
141. Symptoms and syndromes of chronic pancreatitis.
142. Symptoms and syndromes of chronic hepatitis.
143. Symptoms and syndromes of chronic cholecystitis.
144. Syndrome of portal hypertension, basic clinical manifestations.
145. Symptoms and syndromes of cirrhosis.
146. Symptoms and syndromes of cholelithiasis.
147. Symptoms and syndromes of iron deficiency anemia.
148. Symptoms and syndromes of megaloblastic (vitamin B₁₂- and folic acid deficiency) anemia.
149. Symptoms and syndromes of hemolytic anemia.
150. Symptoms and syndromes of insulin-dependent diabetes mellitus.
151. Symptoms and syndromes of non-insulin-dependent diabetes mellitus.
152. Diabetes complications, basic clinical manifestations.

153. Symptoms and syndromes of hyperthyroidism.
154. Symptoms and syndromes of hypothyroidism.
155. Symptoms and syndromes of endemic goiter.
156. Symptoms and syndromes of allergic rhinitis and allergic conjunctivitis (pollinosis).
157. Symptoms and syndromes of urticaria.
158. Symptoms and syndromes of angioneurotic edema.
159. Symptoms and syndromes of anaphylactic shock.
160. Symptoms and syndromes of drug disease.

Clinical pharmacology

161. Clinical and pharmacological approaches to treatment of chronic atrophic gastritis (type A).
162. Clinical and pharmacological approaches to treatment of chronic Helicobacter-associated gastritis (type B).
163. Clinical and pharmacological approaches to treatment of stomach ulcer.
164. Clinical and pharmacological approaches to treatment of duodenal ulcer.
165. Clinical and pharmacological approaches to treatment of chronic pancreatitis.
166. Clinical and pharmacological approaches to treatment of chronic hepatitis.
167. Clinical and pharmacological approaches to treatment of chronic cholecystitis.
168. Clinical and pharmacological approaches to treatment of portal hypertension.
169. Clinical and pharmacological approaches to treatment of cirrhosis.
170. Clinical and pharmacological approaches to treatment of cholelithiasis.
171. Clinical and pharmacological approaches to treatment of iron-deficiency anemia.
172. Clinical and pharmacological approaches to treatment of megaloblastic (vitamin B₁₂- and folic acid deficiency) anemia.

173. Clinical and pharmacological approaches to treatment of insulin-dependent diabetes mellitus.
174. Clinical and pharmacological approaches to treatment of non-insulin-dependent diabetes mellitus.
175. Clinical and pharmacological approaches to treatment of complications of diabetes.
176. Clinical and pharmacological approaches to treatment of hyperthyroidism.
177. Clinical and pharmacological approaches to treatment of hypothyroidism.
178. Clinical and pharmacological approaches to treatment of endemic goiter.
179. Clinical and pharmacological approaches to treatment of allergic rhinitis and allergic conjunctivitis (pollinosis).
180. Clinical and pharmacological approaches to treatment of urticaria.
181. Clinical and pharmacological approaches to treatment of angioneurotic edema.
182. Clinical and pharmacological approaches to treatment of allergic shock.
183. Clinical and pharmacological approaches to treatment of drug disease.
184. AB therapy. Schemes of *H. pylori* eradication and clinical and pharmacological characteristic of drugs included in the given schemes.
185. Clinical pharmacology of antacids.
186. Clinical pharmacology of blockers of histamine H₂-receptor and selective M₁-blockers.
187. Clinical pharmacology of proton pump inhibitors.
188. Clinical pharmacology of anti-diarrhea drugs.
189. Clinical pharmacology of laxatives.
190. Action of the functional condition of the stomach on clinical efficiency of drugs.
191. Clinical pharmacology of polyenzymatic drugs.

192. Clinical pharmacology of cholagogic drugs.
193. Clinical pharmacology of hepatoprotectors.
194. Clinical pharmacology of drugs for etiotropic treatment of hepatic diseases.
195. Changes of pharmacokinetics and pharmacodynamics of drugs in case of hepatic diseases.
196. Action of the functional condition of the liver on clinical efficiency drugs.
197. Clinical pharmacology of iron drugs.
198. Clinical pharmacology of insulin drugs.
199. Clinical pharmacology of oral hypoglycemic drugs.
200. Clinical pharmacology of hormone drugs of the thyroid gland, anti-thyroid drugs, iodine drugs.
201. Clinical pharmacology of antihistaminic drugs.
202. Clinical pharmacology of topical antiallergic drugs.
203. Criteria of efficiency of treatment of chronic atrophic gastritis (type A) and safety of medicinal therapy.
204. Criteria of efficiency of treatment of chronic Helicobacter-associated gastritis (type B) and safety of medicinal therapy.
205. Criteria of efficiency of stomach ulcer treatment and safety of medicinal therapy.
206. Criteria of efficiency of duodenal ulcer treatment and safety of medicinal therapy.
207. Criteria of efficiency of chronic pancreatitis treatment and safety of medicinal therapy.
208. Criteria of efficiency of chronic hepatitis treatment and safety of medicinal therapy.
209. Criteria of efficiency of chronic cholecystitis treatment and safety of medicinal therapy.
210. Criteria of efficiency of portal hypertension treatment and safety of medicinal therapy.
211. Criteria of efficiency of cirrhosis treatment and safety of medicinal therapy.

212. Criteria of efficiency of cholelithiasis treatment and safety of medicinal therapy.
213. Criteria of efficiency of treatment of iron-deficiency anemia and safety of medicinal therapy.
214. Criteria of efficiency of treatment of megaloblastic (vitamin B₁₂- and folic acid deficiency) anemia and safety of medicinal therapy.
215. Criteria of efficiency of insulin-dependent diabetes mellitus treatment and safety of medicinal therapy.
216. Criteria of efficiency of treatment of non-insulin-dependent diabetes mellitus and safety of medicinal therapy.
217. Criteria of efficiency of hyperthyroidism treatment and safety of medicinal therapy.
218. Criteria of efficiency of hypothyroidism treatment and safety of medicinal therapy.
219. Criteria of efficiency of endemic goiter treatment and safety of medicinal therapy.
220. Criteria of efficiency of allergic rhinitis treatment and allergic conjunctivitis (pollinosis) and safety of medicinal therapy.
221. Criteria of efficiency of urticaria treatment and safety of medicinal therapy.
222. Criteria of efficiency of angioneurotic edema treatment and safety of medicinal therapy.
223. Criteria of efficiency of anaphylactic shock treatment and safety of medicinal therapy.
224. Criteria of efficiency of drug disease treatment and safety of medicinal therapy.

Module 3. Pharmaceutical care while dispensing OTC drugs

225. Pharmaceutical care as the responsibility of a pharmacist for safety and efficiency of medicinal therapy.
226. The concept of definition, main principles of the modern concept of self-treatment.

227. Prescription and OTC medicines. Criteria on the basis of which drugs are classified as prescription or OTC ones.

228. Practical functions of a pharmacist required for carrying out pharmaceutical care.

229. Pharmaceutical care in symptomatic treatment of heartburn. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

230. Pharmaceutical care in symptomatic treatment of constipation. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

231. Pharmaceutical care in symptomatic treatment of diarrhea. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

232. Pharmaceutical care in symptomatic treatment of flatulence. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

233. Pharmaceutical care in symptomatic treatment of dysbacteriosis. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

234. Pharmaceutical care in symptomatic treatment of anxious conditions. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

235. Pharmaceutical care in symptomatic treatment of asthenia. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

236. Pharmaceutical care in symptomatic treatment of insomnia. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

237. Pharmaceutical care in symptomatic treatment of traumatic lesions of integuments (cuts, abrasions, scratches, burns, frostbite). The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

238. Pharmaceutical care in symptomatic treatment of infectious lesions of integuments (herpes of lips, acne, topical mycoses) and seborrhea. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

239. Pharmaceutical care in symptomatic treatment of pediculosis and itches. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

240. Pharmaceutical care of patients with varicose veins of the lower extremities. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

241. Pharmaceutical care of patients with hemorrhoid. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

242. Pharmaceutical care in symptomatic treatment of cough. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

243. Pharmaceutical care in symptomatic treatment and prevention of rhinitis. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

244. Pharmaceutical care in symptomatic treatment of sore throat. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

245. Pharmaceutical care in symptomatic treatment of fever. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

246. Pharmaceutical care in choosing OTC drugs for prophylaxis of colds.

247. Pharmaceutical care in symptomatic treatment of articular and muscular pain. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

248. Pharmaceutical care in symptomatic treatment of headache. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

249. Pharmaceutical care of OTC drugs for symptomatic treatment of vitamin deficiency.

250. Pharmaceutical care of elderly and old people. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration for symptomatic treatment.

251. Peculiarities of using OTC drugs for pregnant and breast-feeding women. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

252. Pharmaceutical care of children in the different periods of development (newborns, teenagers). The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration for symptomatic treatment.

253. Clinical and pharmacological aspects of drug interaction with food. The ways of prevention of negative sides effects of interaction.

254. Clinical and pharmacological aspects of using alcohol in medicine and peculiarities of its interaction with drugs of other pharmacological groups.

FORMS OF KNOWLEDGE CONTROL OF STUDENTS IN THE CREDIT-MODULAR SYSTEM OF THE EDUCATIONAL PROCESS ORGANIZATION WITH STUDENTS IN THE FULL-TIME FORM OF EDUCATION

Introduction of the credit-modular organization of the educational process and rating system of assessment of students' knowledge is carried out according to the standard-legislative base of higher education in Ukraine on the basis of Orders of the Ministry of Education and Science of Ukraine and the Ministry of Public Health of Ukraine:

- «About conducting the pedagogical experiment with the credit-modular system of the educational process organization» (the Order of the MPH №48 from 23.01.2004);
- «About the approval of the Program of action as for implementation of Bologna declaration in the system of higher education and science of Ukraine for 2004–2005» (the Order of the MPH №49 from 21.03.2004);
- «About measures as for implementation of Bologna declaration in the system of higher medical and pharmaceutical education» (the Order of the MPH №148 from 22.03.2004);
- «About peculiarities of introduction of the credit-modular system of the educational process organization» (the Order of the MPH №812 from 20.10.2004).

When estimating the knowledge of students the advantage is given to the standardized quality monitoring — testing and the structured control of practical skills.

Success of each student is estimated by 100-score scale consisting of marks for theoretical and practical training at every lesson and independent tasks, as well as the results of the final control conducted at the last lesson.

The current control includes the assessment of theoretical knowledge, practical skills and independent task.

The final control includes the assessment of theoretical knowledge in the form of a test colloquium, the assessment of practical skills and solving situational problems.

A student can get additional score for research work (up to 10 points), and also penalty points.

The maximum score a student can receive when studying each topic module makes 100 points, including those for current learning activity — 60 points, and for results of the final control — 40 points (including score for individual tasks).

Students with minimum 36 points for current learning activity can be admitted to the final module control. The final modular control is passed if a student receives at least 24 points.

A student should have minimum 60 points as the results of the current and module control. In this case he(she) is allowed to pass the examination.

The mark in the discipline is determined as the average one of all for 3 modules and the examination in «Pharmacy» speciality.

100-score rating system of the knowledge assessment in clinical pharmacy of students in speciality 7.110201 «Pharmacy»

Module 1			Module 2			Examination	Module 3							
Current control*		Final control**	Current control		Final control		Current control		Final control					
TM 1**	TM 2		TM 3	TM 4			TM 5	TM 6						
30	30	40	30	30	40									
100		100												
200/2														
100							100							
200/2							30	30	40					
100							100							
200/2														
100****														

Notes. * current control of topic modules finally makes 60 points.

** TM — the topic module.

*** final module control consists of the test control of theoretical knowledge (25 points), the control of practical skills (15 points) and makes 40 points.

**** total rating on discipline does not exceed 100 points.

Rating score

For the topic module control		For the final module control (credit-test)	
national scale	score	national scale	score
5 — excellent	27–30	5 — excellent	36–40
4 — good	23–26	4 — good	31–35
3 — satisfactory	18–22	3 — satisfactory	25–30
2 — unsatisfactory	1–17	2 — unsatisfactory	0–24

Rating score for the examination

National scale	The Rating assessment, score
«5» — excellent	90–100
«4» — very good	83–89
«4» — good	75–82
«3» — satisfactory	67–74
«3» — enough	60–66
«2» — unsatisfactory	1–59

The progress control of students in discipline «Clinical pharmacy»

National scale	ECTS Assessment and definition	The Rating assessment, score
5	A — excellent	90–100
4	B — very good	83–89
4–	C — good	75–82
3	D — satisfactory	67–74
3–	E — enough (satisfies the minimum criteria)	60–66
2	FX — unsatisfactory (with the possibility of re-pass)	35–59
Non-admission	F — unsatisfactory with the obligatory repeated course (additional work is necessary)	1–34

CRITERIA OF STUDENTS' KNOWLEDGE ASSESSMENT

NB! The list of questions to the course examination in clinical pharmacy for students of «Pharmacy» speciality of the full-time form of education at the foreign faculties includes questions of module 1 and module 2 (questions №№1–224).

The examination card consists of 20 test tasks and 3 theoretical questions. The correct answer for the test task is estimated 2 points, the wrong one as — 0 points (maximum 40 points for tests). A student can receive from 1 to 20 points depending on the correctness and completeness of the answer for the answer to the theoretical question (maximum 60 points for theoretical questions). The total mark at the examination is the sum for the test tasks and theoretical questions.

Students receive the following mark:

National scale	The Rating assessment, score
«5» — excellent	90–100
«4» — very good	83–89
«4» — good	75–82
«3» — satisfactory	67–74
«3» — enough	60–66
«2» — unsatisfactory	1–59

THE COURSEWORK IN CLINICAL PHARMACY FOR STUDENTS OF «PHARMACY» SPECIALITY OF THE FULL-TIME FORM OF EDUCATION

An coursework on clinical pharmacy is one of forms for controlling the theoretical knowledge acquired and gaining practical skills of individual tasks.

The purpose of the coursework is to master theoretical knowledge in clinical pharmacy acquired during lectures and practical classes, to master methodology carrying out of pharmaceutical care of a doctor and a patient during medicinal therapy with prescription and OTC drugs.

The structure of the coursework

A student is suggested to make a comprehensive scheme of pharmaceutical care of a doctor or a patient when prescribing one of the medicines registered in Ukraine that the teacher offers as the coursework on clinical pharmacy.

Using the theoretical knowledge acquired during the lectures and practical classes, as well as the educational, scientific and reference literature the student should independently analyze pharmacological properties of the medicine proposed, select the information, which is necessary for a doctor and for a patient and present it in the form of the comprehensive scheme of pharmaceutical care.

To solve this problem the student is suggested to make use of the block of questions concerning the peculiarities of pharmacodynamics, pharmacokinetics, toxicodynamics of the specific medicines, their compatibility with other medicines and food, peculiarities of their use for the specific patients, their effect on clinical and laboratory values, as well as the optimal replacement of drugs if such replacement is necessary.

Answers to the questions proposed allow the student to systematize the knowledge gained during lectures and practical classes while

studying the corresponding sections of clinical pharmacy, to estimate the degree of their comprehension, to master practical skills in pharmaceutical care.

The coursework is the final criterion of checking knowledge in clinical pharmacy, the students' ability to think independently and use the theoretical knowledge acquired in particular practical professional situations, carry out individual work in the optimal choice of drugs for a particular patient and pharmaceutical care of a patient and a doctor throughout the whole period of medicinal therapy.

The work is carried out by the student independently, in the written form and is presented to the teacher not later than 10 days prior to the test week. As the result of the coursework the student receives a differentiated credit-test.

THE PERFORMANCE ALGORITHM OF THE COURSEWORK IN CLINICAL PHARMACY

I. The International name of medicine.

Trade names.

The category of the drug (Prescription or OTC).

II. The basic pharmacological effects.

III. Indications and contraindications of the drug.

IV. Adverse effects:

- related to the mechanism of action;
- related to overdose;
- related to prolonged application;
- related to the dosage form and the route of administration;
- related to specific peculiarities of a patient;
- others.

V. Medicinal forms, in which the medicine is manufactured.

VI. Clinical criteria of the drug efficiency:

- clinical manifestations of the expected effect;
- the term of occurrence of the expected effect.

VII. Clinical criteria of the drug safety:

- clinical manifestations of possible adverse effects;
- the term of occurrence of possible adverse effects.

VIII. Possible interactions of the drug:

- with food;
- with alcohol;
- with nicotine;
- with other medicines.

IX. Peculiarities of the drug prescription to various categories of patients:

- children;
- elderly people;

- pregnant women;
- breast-feeding women.

X. Peculiarities of the drug prescription in case of accompanying diseases.

XI. Peculiarities of using various dosage forms of the drug.

XII. The information for the doctor.

XIII. The information for the patient.

XIV. Literature sources.

PRACTICE IN CLINICAL PHARMACY

The main purpose of the practice in clinical pharmacy is to master theoretical knowledge in clinical pharmacy and acquire practical skills of its application in the process of carrying out pharmaceutical care for visitors of chemist's shops.

Students of the 5th year in «Pharmacy» speciality of foreign faculties of full-time forms of education have practice in clinical pharmacy at a pharmacist's working place «at the first table». They dispense medicines from a chemist's and conduct the advisory work concerning the rational use of the medicine product (the rule of using a particular medicinal form, its dose regimen, compatibility and incompatibility with food and other medicines products, possible adverse effects, etc.).

As the result of practice a student should

KNOW:

- basic current orders and other standard documentation of the Ministry of Public Health of Ukraine concerning prescriptions and drug dispensing from a chemist's shop;
- a modern assortment and classification of medicines;
- the list of OTC drugs authorized to use in Ukraine, the nomenclature of OTC-drugs.
- the rules of drug dispensing;
- characteristic clinical symptoms of the most widespread diseases requiring an obligatory consultation of a doctor;
- the list of diseases and pathological states when self-treatment is possible;
- distinctive clinical symptoms of the most widespread diseases and pathological states when self-treatment with OTC-drugs is possible;
- the main principles of symptomatic medicinal therapy of diseases and pathological states when self-treatment is possible;

- the principles of collecting anamnesis, the anamnesis of life and medicines;
- the algorithm of the optimal choice of an OTC drug for treating diseases and pathological states when self-treatment is possible;
- the principles of pharmaceutical care for visitors of chemist's shops while dispensing OTC-drugs;
- categories of visitors of chemist's shops requiring especially intent pharmaceutical care — «risk groups»;
- organization of information and advisory work in the chemist's shop;
- labour safety and safety measures.

BE ABLE:

- to use standard and reference books on medicines drugs;
- to know the nomenclature of the domestic and foreign drugs;
- to find people requiring an obligatory consultation of a doctor among visitors of a chemist's shop;
- to find people for whom self-treatment is possible among visitors of a chemist's shop;
- to refer drugs to prescription or OTC category;
- to consult the visitors of a chemist's shop concerning all problems of medicinal therapy (both prescription and OTC drugs);
- to collect the anamnesis (disease, life, medicinal history);
- to choose an optimal OTC drug for the specific a chemist's visitor;
- to carry out pharmaceutical care for visitors of a chemist's shop while the dispensing OTC drugs;
- to perform the rules of labour safety and safety measures.

The basic educational and methodical document for students is «Clinical pharmacy. Methodical recommendations to practice for students in speciality 7.110201 «Pharmacy» of the higher pharmaceutical and medical schools of the IIIrd — IVth accreditation levels» — Khar'kov: Publishing House NUPh, 2005. — 20 p.

Practice in clinical pharmacy is held at chemist's shops in the 5th course (term IX) within 72 hours — 2 working week (10 working days

with five-day working week). Students pass the differentiated test by the results of practice.

The report documentation in practice

Daily students keep a diary of the work. The diary is the official document and should be submitted to the university department of clinical pharmacology with pharmaceutical care. The practice cannot be passed without a diary or in case of its untimely registration. It is necessary to reflect every day all the work of a student engaged in practical work (its character and volume): the number of practical situations in pharmaceutical care with a summary of the problem and offers of its solution in the diary. By the end of the practice the diary is necessary to witness by the signature of the head of the chemist's shop and by the institution stamp. In case of absence of the signature and the stamp the credit test in practice is not passed.

QUESTIONS TO THE STATE CERTIFICATION FOR STUDENTS OF «PHARMACY» SPECIALITY

The general questions in clinical pharmacy

1. Definition of the concepts of «chemical name», «international nonproprietary name», «trade name» of drugs.
2. The factors affecting the clinical efficiency of drugs.
3. Clinical and pharmacological characteristics of various ways of drug administration.
4. Basic pharmacokinetic parameters, their practical importance. Visceral diseases that affect pharmacokinetic indices essentially.
5. Anatomical and physiological peculiarities of the human body in different age periods (newborns, children, teenagers, elderly and old people), which have an effect on pharmacokinetics and pharmacodynamics of medicines.
6. Anatomical and physiological peculiarities of the organism of a woman during pregnancy, which have an effect on pharmacokinetics and pharmacodynamics of medicines products.
7. Medicinal monitoring. Factors that cause the necessity of carrying out the medicinal monitoring.
8. Bioavailability of drugs. The clinical importance of bioavailability. Factors affecting the bioavailability value.
9. Bioequivalent drugs. Categories of drugs, which bioequivalence studies are conducted for.
10. Bioequivalence. Clinical methods of bioequivalence determination. Therapeutic non-bioequivalence of drugs, its causes.
11. Selectivity of drug action. Factors that have an effect on the selectivity of medicines.
12. Brand drugs. Advantages of brands and disadvantages of generics.
13. Generic drugs. Requirements for generics.

14. Criteria of drug efficiency. Groups of the efficiency criteria.
15. Criteria of drug safety. Groups of the safety criteria.
16. Interaction of drugs. Types of interaction. Clinical importance of drug interaction.
17. Pharmacodynamic and pharmacokinetic synergy. Possibilities of its use in clinical practice.
18. Pharmacodynamic and pharmacokinetic antagonism. Ways of prevention of drug antagonism.
19. Pharmaceutical interaction of drugs. Positive and negative sides.
20. Combined drugs. Advantages and disadvantages of combined drugs.
21. Types of adverse reactions and complications of medicinal therapy.
22. Toxic complications caused by an absolute or relative overdose of drugs, pharmacological properties of drugs.
23. Allergic reactions, idiosyncrasy, withdrawal syndrome as the manifestation of adverse drug reactions.
24. The concept of placebo, placebo-effectors. Negative placebo-effectors as a group of risk for developing adverse drug reactions.
25. Effects of drugs on clinical and laboratory values and the results of functional tests. Possible mechanisms of action and the way of its prevention.
26. Medicinal anamnesis. The importance of medicinal anamnesis collection for the rational therapy.
27. Compliance. Major factors affecting on compliance.
28. Phases of clinical approbation, goals and tasks of each stage.

Fundamentals of clinical medicine

29. Symptoms and syndromes of atherosclerosis.
30. Symptoms and syndromes of stable angina of effort.
31. Symptoms and syndromes of acute myocardial infarction.
32. Symptoms and syndromes of essential arterial hypertension.

33. Types of symptomatic arterial hypertension. Peculiarities of clinical manifestations.
34. Differences of clinical symptomatology of hypertension disease of the Ist, IInd and IIIrd stages.
35. Hypertensive crisis. Differences of clinical symptomatology of hypertensive crises of the Ist and IInd order.
36. The basic symptoms of chronic heart failure.
37. The basic symptoms of abnormalities of the heart rate.
38. Symptoms and syndromes of rheumatism (acute rheumatic fever, chronic rheumatic heart disease).
39. Symptoms and syndromes of rheumatoid arthritis.
40. Symptoms and syndromes of systemic lupus erythematosus.
41. Symptoms and syndromes of osteoarthritis.
42. Symptoms and syndromes of gout.
43. Symptoms and syndromes of osteoporosis.
44. Syndrome of bronchoobstruction, clinical manifestations.
45. Syndrome of respiratory insufficiency, clinical manifestations.
46. Symptoms and syndromes of pneumonia.
47. Symptoms and syndromes of acute bronchitis.
48. Symptoms and syndromes of chronic bronchitis.
49. Symptoms and syndromes of chronic obstructive bronchitis.
50. Symptoms and syndromes of bronchial asthma.
51. Symptoms and syndromes of acute pyelonephritis.
52. Symptoms and syndromes of chronic pyelonephritis.
53. Symptoms and syndromes of acute glomerulonephritis.
54. Symptoms and syndromes of chronic glomerulonephritis.
55. Symptoms and syndromes of cystitis.
56. Symptoms and syndromes of urolithiasis.
57. Chronic renal failure, basic clinical manifestations.
58. Symptoms and syndromes of chronic atrophic gastritis (type A).
59. Symptoms and syndromes of chronic Helicobacter-associated gastritis (type B).
60. Symptoms and syndromes of stomach ulcer.
61. Symptoms and syndromes of duodenal ulcer.

62. Symptoms and syndromes of chronic pancreatitis.
63. Symptoms and syndromes of chronic hepatitis.
64. Symptoms and syndromes of chronic cholecystitis.
65. Syndrome of portal hypertension, basic clinical manifestations.
66. Symptoms and syndromes of cirrhosis.
67. Symptoms and syndromes of cholelithiasis.
68. Symptoms and syndromes of iron deficiency anemia.
69. Symptoms and syndromes of megaloblastic (vitamin B₁₂- and folic acid deficiency) anemia.
70. Symptoms and syndromes of hemolytic anemia.
71. Symptoms and syndromes of insulin-dependent diabetes mellitus.
72. Symptoms and syndromes of diabetes mellitus (non-insulin-dependent diabetes mellitus).
73. Diabetes complications, basic clinical manifestations.
74. Symptoms and syndromes of hyperthyroidism.
75. Symptoms and syndromes of hypothyroidism.
76. Symptoms and syndromes of endemic goiter.
77. Symptoms and syndromes of allergic rhinitis and allergic conjunctivitis (pollinosis).
78. Symptoms and syndromes of urticaria.
79. Symptoms and syndromes of angioneurotic edema.
80. Symptoms and syndromes of anaphylactic shock.
81. Symptoms and syndromes of drug disease.

Clinical pharmacology

82. Clinical and pharmacological approaches to treatment of atherosclerosis.
83. Clinical and pharmacological approaches to treatment of stable angina of effort.
84. Clinical and pharmacological approaches to treatment of acute myocardial infarction.
85. Clinical and pharmacological approaches to treatment essential arterial hypertension.

86. Clinical and pharmacological approaches to treatment of symptomatic arterial hypertension.
87. Clinical and pharmacological approaches to treatment of hypertensive crises of the Ist and IInd order.
88. Clinical and pharmacological approaches to treatment of chronic heart failure.
89. Clinical and pharmacological approaches to treatment of rheumatism (acute rheumatic fever, chronic rheumatic heart disease).
90. Clinical and pharmacological approaches to treatment of rheumatoid arthritis.
91. Clinical and pharmacological approaches to treatment of systemic lupus erythematosus.
92. Clinical and pharmacological approaches to treatment of osteoarthritis.
93. Clinical and pharmacological approaches to treatment of gout.
94. Clinical and pharmacological approaches to treatment of osteoporosis.
95. Clinical and pharmacological approaches to treatment of pneumonia.
96. Clinical and pharmacological approaches to treatment of acute bronchitis.
97. Clinical and pharmacological approaches to treatment of chronic bronchitis.
98. Clinical and pharmacological approaches to treatment of chronic obstructive bronchitis.
99. Clinical and pharmacological approaches to treatment of bronchial asthma.
100. Clinical and pharmacological approaches to treatment of acute pyelonephritis.
101. Clinical and pharmacological approaches to treatment of chronic pyelonephritis.
102. Clinical and pharmacological approaches to treatment of acute glomerulonephritis.

103. Clinical and pharmacological approaches to treatment of chronic glomerulonephritis.
104. Clinical and pharmacological approaches to treatment of cystitis.
105. Clinical and pharmacological approaches to treatment of urolithiasis.
106. Clinical and pharmacological approaches to treatment of chronic renal failure.
107. Clinical and pharmacological approaches to treatment of chronic atrophic gastritis (type A).
108. Clinical and pharmacological approaches to treatment of chronic Helicobacter-associated gastritis (type B).
109. Clinical and pharmacological approaches to treatment of stomach ulcer.
110. Clinical and pharmacological approaches to treatment of duodenal ulcer.
111. Clinical and pharmacological approaches to treatment of chronic pancreatitis.
112. Clinical and pharmacological approaches to treatment of chronic hepatitis.
113. Clinical and pharmacological approaches to treatment of chronic cholecystitis.
114. Clinical and pharmacological approaches to treatment of portal hypertension.
115. Clinical and pharmacological approaches to treatment of cirrhosis.
116. Clinical and pharmacological approaches to treatment of cholelithiasis.
117. Clinical and pharmacological approaches to treatment of iron-deficiency anemia.
118. Clinical and pharmacological approaches to treatment of megaloblastic (vitamin B₁₂- and folic acid deficiency) anemia.
119. Clinical and pharmacological approaches to treatment of insulin-dependent diabetes mellitus.

120. Clinical and pharmacological approaches to treatment of non-insulin-dependent diabetes mellitus.
121. Clinical and pharmacological approaches to treatment of complications of diabetes.
122. Clinical and pharmacological approaches to treatment of hyperthyroidism.
123. Clinical and pharmacological approaches to treatment of hypothyroidism.
124. Clinical and pharmacological approaches to treatment of endemic goiter.
125. Clinical and pharmacological approaches to treatment of allergic rhinitis and allergic conjunctivitis (pollinosis).
126. Clinical and pharmacological approaches to treatment of urticaria.
127. Clinical and pharmacological approaches to treatment of angioneurotic edema.
128. Clinical and pharmacological approaches to treatment of allergic shock.
129. Clinical and pharmacological approaches to treatment of drug disease.
 130. Clinical pharmacology of hypolipidemic drugs.
 131. Clinical pharmacology of antianginal drugs of nitrate group.
 132. Clinical pharmacology of β -adrenoblockers.
 133. Peculiarities of using β -adrenoblockers for IHD.
 134. Peculiarities of using β -adrenoblockers for arterial hypertension.
 135. Clinical pharmacology of calcium antagonists.
 136. Peculiarities of using calcium antagonists for IHD.
 137. Peculiarities of using calcium antagonists for arterial hypertension.
 138. Clinical pharmacology of ACE inhibitors.
 139. Peculiarities of using ACE inhibitors for arterial hypertension and chronic heart failure.
 140. Clinical pharmacology of diuretics.

141. Peculiarities of using diuretics in arterial hypertension and chronic heart failure.
142. Clinical pharmacology of cardiac glycosides.
143. Clinical pharmacology of anticoagulants and antiaggregants.
144. Clinical pharmacology of steroid anti-inflammatory drugs.
145. Clinical pharmacology of non-steroid anti-inflammatory drugs.
146. Clinical pharmacology of basic anti-inflammatory drugs, including drugs that suppress proliferation of the connective tissue.
147. Clinical pharmacology of metabolism correctors of the connective tissue.
148. Clinical pharmacology of drugs of uricosuric action.
149. Clinical pharmacology of drugs affecting the structure and mineralization of the bone tissue.
150. Principles of the rational antibiotic therapy for organs of the respiratory system.
151. Clinical pharmacology of bronchodilators.
152. Clinical pharmacology of inhaled corticosteroids.
153. Clinical pharmacology of stabilizers of mastocytes membranes.
154. Clinical pharmacology of expectorants and mucolytic agents.
155. Principles of the rational antibiotic therapy of diseases of the urinary system organs.
156. Peculiarities of using immunosuppressants for treating immuno-inflammatory diseases of kidneys.
157. The influence of the functional state of kidneys on clinical efficiency of drugs.
158. Changes of pharmacodynamics and pharmacokinetics of drugs in case of chronic renal failure.
159. AB therapy. Schemes of *H. pylori* eradication and clinical and pharmacological characteristic of drugs included in the given schemes.
160. Clinical pharmacology of antacids.
161. Clinical pharmacology of blockers of histamine H₂-receptor and selective M₁-blockers.

162. Clinical pharmacology of proton pump inhibitors.
163. Clinical pharmacology of anti-diarrhea drugs.
164. Clinical pharmacology of laxatives.
165. Action of the functional condition of the stomach on clinical efficiency of drugs.
166. Clinical pharmacology of polyenzymatic drugs.
167. Clinical pharmacology of chalagogic drugs.
168. Clinical pharmacology of hepatoprotectors.
169. Clinical pharmacology of drugs for etiopathic treatment of hepatic diseases.
170. Changes of pharmacokinetics and pharmacodynamics of drugs in case of hepatic diseases.
171. Action of the functional condition of the liver on clinical efficiency drugs.
172. Clinical pharmacology of iron drugs.
173. Clinical pharmacology of insulin drugs.
174. Clinical pharmacology of oral hypoglycemic drugs.
175. Clinical pharmacology of hormone drugs of the thyroid gland, anti-thyroid drugs, iodine drugs.
176. Clinical pharmacology of antihistaminic drugs.
177. Clinical pharmacology of topical antiallergic drugs.
178. Criteria of efficiency of atherosclerosis treatment and safety of medicinal therapy.
179. Criteria of efficiency of treatment of stable angina of efforts and safety of medicinal therapy.
180. Criteria of efficiency of acute myocardial infarction treatment and safety of medicinal therapy.
181. Criteria of efficiency of essential arterial hypertension treatment and safety of medicinal therapy.
182. Criteria of efficiency of symptomatic arterial hypertension treatment and safety of medicinal therapy.
183. Criteria of efficiency of treatment of hypertensive crises of the Ist and IInd order and safety of medicinal therapy.

184. Criteria of efficiency of treatment of chronic heart failure and safety of medicinal therapy.

185. Criteria of efficiency of rheumatism treatment (acute rheumatic fever, chronic rheumatic heart disease) and safety of medicinal therapy.

186. Criteria of efficiency of rheumatoid arthritis treatment and safety of medicinal therapy.

187. Criteria of efficiency of systemic lupus erythematosus treatment and safety of medicinal therapy.

188. Criteria of efficiency of osteoarthritis treatment and safety of medicinal therapy.

189. Criteria of efficiency of gout treatment and safety of medicinal therapy.

190. Criteria of efficiency of osteoporosis treatment and safety of medicinal therapy.

191. Criteria of efficiency of pneumonia treatment and safety of medicinal therapy.

192. Criteria of efficiency of acute bronchitis treatment and safety of medicinal therapy.

193. Criteria of efficiency of chronic bronchitis treatment and safety of medicinal therapy.

194. Criteria of efficiency of treatment of chronic obstructive bronchitis and safety of medicinal therapy.

195. Criteria of efficiency of bronchial asthma treatment and safety of medicinal therapy.

196. Criteria of efficiency of acute pyelonephritis treatment and safety of medicinal therapy.

197. Criteria of efficiency of a chronic pyelonephritis treatment and safety of medicinal therapy.

198. Criteria of efficiency of acute glomerulonephritis treatment and safety of medicinal therapy.

199. Criteria of efficiency of chronic glomerulonephritis treatment and safety of medicinal therapy.

200. Criteria of efficiency of cystitis treatment and safety of medicinal therapy.
201. Criteria of efficiency of urolithiasis treatment and safety of medicinal therapy.
202. Criteria of efficiency of treatment of chronic renal failure and safety of medicinal therapy.
203. Criteria of efficiency of treatment of chronic atrophic gastritis (type A) and safety of medicinal therapy.
204. Criteria of efficiency of treatment of chronic Helicobacter-associated gastritis (type B) and safety of medicinal therapy.
205. Criteria of efficiency of stomach ulcer treatment and safety of medicinal therapy.
206. Criteria of efficiency of duodenal ulcer treatment and safety of medicinal therapy.
207. Criteria of efficiency of chronic pancreatitis treatment and safety of medicinal therapy.
208. Criteria of efficiency of chronic hepatitis treatment and safety of medicinal therapy.
209. Criteria of efficiency of chronic cholecystitis treatment and safety of medicinal therapy.
210. Criteria of efficiency of portal hypertension treatment and safety of medicinal therapy.
211. Criteria of efficiency of cirrhosis treatment and safety of medicinal therapy.
212. Criteria of efficiency of cholelithiasis treatment and safety of medicinal therapy.
213. Criteria of efficiency of treatment of iron deficiency anemia and safety of medicinal therapy.
214. Criteria of efficiency of treatment of megaloblastic (vitamin B₁₂-and folic acid deficiency) anemia and safety of medicinal therapy.
215. Criteria of efficiency of insulin-dependent diabetes mellitus treatment and safety of medicinal therapy.
216. Criteria of efficiency of treatment of non-insulin-dependent diabetes mellitus and safety of medicinal therapy.

217. Criteria of efficiency of hyperthyroidism treatment and safety of medicinal therapy.
218. Criteria of efficiency of hypothyroidism treatment and safety of medicinal therapy.
219. Criteria of efficiency of endemic goiter treatment and safety of medicinal therapy.
220. Criteria of efficiency of allergic rhinitis treatment and allergic conjunctivitis (pollinosis) and safety of medicinal therapy.
221. Criteria of efficiency of urticaria treatment and safety of medicinal therapy.
222. Criteria of efficiency of angioneurotic edema treatment and safety of medicinal therapy.
223. Criteria of efficiency of anaphylactic shock treatment and safety of medicinal therapy.
224. Criteria of efficiency of drug disease treatment and safety of medicinal therapy.

Pharmaceutical care while dispensing OTC drugs

225. Pharmaceutical care as the responsibility of a pharmacist for safety and efficiency of medicinal therapy.
226. The concept of definition, main principles of the modern concept of self-treatment.
227. Prescription and OTC medicines. Criteria on the basis of which drugs are classified as prescription or OTC ones.
228. Practical functions of a pharmacist required for carrying out pharmaceutical care.
229. Pharmaceutical care in symptomatic treatment of heartburn. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.
230. Pharmaceutical care in symptomatic treatment of constipation. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

231. Pharmaceutical care in symptomatic treatment of diarrhea. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

232. Pharmaceutical care in symptomatic treatment of flatulence. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

233. Pharmaceutical care in symptomatic treatment of dysbacteriosis. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

234. Pharmaceutical care in symptomatic treatment of anxious conditions. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

235. Pharmaceutical care in symptomatic treatment of asthenia. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

236. Pharmaceutical care in symptomatic treatment of insomnia. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

237. Pharmaceutical care in symptomatic treatment of traumatic lesions of integuments (cuts, abrasions, scratches, burns, frostbite). The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

238. Pharmaceutical care in symptomatic treatment of infectious lesions of integuments (herpes of lips, acne, topical mycoses) and seborrhea. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

239. Pharmaceutical care in symptomatic treatment of pediculosis and itches. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

240. Pharmaceutical care of patients with varicose veins of the lower extremities. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

241. Pharmaceutical care of patients with hemorrhoid. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

242. Pharmaceutical care in symptomatic treatment of cough. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

243. Pharmaceutical care in symptomatic treatment and prevention of rhinitis. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

244. Pharmaceutical care in symptomatic treatment of sore throat. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

245. Pharmaceutical care in symptomatic treatment of fever. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

246. Pharmaceutical care in choosing OTC drugs for prophylaxis of colds.

247. Pharmaceutical care in symptomatic treatment of articular and muscular pain. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

248. Pharmaceutical care in symptomatic treatment of headache. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

249. Pharmaceutical care of OTC drugs for symptomatic treatment of vitamin deficiency.

250. Pharmaceutical care of elderly and old people. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration for symptomatic treatment.

251. Peculiarities of using OTC drugs for pregnant and breast-feeding women. The algorithm of choosing optimal OTC drugs, dosage form and the routes of administration.

252. Pharmaceutical care of children in the different periods of development (newborns, teenagers). The algorithm of choosing

optimal OTC drugs, dosage form and the routes of administration for symptomatic treatment.

253. Clinical and pharmacological aspects of drug interaction with food. The ways of prevention of negative sides effects of interaction.

254. Clinical and pharmacological aspects of using alcohol in medicine and peculiarities of its interaction with drugs of other pharmacological groups.

Criteria of the state certification of students in «Pharmacy» speciality

The state examination on clinical pharmacy is conducted in the oral form.

Each card consists of three questions.

The first question includes the analysis of doctor indications list. Five theoretical questions are attached to each list, they allow to make the opinion how students understand the theoretical material concerning all sections of the discipline. The correct answers on theoretical questions should not only reproduct a section of the textbook, but also demonstrate the integrated knowledge in clinical pharmacy, pharmacology, pathological physiology, microbiology and other disciplines of medical and biological course.

The second question consists of the practical situation in pharmaceutical care while dispensing OTC-drugs, it also includes five theoretical questions that allow to give an idea of student's comprehension of the main principles of pharmaceutical care.

The third question is the algorithm of pharmaceutical care conducting by a pharmacist, it allows to estimate practical skills of the student while carrying out this direction of work in a chemist's shop.

Criteria of putting down a mark

Question 1

The maximum number of points — 3.

3 points — the answer coincides with the standard, pharmacological groups of all drugs have been specified correctly; pharmacological compatibility have been taken into account and the presence of concomitant diseases.

2 points — there are insignificant remarks (the daily or course dose is not modified), the irrational choice of drugs has been made, pharmacological compatibility and the presence of concomitant diseases haven't been taken into account.

1 point — the choice of drugs has been made correctly less than 50 %, the group of some drugs has not been determined, there is the combination of drugs with a high risk of adverse effects.

0 points — drugs have been chosen incorrectly, their group has not been specified, a drug with a high risk of complications has been chosen.

Question 2

The maximum number of points — 1.

1 point — the drug choice is rational, comments to the questions are true and complex.

0.5–0.25 points — the drugs choice is correct, but not optimal, comments to the questions true, but short.

0.24–0 points — the choice is not rational, comments are not true or absent.

Question 3

The maximum number of points — 1.

1 point — the scheme is reproduced closely to the standard.

0.5–0.25 points — the scheme is not reproduced completely, there are some errors.

0.24–0 points — the scheme is reproduced incorrectly, or it is not reproduced at all.

Students receive the mark:

- «Excellent» — if the score makes is 5.0–4.75;
- «Good» — if the score is 4.74–3.75;
- «Satisfactory» — if the score is 3.74–2.75;
- «Unsatisfactory» — if the score is 2.74 points and less.

THE EXAMPLE OF THE STATE EXAMINATION CARD

I. Select the optimal combination of drugs to treat patient with this diagnosis from the list given below.

Prior to analysis, answer the questions that will help you to optimize the choice of drugs.

Diagnosis: Rheumatic fever, the activity of the Ist degree, rheumatic heart disease. Heart failure degree II.

1. Tab. Diclofenaci 0,025
1 tablet 3 times a day
2. Tab. Ac. acetylsalicylici 0,5
2 tablets 3 times a day
3. Tab. «Furosemide» 0,04
2 tablets 1 time in 3 days
4. Tab. Meloxicami 0,0075
1 tablet 3 times a day
5. Tab. «Preductal»
1 tablet 2 times a day
6. «Bicillin-5»
By 1200000 U i.m. 1 time a month
7. Tab. Dexamethazoni 0,0005
1 tablet 4 times a day after meals
8. Tab. «Panangin»
1 tablet 2 times a day
9. Sol. Strophanthini 0,05 % — 10 ml
10 ml i.v. 1 time a day
10. Tab. Lisinopril 0,10
1 tablet 1 time a day

Questions to the list of indications:

1. Give the definition of «rheumatic fever». What are the approaches to the treatment of this disease?
2. What types of medicinal therapy do you know? What type of therapy are the listed drugs for?
3. Give the clinical and pharmacological characteristics of nonsteroid anti-inflammatory drugs, which are specified in the list of indications.
4. Give recommendations to the patient in the rational use of medicines you chose from the list of indications.
5. Specify the criteria for effective treatment of rheumatism and safety of medicinal therapy.

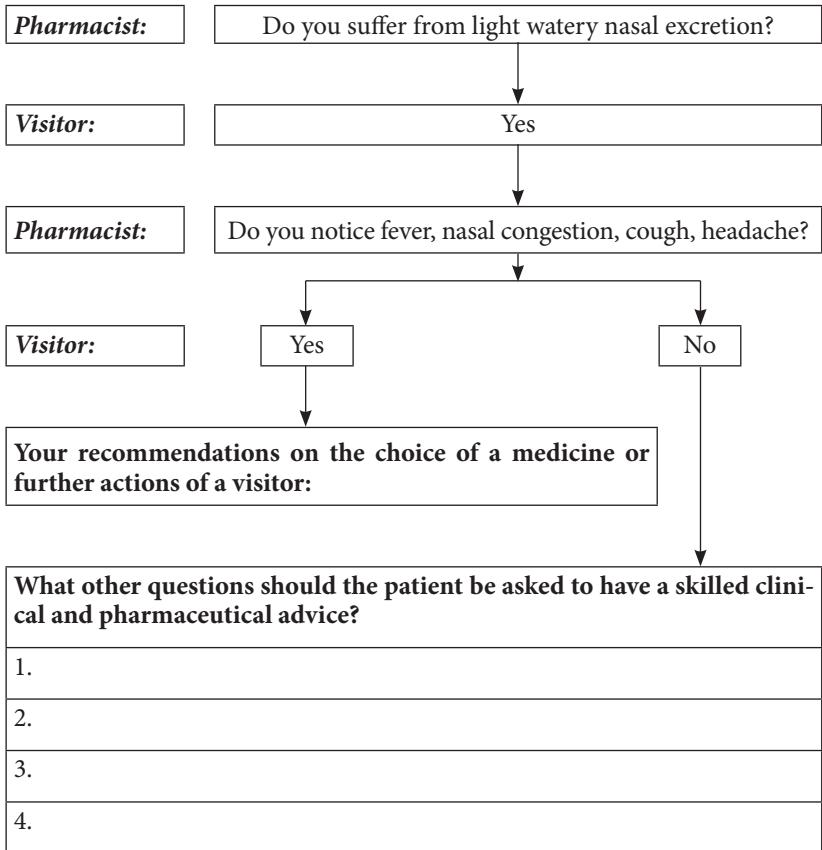
II. Pharmaceutical care — an important direction of your work at the chemist's shop. Being part of this work understand the situation.

A visitor comes to the chemist's shop with a request to recommend a medicine for cough to his pregnant wife. You have: «Codterpin», «Mucolvan», «Libexin», «Fluimucil», «Tussin» in your assortment.

Before giving him recommendations answer the following questions, which help you to make the choice of the optimal drug and to determine the conditions for its rational application.

1. What diseases is cough possible with? When is it necessary to visit a doctor and in what cases is self-treatment possible?
2. Types of cough. What medicines are used depending on the type of cough? How is the mechanism of their action related to the pathogenesis of the cough syndrome development?
3. What peculiarities of the pregnant women organism can affect drug pharmacokinetics?
4. What characteristics of drugs for treating cough should be taken into account when prescribing them to pregnant?
5. What additional questions should this patient be asked to before choosing a drug?

III. Make your recommendations into the proposed scheme of the conversation between a pharmacist and a visitor of chemist's shop, who complains of a runing nose and wants to give him a drug for treating rhinitis.





THE «STANDARDS» OF TRAINING



Topic
CLINICAL PHARMACY IN CARDIOLOGY:
ESSENTIAL HYPERTENSION,
SYMPTOMATIC HYPERTENSION

I. Symptoms and syndromes in cardiology

Arterial hypertension, headache, dizziness, reduction of vision acuteness, albuminuria, hypertrophy of the left ventricle myocardium.

II. The list of nosological units: primary hypertension (essential arterial hypertension); secondary (symptomatic) arterial hypertension (renal, endocrine, medicinal, hemodynamic, neurogenic etc.), hypertensive crisis.

III. Basic approaches to arterial hypertension therapy

1. Control of the blood pressure:

a) *non-medicamental methods* — normalization of the body weight, giving up bad habits, reduction of water and salt use;

b) *drug therapy* — β_1 -adrenoblockers (selective, non-selective), diuretics (thiazide and similar thiazide, loop diuretic), inhibitors of angiotensin-converting enzyme (ACE), blockers of angiotensin receptors II, antagonists of calcium of dihydropyridine group (prolonged), α -adrenoblockers — peripheral (of short action and prolonged), drugs of central action.

IV. The list of medicines

1. *β -adrenoblockers* — propranolol (Anapriline), metoprolol (Betaloc), atenolol (Atenobene), carvedilol (Coryol), bisoprolol (Biprolol).

2. *Inhibitors of ACE* — captopril (Capoten), enalapril (Renitec, Enap), lisinopril (Diroton, Lipril).

3. *Diuretics* — hydrochlorothiazide (Hypothiazide), furosemide (Lasix), indapamide (Arifon Retard, Indopres).

4. *Blockers of angiotensin receptors II* — losartan (Cozaar).

5. *Calcium antagonists* — nifedipine retard (Adalat SL), amlodipine (Norvasc).

6. *Blockers of peripheral α_1 -adrenoreceptors* — prazosin (Prazosin Ratiopharm), doxazosin (Cardura).

7. *Drugs of central action* — methyldopa (Dopegyt), agonists of imidazole receptors — clonidine (Clophelin), moxonidine (Physiotens).

8. *Metabolic drugs* — trimetazidine (Preaductal MR, Triductan), trimethylhydrazine propionate (Mildronat, Vasonat), Cratal.

9. *The combined drugs:*
 - a) Tenoret (atenolol + chlortalidone);

 - b) Tenocheck (atenolol + amlodipine);

 - c) Capozide (captopril + hydrochlorothiazide);

 - d) Liprazid (lisinopril + hydrochlorothiazide);

 - e) Ekvator (lisinopril + amlodipine);

 - f) Hyzaar (losartan + hydrochlorothiazide).

V. Clinical pharmacology of drugs used to treat arterial hypertension (See Table 1).

VI. Criteria of efficiency and safety of the therapy conducted

1. Clinical:

- a) decrease of signs of target organs damage; _____
- b) reduction of hypertensive crises incidence; _____
- c) improvement of the life quality. _____

2. Laboratory — normalization of the general analysis of urine, decrease of proteinuria. _____

3. Instrumental:

- a) decrease the BP to target values; _____
- b) inverse development of the left ventricle hypertrophy; _____
- c) improvement of eyeground vessels state. _____

VII. Principles of pharmaceutical care

Pharmaceutical care while dispensing medicines for symptomatic treatment of headache:

- a) the main causes of headache origin;
- b) «threatening» signs and situations that require immediate diagnosis and treatment of headache;
- c) the algorithm of a patient — pharmacist conversation in case of headache;
- d) pharmaceutical care while dispensing medicines for headache;
- e) the list of OTC-drugs for symptomatic treatment of headache:
 - OTC NSAIDs with the systemic action (Aspirin, Panadol, Ibuprofen, combined drugs);
 - f) drugs for symptomatic treatment of migraine (selective agonists of 5HT₁-serotonin receptors, alkaloids of ergot);
 - g) non-medicamental methods of treatment (massage, psychotherapy, reflexotherapy);
 - h) general recommendations for patients with headache complaints.

Table 1

Clinical pharmacology of drugs used to treat arterial hypertension

International nonproprietary name of a drug	Pharmacodynamics			Interaction with drugs of other groups	Prevention and treatment of adverse effects
	basic effects	peculiarities of drugs and its administration	adverse effects		
1	2	3	4	5	6
<i>Atenolol</i>	antihypertensive, anti-anginal, anti-arrhythmic	cardioselective, in minimal doses it can be used in patients with chronic obstructive disease of lungs and diabetes	bradycardia, deterioration of the peripheral blood circulation, increase of heart failure signs	antihypertensive and antiarrhythmic drugs of other groups, barbiturates	gradual reduction of dose after drug discontinuation
<i>Hydrochlorothiazide</i>	diuretic, hypotensive	Take after meals. It penetrates through the placental barrier and in mother's milk	dyspepsia, dizziness and increased fatigability, allergic reactions, visual impairment, hypokalemia, hyperuricemia, hypercalcemia and carbohydrate metabolism disorders	lithium drugs	it is necessary to keep a diet rich in potassium with a long administration. Control of glucose and uric acid levels in blood
<i>Furosemide</i>	diuretic, hypotensive	Take before meals. It causes quickly coming strong and short-term diuresis. Be careful in prostate adenoma	dyspepsia, hypotension, reversible decrease in sensory acuity, muscular weakness, hypokalemia, hyperuricemia, uricosuria, hyperglycemia	cephalosporins, gentamicin	control of electrolytes, glucose and uric acid in blood level

1	2	3	4	5	6
<i>Indapamide</i>	hypotensive, diuretic	Take before meals. It possesses the expressed vasodilated effect	hypokalemia, hyponatremia, hyperuricemia	see Hydrochlorothiazide	
<i>Nifedipine retard</i>	hypotensive, antianginal	It can weaken attention and slow down responses. The use of grapefruit juice increases toxicity of nifedipine	headache, tachycardia, edema of the lower extremities, hyperemia of face skin and the top part of the trunk	digoxin, theophylline, carbamazepine, antihypertensive drugs of other groups	Nifedipine should be discontinued before 36 hours using fentanyl for narcosis (threat of acute hypotension)
<i>Amlodipine</i>	hypotensive, antianginal	Meal does not affect adsorption of the drug	see Nifedipine retard	antihypertensive drugs of other groups, digoxin	control of the BP and heart rate
<i>Captopril</i>	hypotensive	Take 1 hour before meals. It can cause a pseudo-positive reaction to acetone in urine	dry cough, tachycardia, hypotonia, dyspepsia, visual impairment, leucopenia, agranulocytosis, taste impairment, hyperkaliemia	K ⁺ -NSAIDs, saving diuretics, drugs of potassium	control of differential count of white blood cells, concentration of potassium in blood
<i>Enalapril</i>	hypotensive	Meal does not affect drug adsorption. It is a «prodrug»	see Captopril. Quincke's disease	see Captopril	see Captopril
<i>Lisinopril</i>	hypotensive	Meal does not affect drug adsorption. It does not metabolize in organism	see Enalapril	see Enalapril	see Enalapril

1	<i>Losartan</i>	hypotensive	it is contraindicated during pregnancy and breast feeding	3	dizziness, orthostatic reactions, hypersensitivity reactions, transitional hyperkalemia and increase of ALT activity	4	clinically significant interactions aren't established	5	the control of kidney function	6
	<i>Prazosin</i>	hypotensive	It can weaken attention and slow down responses. It is used in adenoma of the prostate as it reduces the urethra tone. It decreases the lipids atherogenous fractions content with a prolonged administration		orthostatic headache, dizziness, drowsiness, urinary incontinence, skin allergic reactions	reaction, antihypertensive drugs of other groups	Prior to the first dose administration it is necessary to carry out the regular control of the blood pressure (BP) and heart rate (HR) in the position of the patient while lying and standing			
	<i>Doxazosin</i>	hypotensive	see Prazosin. A high-selective blocker of α_1 -adrenoceptors of the prostate		see Prazosin	see Prazosin	clinically significant interactions have not been found	see Prazosin		
	<i>Methyldopa</i>	hypotensive	A drug of choice for AH therapy of pregnant women. It is contraindicated during breast feeding		general weakness, drowsiness, headache, parkinsonism, bradycardia, orthostatic hypotension, peripheral hypostases, dyspepsia, decrease of libido, impotence, skin rash	levodopa, iMAO drugs, NSAIDs; digoxin	control of the body weight for revealing of the latent edemas			

1	2	3	4	5	6
<i>Clonidine</i>	hypotensive	It reduces the speed of mental and physical reactions. It is capable to remove somato-vegetative displays of opiate and alcoholic abstinence. It decreases the intraocular pressure. The withdrawal syndrome	dryness in the mouth, constipation, hypersensitivity reactions, sedative action, orthostatic hypotension, cardiac rhythm dysfunction	neuroleptics, antidepressants, nifedipine, Antihypertensive drugs, cardiac glycosides (CG), β -AB	gradual decrease of dose etc. when discontinued
<i>Moxonidine</i>	hypotensive	A high-selective agonist of imidazoline receptors, therefore, the incidence of side effects is less. The withdrawal syndrome	dryness in the mouth, headache, dizziness, drowsiness, weakness	antihypertensive drugs of other groups; antidepressants	see Clonidine

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Topic
CLINICAL PHARMACY IN CARDIOLOGY:
ATHEROSCLEROSIS, ISCHEMIC HEART DISEASE

I. Symptoms and syndromes in cardiology

Painful syndrome, arrhythmia, the intermittent claudication syndrome, dyslipoproteinemia.

II. The list of nosological units: atherosclerosis, ischemic heart disease (angina pectoris, myocardial infarction, cardiosclerosis*).

III. Basic approaches to atherosclerosis and IHD therapy

1. *Correction of risk factors.* _____
 2. *Normalization of lipid content in blood — hypolipidemic drugs (statines, fibrates).* _____
 3. *Acute relief of an attacks of angina pectoris — nitrates of the short action.* _____
 4. *Prevention of an attacks of angina pectoris — nitrates of the prolonged action and nitrate-similar drugs; antagonists of calcium; beta-blockers.* _____
 5. *Improvement of rheological properties of blood — anticoagulants of the direct action, antiaggregants.* _____
 6. *Improvement of metabolic processes in the myocardium.* _____
-
-
-
-
-

* It is studied as a definition.

IV. The list of medicines

1. *Statines* — simvastatin (Zocor), atorvastatin (Lipprimar). _____
2. *Fibrates* — Gemfibrozil (Innogem). _____
3. *Nitrates* — nitroglycerin, prolonged nitrates (Sustac forte, Nitrong forte), isosorbide mononitrate (Mononitrosid); isosorbide dinitrate (Isoket). _____
4. *Nitrate-similar drugs* — molsidomine (Sidnopharm). _____
5. *Antagonists of calcium* — verapamil (Isoptin), diltiazem (Diacordin). _____
6. *β-blockers* — propranolol (Anapriline), metoprolol (Betaloc), atenolol (Atenobene), carvedilol (Coryol), bisoprolol (Biprolol). _____
7. *Anticoagulants of the direct action* — heparin (Heparin-Rihter), dalteparin sodium (Fragmin), nadroparin calcium (Fraxiparine). _____
8. *Antiaggregants* — acetylsalicylic acid (Aspecard, Aspirin Cardio), ticlopidine (Ticlid), clopidogrel (Atrogrel, Plavix). _____
9. *Metabolic drugs* — trimetazidine (Preaductal MR, Triductan), trimethylhydrazine propionate (Mildronat, Vasonat), Cratal. _____

V. Clinical pharmacology of drugs used to treat atherosclerosis and IHD (See Table 2).

VI. Criteria of efficiency and safety of the therapy conducted

1. *Clinical:* _____
 - a) increase of tolerance to physical activity; _____
 - b) reduction of duration and frequency of an attacks of angina pectoris; _____
 - c) reduction of nitroglycerine tablets intake not less than by 50 % a week; _____
 - d) reduction of expressiveness degree of the intermittent claudication syndrome; _____

- e) rapid relief of the cardial rhythm disorders; _____
- f) improvement of the life quality. _____
2. *Laboratory* — correction of the lipid content in blood. _____
3. *Instrumental* — improvement of electrocardiogram values, rheovasograms. _____
- _____

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Table 2

Clinical pharmacology of drugs used to treat atherosclerosis and IHD

International nonproprietary name of a drug	Basic effects	Pharmacodynamics peculiarities of drugs and its administration	Adverse effects	Interaction with drugs of other groups	Prevention and treatment of adverse effects
Simvastatine	hypolipidemic	it is administered simultaneously with a hypocholesteric diet. Prior the intake the level of transaminases should be determined and then regularly monitored	dyspeptic syndrome, headache, myasthenia, increase of the transaminases activity	4	derivatives of coumarin, cyclosporine, itraconazol, fibrates, digoxin Control of the level of potassium, sodium, calcium, glucose in blood
Atorvastatine	hypolipidemic		see Simvastatine. The use of grapefruit juice during the treatment can increase the level of atorvastatine in blood	see Simvastatine	see Simvastatine
Gemfibrozil	hypolipidemic	it is administered simultaneously with a hypocholesteric diet	dyspepsia, allergic reactions, headache, myalgia, increase of the index of itogenesis in bile, liver dysfunction	oral hypoglycemic drugs, statines	see Simvastatine

1	2	3	4	5	6
<i>Nitroglycerin</i>	antianginal	While taking sublingually the attack of angina pectoris is stopped in 1.5 minutes, the effect lasts within 15 minutes. It is possible to take not more than 3 tablets with the interval of 5 minutes	«nitrate» headache, tachycardia, skin hyperemia, decrease in the BP, increase of the intraocular pressure	vasodilators, iACE, blockers of calcium channels, β -AB, diuretics, tricyclic antidepressants, ethanol	Control of the BP. Avoid the rapid discontinuance (prolonged forms)
<i>Isosorbide mononitrate / dinitrate</i>	antianginal	it is used with caution in disorders of cerebral circulation; glaucoma, hypotonia. While taking the drug the ability to react quickly may decrease. Development of tolerance is possible	headache, sensation of heat, tachycardia, decrease of the BP	see Nitroglycerine	To prevent nitrate tolerances it is recommended to make a break in treatment, replacing drug with another antianginal drugs
<i>Molsidomine</i>	antianginal	the drug of choice in case of intolerance of nitrates. It is used only to prevent an attacks of angina pectoris	hypotonia, allergic reactions, rarely — headache	see Nitroglycerine, ASA	control of the BP
<i>Verapamil</i>	antianginal, antiarrhythmic, antihypertensive	it is used with caution in patients with AV-blockade of the 1 st degree, in the ventricular conductivity disorders, in arterial hypertension. It is metabolically neutral	hyperemia of face and neck skin, headache, arterial hypotension, constipation, bradycardia, AV-blockade	β -AB and antihypertensive drugs of other groups, antiarrhythmic drugs of other groups	control of the BP, ECG (lengthening of P-Q interval)

1	2	3	4	5	6
<i>Dilthiazem</i>	antianginal, antiarrhythmic, antihypertensive	see Verapamil	see Verapamil	see Verapamil	see Verapamil
<i>Propranolol</i>	antihypertensive, antianginal, antiarrhythmic	The withdrawal syndrome. It affects psychophysical abilities — weakens attention and response	bradycardia, deterioration of the peripheral blood circulation, increase of heart failure signs, bronchospasm	antihypertensive and antiarrhythmic drugs — of other groups, tricyclic antidepressants, barbiturates	gradual decrease of the dose while discontinued. Control of the glucose level in blood in patients with diabetes
<i>Metoprolol</i>	antihypertensive antianginal, antiarrhythmic	see Atenolol	see Atenolol	see Propranolol	see Atenolol
<i>Carvedilol</i>	antihypertensive, antianginal, antiarrhythmic	see Atenolol. It is possesses antioxidant properties and moderate antagonistic activity in relation to calcium ions. It affects positively the lipid exchange	see Atenolol	see Propranolol	see Atenolol

1	2	3	4	5	6
<i>Heparin</i>	antithrombic	it is used with caution if there is suspicion of malignant neoplasm, in varicose vein dilatation of the gullet, susceptibility to bleedings, in elderly people	bleedings, allergic reactions, increase of the transaminases activity	ASA, derivatives of coumarin, fibrinolytics, dipyradomol	the regular control of thrombocytes amount in the peripheral blood
<i>Dalteparin</i>	antithrombic	see Heparin. Low-molecular heparin, its administration decreases the risk of bleeding	see Heparin	see Heparin	monitoring of the anticoagulative activity only in special groups (children, pregnant, patients with renal insufficiency, etc.)
<i>Nadroparin</i>	antithrombic	see Heparin. Low-molecular heparin, its administration decreases the risk of bleeding	see Heparin. Possible development of skin necrosis in the site of injection	see Heparin	see Heparin
<i>Acetylsalicylic acid</i>	antithrombic, antiaggregant	it is used once 50–100 mg/day after meals	gastropathy, bronchospasm, skin rash, thrombocytopenia, anaemia, bleeding.	antiocoagulants; NSAIDs, GCS, hypoglycemic drugs, diuretics	to inform a doctor about each case of unusual bleeding; control of bleeding time, quantity and functional activity of thrombocytes

1	2	3	4	5	6
<i>Ticlopidine</i>	antithrombic, antiaggregant	it is intensively metabolized by liver, treatment of patients with pathology of a liver demands extra care	hyperemia and nasal bleedings, nausea and diarrhea, thrombocytopenic purpura, neutropenia/agranulocytosis	anticoagulants	the control of leucogram, level of thrombocytes, bleeding time
<i>Clopidogrel</i>	antithrombic, antiaggregant	it is used with caution in case of increased risk of bleedings, operative interventions, disorders of the hemostasis system, severe liver dysfunction	in comparison with ticlopidine it causes less adverse effects often	see Ticlopidine	see Ticlopidine
<i>Trimetazidine</i>	antianginal, antihypoxic	it is not recommended during pregnancy and breast feeding	dyspepsia, allergic reactions	clinically significant interactions are not established	monitory of functional indices of kidneys in case of chronic renal insufficiency
<i>Trimethyldiazine propionate</i>	antianginal, antihypoxic	see Trimetazidine	skin itch, dyspepsia, tachycardia, excitation, decrease of the BP	nitroglycerine, nifedipine, blockers of α-adrenoreceptors, hypotensive drugs	control of the BP and heart rate

Note. The clinical and pharmacological characteristics of atenolol is given in Table 1.

Topic
CLINICAL PHARMACY IN CARDIOLOGY:
CHRONIC HEART FAILURE

I. Symptoms and syndromes in cardiology

Dyspnea, orthopnea, tachycardia, peripheral edema, cyanosis, acrocyanosis, hepatomegalias.

II. The list of nosological units: chronic heart failure.

III. Basic approaches to chronic heart failure therapy

1. *Decrease of pre- and postloadings on the heart* — inhibitors of ACE; inhibitors of angiotensin II receptors; diuretics (loop diuretic, thiazide diuretics); selective β-blockers.
 2. *Increase of the myocardium contractility* — cardiac glycosides.
 3. *Improvement of metabolic processes in the myocardium.*
-
-
-

IV. The list of medicines

1. *Inhibitors of ACE* — captopril (Capoten), enalapril (Renitec, Enap), lisinopril (Diron-ton, Lipril).
 2. *Diuretics* — hydrochlorothiazide (Hypothiazide), furosemide (Lasix), indapamide (Arifon Retard, Indopres).
 3. *β-blockers* — metoprolol (Betaloc), atenolol (Atenobene), carvedilol (Coryol), bisoprolol (Biprolol).
-
-
-

4. *Cardiac glycosides* — digoxin, strophanthin K. _____

5. *Metabolic drugs* — trimetazidine (Pre-
ductal MR, Triductan), trimethylhydrazine
propionate (Mildronat, Vasonat), Cratal.

V. Clinical pharmacology of drugs used to treat chronic heart failure (See Table 3).

VI. Criteria of efficiency and safety of the therapy conducted

1. Clinical:

- a) disappearance or reduction of subjective symptoms of CHF (dyspnea, cyanosis, palpitation, etc.);

- b) elimination of clinical signs of liquid delay in the organism (normalization/reduction of the liver sizes, decrease of the body weight, disappearance/reduction of edemas).

2. Laboratory — normalization of biochemical indices of blood (electrolytes). _____ _____

3. Instrumental:

- a) improvement of indices of the electrocardiogram;

- b) increase of the left ventricle output.

Table 3

Clinical pharmacology of drugs used to treat chronic heart failure

International nonproprietary name of a drug	basic effects	Pharmacodynamics peculiarities of a drug and its administration	adverse effects	Interaction with drugs of other groups	Prevention and treatment of adverse effects
1 <i>Digoxin</i>	2 positive: inotropic, bathmotropic; negative: dromotropic, chronotropic	3 The medicinal monitoring is necessary to select the effective and safe dose	4 disorders of the rhythm and conductivity, anorexia, nausea, vomiting, diarrhoea, colour vision impairment	5 calcium drugs, sympathomimetics, reserpine, tricyclic antidepressants and drugs causing decrease of the potassium concentration in blood; barbiturates, chinidine, amiodarone, erythromycin, tetracycline	6 control of the electrolytic balance, administration of potassium and magnesium, drugs for prevention of the toxic action
<i>Strophanthin K</i>	see Digoxin	It is not subjected to biotransformation, it is excreted with urine in the unchanged form	see Digoxin	see Digoxin	see Digoxin

Note. Clinical and pharmacological characteristics of atenolol, captopril, enalapril, hydrochlorothiazide, furosemide, indapamide and trimetazidine are given in Table 1 and 2.

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Topic

CLINICAL PHARMACY IN RHEUMATOLOGY. PHARMACEUTICAL CARE WHILE OTC-DRUGS DISPENSING FOR SYMPTOMATIC TREATMENT OF A JOINT AND MUSCULAR PAIN

I. Symptoms and syndromes in rheumatology

Articular syndrome (joints pain, morning constraint, deformation of joints), muscles pain, skin rash (ring-shaped erythema, symptom of «butterfly», acne-like rash), fever, Raynaud syndrome, tophuses, NSAIDs-gastropathy, Reye's syndrome.

II. The list of nosological units: rheumatism (acute rheumatic fever, chronic rheumatic heart disease), systemic lupus erythematosus, rheumatoid arthritis, osteoarthritis, osteoporosis, gout, systemic sclerosis*.

III. Basic approaches to rheumatological diseases therapy

1. *Reduction of expressiveness of disease symptoms* — NSAIDs, non-narcotic analgesics.
2. *Improvement of the functional ability of joints* — chondroprotectors, NSAIDs.
3. *Delay of disease progression* — immunosuppressors, glucocorticoids.
4. *Eradication of hemolytic streptococcus of group A* — antibacterial drugs.
5. *Correction of calcium exchange disorders (calcium drugs, vitamin D) and uric acid (drugs that inhibit the synthesis and increase the uric acid elimination).*

* It is studied as a definition.

IV. The list of medicines

1. NSAIDs:

- a) *non-selective inhibitors of COX-2* — diclofenac sodium (Voltaren), acetylsalicylic acid (Aspirin), ibuprofen;
- b) *selective inhibitors of COX-2* — meloxicam (Movalis); nimesulide.
- c) *specific inhibitors of COX-2* — celecoxib (Celebrex), rofecoxib (Denebol);
- d) *non-narcotic analgesics* — paracetamol (Panadol, Rapidol), metamizol sodium (Analgin).

2. *Glucocorticoids* — prednisolone, methylprednisolone (Methypred).

3. *Antibacterial drugs:*

- a) *penicillines* — benzylpenicillin sodium, bicillin-5, phenoxytmethylpenicillin;
- b) *macrolides* — spiromycin (Rovamycin).

4. *Drugs suppressing proliferation of the connective tissue* — methotrexate, azathioprine (Imuran), infliximab (Remicaid), leflunomide (Arava), D-penicillamine.

5. *Drugs inhibiting the synthesis of uric acid* — allopurinol.

6. *Drugs increasing the uric acid excretion* — Blemaren.

7. *Chondroprotectors:*

- a) monocomponent drugs — glucosamine sulfate (Dona), glucosamine hydrochloride (Arthon Flex), chondroitin sulfate (Structum, Arthon Chondrex), hyaluronic acid (Hyalgan);
- b) combined drugs — Teraflex, Teraflex Advance.

8. *Drugs affecting the structure and mineralization of the bone tissue* — calcium lactate, Osteogenon, Miocalcic, aledronic acid (Fosamax), vitamin D; combined drugs (Calcemin, Calcemin Silver).

V. Clinical pharmacology of drugs used in rheumatology (See Table 4).

Table 4

Clinical pharmacology of drugs used in rheumatology

International nonproprietary name of a drug	Pharmacodynamics	Pharmacokinetics	adverse effects	Interaction with drugs of other groups	Prevention and treatment of adverse effects
1	2	4	3	5	6
<i>Diclofenac</i>	anti-inflammatory, including analgesic, anti-pyretic effects	photosensitization in local administration	NSAID - gasteropathy of Na ⁺ and liquids, increase iACE of the bleeding time	GCS, antiaggregants, anticoagulants, diuretics, decrease iACE	gastroprotectors (misoprostol, bismuth subcitrate, sucralfate), proton pump inhibitors
<i>Metamizol sodium</i>	analgesic, anti-pyretic	control of the peripheral blood indices, atopic BA and pollinoses	agranulocytosis, decrease allopurinol, perioral hypoglycemics of the BP, bronchospasm, intestinal nephrite	glucocorticoids, decrease allopurinol, perioral hypoglycemics and contraceptives, ethanol, sedative, tranquilizers	The drug intake should be discontinued and the doctor should be consulted with immediately
<i>Glucosamine hydrochloride</i>	chondroprotective	The duration of administration is not less than 2–3 months	dyspepsia	NSAIDs, GCS	take after meal
<i>Celecoxib</i>	anti-inflammatory, including analgesic	A high selectivity	cardiovascular complications when administered for a long time	anticoagulants, fluconazole, diuretics	antiaggregants administration

1	2	3	4	5	6
<i>Acetyl salicylic acid</i>	anti-inflammatory, including analgetic, anti-pyretic	in low doses — the antiaggregant action	Reye's syndrome, NSAID-gastroopathy, increases the time of bleeding, chondrotoxicity	GCS, antiaggregants, anticoagulants	gastroprotectors (misoprostol, bismuth subcitrate, sucralfate), inhibitors of proton pump
<i>Prednisolone</i>	anti-inflammatory, immuno-depressive, anti-toxic, antishock, anti-allergic, desensitizing	it is taken early in the morning, to discontinue the drug abruptly (to miss a dose) is impossible, pulse-therapy	ulcerogenic action, withdrawal syndrome, osteoporosis, arterial hypertension, increase of the body weight, steroid diabetes	NSAIDs, immunodepressants	A strict medical control when taking, gas- troprotectors, drugs of potassium, calcium, antihyperten- sive therapy
<i>Benzylpenicillin-sodium</i>	antibacterial	prolonged forms for bicillin prophylaxis and bicillin therapy	dysbacteriosis, allergic reactions	NSAIDs, bacterio-static antibiotics	antihistaminic drugs, the subcutaneous test
<i>Allopurinol</i>	hypouricemic	adequate diuresis, inter-ruptions of the treatment are impossible, the pH control of urine	Aggravation of disease at the beginning of the therapeutic course	thiazide diuretics, furosemide, iron drugs, blemaren	NSAIDs to pre-vent acute con- dition

1	2	3	4	5	6
<i>Blemaren</i>	urolitholytic	it is contraindicated in the decompensation stage of the renal insufficiency; the course of treatment is from 4 to 6 months; a low-protein diet, adequate hydration should be introduced (2-3 L/day)	dyspepsia	allopurinol, cardiac glycosides, citrate-aluminum containing drugs, iACE, potassium-sparing diuretics	take after meals
<i>Vitamin D</i>	regulation of the phosphorus-calcium exchange	it should be taken with caution in elderly persons and patients with hypothyroidism or urolithiasis	anorexia, nausea, vomiting	salts of calcium, phosphorus, cardiac glycosides, thiazide diuretics	control of the calcium level in urine
<i>Calcemim</i>	regulation of the phosphorus-calcium exchange	it is used with caution in case of urolithiasis	hypercalcemia, hypercalciuria, alkalosis	vitamin D, thiazide diuretics, phosphates, barbiturates, tetracyclines, corticosteroids, cardiac glycosides	control of the calcium level in urine
<i>Methotrexate</i>	immunodepressive, antineoplastic	The dosage regimen is based on the body surface area (mg/m^2), alkalinization of urine, adequate hydration should be introduced, the contraceptives should be taken to prevent pregnancy	nausea, myelosuppression, depression, hepatotoxicity, decrease of resistance to infection	folic acid, sulphapyridine, chloramphenicol	A strict medical control when taking; anti-emetic drugs, calcium folinate

VI. Criteria of efficiency and safety of the therapy conducted

1. Clinical:

- a) the pain syndrome decrease; _____
- b) decrease of fever; _____
- c) increased movements in joints; _____
- d) disappearance of manifestations on the skin. _____

2. Laboratory:

- a) the clinical analysis of blood (reduction of leucocytosis, normalization of the leukogram, decrease of ESR); _____
- b) the biochemical analysis of blood (decrease of the level of acute phase indices, hyperuricemia); _____
- c) the urinary analysis (decrease of the level of proteinuria, hematuria). _____

3. Instrumental — normalization of the bone tissue density.

VII. Principles of pharmaceutical care

Pharmaceutical care when treating joint and muscle pain:

- a) the main causes of joint and muscle pain origin;
- b) «threatening» sings of joint and muscle pain;
- c) the algorithm of a patient — pharmacist conversation in case of joint pain;
- d) the algorithm of a patient — pharmacist conversation in case of muscle pain;
- e) principles of the rational choice of drugs for joint and muscle pain relief;

f) the list of OTC-drugs for symptomatic treatment of joint and muscle pain:

- topical irritative drugs (Finalgon*, Ben-Gay*); _____
 - NSAIDs for topical application (Final-gel, Fastum-gel, Nimulid, Denebol-gel*, Diclofen-gel*, Remisid); _____
 - OTC NSAIDs with the systemic action (Panadol, Rapidol, Solpadein*, Ibuprofen); _____
 - phytodrugs (Dr. Theiss ointment with delphinium); _____
 - chondroprotectors (Arthron Complex*, Arthron Chondrex, Arthron Flex, Teraflex*, Teraflex Advance*, Chondroxid). _____
-

g) the comparative characteristics of various dosage forms for joint and muscle pain relief (ointments, gels, creams, alcohols, balms);

h) the non-medicamental methods of joint and muscle pain relief;

i) general recommendations for patients with joint and muscle pain complaints.

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* Complex drugs.

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Topic

CLINICAL PHARMACY IN PULMONOLOGY.

PHARMACEUTICAL CARE OF PATIENTS

WITH THE SYMPTOMS OF COLD

I. Symptoms and syndromes in pulmonology

Cough, dyspnea, chest pain, blood spitting, _____
fever, cyanosis, syndrome of bronchoconstriction, syndrome of respiratory insufficiency, _____

II. The list of nosological units: pneumonia, acute bronchitis, chronic bronchitis, asthma, chronic obstructive pulmonary diseases (chronic obstructive bronchitis, emphysema*), illness of small respiratory tracts of smokers*), pleurisy*, multiple bronchiectasis*, abscess of the lung*.

III. Basic approaches to respiratory diseases therapy

1. *Eradication of pathogenic organisms: antibacterial drugs* (taking into account principles of the rational antibiotic therapy). _____

2. *Elimination of bronchoconstriction: β_2 -adrenergic agonists, selective blockers of M_1 and M_3 receptors, methylxanthines.* _____

3. *Improvement of the airways drainage function: mucolytics, expectorants of the reflex and resorbitive action.* _____

4. *Prevention of bronchospasm: inhaled corticosteroids, stabilizers of mastocytes membranes.* _____

* It is studied as a definition.

IV. The list of medicines

1. *Penicillines* — amoxicillin (Flemaxin), amoxicillin/clavulanic acid (Augmentin). _____
2. *Macrolides* — clarithromycin (Clacid), roxithromycin (Roxilid), azithromycin (Sumamed). _____
3. *Cephalosporins* — cephalexin, cefazolin, cefaclor, cefuroxime (Zinnat), cefixime, ceftriaxone (Rocephin), cefepime. _____
4. *Carbapenems* — meropenem. _____
5. *Respiratory fluoroquinolones* — ciprofloxacin (Ciprobay), sparfloxacin, levofloxacin, moxifloxacin (Avelox), gatifloxacin. _____
6. *Inhaled corticosteroids* — fluticasone (Flixotid); beclomethasone (Becotid). _____
7. β_2 -*adrenergic agonists* — salbutamol (Ventolin), fenoterol (Berotec); salmeterol (Serevent). _____
8. *Selective blockers of M₁ receptor* — ipratropium bromide, tiotropium bromide (Spiriva). _____
9. *Combined drugs:*
 - a) Combivent (ipratropium hydrochloride + salbutamol); _____
 - b) Berodual (ipratropium bromide + fenoterol hydrochloride); _____
 - c) Seretide (salmeterol + fluticasone propionate). _____
10. *Methylxantines* — theophylline (Theo-Dur). _____
11. *Mucolytics* — bromhexine, ambroxol (Lasolvan, Ambrotard), acetylcysteine (ACC), carbocysteine. _____
12. *Stabilizers of mastocytes membranes* — cromoglicic acid, ketotifen. _____

V. Clinical pharmacology of drugs used in pulmonology (See Table 5).

Table 5

Clinical pharmacology of drugs used in pulmonology

International nonproprietary name of a drug	Pharmacodynamics		Interaction with drugs of other groups	Prevention and treatment of adverse effects
basic effects	peculiarities of a drug and its administration	adverse effects		
1 <i>Amoxicillin</i>	2 antibacterial across allergy with other β -lactame antibiotics, pregnant women can take it	3 allergic reactions, dyspepsia, dysbacteriosis	4 antibacterial drugs with the bacteriostatic action, antibiotics	5 pro- and prebiotics, with taking into account the allergological anamnesis
<i>Cefazolin</i> <i>Cefuroxime</i> <i>Ceftriaxone</i> <i>Cefepime</i>	antibacterial across allergy with other β -lactame antibiotics	allergic reactions, dysbacteriosis	antibacterial drugs with the bacteriostatic action, antacids (for oral forms of cephalosporines)	pro- and prebiotics, with taking into account the allergological anamnesis
<i>Meropenem</i>	antibacterial	The postantibiotic effect, a reserve drug, across allergy with other β -lactame antibiotics	antacids	pro- and prebiotics, with taking into account the allergological anamnesis
<i>Azithromycin</i>	antibacterial	The postantibiotic effect (during 5–7 days), immunomodulative effects, it penetrates inside the bacterial cell and leukocytes	antacids	pro- and prebiotics

1	2	3	4	5	6
<i>Gatifloxacin</i>	antibacterial	Do not use under 18 years, respiratory fluoroquinolone	dysbacteriosis, allergic reactions, Q-T interval prolongation, photosensibilization	oral antidiabetic drugs, NSAIDs	dose correction in patients with renal insufficiency
<i>Ciprofloxacin</i>	antibacterial	Do not use under 12 years. Use with caution while driving and operating machines	dysbacteriosis, allergic reactions, Q-T interval prolongation, photosensibilization	theophylline, anti-acids, anticoagulants	-
<i>Levofloxacin</i>	bactericidal	destruction of cartilage tissues (do not use under 18 years) is possible, respiratory fluoroquinolone. Use with caution while driving and operating machines	dysbacteriosis, allergic reactions, Q-T interval prolongation, photosensibilization	NSAIDs, theophylline	-
<i>Doxycycline</i>	bacteriostatic	do not use under 9 years	hepatotoxicity and nephrotoxicity	oral contraceptives, antacids, iron containing drugs	pro- and prebiotics
<i>Salbutamol</i>	broncholytic	it is of the short action, the resistance development during the long-term use, the «rebound» phenomenon, with high doses it worsens the reaction while driving and operating machines	tremor, arrhythmia, paradoxial bronchospasm, headache	broncholytic drugs of other groups, β -AB, corticosteroids	individual selection of doses

1	2	3	4	5	6
<i>Salmeterol</i>	broncholytic	it is of the prolonged action, use with caution in patients with thyrotoxicosis	hypopotassium, tremor, tachycardia, paroxysmal bronchospasm	broncholytic drugs of other groups, β -AB, corticosteroids	–
<i>Theophylline</i>	broncholytic	The resistance development with a long administration, smoking of 1–2 packs of cigarettes a day leads to reduction of the effect duration	arrhythmia, tremor, insomnia, dizziness	broncholytic drugs of other groups, fluoroquinolones, diuretics	The therapeutic drug monitoring is carried out
<i>Ipratropium bromide</i>	broncholytic	it is contraindicated in glaucoma, use with care in adenoma of the prostate	a dry mouth, accommodation disorders	β -AB, broncholytic drugs of other groups	–
<i>Fluticasone</i>	anti-inflammatory	basic therapy of asthma	oral candidiasis, hoarse voice, paradoxical bronchospasm	ketocazole, broncholytic drugs of other groups	rinse the oral cavity with water after each inhalation
<i>Ambroxol</i>	mucolytic, expectorant, stimulation of the surfactant synthesis	Do not use in the 1 st trimester of pregnancy	dyspepsia, allergic reaction	antibacterial drugs, β_2 -adrenergic agonists, theophylline, expectorants	–

1	2	3	4	5	6
<i>Acetylcysteine</i>	mucolytic, expectorant, pneumoprotective	Do not use in patients with ulcer. To increase the mucolytic effect additional intake of liquid is recommended	dyspepsia, allergic reaction	tetracycline, nitroglycerin, antitussive drugs	-
<i>Cromoglicic acid</i>	membrane-stabilizing, antiallergic	To prevent asphyxia attacks and allergy signs. It is not recommended for drivers	irritation of respiratory tract of other groups, mucous membrane, dry mouth, a short-term bronchospasm	broncholytic drugs corticosteroids, antihistaminic remedies	-
<i>Ketotifen</i>	antiallergic	Use with caution while driving and operating machines	CNS suppression, the dry mouth, decrease in secretion of bronchial glands	sedative and hypnotic drugs, other antihistamines, alcohol	-

VI. Criteria of efficiency and safety of the therapy conducted

1. Clinical:

- a) reduction or disappearance of cough; _____
- b) disappearance of blood spitting; _____
- c) reduction or disappearance of dyspnea; _____
- d) normalization of the body temperature; _____
- e) disappearance of the chest pain; _____
- f) reduction of intensity and frequency or disappearance of bronchospasm. _____

2. Laboratory:

- a) normalization of clinical blood analysis indicators (disappearance of inflammation signs); _____
- b) the absence of the pathogenic flora growth in bacteriological analysis of sputum; _____
- c) normalization of immunological blood analysis indicators. _____

3. Instrumental:

- a) the absence of pathological changes on the X-ray pattern of the chest; _____
- b) improvement of spirometry indices (FEV₁, FEV₁/FVC); _____
- c) disappearance of inflammation signs of bronchus mucosa in bronchoscopy. _____

VII. Principles of pharmaceutical care

1. Pharmaceutical care while treating cough:

- a) the main causes of cough origin (non-productive and productive);
- b) «threatening» signs in cough;
- c) the algorithm of patient — pharmacist conversation concerning nonproductive and productive cough;
- d) principles of the rational choice of drugs for non-productive cough treatment;
- e) principles of the rational choice of drugs for productive cough treatment;

f) the list of OTC-drugs for symptomatic treatment of cough:

- antitussive drugs of the central and peripheral action — methylmorphine (Codterpin*), dextromethorphan (Atussin*), glaucine hydrochloride (Broncholitin, Glaument), oxeladin (Paxeladin), butamirate citrate (Sinecod, Stoptussin*), prenoxidiazine (Liberixin);
- expectorants of the reflex and resorptive action — Actifed, Tussin*, Mucaltin, Herbion, Gedelix, Prospan;
- mucolytics — bromhexine (Bronchosan), ambroxol (Lasolvan), acetylcysteine (ACC, Fluimucil), carbocysteine (Fluditec).

g) general recommendations for patients with complaints of cough.

2. Pharmaceutical care while treating rhinitis:

- a) the main causes of rhinitis origin;
- b) «threatening» sings in rhinitis;
- c) the algorithm of patient — pharmacist conversation in rhinorrhea;
- d) principles of the rational choice of drugs for treating rhinitis;
- e) the list of OTC-drugs for symptomatic treatment of rhinitis:

- sympathomimetic agents (selective and non-selective α_1 -adrenomimetic agents) — phenylpropanolamine (Coldact*, Coldflu*, Effect*), pseudoephedrine (Actifed*, Tera-Flu*), phenylephrine (Vibrocyl, Coldrex*, Nasol Baby, Nasol Kids, Rhinopront, Pharmaciton*), pheniramine (Fervex*), oxymetazoline (Nasol, Noxpray), tetrizoline (Tisin), xylomethazoline (Galazolin,

* Complex drugs.

Pharmazolin), tramazoline (Rhino-spray plus), naphazoline (Naphthisin); _____
• other drugs for treating rhinitis (Boromenthol, Pinosol, Salin). _____

g) general recommendations for patients with complaints of rhinitis.

3. Pharmaceutical care while treating fever:

- a) the main causes of fever origin; _____
- b) «threatening» sings in fever; _____
- c) the algorithm of patient — pharmacist conversation concerning the body high temperature; _____
- d) principles of the rational choice of drugs for symptomatic treatment of fever; _____
- e) the list of OTC-drugs for symptomatic treatment of fever:
 - paracetamol (Panadol, Ravidol, Coldrex*), acetylsalicylic acid (Aspirin), ibuprofen (Nurofen); _____
- f) general recommendations for patients with fever complaints.

4. Pharmaceutical care while treating sore throat:

- a) the main causes of sore throat origin; _____
- b) «threatening» sings in sore throat; _____
- c) the algorithm of patient — pharmacist conversation concerning sore throat; _____
- d) principles of the rational choice of drugs for sore throat treatment; _____
- e) the list of OTC-drugs for symptomatic treatment of sore throat:
 - antiseptics (decamethoxine, amba-zone, amylmetacresol, chlorhexidine, menthol); _____
 - local anesthetics (lidocaine, tetracaine); _____
 - essential oils (eucalypt oil, anisic oil, peppermint oil); _____
- f) general recommendations for patients with sore throat complaints.

* Complex drugs.

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Topic

CLINICAL PHARMACY IN NEPHROLOGY

I. Symptoms and syndromes in nephrology

Urinary syndrome, nephrotic syndrome, edematous syndrome, syndrome of arterial hypertension, anemic syndrome, syndrome of renal insufficiency, fever, dysuric syndrome, pain syndrome, Pasternatsky symptom.

II. The list of nosological units: acute pyelonephritis, acute glomerulonephritis, chronic disease of kidneys (chronic pyelonephritis, chronic glomerulonephritis), urolithiasis, cystitis.

III. Basic approaches to kidneys and urinary tracts diseases therapy

1. *Etiotropic therapy* — antibacterial drugs (penicillines, cephalosporins, aminoglycosides, fluoroquinolones, derivatives of 8-hydroxyquinoline, nitrofuranes), herbal uroseptics.
 2. *Suppression of autoimmune and inflammatory reactions* — corticosteroids, cytostatics, NSAIDs, herbal uroantiseptics.
 3. *Improvement of renal haemodynamics* — anticoagulants of direct action, antiplatelet drugs.
 4. *Treatment of renal hyperazotemia* — hypoazotemic drugs, enterosorbents.
 5. *Therapy of renal anemia* — recombinant erythropoietins.
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6. *Treatment of arterial hypertension* — diuretics, antihypertensive drugs (inhibitors of ACE, angiotensin-II receptor antagonists, calcium antagonists).

7. *Dissolution of kidney or bladder stones* — urolitholitic agents.

8. *Improvement of urinary outflow* — herbal uroantiseptics.

9. *Rapid relief of symptoms of colic pain caused by renal and ureteric stones* — anti-spasmodics of the myotropic action, narcotic and non-narcotic analgesics.

10. *Rapid relief of fever symptoms* — non-narcotic analgesics-antipyretics.

IV. The list of medicines

1. *Penicillines* — amoxicillin (Flemaxin), amoxicillin/clavulanic acid (Augmentin).

2. *Cephalosporins* — cefuroxime (Zinnat), ceftriaxone (Rocephin), cefixime, cefepime.

3. *Aminoglycosides* — gentamicin, amikacin (Amicyl).

4. *Fluoroquinolones* — ciprofloxacin (Cipro-bay), norfloxacin, levofloxacin, gatifloxacin.

5. *Derivatives of 8-hydroxyquinoline* — nitroxoline (5-NOK).

6. *Nitrofuranes* — furazidin (Furagin), furazolidone.

7. *Herbal uroantiseptics* — Canephron N, Urolesan, Phytolyte.

8. *Glucocorticosteroides* — prednisolone, methylprednisolone (Metypred).

9. *NSAIDs* — diclofenac sodium (Voltaren).

10. *Cytostatics* — cyclophosphamide (Cyclophosphane), chlorambucil (Leukeran), methotrexate.

11. *Anticoagulants of direct action* — heparin sodium, nadroparin calcium (Fraxiparin), enoxaparin sodium (Clexane).

12. *Antiplatelet drugs* — dipyridamole (Cuantyl), ticlopidine (Ticlid), pentoxifylline (Trental). _____
13. *Enterosorbents* — methylsilicic acid (Enterosgel), Polyphepan. _____
14. *Recombinant erythropoetins* — epoetin β (Recormon), epoetin α (Eprex). _____
15. *Hypoazotemic drugs* — Lespenephryl, Chophytol. _____
16. *Diuretics* — furosemide (Lasix), indapamide (Arifon). _____
17. *Inhibitors of ACE* — captopril (Capoten), enalapril (Renitec), lisinopril (Diroton), fosinopril (Monopril). _____
18. *II RA Antagonists* — losartan (Cozaar). _____
19. *Calcium antagonists* — felodipine (Felo-hexal), amlodipine (Norvasc). _____
20. *Urolitholitic agents* — Blemaren, Phy-tolisin. _____
21. *Antispasmodics of the myotropic action* — drotaverine (No-spa). _____
22. *Combined drugs* (antispasmodics of the myotropic action + non-narcotic analgesics) — Baralgin, Renalgan. _____
23. *Analgesics-antipyretics* — paracetamol (Panadol, Rapidol). _____

V. Clinical pharmacology of drugs used in nephrology (See Table 6).

Table 6

Clinical pharmacology of drugs used in nephrology

Internal- nonpropri- etary name of a drug	Pharmacodynamics			Prevention and treatment of adverse effects	
	basic ef- fects	peculiarities of a drug and its administration	adverse effects	Interaction with drugs of other groups	
1	2	3	4	5	6
<i>Amoxicil- lin</i>	antibac- terial	across allergy with other β-lactame anti- biotics, possible use in pregnant and lactat- ing women	allergic reactions, dyspepsia, dysbacteriosis	fluoroquinolones, pro- - and prebiotics, taking into account the allergologi- cal anamnesis, antihistamine drugs; taking into account the GFR while selecting the dose	
<i>Ceftri- axone</i>	antibac- terial	across allergy with other β-lactame anti- biotics; possible use in pregnant; a drug of choice in decrease of GFR	allergic reactions, dyspepsia, dysbacteriosis	calcium containing drugs, fluoroquino- lones, aminoglyco- sides, antibacterial drugs with the bacte- riostatic action	pro- and prebiotics, taking into account the allergologi- cal anamnesis, antihistamine drugs; taking into account the GFR while selecting the dose
<i>Gentami- cin</i>	antibac- terial	it is used in severe forms of the urinary system infections; it is not used in pregnan- cy; in children and in decrease of GFR	oto-, nephro-, hepatotoxicity, dysbacteriosis	cephalosporins, fu- rosemide, antibac- terial drugs with the bacteriostatic action	control of the blood creati- nine level and GFR, bilirubin and transaminases levels; pro- - and prebiotics

1	2	3	4	5	6
<i>Ciprofloxacin</i>	antibacterial	Do not use under 12 years, in pregnant and lactating women, in CRF. Use with caution while during and operating machines	dyspepsia, dysbacteriosis, Q-T interval prolongation, photosensitivity, allergic reactions	theophylline, acids, anticoagulants, antibacterial drugs with the bacteriostatic action	control of electrocardiogram indices; pro- and prebiotics; taking into account the allergological anamnesis; taking into account the GFR while selecting the dose
<i>Nitroxoline</i>	antibacterial	Do not use in children, pregnant and lactating women; use with caution in CRF	dyspepsia, change of colour of urine, allergic reactions, peripheral neuritis and optic nerve damage	hydroxiquinolines, quinolones	pro- and prebiotics; vitamins of group B; taking into account the allergological anamnesis; taking into account the GFR while selecting the dose
<i>Furazolidin</i>	antibacterial	Do not use in children, pregnant women; in CRF. It does not penetrate into breast milk	dyspepsia, allergic reactions, peripheral neuritis	uricosuric drugs, quinolones; alkalinizing urine; carbonic anhydrase inhibitors, thiazide diuretics	abundant drinking; vitamins of group B; taking into account the allergological anamnesis, antihistamine drugs; taking into account the GFR while selecting the dose
<i>Prednisolone</i>	anti-inflammatory, immuno-depressive, antitoxic,	Take early in the morning hours; it is not allowed to discontinue it abruptly; pulse-therapy; do not use in CRF, AH	ulcerogenic action, withdrawal syndrome, osteoporosis, increase of the BP; increase of the body weight, steroid	NSAIDs, immunoagents, depressant oral antidiabetic drugs	a strict medical control when taking; combined administration with cytostatics in lower doses; gastroprotectors; drugs containing potassium and calcium; antihypertensive therapy

1	2	3	4	5	6
	antishock, anti-allergic, desensitizing	diabetes, decrease of resistance to infections	glucocorticosteroids, barbiturates, acetylcholine, antitumor drugs	a strict medical control when taking combined administration with corticosteroids in lower doses; control of urine and blood - clinical analysis; antiemetic drugs, taking into account the GFR while selecting the dose	
<i>Cyclophosphamide</i>	pulse-therapy, do not use in CRF	dyspepsia, allergic reactions, myelosuppression, hepato-, nephrotoxicity, decrease of resistance to infections	antiplatelet drugs (including heparin, fibrinolytic agents, thrombocytopenia, allergic reactions)	control of blood coagulation, the level of trombocytes in blood and hematuria; taking into account the allergological anamnesis, antihistamine drugs; gradual dose reduction; protamine sulfate	
<i>Heparin sodium</i>	anticoagulant, fibrinolytic	it is used up to 6 times a day; with caution in pregnancy and CRF; it is not used if the risk of bleeding exists and after a hemorrhagic stroke	antiplatelet NSAIDs, fibrinolytic agents, glucocorticosteroids, penicillines, nitrates	control of blood coagulation, the level of trombocytes in blood and hematuria; taking into account the allergological anamnesis, antihistamine drugs; gradual dose reduction; protamine sulfate	
<i>Enoxaparin sodium</i>	anticoagulant, fibrinolytic	prolonged T _{1/2} , possibility to use once per day; injection is recommended, in hemodialysis — i.v. injection; it is not used in children, after hemorrhagic stroke, if the	antiplatelet NSAIDs, fibrinolytic agents, glucocorticosteroids, penicillines	control of blood coagulation, the level of trombocytes in blood and hematuria; protamine sulfate; taking into account the allergological anamnesis, antihistamine drugs; taking into account the GFR while selecting the dose	

1	2	3 risk of bleeding exists; it is used with caution in pregnancy	4	5	6
<i>Pentoxifylline</i>	antiaggregant, vasodilating	do not use in pregnant dyspepsia, hypotonia, allergic reactions	antiplatelet, anticoagulants, antihypertensive, oral antidiabetic drugs	control of the BP level; taking into account the allergological anamnesis, antihistamine drugs	
<i>Diclofenac-sodium</i>	anti-inflammatory	it is used in the lack of glucocorticosteroides effect, it is not used in CRF	NSAID - gasteropathy, Na^+ and water retention, increase the bleeding time, nephrotoxicity	glucocorticosteroides, diuretics, antiplatelet, anticoagulants, antihypertensive drugs	gastroprotectors (misoprostol, bismuth subcitrate, sucralfate), inhibitors of proton pump, taking into account the GFR while selecting the dose
<i>Lespernephryl</i>	hypozotemic, diuretic	do not use in pregnant women, with caution while during and operating machines	allergic reactions	ethanol, hypoazotemic drugs, sedatives, oral antidiabetic drugs	warn about the presence of ethanol in the drug
<i>Epoetin β</i>	anti-anemic (stimulation of erythropoiesis)	with caution in AH, epilepsy, malignant neoplasms, vascular diseases; correction of deficiency of iron, vitamins B_C and B_{12} deficiency prior the therapy	flu-like syndrome, increase of the BP, thrombocytosis, allergic reactions	iron-containing drugs, antihypertensive drugs, folic acid, cyanocobalamin, cytostatics	control of hepatic function and basic blood biochemical values, ferritin level, blood clinical analysis, the BP level; taking into account the allergological anamnesis, antihistamine drugs

1	2	3	4	5	6
<i>Furosemide</i>	diuretic, antihypertensive, de-toxicant	a fast action drug; it is possible to use in CRF should with caution; do not use in pregnancy	dyspepsia, hearing impairment, interstitial nephritis, hypertension, hypovolemia, hypopotassemia, hyperglycemia, hyperuricemia, allergic reactions	cephalosporins, aminoglycosides, diuretics of other groups, antihypertensive drugs, glucocorticosteroids, NSAIDs	potassium-containing drugs (in the absence of CRF); control of the BP, uric acid and sugar level in blood; taking into account the GFR while selecting the dose; taking into account the allergo-logical anamnesis, antihistamine drugs
<i>Methylstilblic acid</i>		intervals between the intake and concomitant therapy drugs	dyspepsia, constipation	absorption of drugs in the gastrointestinal tract	use restrictions in intestine atonia
<i>Lisinopril</i>	antihypertensive, nephroprotective, including antiproteinuric	It does not metabolize in liver, nephroprotective action, «the first dose» effect, it is not used in pregnant and lactating women; increase of blood creatinine <30 % is not an indication to discontinue; use with caution in CRF	hypotension, hyperpotassmia, dry cough, dyspepsia, allergic reactions, increase of urea, creatinine and transaminases level	hypotensive drugs, saluretics, K ⁺ -sparing diuretics, potassium containing drugs, nitrates, NSAIDs	control of the BP level; taking into account the GFR while selecting the dose, control of the blood level of potassium and creatinine level in blood (if creatinine > 0.25 mmol/l, — change for fosinopril), thiazide diuretics, calcium gluconate, glucose + insulin
<i>Drotavertine</i>	antispasmodic	The expressed and long action; it is possible to use in pregnant and lactating women	decrease of the BP, arrhythmia, tachycardia, sensation of heat	antiparkinson drugs, antispasmodics of other groups, antihypertensive drugs	control of the BP

VI. Criteria of efficiency and safety of the therapy conducted

1. Clinical:

- a) rapid relief of the fever symptoms; _____
- b) decrease of dysuric disorders; _____
- c) rapid relief of the edematous syndrome; _____
- d) decrease of blood pressure; _____
- e) rapid relief of the pain syndrome in the renal colic. _____

2. Laboratory:

- a) decrease of proteinuria; _____
- b) normalization of diuresis; _____
- c) normalization of functional indices of kidneys; _____
- d) normalization of urine clinical analysis indices; _____
- e) normalization of blood clinical analysis indices; _____
- f) normalization of nitrogenous exchange indices. _____

3. Instrumental — disappearance of stones in kidneys and urinary tract.

VII. Principles of pharmaceutical care

1. Pharmaceutical care while dispensing medicines for treatment of kidneys and urinary tract diseases.

2. OTC-drugs for treating kidneys and urinary tract diseases. The symptomatic treatment and prevention of urolithiasis:

- antispasmodics of the myotropic action — drotaverine (No-spa); _____
- combined drugs (antispasmodics of the myotropic action + non-narcotic analgesics) — No-spalgin, Spasmalgon; _____
- urolytics — Blemaren, Phytolisin; _____
- uroantiseptics — Canephron N, Urolesan, Phytolit. _____

3. Non-medicamental approaches to urinary tract diseases treatment.

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Topic
CLINICAL PHARMACOLOGY
IN GASTROENTEROLOGY. PHARMACEUTICAL
CARE OF PATIENTS WITH THE SYMPTOMS
OF FUNCTIONAL DIGESTION DISORDERS
(HEARTBURN, NAUSEA, CONSTIPATION,
DIARRHEA, DYSBACTERIOSIS)

I. Symptoms and syndromes in gastroenterology

Appetite disorders, eructation, heartburn, _____
nausea, vomiting, constipation, diarrhea, _____
meteorism; syndromes: gastric dyspepsia, _____
intestinal dyspepsia, maldigestia and mal-
absorption, gastrointestinal bleeding, poly-
hypovitaminosis; asthenoneurotic, anemic
syndromes, pain syndrome. _____

II. The list of nosological units: gastritis and duodenitis; chronic Helicobacter-associated gastritis; stomach ulcer, duodenal ulcer, chronic pancreatitis, dyspepsia, non-infectious gastroenteritis and colitis*.

III. Basic approaches to gastrointestinal diseases therapy

1. Correction of gastric secretion disorders: _____

- a) replacement therapy — gastric juice, _____
pepsin;
- b) stimulation of gastric secretion — _____
drugs from *Plantago major*;
- c) suppression of gastric secretion — _____
 H_2 -receptors antagonists, selective blockers
of M_1 receptor, proton pump inhibitors;
- d) neutralization of gastric juice — ant-
acids. _____

* It is studied as a definition.

2. *Protection of the stomach mucous cells* — gastrocytoprotectors. _____
3. *Correction of metabolic imbalance* — vitamins. _____
4. *Correction of the motion activity disorders and elimination of meteorism:* _____
a) stimulators of peristalsis (cholinomimetic agents), prokinetic and spasmolytic drugs; _____
b) antidiarrheal drugs; _____
c) antiflatulent drugs; _____
d) laxatives. _____
5. *Correction of intestinal digestion disorders* — pancreatic enzyme drugs. _____
6. *Eradication of Helicobacter pylori* — antibacterial drugs. _____

IV. The list of medicines

1. *Drugs for replacement therapy* — betaine-pepsin (Acidin-pepsin), natural gastric juice. _____
2. *Pancreatic enzyme drugs* — pancreatin (Mezym, Kreon, Pancreatin); combinations of pancreatin + bile components + hemicellulose (Festal, Digestal, Enzistal). _____
3. *Drugs for stimulation of gastric juice secretion* — Plantaglucid. _____
4. *Antibacterial drugs (drugs of choice):* _____
a) macrolides — clarithromycin (Clacid); _____
b) penicillines — amoxicillin (Fle-moxin); _____
c) tetracyclines — doxycycline (Vibramycin); _____
d) imidazoles — metronidazole (Trichopol, Flagyl), tinidazole (Tiniba), ornidazole (Meratin, Tiberol). _____

5. *Antacids:*

- a) aluminium phosphate (Phosphalugel); _____
- b) aluminium hydroxide + magnesium hydroxide (Almagel, Alumag, Maalox); _____
- c) combinations of antacids with drugs of other groups _____
- Almagel-Neo, Digene (aluminium hydroxide + magnesium hydroxide + dimethicon or simethicon); _____
- Almagel A (aluminium hydroxide + magnesium hydroxide + benzocaine); _____
- Rennie (calcium carbonate + magnesium carbonate); _____
- Gastromax (calcium carbonate, magnesium hydroxide, famotidine). _____

6. *H₂-receptors antagonists* — ranitidine (Ranisan, Zantak), famotidine (Quamatel).

7. *Proton pump inhibitors* — omeprazole (Losec, Ultop), pantoprazole (Controloc), lansoprazole, rabeprazole (Pariet).

8. *Selective blockers of M₁ receptor* — pirenzepine (Gastrozepin).

9. *Gastrocytoprotectors* — sucralfate (Venter), bismuth subcitrate (De-nol), prostaglandines (Misoprostol), Altan.

10. *Prokinetics* — metoclopramide (Cerucal), domperidone (Motilium).

11. *Spasmolytic drugs* — papaverine, drotaverine hydrochloride (No-spa); mebeverine (Duspatalin).

12. *Antiflatulent drugs* — simethicone (Espumisan), dimethicone.

13. *Antidiarrheal drugs:*

- a) enterosorbents — medical activated carbon, attapulgite, diosmectite (Smecta), methylsilicic acid (Enterosgel), polyphepan; _____

b) antiperistaltic drugs — loperamide
(Imodium, Lopedium). _____

14. *Laxatives:*

- a) stool softners — fluid paraffin (Vaseline oil); _____
- b) stimulant laxatives — bisacodyl (Bisacodyl, Stadalax), castor oil, sennosides (Senadex, Senade, Senadexin), Rhamnus cathartica glycosides (bark and syrup of Rhamnus cathartica), sodium picosulfate (Guttalax, Angiolax); _____
- c) bulk-forming agents — drugs from seeds of Plantago major (Mucofalk orange, Transilane); _____
- d) hyperosmotic laxatives — magnesium sulfate, lactulose (Dufalac, Lactuvit, Normase), macrogol (Forlax); _____
- e) laxatives in enemas — docusate sodium (Norgalax); _____
- f) other laxatives — glycerol (glyceric suppositories Ameda). _____

15. *Microbial drugs:*

- a) lactobacteria (Lactobacterin, Lactobacterin acidophillus); _____
- b) prebiotics (Hylak, Hylak-forte); _____
- c) combined drugs (Biosporin, Bifiform, Bificol dry, Yoghurt, Linex, Pro-biovit). _____

16. *Combined drugs for Helicobacter pylori eradication:*

- a) Pylobact (clarithromycin + tinidazole + omeprazole); _____
- b) Clatinol (lansoprazole + clarithromycin + tinidazole); _____
- c) Gastropak (amoxicillin + metronidazole + bismuth subcitrate); _____

- d) Helicocin (amoxicillin + metronidazole); _____
e) Ornistat (rabeprazole, ornidazole, clarithromycin). _____

V. Clinical pharmacology of drugs used in gastroenterology
(See Table 7).

VI. Criteria of efficiency and safety of the therapy conducted

1. Clinical:

- a) the pain syndrome reduction; _____
b) disappearance or decrease of heartburn, eructation, nausea, vomiting, meteorism, diarrhea, constipation; _____
c) improvement of the general state of health. _____

2. Laboratory:

- a) normalization of the gastric juice pH; _____
b) eradication of H. pylori; _____
c) disappearance of gastroenteric bleeding signs; _____
d) disappearance of creatorrhea, steatorrhea. _____

3. Instrumental — reduction of inflammation signs, ulcer defect healing according to the results of fibrogastroduodenoscopy. _____

Table 7

Clinical pharmacology of drugs used in gastroenterology

International nonproprietary name of a drug	Pharmacodynamics			Interaction with drugs of other groups	Prevention and treatment of adverse effects
	basic effects	peculiarities of a drug and its administration	adverse effects		
1	2	3	4	5	6
<i>Acidin-pepsin</i>	increase of gastric juice acidity, proteolytic	take with meal	allergic reactions	antacids	collection of the allergological anamnesis
<i>Pancreatin</i>	lipolytic, amylolytic, proteolytic	do not break a capsules	allergic reactions	significant interactions have not been described	collection of the allergological anamnesis
<i>Clarithromycin</i>	antibacterial	correct the dose in CRF	dyspepsia, allergic reactions	theophylline, carbamazepine	pro- and pre-biotics
<i>Amoxicillin</i>	antibacterial	correct the dose in CRF	allergic reactions, dyspepsia	metronidazole	pro- and pre-biotics, test of allergy
<i>Amoxicillin potentiated by clavulanate</i>	antibacterial	it should not be administered when infectious mononucleosis is suspected	allergic reactions, dyspepsia	probencid, combined oral contraceptives	pro- and pre-biotics, test of allergy
<i>Doxycycline</i>	antibacterial	it is not used in patient with hepatic disorders	dyspepsia, allergic reactions	drugs containing calcium or iron, antacids, milk	pro- and pre-biotics

1	2	3	4	5	6
<i>Metronidazole</i>	antimicrobial, antiprotozoal	disulfiram-like reaction	dyspepsia, metallic taste in the mouth, candidosis of mucous cavity of mouth and intestine	indirect agulants, salts of lithium, barbiturate, phenytoin, disulfiram	pro- and prebiotics
<i>Aluminium hydroxide</i>	antacid	it is used 2 hours before or after other oral drugs administration and 4 hours before or after fluoroquinolones intake	constipation, osteoporosis, encephalopathy during long-term administration	any oral drugs taken simultaneously	administration of laxatives
<i>Ranitidine</i>	antisecretory	development of withdrawal syndrome is possible	allergic reactions, AV-blockade, bradycardia, headache, dizziness	sucralfate, bismuth-containing drugs, antiacids, metoprolol, itraconazole, ketoconazole	symptomatic therapy
<i>Omeprazole</i>	antisecretory, antihelicobacterial	prior the therapy it is necessary to exclude a malignant neoplasm of the stomach	headache, nausea, diarrhea, constipation, meteorism, general weakness, skin rash	diazepam, diazepam, conazole, clarithromycin, iron containing drugs	symptomatic therapy
<i>Pirenzepine</i>	antisecretory	it is taken with caution in glaucoma and hypertrophy of the prostate	feeling of dryness in the mouth, accommodation disorders, diarrhea	anticholinergic drugs of other groups, metoclopramide, narcotic analgesics, H ₂ -receptors antagonists	collection of the allergological anamnesis

1	2	3	4	5	6
<i>Sucralfate</i>	cytoprotective	it is taken with caution in patients with CRF, hypophosphatemia	constipation, feeling of dryness in the mouth, nausea, vomiting, dizziness	it should be taken in fasting condition and in 30 min before or after antacids administration	collection of the allergological anamnesis
<i>Bismuth subcitrate</i>	cytoprotective, antihelicobacterial	it should not be combined with alcohol, milk, faeces becomes black, it acts only in the acidic medium and in the presence of ulcerous defect	nausea, vomiting, frequent stool, skin rash, itch	tetracycline, drugs decreasing acidity	collection of the allergological anamnesis
<i>Metoclopramide</i>	antiemetic, prokinetic	it is used with caution in patients with asthma, AH	somnolence, headache, buzzing in the ears, constipation, diarrhea, dryness in the mouth, allergic reactions	ethanol, somnolent drugs, ASA, paracetamol, diazepam, tetracycline, ampicillin, digoxin	collection of the allergological anamnesis
<i>Domperidone</i>	prokinetic	it is used with caution in patients with hepatic insufficiency	enterospasms, extrapyramidal disorders, allergic reactions	anticholinergic drugs of other groups, antacid and antisecretory drugs	collection of the allergological anamnesis

1	2	3	4	5	6
<i>Mebeverine</i>	spasmolytic	it is not used in patients with hypotension, angina pectoris	allergic reactions, dizziness, hypotension	clinically significant interactions have not been found	a strict compliance with dosage and terms of administration, collection of the allergological anamnesis
<i>Drotaverine</i>	spasmolytic	it is not used in patients with hypotension, angina pectoris	dizziness, tachycardia, feelings of heat, hyperhidrosis, decrease of the BP and arrhythmia in case of i.v. administration	levodopa	collection of the allergological anamnesis, drugs increasing the BP
<i>Prostaglandin</i>	cytoprotective	it is used with caution in patients with hypotension, lesions of coronary and cerebral arteries	headache, pain in area of stomach, dyspepsia	magnesium containing antacids	a strict compliance with dosage and terms of administration
<i>Fluid paraffin</i>	laxative	it is not used in intoxication with phosphorus and organophosphorus compounds	nausea, anorexia, hypovitaminosis A, D, K, irritation and itch in the anal area	liposoluble anti-helmintic drugs	limitation of duration of its administration
<i>Bisacodyl</i>	laxative	it is used with caution in patients with the prostate diseases	spastic pain in the area of the stomach	antacids	limitation of duration of its administration

1	2	3	4	5	6
<i>Sennosides</i>	laxative	intake for the night or in the morning on an empty stomach	nausea, vomiting, diarrhea, spastic pain in area of stomach	antacids	limitation of duration of its administration
<i>Sodium picosulfate</i>	laxative	taste-free, it is possible to add to food for children. It is not used daily without the physician control more than 10 days	diarrhea that leads to the loss of water and electrolytes, weakness, cramps, arterial hypotension, abdominal pain	cardiac glycosides, diuretics, corticosteroids, antibiotics	limitation of duration of its administration
<i>Drugs from Plantago major seeds</i>	stimulation acid formation in the stomach	the effect comes in 6 hours	allergic reactions	clinically significant interactions have not been found	limitation of duration of its administration
<i>Magnesium sulfate</i>	laxative	antagonism with calcium containing drugs	suppression of CNS	hypotensive and sedative drugs, calcium-containing drugs	limitation of duration of its administration
<i>Lactulose</i>	laxative	it is used in dysbacteriosis, intoxications of different etiology	meteorism	antibiotics	limitation of duration of its administration
<i>Macrogol</i>	laxative	the long-term administration is not recommended	pain in stomach	it decreases the absorption of other drugs with simultaneous peroral administration	limitation of duration of its administration
<i>Docusate sodium</i>	laxative	it is used rectally	feelings of burning in the anal area	clinically significant interactions have not been found	limitation of duration of its administration

VII. Principles of pharmaceutical care

1. Pharmaceutical care when treating heartburn:

- a) the main causes of heartburn origin;
- b) «threatening» sings in heartburn;
- c) the algorithm of patient — pharmacist conversation in heartburn;
- d) principles of the rational choice of drugs for heartburn treatment;
- e) the list of OTC-drugs for symptomatic treatment of heartburn:

• see section «The list of medicines.

Antacids;

f) general recommendations for patients with heartburn complaints.

2. Pharmaceutical care when treating constipation:

- a) the main causes of constipation origin;
- b) «threatening» symptoms in constipation;
- c) the algorithm of patient — pharmacist conversation in constipation;
- d) principles of the rational choice of drugs for constipation treatment;
- e) the list of OTC-drugs for symptomatic treatment of constipation:

• see section «The list of medicines.

Laxatives;

f) general recommendations for patients with constipation complaints.

3. Pharmaceutical care when treating diarrhea:

- a) the main causes of diarrhea origin;
- b) «threatening» sings of diarrhea;
- c) the algorithm of patient — pharmacist conversation in case of diarrhea;

- d) principles of the rational choice of drugs for diarrhea treatment;
e) the list of OTC-drugs for symptomatic treatment of diarrhea:

- see section «The list of medicines. _____

Antidiarrheal drugs: enterosorbents, _____
antiperistaltic drugs. Microbial drugs. _____

Pancreatic enzyme drugs»; _____

- oral rehydration solution — Rehydrone; _____

- f) general recommendations for patients with diarrhea complaints.

4. Pharmaceutical care when treating meteorism:

- a) the main causes of meteorism origin;

- b) «threatening» signs of meteorism;

c) the algorithm of a patient — pharmacist conversation in case of meteorism;

d) principles of the rational choice of drugs for meteorism treatment;

- e) the list of OTC-drugs for symptomatic treatment of meteorism:

- see section «The list of medicines. _____

Antidiarrheal drugs: enterosorbents. _____

Antiflatulent drugs. Pancreatic enzyme drugs»; _____

- drugs of dill, fruits of fennel, fruits of cumin, flowers of chamomile; _____

f) general recommendations for patients with meteorism complaints.

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Topic

CLINICAL PHARMACY IN HEPATOLOGY

I. Symptoms and syndromes in hepatology

Skin itch, fever, ascitis, syndrome of jaundice, syndrome of dyspepsia, syndrome of portal hypertension, hepatolienal syndrome, syndrome of hepatic failure, laboratory syndromes (syndrome of cytolysis, cholestasis, hepatocellular failure). _____

II. The list of nosology units: chronic hepatitis, cirrhosis of liver, cholelithiasis, chronic cholecystitis.

III. Basic approaches of the therapy of the hepatobiliary system diseases

1. *Restoration of impaired metabolism* — hepatoprotective drugs, drugs of deoxycholic acid, hypoammonemic drugs, vitamins. _____

2. *Removal of etiologic factors* — antibacterial drugs, antiviral drugs. _____

3. *Correction of the immune response* — immunomodulators, corticosteroids. _____

4. *A rapid relief of the active inflammatory process* — corticosteroids. _____

5. *Restoration of impaired biliary excretion* — choleretics and cholekinetics, spasmyotics. _____

6. *A rapid relief of the pain syndrome* — spasmyotics. _____

7. *Desintoxication therapy* — infusion drugs, hypoammonemic drugs. _____

IV. The list of medicines

1. *Hepatoprotectors* — ademetionine (Hep-tral), Silymarin (Legalon, Carsil, Silibore), drugs of artichoke (Chophytol), essential phospholipids (Essentiale N), combined drugs (Hepabene, Hepatofalk planta), Thiotriazolin. _____
2. *Antiviral drugs* — ribavirin (Hepavirin, Rebetol, Ribavirin Rosh, Ribamidil). _____
3. *Immunomodulators* — α -Interferon (Riferon, Viferon), PEG Interferon α (Pegasis), β -Interferon (Rebif, Betaferon). _____
4. *Corticosteroids* — methylprednisolone (Methylprednisolone, Metypred), prednisolone. _____
5. *Drugs of Bile Acids* — chenodeoxycholic acid (Chenofalk), ursodeoxycholic acid (Ursosfalk, Ursochol). _____
6. *Antibacterial drugs*:
 - a) penicillins — Amoxicillin, Augmentin; _____
 - b) cephalosporins — Ceftriaxon, Ceftazi-dime; _____
 - c) fluoroquinolones — Ciprofloxacin. _____
7. *Enterosorbents* — methylsilicic acid (Enterosgel), absorbed carbon (Sorbex), polyphepan. _____
8. *Vitamins* — thiamine (Vitamin B₁), riboflavin (Vitamin B₂), pyridoxine (Vitamin B₆), cyanocobalamin (Vitamin B₁₂), ascorbic acid (Vitamin C). _____
9. *Hypoammonemic drugs* — lactulose (Lactulose, Duphalac), arginine glutamate (Glutargin), Ammonal. _____
10. *Combined choleretics* — Allochol, Cholenzyme, Choliver. _____

11. *Cholekinetics* — magnesium sulfate, sorbitol. _____
12. *Spasmolytic* — drotaverine (No-Spa), mebeverine (Duspatalin). _____

V. Clinical pharmacology of drugs used to treat the hepatobiliary system diseases (See Table 8).

VI. Criteria of efficiency and safety of the therapy conducted

1. *Clinical:* _____
a) a rapid relief of pain; _____
b) disappearance of icterus symptoms; _____
c) normalization of temperature; _____
d) disappearance of skin itch; _____
e) normalization of appetite; _____
f) removal of ascites; _____
g) decrease of gum and nasal bleedings. _____
2. *Laboratory:* _____
a) decrease the levels of cytolysis indicators of hepatocytes (alanine aminotransferase, aspartate aminotransferase, lactate dehydrogenase), indicators of cholestasis (alkaline phosphatase, γ -glutamyl-transpeptidase) in the blood serum; _____
b) normalization of the levels of general, direct and indirect bilirubin in the blood serum; _____
c) normalization of the levels of general albumin and albuminous fractions and removal of dysproteinemias in the blood serum; _____
d) normalization of the levels of sialic acids, seromucoid, fibrin in the blood serum; _____
e) decrease of the levels of seromarkers of viral hepatitis, titres of antinuclear antibodies; _____

f) normalization of indices of general urine analysis; _____

g) normalization of indices of general blood analysis. _____

3. *Instrumental:*

a) normalization of sizes of the liver, spleen, gallstone or its walls; the structure of parenchima of the liver when ultrasound research is conducted; _____

b) normalization of the parenchyma structure of the liver when performing puncture biopsy; _____

c) results of cholecystography and cholangiography. _____

VII. Principles of pharmaceutical care

1. Pharmaceutical care while dispensing OTC-drugs for patients with the biliary diseases and disease of the liver.

2. OTC-drugs for treating biliary diseases and diseases of the liver:

• see section «The list of medicines. _____

Hepatoprotectors. Sorbents. Hypoammonemic drugs. Combined choleretics. _____

Cholekinetics. Spasmolytics». _____

3. Non-medicamental approaches to treatment of biliary diseases and diseases of liver.

Table 8

Clinical pharmacology of drugs used to treat the hepatobiliary system diseases

International nonproprietary name of a drug	Pharmacodynamics			Interaction with drugs of other groups	Prevention and treatment of adverse effects
	basic effects	peculiarities of a drug and its administration	adverse effects		
1 <i>Ademethionine</i>	2 anticholestatic, antidepressive	3 it is not recommended to take before going to bed, because it possesses the restorative action	4 discomfort in epigastric area	clinically significant interactions have not been observed	it is taken between meals
<i>Drugs of silymarin</i>	hepatoprotective	it is taken after meals, the course of treatment is not less than 3 months	sometimes — the purgative action, allergic reactions	clinically significant interactions have not been observed	symptomatic treatment
<i>Drugs of (artichoke) topinambour</i>	hepatoprotective, bile-expelling	it possesses the desintoxication and diuretic activity, it can be used in fetoplacental insufficiency	diarrhea occurs during the prolonged administration in high doses	clinically significant interactions have not been observed	compliance with the dosage regimen, symptomatic treatment
<i>Essential phospholipids</i>	hepatoprotective	it is not recommended in cholestasis	diarrhea occurs during the prolonged administration in high doses	clinically significant interactions have not been observed	compliance with the dosage regimen, symptomatic treatment

1	2	3	4	5	6
<i>Hepabene</i>	hepatoprotective, bile-expelling, cholespasmodolytic	it is contra-indicated in acute inflammatory diseases of the liver and bile ducts	purgative action, increase of diuresis, allergic reactions	clinically significant interactions have not been observed	symptomatic treatment
<i>Hepatofalk Planta</i>	hepatoprotective, it renders the papaverine-like spasmolytic action on the smooth musculature; possesses the anti-inflammatory and antibacterial activity		clinically significant interactions have not been observed	it is taken between meals	
<i>Thiotriazoline</i>	hepatoprotective, cardioprotective	it is used to treat ischemic heart disease: inhibits the suppression of the retractive activity of the heart, decrease the areas of necrosis and ischemia, improves rheological properties of the blood	they are not observed with acid reaction	drugs with the therapeutic doses	compliance with the dosage regimen
<i>Arginine glutamate</i>	it reduces the level of ammonia in blood, hepatoprotective	it is effective for a prophylaxis and treatment of hepatic encephalopathy; it is administered with caution in inflammatory diseases of the stomach and duodenum; it can stimulate the secretion of insulin and the growth hormone	sometimes there is a discomfort in the epigastric area, nausea	aminophylline, antiaggregants	the dyspepsia phenomena disappear independently

1	2	3	4	5	6
<i>Interferon alfa-2a or alfa-2b</i>	immunomodulatory	it is prescribed only in case of the confirmed replication of hepatitis B and C virus during 6–12 months. It is not prescribed with the history of autoimmune hepatitis and other autoimmune diseases on the background of immunodepressants administration	the flu-like syndrome; erythro-, leuko- and/or thrombocytopenia; development of hypotension – it is possible	in chronic hepatitis C it is preferably prescribed with Ribavirin	control of the peripheral blood composition; in the flu-like syndrom — Paracetamol; in case of hypotension — adequate hydration of the organism
<i>Ribavirin</i>	antiviral	monotherapy in hepatitis C is not effective. It is not prescribed in autoimmune hepatitis and other autoimmune diseases in anamnesis on the background of immunodepressants administration	erythro-, leuko- and/or thrombocytopenia; headache, somnolence; dyspepsia	in case of chronic hepatitis C it is prescribed only with α -interferon	control of the peripheral blood composition, symptomatic treatment in asthenia and dyspepsia
<i>Prednisolone</i>	see Table 4	see Table 4. It is prescribed only in case of autoimmune hepatitis and active hepatocirrhosis	see Table 4	immunomodulators	see Table 4

1	2	3	4	5	6
<i>Ursodeoxy-cholic acid</i>	cholelitholytic	hepatoprotective, antioxida-tive, antitoxic, antifibric, spas-molytic, analgetic, choleretic, cholekinetic and immuno-modulative	calcinoses of concrements, decompensa-tion is some-times ob-served in case of primary biliary cirrho-sis	aluminium containing antiacid; antidiabetic drugs	X-ray photogra-phy, cholecysto-graphy, ultrasound examination should be con-ducted in 6–10 months to reveal calcinosis. In case of decompensa-tion it is neces-sary to continue the treatment with 1 capsule per day with gradual increasing the dose (one capsule more per week) to achieve the dose required
<i>Amoxycillin</i>	see Table 5	see Table 5. It penetrates into the bile-excreting tract and can be used in pregnant women	see Table 5	Metronidazol	see Table 5
<i>Ceftriaxone</i>	see Table 5	see Table 5. It penetrates into the bile-excreting tract	see Table 5	see Table 5	see Table 5

1	2	3	4	5	6
<i>Ciprofloxacin</i>	see Table 5	see Table 5. It penetrates into the bile-excreting tract	see Table 5	see Table 5	see Table 5
<i>Polyphepan (Liginin hydrolysed)</i>	detoxificant	It possesses the hypocholes- teremic action	dyspepsia, constipation	adsorption drugs in the gastrointestinal tract	symptomatic treatment
<i>Methylsilicic acid</i>	reduces the level of nitrogen in blood, detoxificant	intervals between the use of concomitant drugs	dyspepsia, constipation	adsorption drugs in the gastrointestinal tract	limitation of administration in the case of atony of the intestine
<i>Lactulose</i>	laxative, reduces the level of ammonium in blood	it is used in hepatic encephalopathy, hypercholesterolemia, dysbacteriosis, intoxications of different etiology	flatulence	antibiotics	limitation of administration duration
<i>Allochol</i>	choleretic, laxative, sorbing	it is with caution used in patients with cholelithiasis, it is not prescribed in acute hepatitis, obturative jaundice	allergic reactions and diarrhea	choleretics	symptomatic treatment
<i>Choliver</i>	choleretic, hepatoprotective	it renders the diuretic, anti-toxic, antilulcerous action. It is also used in chronic atony constipations, gastric and duodenal ulcer, oliguria because of cardiac insufficiency and cirrhosis of the liver	rarely allergic reactions or diarrhea	clinically significant interactions or have not been observed	symptomatic treatment

1	2	3	4	5	6
<i>Magnesium sulfate</i>	bile-expelling	it renders the sedative, spasmolytic, laxative action, decreases the level of the blood pressure (in case of arterial hypertension)	suppression of the CNS	hypotensive and sedative drugs, drugs of calcium	limitation of administration duration
<i>Mebeverine</i>	spasmolytic	it is not used in patients with hypotension, angina pectoris, possible development of vertigo, decrease of the blood pressure	allergic reactions	clinically significant interactions have not been observed	a strict dosage regimen and terms of administration, collection of the allergico-logical anamnesis

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Topic

CLINICAL PHARMACY IN HEMATOLOGY

I. Symptoms and syndromes in hematology

Circulatory and hypoxic syndrome, syndrome of sideropeniae, hematological syndrome, neurological syndrome, hemorrhagic syndrome, asthenoneurotic syndrome.

II. The list of nosology units: anaemia (iron-deficient anemia, megaloblastic anaemia — Vitamin-B₁₂- and folic acid deficiency anemia, hemolytic anaemia); hemoblastosis* (acute leucosis; myelosis; chronic lymphatic leukemia; erythremia).

III. Basic approaches of the hematological diseases therapy

1. *Removal of etiologic factors* — bleeding, helminthic invasion, unbalanced nutrition, intake of drugs, chronic diseases of gastrointestinal tract).

2. *Elimination of iron deficiency and vitamins* — drugs of iron, ascorbic acid, vitamin B₁₂ and folacin.

3. *Multichemotherapy, immunosuppressive and X-ray therapy.*

4. *Stimulation of erythropoiesis* — recombinant erythropoietins.

IV. The list of medicines

1. *Iron-containing drugs:*
a) *bivalent iron* — iron sulfate (Tardyferon, Ferrogradumet), iron chloride (Hemofer), iron fumarate (Heferol), iron gluconate (Megaferin, Ferronal);

* It is studied as a definition.

- b) trivalent iron for peroral and parenteral administration — ferric(III)-hydroxide polymaltose complex (Ferrum Lek, Maltofer); _____

- c) combined drugs — Aktiferrin, Gynotardyferon, Haemoferon, Globiron-N, Ranferon, Sorbifer durules, Totema, Ferroplect. _____

2. Cyanocobalamin (Vitamin B₁₂), folic acid (Tifol, Folacin), ascorbic acid (Vitamin C). _____

3. Recombinant erythropoietins — Epoetin β (Recormon). _____

V. Clinical pharmacology of drugs used in hematology (See Table 9).

VI. Criteria of efficiency and safety of the therapy conducted

1. Clinical:

- a) normalization of the skin colour (disappearance of pallor, icteritiousness); _____

- b) restoration of the working capacity, disappearance of weakness, dizziness; _____

- c) disappearance of shortbreathing and palpitation; _____

- d) disappearance or decrease of signs of glossitis, taste restoration; _____

- e) the absence of dyspepsic disorders. _____

2. Laboratory:

- a) the presence of reticulocytosis; _____

- b) normalization of the haemoglobin level; _____

- c) normalization of the red blood cells amount; _____

- d) normalization of morphology of red blood cells (disappearance of poikilocytes, megalocytes, Kebot's rings, Jolly's corpuscle); _____

- e) normalization of the ferritin level; _____
f) normalization of the total iron-binding ability of serum; _____
g) normalization of transferrin saturation degree. _____
3. *Instrumental:* decrease of sizes of the liver, spleen. _____

VII. Principles of pharmaceutical care

1. Pharmaceutical care while dispensing OTC-drugs to the patients with anemic states.
2. Pharmaceutical care while dispensing prescription drugs to the patients with anemic states.
3. OTC-drugs for treatment of anemic states:

- Haemoferon*, Megaferin, Totema*, Ferroplex*, Ferramin-Vita*, Ferrohaematinogen, Fenules*. _____

4. Non-medicamental approaches to treatment of anemic states.

* Combined drugs.

Table 9

Clinical pharmacology of drugs used in hematology

International nonproprietary name of a drug	basic effects	Pharmacodynamics			Interaction with drugs of other groups	Prevention and treatment of adverse effects
		peculiarities of a drug and its administration	adverse effects	4		
1	2	3				6
<i>Drugs of Fe²⁺ (orally)</i>	anti-anemic	food containing tan-nins; milk; it is taken after meals, the course of therapy is continued long-term for 2 months after normalization of the haemoglobin level	dyspepsia, allergic reactions, dark coloration of stool; during the administration of the haemoglobin level	antacids, ascorbic acid, tetracyclines, fluoroquinolones	washing out of the stomach with 1% solution of soda, antidote therapy — Deferoxamine	
<i>Drugs of Fe³⁺ (orally)</i>	anti-anaemic	see <i>Drugs of Fe²⁺ (per os)</i>	dyspepsia rarely	c.M. Drugs of Fe ²⁺ (per os)	antidote therapy — Deferoxamine	
<i>Drugs of Fe³⁺ (paren- terally)</i>	anti-anaemic	i.v. — according to the scheme, i.m. — in twenty-four hours, slowly; do not allow the drug get into the subcutaneous fatty tissue	arterial hypotension occurs rarely, headache, dyspepsia, anaesthesia, arthralgia, headache, phylactic reactions, infiltration in the site of injection	it is not use with drugs of the allergic reaction anti-histaminic drugs, cortico-steroids, epinephrine are used	in the case of iron, the interval is not less than 5 days	

1	2	3	4	5	6
<i>Cyanocobalamin</i>	anti-anemic	parenteral injection with control of the level of white blood cells, red blood cells and blood coagulation; it is prescribed with caution in patients with angina pectoris	allergic reactions, headache, pain in the area of the heart, tachycardia	Thiamine, Riboflavin	discontinuance of the drug; if necessary, restart the treatment with low doses
<i>Folic acid</i>	anti-anemic	if it is impossible to find the cause of megaloblastic anemia, it is prescribed together with cyanocobalamin	allergic reactions	antiacids, antibiotics, combined oral contraceptives, antiepileptic drugs, sulphonamides, cytostatics	taking into account the allergiological anamnesis, antihistaminic drugs
<i>Epoetin beta</i>	anti-anemic	it should be administered with caution in arterial hypertension, epilepsy, thrombocytosis, malignant tumors, vascular diseases; prior the therapy the correction of deficiency of iron, folacin and vitamin of B ₁₂ should be conducted	the flu-like syndrome, increase of the blood pressure, thrombocytosis, allergic reactions	hypotensive drugs, drugs of iron, folacin and vitamin of B ₁₂ , cytostatics	weekly control of the hepatic function, basic biochemical indices of blood, the ferritin level, clinical blood count, blood pressure

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Topic

CLINICAL PHARMACY IN ENDOCRINOLOGY

I. Symptoms and syndromes in endocrinology

Polyuria, polydypsia, polyphagia, exophthalmos, tachycardia, goiter, syndrome of hyperglycemia, syndrome of hypoglycemia, syndrome of hyperthyroidism, syndrome of hypothyroidism, syndrome of diabetic foot, syndrome of iodine deficiency.

II. List of nosology units: diabetes mellitus (insulin-dependent and non-insulin-dependent), hyperthyroidism, hypothyroidism, complications of diabetes mellitus, endemic goiter.

III. Basic directions of the therapy of the endocrine diseases

Insulin-dependent diabetes mellitus, non-insulin-dependent diabetes mellitus

1. *Normalization of the glucose level in blood* — medicinal nutrition, insulin, peroral drugs, decreasing the glucose level in blood serum (biguanide, derivatives of sulphonylurea, etc.).

2. *Normalization of exchange of lipids, albumins, vitamins, oligoelements* — statines, fibrates, vitaminic-mineral complexes.

3. *Treatment of complications* — angiopathy, neuropathy — co-enzymes, angioprotectors, antiaggregants, vasodilators, antioxidants.

Hyperglycemic, hyperketonemic, acidotic coma

1. *Removal of insulin deficiency and normalization of the carbohydrate exchange.*

2. *Rehydration of the organism.*

3. Restoration of the electrolytic balance. _____
4. Correction of the acid-base balance. _____
5. Normalization of the cardiovascular system activity. _____
6. Restoration of glucose (glycogen) in the organism. _____

Hypoglycemic coma

1. Treatment of the precomatose state — intake of the easily absorbed carbohydrates. _____
2. Treatment of the comatose hypoglycemic state — injection of glucose and the glucose-insulin mixture. _____

Hyperthyroidism

1. Thyrostatic therapy. _____
2. Immunosuppressive therapy — corticosteroids (thyrotoxic crisis). _____
3. Symptomatic treatment — β -blockers, sedative drugs, tranquilizers, antihypertensive drugs. _____

Hypothyroidism, endemic goiter

1. Replacement therapy — thyroid hormones. _____

IV. The list of medicines

1. Insulin (of short, average duration, prolonged action) — Acrtapid, Monotard, Lantus. _____

2. Biguanides — metformin (Siofor). _____
3. Derivatives of sulphonylurea — glibenclamide (Maninil), glipizide (Minidiab), gliquidone (Glurenorm), gliclazide (Diabeton), glimepiride (Amaryl). _____

4. Combined drugs containing derivatives of sulphonylurea and biguanides — Glibomet. _____
5. Inhibitors of α -glucosidase — Acarbose (Glucobay). _____
6. Thiazolidindions — Roziglitazone (Avandia), Pioglitazone (Pionorm). _____
7. Other peroral sugar lowering drugs — repaglinide (Novonorm). _____
8. Thyroid hormone — levothyroxine sodium (L-thyroxin). _____
9. Sulphur-containing imidazole derivatives — thiamazole (Thyrozol). _____
10. Drugs of iodine used in thyroid gland diseases — potassium iodide (Iodid-Farmak, Iodomarin). _____

V. Clinical pharmacology of drugs used in endocrinology (See Table 10).

VI. Criteria of efficiency and safety of the therapy conducted

1. *Clinical:*
 - a) improvement of the general state of a patient; _____
 - b) retaining of the work capacity; _____
 - c) disappearance or decrease of strong of thirst, dryness in the mouth, polyuria; _____
 - d) normalization of the patient's body weight. _____
2. *Laboratory:*
 - a) normalization of the relative density of urine; _____
 - b) normalization of day's diuresis; _____
 - c) absence of glucosuria; _____
 - d) achievement of the target levels of glycemia on an empty stomach and after meals; _____

- e) normalization of biochemical indices of nitrous, lipid, pigment exchange; _____
f) the glycated hemoglobin level does not exceed 6.5%; _____
g) normalization of the levels of T_3 , T_4 , thyroid stimulating hormone and the level of antibodies to thyroglobulin. _____

3. *Instrumental:*

- a) electrocardiogram; _____
b) the eye ground state; _____
c) estimation of the neurological status. _____

VII. Principles of pharmaceutical care of patients

1. Pharmaceutical care while dispensing drugs for patients with endocrine diseases.
2. OTS-drugs for treating endocrine diseases. Symptomatic treatment and prophylaxis of endemic goiter:

- drugs of iodine used in diseases of the thyroid gland: potassium iodide (Iodid-Farmak, Iodomarin).

3. Non-medical approaches to treatment of endocrine diseases.

Table 10

Clinical pharmacology of drugs used in endocrinology

International nonproprietary name of a drug	Pharmacodynamics			Prevention and treatment of adverse effects	
	basic effects	peculiarities of a drug and its administration	adverse effects	Interaction with drugs of other groups	
1	2	3	4	5	6
<i>Metformin</i>	hypoglycemic	it is used with caution in people over 65 years old, promoter to decrease of the body weight	diarrhea, lactoacidosis	other drugs, which reduce sugar, nonsteroid anti-inflammatory drugs, corticosteroids, combined oral contraceptives, thyrotropic drugs, diuretics, ethanol	control of hepatic and renal function, the lactate level every 6 months, not less than 2 times a year
<i>Gliben-clamide</i>	hypoglycemic	it is used with caution in elderly people	hypoglycemia, dyspepsia, photosensibilization, cardio-toxicity	other drugs, which reduce sugar, sulfonamides, barbiturates, corticosteroids, thyrotropic drugs, β -blockers, sympathomimetics, alcohol and blockers of H ₂ -histaminoreceptors	limitation of the sun exposure, regular control (one time per month) of the total blood and urine analysis

1	2	3	4	5	6
<i>Glimepiride</i>	hypoglycemic	limitation of administration for dyspepsia, abnormalities of vision, increase of transaminases activity, decrease of attention and the rate of psychomotor reactions	hypoglycemia, dyspepsia, abnormalities of vision, increase of transaminases activity, decrease of attention and the rate of psychomotor reactions	other drugs, which reduce sugar, fibrates, miconazole, pentoxifylline, quinolones, salicylates, sulfonamides, corticosteroids, sympathomimetics, combined oral contraceptives, alcohol, blockers of H ₂ -histamine receptors, thyrotropic drugs	regular control (one time per month) of the total blood and urine analysis
<i>Acarbose</i>	hypoglycemic	the use in food of sugar-raw can lead to intestine dysfunctions; tablets should not be chewed	dyspepsia intensifying if the diet is broken; increase of the transaminases level	other drugs, which reduce sugar; antacids, enterosorbents and digestive enzymes	drinks and dishes, containing carbohydrates should be exclude from ration for 4–6 hours
<i>Roziglitazone</i>	hypoglycemic	it is used with caution in patients with chronic cardiac failure	headache, peripheral edema, anemia, increase of the body weight	other drugs, which reduce sugar, ketoconazole, fluconazole	control of the hemoglobin level

1	2	3	4	5	6
<i>Repaglinide</i>	hypoglycemic	limitation of administration for reactions people operating machines	dyspepsia, allergic reactions	non-selective β -adrenergic blockers, nonsteroid anti-inflammatory drugs, alcohol, combined oral contraceptives, thiazide diuretics, corticosteroids, thyrotropic drugs, sympathomimetics, inhibitors of microsomal enzymes of the liver	control of glycemia
<i>Thiamazole</i>	antithyroid	it is necessary to address a doctor in case of fever, matopoesis, chill, cough, sore throat, inflammations of mucous membrane of the oral cavity, furuncles	allergic reactions, suppression of hematopoiesis, dyspepsia	β -adrenergic blockers, amiodarone, sulphonamides, metamizol sodium, cytostatics, drugs containing iodine	collection of allergological anamnesis, control of the peripheral blood indices
<i>Levothyroxine sodium</i>	stimulation of all types of metabolism, growth and differentiation of tissues	it is used with caution in elderly people, with diseases of the cardiovascular system, diabetes mellitus	in high doses manifestations of the hyperthyroidism syndrome	insulin, anticoagulants, combined oral contraceptives, β -adrenergic blockers	careful selection of a dose

1	2	3	4	5	6
<i>Potassium iodide</i>	restoration or inhibition of thyroid hormones synthesis	it possesses the mucolytic effect. Preventive administration in the case of iodine insufficiency should be continued in the period of pregnancy	allergic reactions, manifestations of hyperthyroidism	potassium-sparing, thyrostatic drugs	the intake should be discontinued in case of the signs of «iodism» («metallic» taste in the mouth, rhinitis, conjunctivitis, dermatitis, intense salivation, hyperthermia, acne)
<i>Insulin</i>	hypoglycemic, anabolic (assimilation of carbohydrates, albumins and fats)	it can reduce the psychomotor reactions rate	allergic reactions, lipodystrophy in the site of injection, refraction dysfunction	sulphonamides, β -adrenergic blockers, peroral hypoglycemic drugs, alcohol, corticosteroids, thyrotropic drugs, combined oral contraceptives	the change of the site of drug introduction, correction of a dose in case of changing a diet and in infectious processes, etc.

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Topic

CLINICAL PHARMACY IN ALLERGOLOGY.

PHARMACEUTICAL CARE WHILE

DISPENSING MEDICINES FOR TREATMENT

OF ALLERGY SYMPTOMS

I. Symptoms and syndromes in allergology

Itch, hyperemia of skin and mucous membranes, appearance of skin rash, oedematous syndrome, bronchospasm, sneezing, rhinorrhea, lacrimation, Lyell's syndrome, syndrome of Stevens-Johnson, syndrome of acute cardiovascular failure.

II. List of nosology units: acute and chronic urticaria, angioneurotic edema, allergic rhinitis, allergic conjunctivitis, anaphylactic shock, drug disease*.

III. Basic approaches of the allergic diseases therapy

1. *A rapid relief of the urgent states* — corticosteroids; agonists of α - and β -adrenoceptors; bronchodilators; infusion therapy.
 2. *Treatment of symptoms of the allergic reaction* — corticosteroids; antihistaminic drugs; drugs of Ca^{2+} ; detoxic therapy (enterosorption, hemosorption, plasmaapheresis); sedative drugs.
 3. *Prophylaxis of the allergic reaction development* — stabilizers of mastocytes membranes; antihistaminic drugs; specific and nonspecific hyposensitization.
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* It is studied as a definition.

IV. The list of medicines

- 1. Antihistaminic drugs:**
 - a) the Ist generation — diphenhydramine (Dimedrol), chloropyramine (Suprastin), mebhydrolin (Diazolin); _____
 - b) the IInd generation — loratadine (Claritin), Cetirizine (Zyrtec), including topical antihistaminic drugs — azelastine; _____
 - c) the III^d generation — fexofenadine (Telfast), desloratadine (Aerius), levoce-tirizine (Xyzal). _____
- 2. Drugs of Ca²⁺** — calcium chloride, calcium gluconate. _____
- 3. Corticosteroids** — prednisolone, methylprednisolone, betamethasone (Celestoderm V), fluocinolone acetonide (Flucinar), beclometasone (Beconase), fluticasone (Flixotide). _____
- 4. Stabilizers of mastocytes membranes** — cromoglicic acid (Ifiral), ketotifen (Zaditen). _____
- 5. Agonists of α- and β-adrenoreceptors** — epinephrine (adrenalin). _____
- 6. Sedative drugs** — drugs of Valerianic root, Leonuri herb. _____
- 7. Bronchodilators:**
 - a) methylxanthines — aminophylline (Euphyllin); _____
 - b) β₂-agonists — salbutamol (Ventolin). _____
- 8. Enterosorbents** — Entherosgel, Sorbex, Polyphepan. _____
- 9. Non-medicaqmental methods of therapy:**
 - a) specific hyposensibilisation; _____
 - b) hypoallergenic, eliminative diet; _____
 - c) eliminative measures in relation to allergens that come avoiding the gastrointestinal tract; _____
 - d) hemosorption; _____
 - e) plasmapheresis. _____

V. Clinical pharmacology of drugs used to treat allergic diseases (See Table 11).

Table 11

Clinical pharmacology of drugs used to treat allergic diseases

International nonproprietary name of a drug	basic effects	Pharmacodynamics peculiarities of a drug and its administration	adverse effects	Interaction with drugs of other groups	Prevention and treatment of adverse effects
<i>Chloropyramine</i>	antiallergic (antipruritic, antioxudative), anticholinergic, sedative, antispasmodic	it is used 4–6 times per twenty-four hours; limitation of administration of people operating machines	CNS suppression, dyspepsia, tachyphylaxis	so m n o l e n t , sedative drugs, tranquilizers, narcotic opioid analgesics, alcohol	the symptomatic treatment in case of tachyphylaxis — it is necessary to change the drug
<i>Loratadine</i>	antiallergic (antipruritic, antioxudative), antispasmodic	it is used 1 time per 24 hours, in children over 1 year, it does not possess cardiotoxicity	headache in rare cases, dyspepsia	inhibitors of microsomal enzymes of the liver	the symptomatic treatment
<i>Fexofenadine</i>	antiallergic (antipruritic, antioxudative)	it is used with caution in elderly people, patients with renal and hepatic failure, it is not used in children under 12 years	headache, nausea	antacids, inhibitors of microsomal enzymes of the liver	the symptomatic treatment

	1	2	3	4	5	6
<i>Prednisolone</i>	anti-inflammatory, immunodepressive, antitoxic, anti-shock, antiallergic, desensitizing	it should be taken early in the morning, the abrupt discontinuence (missing dose) is impossible	ulcerogenic action, withdrawal syndrome, osteoporosis, hypertension, increase of the body weight, steroid diabetes	barbiturates, a strict medical control while using; gas-troprotectors, drugs of potassium, calcium, antihypertensive therapy	non-steroid anti-inflammatory drugs, immunodepressants	it should not be pre-scribed after the surgery of nasal septum (1 year), in case of traumas of nose (2 weeks), ulcers of the nasal mucous membrane, the recommended dose should not be exceeded
<i>Betamethasone</i>	anti-inflammatory, antiallergic, immuno-suppressive	practically does not possess the resorptive action, the effect develops during 5-7 days	candidosis of the upper respiratory tract, dryness in the nose, rare nasal bleedings	local vasoconstrictive drugs, antihistaminic drugs		
<i>Calcium chloride</i>	antiallergic, anti-inflammatory	in allergic diseases it is used with antihistaminic drugs	arrhythmia, in case of hypodermic introduction it causes irritation and necrosis	tetracyclines, anti-acids, sorbents	hypodermic or intramuscular administration of the drug is forbidden, it is not used in patients susceptible to the thromboses	

1	<i>Ketotifen</i>	antiallergic	the effect develops for 1–2 months; limitation of administration in people operating machines	the CNS pressure, dryness in the mouth, decrease of bronchial glands secretion, increase the body weight	sup-nolent, antihistaminic drugs, alcohol, tranquilizers	sedative, somnolent, antihistaminic drugs, tranquilizers	the recommended dose should not be exceeded	6
	<i>Epinephrine</i>	bronchodilating, cardiostimulating, vasoconstrictive	it is used with caution in elderly people; necrosis of the skin in case of hypodermic introduction	headache, tachycardia, dyspepsia	α - and β -adrenergic blockers, eu-nitrates, eutrophylline, thyroid drugs	in the case of hypodermic introduction at the site of injection should be varied; symptomatic treatment		
	<i>Eurosemide</i>	diuretic, antihypertensive desintoxic	a drug of the rapid action; with caution administration is possible in chronic renal failure; it is not used in pregnancy	dyspepsia, decrease of the acuity of hearing, interstitial nephritis, hypovolemia, hypopotassemia, hyperglycemia, hyperuricemia, allergic reactions	cephalosporines, diuretics, of other groups, antihypertensive drugs, corticosteroids, nonsteroid anti-inflammatory drugs	cephalosporines, aminoglycosides, diuretics, control of the blood pressure, blood level of uric acid and sugar; selection of a dose taking into account the speed of glomerular filtration; collection of the allergological anamnesis, antihistaminic drugs		

1	2	3	4	5	6
<i>Theophylline</i>	bronchodilating	development of resistance during the prolonged administration, smoking of 1-2 packs of cigarettes a day decreases the effect	disorder of the cardiac rhythm, tremor, disturbance of sleep, vertigo	bronchodilatory drugs of other groups, fluoroquinolones, diuretics	to conduct the medical monitoring is carry out
<i>Methylsilicic acid hydrogel</i>	desintoxic	intervals between the administration of other drugs	dyspepsia, constipation	adsorption of other drugs in the gastrointestinal tract	limitation of administration in case of atony of the intestine

VI. Criteria of efficiency and safety of the therapy conducted

1. *Clinical* — decrease of itch, edema, skin rash, symptoms of rhinitis. _____

2. *Laboratory* — dynamics of the blood analysis indices (the level of eosinophilia), biochemical (the level of β - and γ -globulins), immunological (immunoproteins E, A).

VII. Principles of pharmaceutical care

Pharmaceutical care while dispensing drugs for treatment allergy symptoms:

- a) principal causes of allergy origin; _____
- b) «threatening» symptoms of allergy; _____
- c) the algorithm of conversation with a patient concerning allergy complaints (allergic rhinitis, allergic conjunctivitis, allergic dermatosis);
d) pharmaceutical care while dispensing medicines for allergy treatment;
e) the list of drugs for symptomatic treatment of allergy:
 - antihistaminic — Loratadine, Cetrine, _____
Telfast;
 - topical antihistaminic — Allergodil, _____
Fenistil Gel, Lorizan;
 - local corticosteroids — Beconase; _____
 - enterosorbents — Enterosgel, Sorbex,
Polyphepan; _____
 - sedative drugs — drugs of Valerianic root, Leonuri Herb; _____
 - stabilizers of mastocytes membranes — Ifiral. _____
- f) clinical and pharmacological description of different medicinal formulations in case of symptomatic therapy of the allergic states.

g) methods of non-medicamental treatment of allergy:

- hypoallergenic, eliminative diet;
- eliminative activity in relation to allergens which do not penetrate through the gastrointestinal tract;
- psycho- and physiotherapy.

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THE LIST OF MEDICINES, WHICH MUST BE KNOWN DURING THE FINAL CONTROL OF KNOWLEDGE TO THE COURSE OF CLINICAL PHARMACY

D-Penicillamine	Amoxicillin	Blemaren*
α-Interferon	Amylmetacresol	Boromenthol*
β-Interferon	Aprotinin	Bromhexine
Acarbose	Arginine Glutamate	bromide
Acetylcysteine	Arthon Chondrex*	Budesonide
acid	Arthon Complex*	Butamirate citrate
Acidin-pepsin*	Arthon Flex*	Castor Oil
Actifed*	Ascorbic Acid	Cefaclor
Activated charcoal	Aspirin Cardio*	Cefazidime
medical	Atenolol	Cefazolin
Actrapid	Atorvastatin	Cefepime
Acyclovir	Atropine sulfate	Cefixime
Ademetionine	Attapulgite	Ceftriaxone
Aktiferrin*	Atussin*	Cefuroxime
Alendronic acid	Augmentin*	Celecoxib
Allochol*	Azathioprine	Cephalexin
Allopurinol	Azelastine	Cetirizine
Almagel A*	Azithromycin	Chenodeoxycholic acid
Almagel*	Acetylsalicylic acid	Chlorambucil
Almagel-Neo*	Baralgin*	Chloramphenicol
Altan	Beclomethasone	Chlorhexidine
Alteplase	Ben-Gay*	Chloropyramine
Althaemix*	Benzylpenicillin	Cholenzym*
Alumag*	Berodual*	Choliver*
Aluminium phosphate	Betamethasone	Chondroitin Sulfate
Ambazone	Bicillin-5*	Chondroxid*
Ambroxol	Bificol siccum*	Chophytol*
Amikacin	BifiForm*	Ciprofibrate
Aminocaproic acid	Biosporin*	Ciprofloxacin
Aminophylline	Bismuth subcitrate	Clarithromycin
Amlodipine	Bisacodyl	Clatinol*

* Complex drug or trade name.

Clonidine	Essentiale forte N*	Gliquidone
Clopidogrel	Famotidine	Globiron-H*
Codeine phosphate	Fastum-Gel	Glucosamine hydrochloride
Codterpin*	Felodipine	Glucosamine sulfate
Coldact*	Fenistil Gel*	Glutargin
Coldflu*	Fenofibrate	Glycerol
Coldrex*	Fenoterol	Gyno-Tardyferon*
Combivent*	Fenspiride	Haemoferon*
Cromoglicic acid	Fenules*	Hedelix*
Cyanocobalaminum	Ferramin-Vita*	Hepabene*
Cyclophosphamide	Ferric(III)-hydroxide	Heparin sodium
Dalteparin sodium	polymaltose complex	Hepatofalk planta*
Decamethoxin	Ferrohematogen*	Herbion*
Denebol Gel*	Ferrolect*	Humulin*
Desloratadine	Ferroplex*	Hyaluronic Acid
Dexamethasone	Ferrum Lek*	Hydrochlorothiazide
Dextromethorphan	Fervex*	Hylak*
Diclofenac sodium	Festal*	Hylak-forte*
Diclofen-Gel*	Fexofenadine	Hyzaar*
Digene*	Finalgel*	Ibuprofen
Digestal*	Finalgon*	Indapamide
Digoxin	Flucold*	Infliximab
Diltiazem	Fluconazole	Inosine
Dimethicone	Fluocinolone acetonide	Insulin
Diosmectite	Fluticasone	Iron chloride
Diphenhydramine	Folic Acid	Iron fumarate
Dipyridamole	Fosinopril	Iron gluconate
Docusate sodium	Furazidin	Iron sulfate
Domperidone	Furazolidone	Isosorbide dinitrate
Doxazosin	Furosemide	Isosorbide mononitrate
Doxycycline	Gastric Juice	Ipratropium bromide
Drotaverine hydrochloridum	Gastromax*	Kreon*
Ekvator*	Gastropac*	Ketotifen
Enalapril	Gatifloxacin	Lactobacterin*
Enoxaparin sodium	Gemfibrozil	Lactulose
Enterosgel*	Gentamicin	Lansoprazole
Enzystal*	Glaucine hydrochloride	Lantus*
Ephact*	Glibenclamid	Leflunomide
Epinephrine	Glibomet*	Lespenephryl*
Epoetin α	Gliclazide	Levocetirizine
Epoetin β	Glimepiride	Levofloxacin
Erythromycin	Glipizide	Levothyroxine sodium

Lidocaine	Nitroglycerin	Pyridoxine
Linex*	Nitroxoline	Rabeprazole
Liprazid*	Norfloxacin	Ranferon*
Lisinopril	No-spalgin*	Ranitidine
Lomefloxacin	Nystatin	Rehydrone*
Loperamide	Omeprazole	Remisid*
Loratadine	Ornidazole	Renalgan*
Losartan	Ornistat*	Rennie*
Lovastatin	Osteogenon	Reosorbilact*
Maalox*	Oxeladin	Repaglinide
Macrogol	Oxymetazoline	Rheopolyglucine*
Magnesium Sulfate	Panangin*	Rhinoprонт*
Mebeverine	Pancreatin*	Ribavirin
Mebhydrolin	Papaverine	Riboflavin
Meloxicam	Paracetamol	Rofecoxib
Menthol	Paraffin liquid	Roxithromycin
Meropenem	PEG interferon α	Roziglitazone
Metamizol sodium	Pentoxifylline	Salbutamol
Metformin	Perindopril	Salin*
Methotrexate	Pharmacitron*	Salmeterol
Methyldopa	Phenoxy methylpenicillin	Sedasen forte*
Methylprednisolone	Phenylephrine	Senadex*
Methylsilicic acid	Phenyltin	Senadexin*
Metoclopramide	Phytolit*	Seretide*
Metoprolol	Pilobact*	Sibazon*
Metronidazol	Pinosol*	Silybinin
Miacalcic*	Pioglitazone	Silymarin
Midecamycin	Piracetam	Simethicone
Misoprostol	Pirenzepine	Simvastatin
Molsidomine	Piroxicam	Sodium picosulfate
Monotard*	Plantaglucide*	Solpadeine*
Moxifloxacin	Platiphylline	Sorbifer durules*
Moxonidine	Polyphepan	Sorbitol
Mucaltin*	Potassium iodide	Sparfloxacin
Mucofalk Orange*	Prazosin	Spasmalgon*
Mezym*	Prednisolone	Spiramycin
Nadroparin calcium	Prenoxdiazine	Spironolactone
Nalidixic acid	Probiovit*	Stoptussin*
Naphazoline	Promethazine	Strophanthin K
Nasol baby*	Propranolol	Sucralfate
Neohaemodesum*	Prospan*	Sulfadimethoxine
Nifedipine retard	Protamine sulfate	Sumatriptan
Nimesulide		Tardyferon*

Tenochek*	Thiamine	Trimetazidine
Tenoret*	Thioctic acid	Trimethylhydrazinie
Tetracaine	Thiotriazoline	propionate
Tetracycline	Theo-Dur	Troxerutin*
Tetryzoline	Ticlopidine	Tussin*
Theophylline	Tinidazole	Urolesan*
Theraflex Advance*	Tiotropium	Ursodeoxycholic acid
Theraflex*	Totema*	Verapamil
Theraflu*	Tramadol	Xanthinol nicotinate
Thiamazole	Transilan*	Xylometazoline

DOSAGE FORMS

<i>Capsules</i>	Syrups
Hard capsules	Powders and granules for syrups
Soft capsules	
Modified-release capsules	<i>Nasal preparations</i>
Gastro-resistant capsules	Nasal drops and liquid nasal spray
Cachets	Nasal powders
	Semi-solid nasal preparations
<i>Ear preparations</i>	Nasal washes
Ear drops and sprays	Nasal sticks
Semi-solid ear preparations	
Ear powders	<i>Oromucosal preparations</i>
Ear washes	Gargles
Ear tampons	Mouthwashes
	Gingival solutions
<i>Eye preparations</i>	Oromucosal solutions and oromucosal suspensions
Eye drops	Semi-solid oromucosal preparations
Eye lotions	Oromucosal drops, oromucosal sprays and sublingual sprays
Powders for eye drops and powders for eye lotions	Lozenges and pastilles
Semi-solid eye preparations	Sublingual tablets and buccal tablets
Ophthalmic inserts	Oromucosal capsules
	Mucoadhesive preparations
<i>Granules</i>	<i>Parenteral preparations</i>
Effervescent granules	Injections
Coated granules	Infusions
Modified-release granules	Concentrates for injections or infusions
Gastro-resistant granules	Powders for injections or infusions
	Gels for injections
	Implants
<i>Liquid preparations for cutaneous application</i>	<i>Patches, transdermal</i>
Shampoos	<i>Powders, oral</i>
Cutaneous foams	Effervescent powders
<i>Liquid preparations for oral use</i>	<i>Preparations for inhalation</i>
Oral solutions, emulsions and suspensions	Liquid preparations for inhalation
Powders and granules for oral solutions and suspensions	Powder for inhalation
Oral drops	
Powders for oral drops	

<i>Rectal preparations</i>	<i>Tablets</i>
Suppositories	Uncoated tablets
Rectal capsules	Coated tablets
Rectal solutions, emulsions and suspensions	Effervescent tablets
Powders and tablets for rectal solutions and suspensions	Soluble tablets
Semi-solid rectal preparations	Dispersible tablets
Rectal foams	Orodispersible tablets
Rectal tampons	Modified release tablets
	Gastro-resistant tablets
	Tablets for use in the mouth
<i>Semi-solid preparations for cutaneous application</i>	<i>Vaginal preparations</i>
Ointments	Pessaries
Creams	Vaginal tablets
Gels	Vaginal capsules
Pastes	Vaginal solutions, emulsions and suspensions
Poulties	Tablets for vaginal solutions and suspensions
Medicated plasters	Semi-solid vaginal preparations
<i>Sticks</i>	Vaginal foams
	Medicated vaginal tampons

ADMINISTRATION ROUTES

Auricular	Intradiscal	Nasal
Buccal	Intrahepatic	Occlusive dressing
Cutaneous	Intralesional	technique
Dental	Intralymphatic	Ophtalmic
Endocervical	Intramedullar	Oral
Endosinusial	Intrameningeal	Oropharyngeal
Endothracheal	Intramuscular	Parenteral
Epidural	Intraocular	Periarticular
Extra-amniotic	Intrapericardial	Perineural
Hemodialysis	Intraperitoneal	Rectal
Intra-amniotic	Intrapleural	Respiratory
Intra-arterial	Intrasynovial	Retrobulbar
Intra-articular	Intratumour	Subconjunctival
Intra-uterine	Intrathecal	Subcutaneous
Intracardiac	Intrathoracic	Sublingual
Intracavernous	Intratracheal	Topical
Intracerebral	Intravenous bolus	Transdermal
Intracervical	Intravenous drip	Transmammary
Intracisternal	Intravenous (not otherwise specified)	Transplacental
Intracorneal	Intravesical	Urethral
Intracoronary	Iontophoresis	Vaginal
Intradermal		

THE LIST OF ABBREVIATIONS

β -AB	—	β -adrenoblockers
γ -GTP	—	γ -glutamyl-transpeptidase
AB	—	antibacterial
ACE	—	angiotensin-converting enzyme
AH	—	arterial hypertension
ALKP	—	alkaline phosphatase
ALT	—	alanine aminotransferase
ASA	—	acetylsalicylic acid
AV	—	atrioventricular
BA	—	bronchial asthma
BP	—	blood pressure
CG	—	cardiac glycosides
CHF	—	chronic heart failure
CRF	—	chronic renal failure
CNS	—	central nervous system
COX	—	cyclooxygenase
CS	—	cytostatics
ECG	—	electrocardiograma
ESR	—	erythrocytes sedimentation rate
FEV ₁	—	forced expiration volume in the first second
FVC	—	forced vital capacity
GCS	—	glucocorticosteroids
GFR	—	glomerular filtration rate
GIT	—	gastrointestinal tract
HMG-CoA	—	3-hydroxy-3-methyl-glutaryl-CoA
HR	—	heart rate
iACE	—	inhibitor of angiotensin-converting enzyme
IHD	—	ischemic heart disease
iMAO	—	inhibitor of monoamine-oxydase
NSAID	—	non-steroid anti-inflammatory drug
OTC	—	over the counter

ADDITIONAL LITERATURE

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Навчальний посібник призначений для позааудиторної та аудиторної роботи, а також для підготовки до підсумкової атестації з клінічної фармації студентів напрямку «Фармація» фармацевтичних ВНЗ і фармацевтичних факультетів вищих медичних навчальних закладів III–IV рівнів акредитації.

Представленний теоретичний мінімум, питання до курсового іспиту та Державної атестації з клінічної фармації для студентів спеціальності 7.110201 «Фармація» (денної форми навчання), які навчаються на англійській мові.

В посібнику наведені зразки білетів, критерії оцінки знань, список рекомендованої літератури.

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