

# AMENDMENTS AND CHANGES TO THE CURRICULUM IN THE EDUCATIONAL DISCIPLINE «CLINICAL PHARMACOLOGY, PHARMACOLOGICAL THERAPY»

for the specialty 1-79 01 08 "Pharmacy"

2020/2021 academic year

Amendments and changes	Basis/Reason
1. Changes have been introduced into the educational discipline curricular chart <i>(only if there are supervised self-study hours)</i>	Educational Plan for 2021/2022 academic year
2. The following sections have been added to the information and methodological part:  <b>MAIN FORMS OF SUPERVISED STUDENT INDEPENDENT WORK:</b> – preparation and presentation of abstracts Control of supervised student independent work is carried out in the forms of: discussion of abstracts.	Educational Plan for 2021/2022 academic year
3. The literature has been updated	

The curriculum is revised and approved at the department meeting  
Clinical Pharmacology (protocol # 13 of 15.06.2021 )

Head of the department  
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APPROVED  
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## EDUCATIONAL DISCIPLINE CURRICULAR CHART

Section, topic #	Section (topic) name	number of hours				Form of control
		lectures	practical ( <i>laboratory or seminars</i> )	supervised self-study	Self-studies	
1	<b>7th semester</b> Introduction to clinical pharmacology. Nomenclature of drugs. Prescription and non-prescription drugs. The main parameters of pharmacokinetics and pharmacodynamics. Pharmacological therapy. Principles of evidence-based medicine.	4	-	1	4	Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
2	Nomenclature of drugs (drugs): chemical name, international non-proprietary name, original and generic drugs, biotech drugs, immunobiological drugs, targeted (orphan), homeopathic drugs, biologically active additives. Pharmacokinetics: stages and basic parameters (drug administration routes, bioavailability, absorption, distribution, metabolism, elimination; half-life, equilibrium concentration, min / max concentration). Pharmacodynamics (mechanisms of the drugs action, pharmacological drugs effects, systemic and local effects). Unwanted (adverse) reactions to the drugs. 4 types of the adverse reactions: pharmacological expected, allergic and immune. Cancellation syndrome (rebound). Drug dependence, tolerance, addiction, carcinogenicity, teratogenicity, embryotoxicity (reactions of type A, B, C, D according to the WHO	-	3	-	-	



	classification).					
	Drug interactions (pharmaceutical, pharmacodynamic, pharmacokinetic).					
3	Prescription and OTC drugs. Rules for the drugs prescription. The concept of the responsible and irresponsible self-medication. Features of the drug use in children (neonatal, early and older periods); elderly patients (comorbidity, polytherapy and polypragmasia); in women during pregnancy and lactation (drugs classification at risk for the fetus, especially the pharmacokinetics of the drugs pharmacodynamics during pregnancy and lactation); in patients with the liver and kidney diseases (hepatic, renal failure).	-	3	-	-	
4	The concept of the evidence-based medicine.  General principles of patient's examination: evaluation of complaints, history of the disease and life history, pharmacological and allergic history. The main research methods are: examination, palpation, percussion and auscultation of the patient; measurement of blood pressure, pulse, electrocardiogram, X-ray, endoscopic, ultrasound Laboratory tests of blood, urine (general and biochemical), sputum and other biological fluids.	-	3	-	-	
5	The main types of pharmacotherapy: etiologic, pathogenetic, symptomatic.  Clinical pharmacology of antimicrobial drugs.					
		2	-	2	8	Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
6	The main causative agents of human infectious diseases are Gr +, Gr-, aerobic, anaerobic microflora, viral, parasitic and fungal infections.  General information about the etiopathogenesis of the respiratory organs acute infectious and inflammatory diseases of (ARVI, acute pharyngitis, laryngotracheitis, acute bronchitis, community-acquired pneumonia).  Principles of rational antibiotic therapy. Types of antibacterial therapy: empirical, etiologic. Natural and acquired antibiotic resistance.					
		-	3	-	-	
7	Clinico-pharmacological classification, characterization and application of the antimicrobial drugs major groups principles (beta-lactam antibiotics, macrolides, tetracyclines, fluoroquinolones, nitroimidazoles, chloramphenicol, mifofurans, nitroimidazoles, tetracyclines, nitroimidazoles, chloramphenicol,	-	6	-	-	

	glycopeptides, lincosamides, oxazolidinones, sulfonamides, fosfomycin). The role of a pharmacist-specialist in providing information to the population on the antimicrobial drugs medical use.					Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
8	Clinical pharmacology of nonsteroidal anti-inflammatory drugs.	2	-	-	4	Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
9	Clinical and pharmacological characteristics of the nonsteroidal anti-inflammatory drugs. Indications and contraindications for use. Principles of their rational use. Side effects, their prevention. Interactions with other drugs. Demonstration of patients with the internal organs diseases, the pharmacotherapy of which includes the non-steroidal anti-inflammatory drugs (arthritis, dorsalgia, lumboschialgia, ischemic heart disease, etc.). The role of a pharmacist-specialist in providing the population with information on the non-steroidal anti-inflammatory drugs medical use.	-	6	-	-	
10	Clinical pharmacology of bronchodilators, expectorant and antitussive drugs.	2	-	2	6	Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
11	Clinical and pharmacological characteristics of the resorptive and reflex action expectorant drugs, mucolytics and mucoregulators. Approaches to their purpose. Clinico-pharmacological characteristics of the drugs with anti-broncho-obstructive effects (chromones, inhaled glucocorticoids, anti-leukotriene drugs), beta-adrenomimetics, M-anticholinergics, methylxanthines). Indications and contraindications to their use. The role of a pharmacist-specialist in providing information to the population on the expectorant drugs medical use.	-	3	-	-	
12	Pharmacological therapy infectious and inflammatory diseases of the respiratory organs	2	-	-	6	Interviews, reports at seminars, reports on home practice exercises with



13	<p>General information about the etiology and pathogenesis of the respiratory system infectious and inflammatory diseases (pneumonia and bronchitis). Their main manifestations, outcomes, complications.</p> <p>Principles of the antibacterial drugs use, depending on the pathogen etiology.</p> <p>Application in the broncho-obstructive syndrome of antiussive and expectorant drugs.</p> <p>General information about the broncho-obstructive syndrome pathogenesis.</p> <p>Indications for the drugs choice for the asthma relief. Principles of the bronchial asthma and chronic obstructive pulmonary disease treatment.</p> <p>The role of a specialized pharmacist in providing information to the population on the an i-broncho-obstructive drugs medical use.</p> <p>Credit.</p>					<p>their oral presentation, control questioning, situational tasks and tests</p> <p>Credit.</p>
<b>8th semester</b>						
14	Drugs used to treat the gastrointestinal tract diseases					<p>Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests</p>
		2	-	-	6	
15	<p>Classification of drugs used to treat ulcer-forming diseases of the gastrointestinal tract and disorders of the small and large intestines motor function: anticholinergics,</p> <p>H2 blockers, proton pump blockers, antacid drugs, gastrocytoprotectors, prokinetics, probiotics.</p> <p>The mechanism of these drugs action, side effects, indications and contraindications.</p> <p>The role of a pharmacist-specialist in providing information to the population on the medical use of the drugs for the gastroenterological diseases treatment.</p>					
		-	5	-	-	

16	Pharmacological therapy of gastric ulcer and duodenal ulcers Modern ideas about the etiology and pathogenesis of gastric ulcers and duodenal ulcer, principles of pharmacotherapy - triple and four-part treatment regimen. The mechanism of the antsecretory drugs action, side effects, indications and contraindications for their use. The effectiveness of pharmacotherapy regimens.	-	3	-	3	Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
17	Clinical pharmacology of the drugs used to treat the hepatobiliary system, pancreas and intestinal diseases	1	-	1	3	Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
18	The concept of the liver damage causation (hepatitis, cholecystitis, cholelithiasis) and pancreatitis. The value of microorganisms in their development. Etiopathogenic pharmacotherapy principles of the hepatobiliary system and pancreas diseases. Clinical and pharmacological characteristics of drugs used to treat the liver, gallbladder and pancreas diseases: hepatoprotectors, enzymes and laxative drugs, antispasmodics, vitamins. Side effects, indications and contraindications to their use. Etiopathogenesis of irritable bowel syndrome. Roman criteria for the diagnosis of the disease. Modern approach to the pharmacotherapy of irritable bowel syndrome. Complications of pharmacotherapy.	-	4	-	-	
19	Clinical pharmacology of the drugs used to treat arterial hypertension	1	-	1	8	Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
20	Classification of antihypertensive drugs: diuretics, $\beta$ -blockers, slow calcium channel blockers, angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, central $\alpha_2$ and imidazoline receptor agonists. Representatives of other antihypertensive drugs groups: $\alpha$ -blockers, inhibitors of renin synthesis, direct	-	6	-	-	



	<p>aldosterone antagonists, etc.</p> <p>The mechanism of the drugs listed groups action, their effectiveness, safety, principles of use, side effects.</p> <p>Principles of arterial hypertension pharmacological therapy, based on the current knowledge.</p> <p>The role of a pharmacist-specialist in providing information to the population on the medical use of drugs for the cardiac diseases treatment.</p>					
21	Clinical pharmacology of the drugs used to treat coronary heart disease	2	-	-	5	Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
22	<p>Classification of the antianginal drugs:</p> <p><math>\beta</math>-adrenergic blockers, slow calcium channel blockers, nitrates, sydnonimines, statins, cardiocytoprotectors.</p> <p>Characteristic actions of each pharmacological group, adverse reactions, the application age-related features.</p> <p>Modern principles of the coronary heart disease treatment (angina pectoris and acute myocardial infarction).</p>		9	-	-	
23	Clinical pharmacology of the antiarrhythmic drugs	1	-	1	4	Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, <input type="checkbox"/> situational tasks and tests
24	<p>Electrophysiology of the heart. Mechanisms of the cardiac arrhythmias development. Clinical and pharmacological characteristics of the antiarrhythmic drugs. Principles of the drugs use with antiarrhythmic activity. Efficacy and safety of the antiarrhythmic drugs, their side effects.</p> <p>Principles of the drugs use with antiarrhythmic activity.</p> <p>Drugs used in the cardiac conduction system disorders treatment.</p>	-	9	-	-	

25	Drugs used to treat heart failure					Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
26	Pathogenesis of heart failure. Clinical and pharmacological characteristics of the drugs groups used to treat heart failure. The mechanism of the drugs action used in heart failure, efficacy and safety, indications and contraindications for use, side effects.	1	-	1	3	
27	Clinical pharmacology of the steroidal anti-inflammatory drugs	-	3	-	-	
28	Steroidal anti-inflammatory drugs. The mechanism of the glucocorticoids action. Efficacy and safety, indications and contraindications. Side effects, their prevention. Withdrawal syndrome.	2	-	-	4	Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
29	Pharmacological therapy of the systemic connective tissue diseases Modern principles of the connective tissue systemic diseases treatment (rheumatoid arthritis, reactive arthritis, systemic lupus erythematosus, systemic scleroderma). Principles of the basic, steroid and nonsteroidal anti-inflammatory drugs use.	-	6	-	-	
30	Pharmacological therapy of the systemic connective tissue diseases Clinical and pharmacological characteristics of drugs for the gout attacks relief, uricodpressive and uricosuric drugs. mixed action drugs. Characteristics of chondroprotectors, nonsteroidal anti-inflammatory drugs, muscle relaxants; drugs that slow down bone resorption and stimulate bone formation: bisphosphonates, calcitonins, estrogenic drugs.	-	3	-	4	Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
	Pharmacological therapy of gout and age-related diseases of the musculoskeletal system	-	6	-	6	Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests

Credit



	The role of a pharmacist-specialist in providing the population with information on the medical the drugs use for the treatment of metabolic and the musculoskeletal system age-related diseases.					
	<b>9th semester</b>					
31	Clinical pharmacology of the drugs for the correction of hemostasis disorders.					Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
		1	-	1	6	
32	The main causes leading to the impaired function of blood coagulation and anticoagulation systems. Drugs used to treat the increase in blood clotting activity: antiplatelet agents, direct and indirect anticoagulants, thrombolytic drugs. Indications and contraindications for use, side effects, methods of evaluating the effectiveness. The main drugs used to reduce the activity of the blood coagulation system: proagreganty (adrokson, etamzilat), proaguaris, fibrinolysis inhibitors. Indications and contraindications for use, side effects. The role of the pharmacist-specialist in providing the population with information on the medical drugs use for the hemostatic disorders correction.	-	6	-	-	
33	Clinical and pharmacological approaches to the choice of drugs for the anemia treatment.	1	-	1	6	Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
34	Types and causes of anemia. Principles of the anemia pharmacological treatment. Clinical and pharmacological characteristics, indications and contraindications, side effects of the drugs used to treat anemia. Iron preparations for enterai and parenteral administration. Principles of pharmacotherapy B12- and folic deficiency anemia. Criteria for the effectiveness of pharmacotherapy.	-	6	-	-	

35	Drugs used to treat diabetes mellitus and thyroid disease					Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
36	Clinical pharmacology of insulin, synthetic glucose-lowering drugs. Complications of insulin therapy, glycemic correction in diabetic coma - hyper and hypoglycemic. Features of the sulfonylurea and biguanide derivatives purpose. Medicines used for obesity. Pharmacotherapy of thyroid hyperfunction - thyreostatics (mercazole, tiamazole, propylthiouracil). Drugs for replacement therapy for hypothyroidism (thyroidin, levothyroxine, liothyronine, thyroid, thyreocomb). Complications of pharmacotherapy.	-	6	-	-	
37	Pharmacological therapy of the central nervous system diseases. Drugs that improve cerebral blood flow and stimulate neurometabolic processes: calcium channel blockers (nimodipine, cinnarizine, flunarizin), vinca small alkaloids (vinpocetine), ergot alkaloids (nicergoline), derivatives of nicotinic acid (xanthinol nicotinate), derivatives of gamma-aminobutyric acid (aminlonon, piracetam, sodium hydroxybutyrate, picamilon), pentoxifylline, pyriditol, papaverine hydrochloride. Medicines for the migraine treatment: nonsteroidal anti-inflammatory drugs, ergot alkaloids, serotonin agonists, dopamine antagonists, amitriptyline, methysergide. The role of a pharmacist-specialist in providing information to the population on the medical drugs use for the treatment of the central nervous system diseases.	-	6	-	8	Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
38	Pharmacological therapy of the allergic diseases and immunodeficiency states					Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
39	Comparative clinical and pharmacological characteristics of H1-histamine	-	3	-	-	



	receptor blockers (antihistamine) I, II, III generations, nasal and conjunctival forms of mast cell membrane stabilizers and glucocorticoid drugs. Types of the immunotropic therapy. Immunotropic drugs of the plant and animal origin, synthetic immunotropic drugs. Methods of these groups drugs use, indications, contraindications for use. Types of control over the treatment effectiveness. The role of a pharmacist-specialist in providing information to the population about the medical devices use (inhalers, dishalers, turbuhalers, spacers).					
40	Pharmacological treatment of the excretory system organs diseases					Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
41	The main pharmacological treatment directions of cystitis, pyelonephritis: the drugs use that affect bacterial infection (sulfa drugs, quinolones, nitrofuran compounds, fluoroquinolones, 8-hydroxyquinoline derivatives, antibiotics); herbal medicines; antispasmodics.	-	3	-	-	
42	Pharmacological therapy of pain syndrome	2	-	-	8	Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
43	Drugs used for the pain syndrome pharmacological treatment: opioid analgesics, non-opioid analgesics, analgesics of the action mixed mechanism, anti-inflammatory drugs, antispasmodics, muscle relaxants, neuroleptics, tranquilizers. Pharmacological therapy of individual pain syndromes: acute myocardial infarction, trauma, renal and hepatic colic, toothache, pain with trigeminal neuralgia, tumors. Side effects when using pain medication.	-	6	-	-	
44	Clinical pharmacology of the antiviral drugs. Pharmacological treatment of the viral diseases.	2	-	-	8	Interviews, reports at seminars, reports on home practice exercises with

45	<p>Clinical and pharmacological classification of antiviral drugs, the mechanisms of their action.</p> <p>Clinical and pharmacological characteristics of anti-influenza drugs (M2-channel blockers, inhibitors of viral neuraminidase, fusion of the lipid membrane of the virus with the cell membrane), antihypertensive and antiretroviral drugs.</p> <p>Indications and contraindications to their use, side effects.</p> <p>The role of a pharmacist-specialist in providing information to the population on the medical antiviral drugs use.</p>					their oral presentation, control questioning, situational tasks and tests
46	<p>Clinical Pharmacology of the antifungal drugs</p>					Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests
47	<p>Modern principles of the most common fungal diseases pharmacological therapy.</p> <p>Classification of the antifungal drugs: for local use - polyene antibiotics, imidazoles, allylamines, drugs of other groups; for systemic use - polyene antibiotics, imidazoles, triazoles, allylamines, pyrimidine derivatives, semi-synthetic drugs: semi-synthetic drugs of drugs (echinocandins, etc.).</p> <p>Indications and contraindications for use. Side effects, their prevention.</p> <p>The role of a pharmacist-specialist in conducting instruction on the antifungal drugs use.</p>	2	-	-	8	
48	<p>Features of pharmacological therapy in geriatrics</p> <p>Principles of dosing and prescribing drugs for the elderly. due to the characteristics of pharmacokinetics and pharmacodynamics.</p> <p>The main drug groups used in geriatrics are: cardiovascular drugs, antihypertensive drugs, hypnotics, laxatives, analgesic drugs, drugs for the treatment of various origins encephalopathies, etc.</p> <p>Features of the pharmacotherapy complications in the elderly, their prediction, prevention and correction.</p>	-	3	-	5	Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests



	The role of a pharmacist-specialist when instructing the elderly on the drugs use.					
49	<p>Information and advisory activities of a pharmacist-specialist in hospital, ambulatory-polyclinic and pharmacy organizations</p> <p>Information on new drugs recommended for use in the treatment of atherosclerosis, cardiovascular diseases, acute respiratory and viral diseases, pathology of the gastrointestinal tract, kidney and urinary tract diseases, the liver and biliary tract.</p> <p>Comparative characteristics of new drugs for pharmacotherapeutic properties and the likelihood of side effects. Information about new dosage forms and prospects for their creation.</p> <p>The role of a pharmacist-specialist in conducting instruction on the drugs use.</p>	-	6	-	8	<p>Interviews, reports at seminars, reports on home practice exercises with their oral presentation, control questioning, situational tasks and tests</p> <p>Exam</p>