

SYLLABUS

Academic year 2022/2023

Name of a course / module	Clinical pharmacology	
Name of a department where course is held	Department of Clinical Pharmacology	
E-mail of department	clinpnan@umb.edu.pl	
Faculty of	Medicine with Division of Dentistry and Division of Medical Education in English	
Name of a field of study	Medicine	
Level of education	<i>First degree studies, Uniform master's degree studies</i>	
Form of study	full time <input checked="" type="checkbox"/>	part time <input type="checkbox"/>
Language of instruction	Polish <input type="checkbox"/>	English <input checked="" type="checkbox"/>
Type of course	obligatory <input checked="" type="checkbox"/>	facultative <input type="checkbox"/>
Year of study / Semester	I <input type="checkbox"/> II <input type="checkbox"/> III <input type="checkbox"/> IV <input checked="" type="checkbox"/> V <input checked="" type="checkbox"/> VI <input type="checkbox"/>	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input checked="" type="checkbox"/> 9 <input type="checkbox"/> 10 <input checked="" type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/>
Introductory courses with preliminary requirements	Implementation of the learning outcomes in terms of knowledge, skills and competencies of the previous year of study	
Number of didactic hours with specification of forms of conducting classes	Lectures – 10 Classes – 25	
Assumptions and aims of the course	<p>The aim of the course of clinical pharmacology is teaching medical students about the practical principles of rational pharmacotherapy of patients in relation to certain types of diseases and clinical situations. During the course the student, after familiarizing with etiopathogenesis, symptomatology and elements of diagnosis of selected diseases, can propose pharmacotherapeutic intervention. Acquires knowledge about the mechanisms of drug action, their effectiveness, side effects and interactions in specific clinical situations. Recognizes the risks associated with polypharmacy. The student should be able to plan the pharmacotherapy of the patient based on the current standards, with particular emphasis on its individualization, adjust the dosage, take into account aspects of pharmacokinetics, indications for monitoring, predict adverse drug reactions and drug interactions. The student learns the basic issues of pharmacoconomics.</p>	
Didactic methods	<ul style="list-style-type: none"> - providing knowledge in a form of a lecture - consultation (both regular and organized in individual cases) - discussion - presentation - case description - clinical classes - with subject and subjective examination of the patient (to plan individual pharmacotherapy) 	
Full name of the person conducting the course	employed scientific and teaching staff	
Full name of the person responsible for teaching	Prof. dr hab. Halina Car	

Symbol and number of learning outcomes according to the teaching standards and other learning outcomes	Description of directional learning outcomes	Form of classes	Verification methods for achieving intended learning outcomes
Knowledge			
C.W36	effect of pathological processes on drug's metabolism and elimination	Classes/Lectures/clinical classes	Summary methods, e.g. - written exam (test) Forming methods, e.g. - observation of the student's work - assessment of activity during classes - oral exam - assessment of preparation for classes - oral exam - discussion during classes - partial credits Clinical classes - students are required to write a patient's pharmacotherapy proposition based on physical and subjective examination and analysis of laboratory and imaging data.
C.W37	basic principles of pharmacotherapy	Classes/Lectures/clinical classes	
C.W38	major unwanted responses to drugs and those resulting from drug interactions	Classes/Lectures/clinical classes	
C.W40	indications for genetic test to individualize pharmacotherapy	Classes/Lectures/clinical classes	
C.W41	basic developments of therapy, specifically capabilities of cell therapy and gene therapy	Classes/Lectures/clinical classes	
C.W43	drug groups, the abuse of which can cause poisoning	Classes/Lectures/clinical classes	
C.W44	symptoms of typical acute poisonings; intoxication caused by alcohol, narcotics and psychotropic substances, heavy metals and other drugs	Classes/Lectures/clinical classes	
Skills			
C.U13	making simple pharmacokinetic calculations	Classes/Lectures/clinical classes	Summary methods, e.g. - written exam (test) Forming methods, e.g. - observation of the student's work - assessment of activity during classes - oral exam - assessment of preparation for classes - oral exam - discussion during classes - partial credits Clinical classes - students are required to write a patient's pharmacotherapy proposition based on physical and subjective examination and analysis of laboratory and imaging data.
C.U14	administering a right medication dose in order to remedy pathological phenomena in the organism or an organ	Classes/Lectures/clinical classes	
C.U18	estimating a toxicological risk for certain age groups and of hepatic and renal failure; preventing medicine poisoning	Classes/Lectures/clinical classes	
E.U31	interpreting characteristics of pharmaceuticals and critically evaluating medicine advertisements	Classes/Lectures/clinical classes	
Social competence			
K1	He /She recognizes his/her own diagnostic and therapeutic limitations, educational needs, planning of educational activity		Continuous assessment by the teacher
K2	He /She is able to work in a team of professionals, in a multicultural and multinational environment		
K3	He /She implements the principles of professional camaraderie and cooperation with representatives of other professionals in the range of health care		
K4	He /She observes doctor-patient privilege; and patient rights		

ECTS points	
Student Workload	
Form of activity	Number of hours to complete the activity
Classes that require the participation of a teacher	
1. Realization of the course: lectures (according to the curriculum)	4
2. Realization of the course: classes (according to the curriculum)	13
3. Realization of the course: seminars; (according to the curriculum)	
4. Realization of the course: electives	
5. Participation in consultation	
	Total hours: 17
Student self-study:	
<i>1 punkt ECTS oznacza 25-30 godzin pracy studenta w różnych formach, takich jak np.:</i>	
1. Preparation for the theoretical and practical classes (realization of projects, documentation, case description etc.)	
2. Preparation for tests/credits	
3. Preparation for an exam/final test-credit	
	Total hours:

Course contents: *proszę wpisać hasłowo tematykę poszczególnych zajęć, pamiętając, aby przekładała się ona na zamierzone efekty kształcenia*

**Learning outcomes
(symbol and number)**

1. C.W36, C.U13

2. C.W37, C.W38, C.W40, C.W41, C.W43, C.W44, C.U14,
C.U18, E.U31

Topics:

Lectures:

Fundamentals of clinical pharmacology.

Drug interactions.

Adverse drug reactions.

Safety of drugs in pregnancy.

Pharmacotherapy of obesity.

Nanopharmacology - possibilities and limitations.

Classes:

Pharmacotherapy of respiratory diseases: strategies of therapy and prevention of selected diseases, in particular bronchial asthma, COPD, inflammation of the respiratory tract.

Subject and physical examination of the patient in terms of therapy effectiveness, side effects and drug interactions. Ability to plan individual therapy and assess patient safety. New therapeutic strategies for respiratory diseases.

Pharmacotherapy of gastrointestinal diseases: treatment strategies and elements of prophylaxis of selected gastrointestinal diseases, including in particular: peptic ulcer disease, irritable bowel syndrome, motor disorders, secretion and inflammation of the gastrointestinal tract. Liver failure - the choice of treatment. Aspects of parenteral and enteral nutrition.

Subject and physical examination of the patient in terms of therapy effectiveness, side effects and drug interactions. Ability to plan individual therapy and assess patient safety. New therapeutic strategies in the treatment of gastrointestinal diseases.

Pharmacotherapy of diseases of the endocrine systems.

Therapeutic management and prophylaxis in diabetes mellitus and metabolic syndrome. Pathologies in the secretory system of the adrenal cortex and thyroid hormones - clinical implications and therapy.

Subject and physical examination of the patient in terms of therapy effectiveness, side effects and drug interactions. Ability to plan individual therapy and assess patient safety. New therapeutic strategies.

Basic principles of chemotherapy: Individualized pharmacotherapy of bacterial infections, interactions, side effects, combination therapy. Influence of pathological and physiological processes on the choice of therapy. Clinical use of antibacterial chemotherapeutic agents:

- upper and lower respiratory tract infections
- the use of antibacterial drugs in the treatment of gastrointestinal diseases
- H. pylori infections - bacterial poisoning (Salmonella, Shigella and others)
- Clostridium difficile infections
- urinary tract infections - antibiotics in dermatology
- antibiotic therapy of meningitis, sepsis
- prophylactic use of antibacterial drugs
- management of multiresistant strains
- microbiome, probiotics and symbiotic

Problems of antibiotic resistance, hospital infections. Antibiotic prophylaxis. New therapeutic strategies.

Subject and physical examination of the patient in terms of therapy effectiveness, side effects and drug interactions. Ability to plan individual therapy and assess patient safety.

Immunomodulators: immunosuppression and immunostimulation. Chemotherapy of oncological diseases. The main groups of anti-cancer drugs - the scope of the therapeutic effect, the most common side effects. Complications of anti-cancer treatment, mitigation options. Oncological supervision. Principles of combined chemotherapy in oncology, diagnostic and therapeutic algorithms in the most common human neoplasms. Subject and physical examination of the patient in terms of therapy effectiveness, side effects, and drug interactions. Ability to plan individual therapy and assess patient safety. New therapeutic strategies.

Basic antiprotozoal and helminthic drugs in the treatment of:

- Pneumocystis irovecii pneumonia
- amoebiasis
- trichomoniasis
- toxoplasmosis
- flatworm and roundworm infections (intestinal and tissue)

Drugs used in the treatment of viral infections
Drugs used in fungal infections:

- antifungal antibiotics
- synthetic antifungal drugs
- problems and new directions of antifungal therapy

Subject and physical examination of the patient in terms of therapy effectiveness, side effects and drug interactions. Ability to plan individual therapy and assess patient safety. New therapeutic strategies.

Pharmacotherapy of diseases of the endocrine systems. Thyroid.

1. Therapeutic problems related to the dysfunction of the endocrine systems: - thyroid gland dysfunction.

2. Pharmacotherapy of life-threatening conditions.

The applicable material for theoretical part in the field of therapy of thyroid gland diseases:

Discussion of pharmacotherapy of selected disease entities:

- a. hyperthyroidism and hypothyroidism
- b. hyperthyroidism during pregnancy
- c. thyroid crisis
- d. Graves' disease
- e. chronic autoimmune thyroiditis (Hashimoto's disease) - in the field of calculating doses, side effects, drug interactions, therapy algorithms, complementary therapy and individualization of therapy

Treatment of Cardiovascular Diseases: Therapeutic strategies for basic conditions in cardiology, emergencies in cardiology, control of vascular smooth muscle tone, disorders of the hematopoietic system, and treatment of anemia. Avitaminosis. Subjective and physical examination of the patient in terms of the effectiveness of therapy, side effects and drug interactions. Ability to plan individual therapy and evaluate patient safety. New therapeutic strategies for cardiovascular diseases.

Pharmacotherapy of central nervous system diseases: Clinical implications of anti-psychotic, anti-depressant and anti-anxiety drugs. Pharmacotherapy of mood disorders, anxiety disorders, principles of treatment of sleep disorders, seizures. Therapy of diseases of the elderly: Alzheimer's disease, Parkinson's disease. Subjective and physical examination of the patient in terms of the effectiveness of therapy, side effects and drug interactions. Ability to plan individual therapy and assess patient safety. New therapeutic strategies.

Insulin therapy: types of insulins; Principles of insulin therapy: intensive functional, intensive, conventional, simple - combined treatment (insulin + oral drugs), intravenous insulin therapy. The insulin therapy of selected diseases: type 1 diabetes (including LADA); type 2 diabetes; type 3 diabetes (including MODY); gestational diabetes mellitus (GDM) in terms of dose calculation, side effects, drug interactions, therapy algorithms, complementary therapy and individualization of therapy. Insulin therapy and physical activity, carbohydrate exchangers. Complications of treatment with exogenous insulin (hypoglycemia and glucose fluctuations, adipose tissue hypertrophy, iatrogenic insulin resistance). Primary and secondary prevention of diabetes complications. Subjective and physical examination of the patient in terms of the effectiveness of therapy, side effects and drug interactions. Ability to plan individual therapy and assess patient safety. New therapeutic strategies.

The scope of topics applicable to exercises at the Medical Simulation Center:

Emergency pharmacology in adults: shocks; electrolyte imbalances; acid-base imbalance; carbohydrate metabolism disorders; convulsions; drug poisoning

Pharmacological management in emergencies in children: from the respiratory system; from the central nervous system. Knowledge of drugs used: order of drug administration; doses of the preparations used depending on age, body weight and clinical condition, legitimacy of the use of drugs in given clinical situations, pharmacological characteristics of drugs, individualization of the selection of pharmacotherapy depending on the patient's clinical condition.

Obligatory textbook: (1-2 pozycje)

1/ „Basic & clinical pharmacology”

Bertram G. Katzung, Anthony J. Trevor.

McGraw-Hill Companies, cop. 2019. 15th ed.

2/ „Principles of pharmacology. The pathophysiologic basis of drug therapy” 4th Edition

Eds. D.E. Golan, A.H. Tashjian, Jr., E.J. Armstrong, A.W. Armstrong

Lippincott Williams & Wilkins 2016

Optional textbook: (1-2 pozycje)

1/ “Goodman & Gilman’s The pharmacological basis of therapeutics”

Eds. L.L. Brunton, J.S. Lazo, K.L. Parker (13th ed.)

McGraw-Hill Companies, USA 2017

2/ “Rang & Dale's Pharmacology”

Eds James M. Ritter, Rod J. Flower, et al (9th ed.)

Elsevier Ltd, Philadelphia 2020

Criteria for assessing the achieved learning outcomes and the form and conditions for receiving credit:

Należy określić w szczególności: zasady dopuszczenia do egzaminu, zwalniania z egzaminu, sposób i warunki zaliczenia zajęć, łącznie z określeniem zasad zaliczania nieobecności oraz określeniem liczby godzin nieobecności kwalifikujących do niezaliczenia przedmiotu oraz możliwości i formy wyrównywania zaległości

Written exam, active participation on the classes and their credit

01.02.2023 Emil Trofimiuk.

(date and signature of the person preparing the syllabus)

01.02.2023 Halina Car

*(date and signature of the Head of the
Department where the course is held)*

and

(course coordinator)