

University: <i>Slovak Medical University in Bratislava</i>	
Faculty: <i>Faculty of Medicine</i>	
Code of the Subject: <i>GM057</i>	Title of the Subject: <i>Clinical Pharmacology</i>
Type, Extent, Methods of Education Activities: <i>Per semester in hours: 21</i> <i>Lectures: 0 per week</i> <i>Practical: 21/1,5 hours per week</i> <i>(Total workload of a student is 25 hours.)</i> <i>Method: contact teaching (distant teaching¹)</i> <i>Study form: full-time study</i>	
Nr. of credits: <i>1 credit</i>	
Recommended Semester /Trimester of the Study: <i>8th semester</i>	
Level of Study: <i>1st + 2nd Level (MD.)</i>	
Necessary pre-requisites: <i>medical pharmacology, + clinical disciplines (passed successfully till 7th Semester including)</i>	
Conditions for Awarding the Credit: <i>Criteria for awarding the credits are as follows: attendance at the practicals, successful knowledge test, written elaboration of 5 medicines' prescriptions.</i>	
Completion of the course: <i>CA - continuous assessment</i> <i>The student's workload in indirect teaching is 4 hours. It includes self-study of the recommended literature and written elaboration of assigned medicines prescriptions.</i>	
Learning outcomes: <i>VV1 - cognitive learning outcomes: The student will complete and deepen his/her knowledge in clinical pharmacology and pharmacotherapy, especially in clinical pharmacokinetics, and pharmacodynamics, in relationship to their application in a particular patient with regard to the principles of rational pharmacotherapy, including the application of knowledge in pharmacoeconomics and health technology assessment (HTA).</i> <i>VV2 - cognitive learning outcomes: The student will complete and consolidate his/her knowledge in clinical pharmacology of clinically most used groups of drugs in various disciplines of internal medicine, neurology, psychiatry, paediatrics, gynaecology and obstetrics and in emergency and intensive care medicine. The knowledge on practical application of the principles of the rational selection (indication) of drugs in relationship to clinical characteristics of a disease and to clinically important individual characteristics of a patient, aimed at individualization and optimization of his/her pharmacotherapy.</i> <i>VV3 - cognitive learning outcomes: The student will deepen his/her knowledge on the importance of clinical trials results for improvements in rational pharmacotherapy, on the sources and methods of prevention of drug prescription errors, on differences between polypharmacy and polypragmasy, on clinical significance of drug-drug interactions, on drug adverse events/reactions, and side effects, on methods of monitoring the efficacy and safety of a drug therapy, including the therapeutic drug monitoring (TDM).</i> <i>VV4 – psycho-motor learning outcomes: The student will gain the necessary knowledge and skills regarding practical prescribing in inpatient and outpatient health care settings, especially e-prescription (within the e-Health context). He/she will master the procedure of reporting adverse drug reactions/effects. He/she will learn or improve the skills in working with relevant drug databases and expert systems. He/she will improve the communication skills in rational pharmacotherapy and prescribing, especially the communication with a patient, his/her relatives, with colleagues - doctors, pharmacists, nurses, and with health insurance companies. He/she will get acquainted with effective procedures of drug education.</i> <i>VV5 - affective learning outcomes: The student will acquire or consolidate his/her positive professional attitudes and skills in the field of rational pharmacotherapy and prescribing, including those regarding dealing with relevant ethical issues, deemed important for his/her successful work in clinical practice/prescribing, for development and maintaining his/her professional integrity (medical and ethical) and for the prevention of unethical conduct or behaviour.</i>	
A Brief Outline of the Subject:	

¹ § 108e ods. 2 zákona č.131/2002 Z. z. o vysokých školách.

- *Clinical-pharmacological prerequisites for rational pharmacotherapy and prescribing. Practical principles of clinical pharmacokinetics and pharmacodynamics.*
- *Efficacy and safety profile of a drug (medicament), its position within a particular pharmacotherapeutic group.*
- *Individual characteristics of a patient and their consideration in rational pharmacotherapy, impairment of function of the elimination organs (kidneys, liver), individualization and optimization of pharmacotherapy, clinical pharmacogenetics, and personalized medicine. Methods for increasing and monitoring patients' compliance.*
- *Clinical significance of drug-drug interactions, of drug adverse events, of drug adverse reactions, of drug adverse effects and of the side effects of drugs. Methods of monitoring of the effectiveness and safety of drug treatments, principles of therapeutic drug monitoring (TDM). Reporting of adverse drug reactions/adverse drug effects.*
- *The importance of drug clinical trials for improvements in rational pharmacotherapy.*
- *Current drug information resources (databases, expert systems) for use in optimizing the rational pharmacotherapy and drug prescribing.*
- *Sources of prescribing errors and procedures for their prevention. Polypharmacotherapy, polypragmasy.*
- *The practical prescribing (e-Prescription, prescribing of drugs in the inpatient department).*
- *Clinical pharmacology and rational prescribing of the most frequently used groups of drugs in internal medicine - in cardiology, pneumology, gastroenterology, nephrology, hepatology, diabetology, anti-infective treatment (antibiotics, antivirals) and prevention (vaccines), endocrinology, immunology, and oncology.*
- *Rational pharmacotherapy and prescribing in emergency and intensive care.*
- *Rational pharmacotherapy and prescribing in psychiatry.*
- *Rational pharmacotherapy and prescription in neurology.*
- *Rational pharmacotherapy and prescribing in paediatrics.*
- *Rational pharmacotherapy and prescribing in old age.*
- *Rational pharmacotherapy and prescribing during pregnancy and lactation.*
- *Drug utilization processes, state drug policy. Registration and categorization of drugs. Methods of payment for pharmacotherapy, communication with health insurance companies. Generic prescription, biosimilar drugs. Off label prescription. Irrational and irrational pharmacotherapy. Nutritional supplements.*
- *Communication and education in rational pharmacotherapy and prescribing (management of disinformation and prejudices).*

Recommended Literature:

- Gerard A. McKay, Matthew R. Walters, Neil D. Ritchie (2021): *Clinical Pharmacology and Therapeutics. Lecture Notes.* John Wiley & Sons, 320 pages, ISBN 1119599954/9781119599951.
- Derek G. Waller, Anthony Sampson, Andrew Hitchings (2021): *Medical Pharmacology and Therapeutics. E-Book. 6th Edition,* Elsevier Health Sciences, 2021, 752 pages, ISBN 0702081604/9780702081606.
- Lüllmann, H., Mohr K., Hein L. (2018): *Color Atlas of Pharmacology. 5th Edition,* Thieme, 444 pages, ISBN 3132410659/9783132410657.
- *Other relevant literature will be recommended by the teacher.*

Language Necessary for the Study of the Subject: English

Notes: Teaching at the Slovak Medical University available in English or in Slovak language.

Evaluation of the Subject (Note: This is a newly introduced subject.)

A	B	C	D	E	FX

Teachers: prof. Jozef Glasa, MD, PhD, PhD, ass. prof. Helena Glasová, PhD, and ad hoc invited experts from clinical practice (clinicians).

Date of the Latest Change: 18.3.2022

Approved by: person responsible for realization, development and ensuring of the study program quality
prof. MUDr. Iveta Šimková, CSc.