

Module of Clinical Pharmacology: The list of the topics and the contents of the tutorials.

Year 6 students (English Medium)

Faculty of General Medicine

Tutorial	Topic	Content	Hours	
1	Topic 1: Clinical Pharmacology and Pharmacokinetics	Clinical Pharmacology: The concept and the main topic areas. Pharmacokinetics. Drug disposition processes: Absorption, distribution, plasma protein binding, metabolism, and excretion. The main pharmacokinetic parameters and their clinical applications: Bioavailability, volume of distribution, clearance, plasma half-life. Plasma concentration-time profiles. The concept of loading and maintenance doses. Methods to calculate loading and maintenance doses. Pharmacogenetics and the concept of individualised medicine.	4	
2	Topic 2: Pharmacodynamics	Pharmacodynamics. The main targets (receptors, enzymes, ion channels, and carriers) and mechanisms of drug action. Drug-receptor interactions: Full and partial agonists, competitive and non-competitive antagonists. Pharmacological response: The expected pharmacological effects, hyperreactivity, idiosyncrasy. Drug efficacy. Therapeutic index. Dose-response curve (DRC): Graded and quantal DRCs.	4	
3	Topic 3: Drug toxicity, safety and drug-drug interactions.	Pharmacotherapeutics and rational drug prescribing. Drug toxicity and safety. The concept of LD ₅₀ , TD ₅₀ , ED ₅₀ and therapeutic drug monitoring. Adverse drug re-	2	

		actions (ADRs): Type A, B, C, D, and E ADRs. Pharmacovigilance.		
		Drug-drug interaction: Pharmaceutical, pharmacokinetic, and pharmacodynamic drug interactions. Drug-food and drug-herb interactions.	1	
	Topic 4: Factors that affect pharmacokinetics and pharmacodynamics	Age, sex, pregnancy-related changes in pharmacokinetics and pharmacodynamics: Basic principles and clinical applications.	1	
4	Topic 5: Substance of abuse	the concept of substance /drug abuse, withdrawal syndrome, physical and psychological dependence, tolerance. Classification of substances of abuse: Opioids, psychostimulants, cannabinoids, hallucinogens, nicotine, alcohol. Clinical pharmacology of substances of abuse: Prevalence in population, mechanisms of action, clinically relevant pharmacokinetics, effects of short and long-term use, withdrawal effects, overdose and treatment of acute overdose.	2	
	Topic 6: Clinical Pharmacology of the drugs used for the treatment of gastrointestinal diseases.	Classification and clinical pharmacology of the drugs used for the treatment of peptic ulcer: Mechanism of action, main pharmacological effects, clinical related pharmacokinetics, clinical applications, ADRs, and drug-drug interactions. Rational pharmacotherapy of peptic ulcer disease.	2	
5	Topic 7: Principles of rational antimicrobial therapy	The types of antimicrobial therapy: Definitive, empirical, Principles of rational antimicrobial therapy. Criteria of effective antimicrobial	2	

		therapy. Classification of antimicrobial agents. Mechanisms of bacterial antibiotic resistance.		
	Topic 8: Clinical Pharmacology of antibacterial drugs.	Clinical pharmacology of inhibitors of bacterial cell wall synthesis (beta lactams and glycopeptides): Mechanism of action, main pharmacological effects, clinical related pharmacokinetics, clinical applications, ADRs, and drug-drug interactions.	2	
6	Topic 8: Clinical Pharmacology of antibacterial drugs.	Clinical pharmacology of inhibitors of bacterial protein synthesis (macrolides, tetracyclines), fluoroquinolones, and aminoglycosides: Mechanism of action, main pharmacological effects, clinical related pharmacokinetics, clinical applications, ADRs, and drug-drug interactions.	4	
	Topic 9: Clinical Pharmacology of antifungal and antiviral drugs.	Clinical pharmacology of antifungal and antiviral drugs: Mechanism of action, main pharmacological effects, clinical related pharmacokinetics, clinical applications, ADRs, and drug-drug interactions.		
7	Topic 10: Clinical pharmacology of the drugs used for the treatment of hypertension	Clinical Pharmacology of beta-blockers, inhibitors of renin angiotensin system, calcium channel blockers and anti-arrhythmic drugs: Mechanism of action, main pharmacological effects, clinical related pharmacokinetics, clinical applications, ADRs, and drug-drug interactions. Rational pharmacotherapy of hypertension.	4	

8	Topic 11: Clinical pharmacology of the drugs used for the treatment of chronic ischemic heart disease and chronic heart failure.	Clinical Pharmacology of antiplatelets, anticoagulants, lipid lowering, anti-anginal, and cardiotoxic drugs: Mechanism of action, main pharmacological effects, clinical related pharmacokinetics, clinical applications, ADRs, and drug-drug interactions. Rational pharmacotherapy of chronic ischemic heart disease and chronic heart failure.	4	
9	Topic 12: Clinical Pharmacology of analgesics and anti-inflammatory drugs	Clinical pharmacology of glucocorticoids and nonsteroidal anti-inflammatory drugs: Mechanism of action, main pharmacological effects, clinical related pharmacokinetics, clinical applications, ADRs, and drug-drug interactions.	4	
10	Topic 13: Clinical Pharmacology of the drugs used for the treatment of respiratory diseases.	Clinical Pharmacology of bronchodilators and inhaled glucocorticoids: Mechanism of action, main pharmacological effects, clinical related pharmacokinetics, clinical applications, ADRs, and drug-drug interactions. Rational pharmacotherapy of bronchial asthma and COPD.	2	
	Topic 14: Clinical Pharmacology of diuretics	Classification and clinical pharmacology of diuretics: Mechanism of action, main pharmacological effects, clinical related pharmacokinetics, clinical applications, ADRs, and drug-drug interactions.	2	
11	Topic 15: Clinical Pharmacology of the drugs used for the treatment of diabetes mellitus type 1 and type 2	Classification and clinical pharmacology of insulins and oral antidiabetic drugs: Mechanism of action, main pharmacological effects, clinical related pharmacokinetics, clinical applications, ADRs, and drug-drug interactions. Rational treatment	4	

		of diabetes myelitis type 1 and type 2.		
12	End of Module Test		4	
Total hours			48	