VNIVERSITAT DE VALÈNCIA

Course Guide
34468 Clinical pharmacology

COURSE DATA

Data Subject	
Code	34468
Name	Clinical pharmacology
Cycle	Grade
ECTS Credits	4.5
Academic year	2024 - 2025

Study (s)

Degree	Center	Acad. year	Period
1204 - Degree in Medicine	Faculty of Medicine and Odontology	5	First term

Subject-matter

Degree	Subject-matter	Character
1204 - Degree in Medicine	11 - Diagnostic and therapeutic procedures	Obligatory

Coordination

Name	Department
ESPLUGUES MOTA, JUAN VICENTE	135 - Pharmacology

SUMMARY

The subject of Clinical Pharmacology focuses on the practical application of drugs to select and adjust treatments in an individualized manner, considering the specific characteristics of each patient and the most modern therapeutic approaches for each medical condition. Additionally, it promotes the rational use of medications, avoiding unnecessary or inappropriate use, which contributes to the sustainability of the healthcare system and improves clinical outcomes. The subject emphasizes the clinical justification of indications, dosages, and possible side effects, aiming to improve the efficacy and safety of drugs. It also includes knowledge of pharmacovigilance to detect, evaluate, and prevent adverse effects, ensuring the safety of drugs on the market. Finally, it seeks to develop critical and analytical skills in students, allowing them to solve complex clinical problems, make evidence-based therapeutic decisions, and stay updated with advances in pharmacology. Furthermore, it fosters knowledge about research and innovation in therapeutics, preparing students to face the challenges of modern medicine and improve the health outcomes of their patients, contributing to more effective and safer medical practice.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

1204 - Degree in Medicine

- Establish the diagnosis, prognosis and treatment, applying principles based on the bestinformation available and on conditions of clinical safety.
- Indicate the most accurate therapy in acute and chronic processes prevailing, as well as for terminally ill patients.
- Acquire properclinical experience in hospitals, health care centres and other health institutions, under supervision, as well as basic knowledge of clinical management focused on the patient and the correct use of tests, medicines and other resources available in the health care system.
- Know how to use the sources of clinical and biomedical information available, and value them critically in order to obtain, organise, interpret and communicate scientific and sanitary information.
- Know how to use IT in clinical, therapeutic and preventive activities, and those of research.
- Keep and use medical records which contain information about the patient for later analysis, preserving the confidentiality of personal data.
- In the professional practise, take a point of view which is critical, creative, constructive and research-oriented.
- Understand the importance and the limitations of scientific thinking in the study, prevention and management of diseases.
- Be able to formulate hypothesis, gather information and evaluate it critically in order to solve problems by following the scientific method.
- Establish a good interpersonal communication which may allow professionals show empathy and talk to the patients efficiently,as well as to their relatives, the media and other professionals.
- Organizar y planificar adecuadamente la carga de trabajo y el tiempo en las actividades profesionales.
- Capacidad para trabajar en equipo y para relacionarse con otras personas del mismo o distinto ámbito profesional.
- Criticism and self-criticism skills.
- Capacity for communicating with professional circles from other domains.

- Acknowledge diversity and multiculturality.
- Consideration of ethics as a fundamental value in the professional practise.
- Working capacity to function in an international context.
- Evaluate the risk-benefit balance of diagnostic and therapeutic procedures.
- Knows the main groups of drugs, doses, routes of administration and pharmacokinetics. Interactions and adverse effects.
- Understands the importance of prescription and pharmacovigilance.
- Knows pharmacology of various organs and systems.
- Knows how to use medicines properly. Analgesic, antineoplastic, antimicrobial and anti-inflammatory drugs.
- Understands the characteristics of surgical haemorrhage and thromboembolic prophylaxis.
- Compiles medical prescriptions correctly, adapted to the patient?s situation and legal requirements.

LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

- Developing the professional practice of the pharmacological therapeutic intervention, based on the updated scientific evidence.
- Knowing the proper pharmacological therapeutic of the more prevalent pathological processes.
- Stating and proposing preventive measures against adverse potential events derived from the use of drugs in therapeutics.
- Capacity to select the use of the drugs depending on the criteria of benefit/risk for the patient.
- Assessing the individual response (therapeutic or toxic) of the drug in each patient according the physiopathological, environmental or genetic factors.
- Foreseeing the potential pharmacological interactions in the medical practice.
- Acquiring basic knowledge of drugs clinical management focused on the patient and the rational use of the healthcare system resources.
- Acquiring basic knowledge in Pharmacoepidemiology to evaluate drug tendencies and risks over the population.
- Skill to know, use and evaluate critically the information sources about essays or clinical studies with drugs.
- Acquiring a critical point of view about the incorporation of new drugs in the common therapeutic practice.

DESCRIPTION OF CONTENTS

1. Theory (1)

1. Clinical pharmacology of the Central Nervous System I. Anxiety. Insomnia. Depression, mania, bipolar disorder. Psychosis.
2. Clinical pharmacology of the Central Nervous System II. Epilepsy. Parkinson. Depression. Neurodegenerative diseases.
3. Clinical pharmacology of the pain I. Pharmacotherapy of the pain and the inflammation: drugs

selection. Rheumatic pain. Gout. Migraine. Intense pain in special situations.
4. Clinical pharmacology of the pain II. Pharmacotherapy and drugs selection. Headache, migraine. Intense pain in special situations.
5. Clinical pharmacology of the coagulation disorders I. Pharmacotherapy and drugs selection in the thromboembolic processes.
6. Clinical pharmacology of the coagulation disorders II and of the hematopoietics. Pharmacotherapy and drugs selection in the hemostasis disorders. Pharmacotherapy and drugs selection in the hematopoietics disorders.
7. Clinical pharmacology of the hyperlipemia. Pharmacotherapy and drugs selection. Interactions.
8. Clinical pharmacology of hypertension. Pharmacotherapy and drugs selection. Use of the antihypertensive in special situations.
9. Cardiac clinical pharmacology I. Pharmacotherapy and drugs selection. Angina. Infarction.
10. Cardiac clinical pharmacology II. Pharmacotherapy and drugs selection. Arrhythmias. Cardiac insufficiency.

2. Theory (2)

11. Bronco-pulmonary clinical pharmacology. Pharmacotherapy and drugs selection. Cough. Asthma. Obstructive diseases.
12. Gastrointestinal clinical pharmacology I. Pharmacotherapy and drugs selection. Ulcer and pathologies related with the gastric acid secretion.
13. Gastrointestinal clinical pharmacology II. Pharmacotherapy and drugs selection. Vomit. Diarrhea. Constipation. Intestinal inflammatory disease. Hepatic pharmacotherapy.
14. Clinical pharmacology of the most prevalent endocrine disorders. Pharmacotherapeutic guidelines and drugs selection.
15. Anti-infectious clinical pharmacology I. Selection criteria of the antibacterials. Pharmacotherapeutic guidelines.
16. Anti-infectious clinical pharmacology II. Selection criteria of the antifungal, antiviral and antiparasites. Pharmacotherapeutic guidelines.
17. Anti-neoplastic clinical pharmacology. Selection criteria of the anti-neoplastic agents. Pharmacotherapeutic guidelines.

3. CLINICAL CASES

1. Patient with neurological or psychiatric disease.
2. Patient with an inflammatory process and/or pain.
3. Patient with a thromboembolic process.
4. Patient with a cardiovascular disease.
5. Patient with an endocrine/metabolic disease.
6. Patient who presents an infectious process.
7. Patient with a broncho-pulmonary process.
8. Patient who presents a process that affects the digestive system or liver or the biliary ducts.

4. COMPUTER PRACTICES

1. Clinical pharmacokinetics. Monitoring of drug plasma levels. Monitoring procedures. Monitoring indications. Dose adjustment and individualisation. Bioequivalence study.
2. Sources of medication information III. Preparation of a written document on current pharmacological issues.
3. Sources of medication information IV. Presentation and discussion of the document prepared.
4. Pharmacoepidemiology. Cohort studies. Case-control studies. Reason for advantages (odds ratio). Errors and biases. Systematic review and meta-analysis.
5. Pharmacoeconomics. General concepts. Definition of objectives. Determination of pharmacological effects and costs. Types of economic drug analysis: cost-benefit, cost-effectiveness, cost-utility.
6. Prescription. Basics for and objectives of the prescription. Drug promotion (analysis of available information). Medications (Types, possible errors, forms of prescription). The medical prescription Therapeutic compliance.

5. Seminar practices

1. Sources of medication information I. Printed and electronic sources.
Types of documents: primary, secondary and tertiary. Technical data sheet and package leaflet.
2. Sources of medication information II. Search and critical analysis.
3. Clinical trial. Definition and objectives. Types of tests according to the stage of development. Types of tests according to their design. Randomisation and masking. Sample size. Ethical considerations. Informed consent. Good clinical practice standards.
4. Pharmacovigilance. Spontaneous notification of suspected adverse reactions to medications. Management of notifications. Evaluation of causality. Prevention.
5. Adverse drug reaction (ADR). Concept. Types of ADR. ADR classification Risk factors. Diagnosis. Alerts.
6. Drug interactions. Clinically relevant interactions. Types of interactions. Frequency and severity of interactions. Most frequent interactions of clinical interest. Prevention and detection of interactions.
7. Pharmacotherapy in special situations: physiological and pathological.
8. Genetic bases of the individualised response to medications.
Pharmacogenetics. Pharmacogenomics.

WORKLOAD

ACTIVITY	Hours	% To be attended
Seminars	24,00	100
Theory classes	19,00	100
Computer classroom practice	13,00	100
Development of group work	20,00	0
Study and independent work	20,00	0
Readings supplementary material	16,50	0
TOTAL	**112,50**	

TEACHING METHODOLOGY

A) Theoretical lessons: they will be focused on the presentation of the concepts and procedures associated with the study of the subject through the expositive method.

B) Practical lessons: they are focused on individual or in group activities, works and cases expositions, performed individually or in group and monitored by the professor.

C) Exam: it will be focused on the learning assessment.

- The gender perspective, the respect for diversity, and the sustainable development goals (SDGs) will be incorporated into teaching, whenever possible.

EVALUATION

The final mark will be based on the sum of the marks received for the theory and practical parts of the subject, each of which represent 50% of the final mark and both of which must be passed independently:

a) **Theory**: Evaluation will take place throughout the academic course through a series of multiple-choice tests or a final exam with the same format. The multiple-choice tests consist of questions with 5 possible answers of which only one is valid; a correct answer will receive 1 point, while an incorrect answer will result in 0.20 points being subtracted from the final mark.

b) **Practical classes**: Attendance of practical classes is compulsory. Evaluation will be based on continued assessment of the student's participation in the different activities carried out during the practical classes and on an exam that will assess the acquired skills and capacities related with the subject's general competences. This exam may include short questions, multiple-choice questions and problems to be solved. Non-attendance of more than 20% of classes without due justification will rule out the possibility of passing the subject.

- Attendance at practical activities is mandatory. The student is considered to meet this requirement if he or she has attended a minimum of 80% of these activities and has adequately justified the impossibility of attending the remaining sessions due to the occurrence of a cause of force majeure. It will be essential to comply with this requirement to pass the subject.

- Students are reminded of the importance of carrying out evaluation surveys on all the teaching staff of the degree subjects.

REFERENCES

Basic

- DiPiro JT (2020). Pharmacotherapy: A pathophysiologic approach. 11th ed. McGraw-Hill Education/Medical.
- Florez J. (2013). Farmacología Humana, 6ª ed., Elsevier-Masson.
- Golan DE. (2017) Principios de farmacología. Bases fisiopatológicas del tratamiento farmacológico. 4ª ed. Lippincott.
- Goodmann and Gilman (2022). The Pharmacological Basis of Therapeutics. 14th ed. McGraw-Hill. Education/Medical.
- Katzung, B.G. (2022). Basic and Clinical Pharmacology 15th ed. McGraw-Hill Education/Medical.
- Rang y Dale (2020). Farmacología. 9ª ed. Elsevier.
- Schwinghammer TS. (2021). Pharmacotherapy Handbook, 11th edition ed. McGraw-Hill Education/Medical.
- Velázquez. (2021). Farmacología Básica y Clínica 19ª ed. Madrid. Editorial Médica Panamericana.
- RECURSOS e-Salut:
- ClinicalKey Student Medicina, Odontologia y Enfermería
[https://uv-es.libguides.com/RecursosSalut]
- Acces Medicina
[https://uv-es.libguides.com/Access_Medicina]
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