Universitat Autònoma de Barcelona

2021/2022

Clinical Pharmacology

Code: 102931
ECTS Credits: 5.5

Degree	Type	Year	Semester
2502442 Medicine	OB	5	0

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

Contact

Name: Eduard Diogene Fadini
Email: Eduard.Diogene@uab.cat

Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Teachers

Eduard Diogene Fadini
Magí Farré Albaladejo
Josep Torrent Farnell
Caridad Pontes García

Prerequisites

It is absolutely necessary to have achieved sufficient knowledge in general pharmacology.

It is advisable that the student has achieved basic competencies in physiopathology and clinical semiology.

Objectives and Contextualisation

The course is scheduled in the fifth year of the Degree in Medicine, when the students have already achieved knowledge of general pathology and etiology, clinical and diagnostic of the main diseases and syndromes. The student already has a knowledge of the principles of general pharmacology and knows the large groups of medicines, their mechanism of action and the main desired and undesired effects.

The training objectives of the subject are to provide the elements to learn to select the most appropriate treatment for each individual patient through a reasoned process that involves assessing the effectiveness, toxicity, convenience and cost of each available option. Additionally, it is intended to publicize the dynamics of medicines in society, from the search for new molecules to approval by health authorities and pharmacovigilance after marketing, as well as providing the necessary elements to be able to critically evaluate the information about the new medicines that are commercialized.

The theoretical knowledge of the subject is complemented by practical activities on selection of treatments in patients with frequent pathologies, critical evaluation of information on new drugs, and identification and assessment of suspected adverse reactions to drugs in specific patients.

Competences

- Be able to work in an international context.
- Communicate clearly and effectively, orally and in writing, with patients, family-members and accompanying persons, to facilitate decision-making, informed consent and compliance with instructions.
- Communicate clearly, orally and in writing, with other professionals and the media.
- Critically assess and use clinical and biomedical information sources to obtain, organise, interpret and present information on science and health.
- Demonstrate an understanding of the fundamentals of action, indications, efficacy and benefit-risk ratio of therapeutic interventions based on the available scientific evidence.
- Establish the diagnosis, prognosis and treatment, basing decisions on the best possible evidence and a multidisciplinary approach focusing on the patient's needs and involving all members of the healthcare team, as well as the family and social environment.
- Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
- Indicate the most suitable treatment for the most prevalent acute and chronic processes, and for the terminally ill.
- Maintain and sharpen one's professional competence, in particular by independently learning new material and techniques and by focusing on quality.
- Organise and plan time and workload in professional activity.
- Recognize the determinants of population health, both genetic and dependent on gender, lifestyle, and demographic, environmental, social, economic, psychological and cultural factors.

Learning Outcomes

1. Apply the scientific method to the alternative medicines.
2. Be able to work in an international context.
3. Communicate clearly, orally and in writing, with other professionals and the media.
4. Correctly write medical prescriptions that are suited to the situation of each patient and meet legal requirements.
5. Define pharmacokinetics and know the mathematical principles that govern it. Describe the main pharmacokinetic parameters.
6. Define social pharmacology and medication and drug abuse.
7. Define the concept of drug interaction and know the main mechanisms of interactions between drugs and between drugs and other substances (food, toxic habits, medicinal plants) and diagnostic tests.
8. Define the concept of pharmacodynamics, action, effect, bioassay, dose-response and mathematical models governing the action of drugs.
9. Define the concepts of pharmacology and clinical pharmacology and know their divisions.
10. Define the problem, establish the therapeutic objectives, select treatment according to evidence of efficacy and safety, establish cost and advantages, prescribe and monitor the results.
11. Describe information systems on medication and therapies to professionals and consumers and describe their regulation.
12. Describe pharmacoepidemiology and the main types of medication epidemiology studies.
13. Describe the basis for the selection and prescription of drugs in cardiovascular , respiratory, endocrine, gastrointestinal, neurological, rheumatological, allergic disease, in infections, the treatment of acute and chronic pain, mental disorders, palliative care and in acute intoxication from the most common drugs in primary healthcare.
14. Describe the concept of risk-benefit in medical therapy.
15. Describe the concepts of drug, medication, narcotic and toxic.
16. Describe the different routes of medication administration.
17. Describe the main features of the pharmacology of the different body systems (cardiovascular, respiratory, gastrointestinal, kidney, blood, endocrine and metabolism).
18. Describe the main genetic, sexual, age, lifestyle, environmental, social, economic, psychological and cultural factors that may modify the therapeutic and toxic response of a drug.
19. Describe the main mechanisms of toxicity involved in adverse reactions to drugs.
20. Describe the main types of alternative medicines.
21. Describe the principal intoxications caused by medication and drugs.

22. Determine the importance of self-medication.
23. Differentiate the composition of analgesic, antineoplastic, antimicrobial and anti-inflammatory drugs.
24. Explain the main sources of information on medication and know how to use new search technologies.
25. Explain the principles of good prescription.
26. Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
27. Gather and communicate the data on the pharmacological anamnesis.
28. Identify an infectious, cardiovascular, respiratory, endocrine, gastrointestinal, neurological, rheumatological and osteoarticular pathology induced by medication.
29. Identify methods to facilitate adherence to prescribed treatments.
30. Identify the main sources of information on medication, therapeutics and clinical pharmacology: primary, secondary and tertiary.
31. Identify the main sources of information on therapeutics and clinical pharmacology.
32. Identify the medication registration process and the legal regulation of medication.
33. Identify the methods for evaluating the efficacy and safety of a pharmacological intervention.
34. Identify the role of drugs in current and future therapy.
35. Inform patients of their treatment plan.
36. Know the methods of dose adjustment and calculate the dosage of drugs in different physiological and pathological conditions.
37. Know the principles of homeopathy, acupuncture and phytotherapy.
38. Maintain and sharpen one's professional competence, in particular by independently learning new material and techniques and by focusing on quality.
39. Organise and plan time and workload in professional activity.
40. Promote the rational use of medication and health products.
41. Use manual methods and new information search technologies.

Content

Introduction to Clinical and Therapeutic Pharmacology. The medicines for human use. Sources of information in Clinical Pharmacology. Development of medicines: scientific, methodological, bioethical and legal aspects. Clinical trial of medicines and their methodological bases. Placebo effect. Clinical pharmacokinetics and dose adjustment. Evaluation of the action and effect of medications. Pharmacological interactions of clinical interest and interactions between drugs and other compounds. Adverse drug reactions and pharmacovigilance. Poisoning by drugs and drugs. Clinical pharmacology of pregnancy, childhood and old age. Clinical Pharmacology of renal, cardiac insufficiency and other pathological processes. Pharmacogenetics and pharmacogenomics. Social pharmacology. Pharmacological anamnesis, self-medication and compliance. Legal regulation of medicines and pharmaceutical advertising. Principles of Pharmacoeconomics. Good practices for prescribing medicines. Pharmacoepidemiology. Alternative medicines Selection and prescription of drugs in the main pathological processes in primary care. Regulation of fertility. Pathology of the main devices, organs and systems induced by drugs.

Distributive blocks

A. General clinical pharmacology. The medicines for human use. Information sources.
B. Research methods of new medicines. The clinical trial Methodological and ethical aspects. Evaluation of the effects of medications. Adverse reactions and interactions.
C. Use of drugs in special populations (pregnancy, childhood and old age, renal and cardiac insufficiency).
D. Social pharmacology. Principles of pharmacoeconomics.
E. Special clinical pharmacology - Therapeutics in the most frequent pathologies in primary care.

THEORY

Day 1: Introduction to clinical and therapeutic pharmacology. The medicines for human use.
Day 2: Information sources in clinical pharmacology.
Day 3: Development of medicines: scientific, methodological, bioethical and legal aspects. Placebo effect.
Day 4: Clinical trial of medicines (AC) and its methodological bases (1).
Day 5: AC and its methodological bases (2).
Day 6: Clinical pharmacokinetics and dose adjustment. Evaluation of the action and effect of medications.

Day 7: Pharmacological interactions of clinical interest and interactions between drugs and other compounds.
Day 8: Adverse drug reactions and pharmacovigilance.
Day 9: Pharmacoepidemiology.
Day 10: Use of medications in the health system and its economic implications.
Day 11: Abuse and dependencies of medicines and drugs.
Day 12: Clinical pharmacology of pregnancy and childhood.
Day 13: Clinical pharmacology of old age.
Day 14: Clinical Pharmacology of renal, hepatic and other pathological conditions.
Day 15: Pharmacogenetics.
Day 16: Good practices of prescribing medications. Legal regulation of medicines and pharmaceutical advertising. Anamnesis.
Day 17: Selection and prescription of drugs in the main pathological processes in primary care (1): Introduction to antibiotics.
Day 18: Selection and prescription of drugs in the main pathological processes in primary care (2): Cardiovascular.
Day 19: Selection and prescription of drugs in the main pathological processes in primary care (3): Introduction to psychiatric pathologies.
Day 20: Selection and prescription of drugs in the main pathological processes in primary care (4): Introduction to the treatment of pain.
Day 21: Selection and prescription of drugs in the main pathological processes (5): Oncology.
Day 22: Regulation of fertility.
Day 23: Alternative medicines.
Day 24: Principles of selection and appropriate use of medicines used in respiratory pathology.
Day 25: Principles of selection and appropriate use of medicines used in digestive pathology.
Day 26: Principles of selection and appropriate use of drugs used in genitourinary pathology.
Day 27: Principles of selection and appropriate use of medicines used in elderly patients.
Day 28: Is it possible to depress medications?

SEMINARS OF CLINICAL CASES

Day 1: Information sources in Clinical Pharmacology.
Day 2: Clinical trial of medicines and their methodological bases. Placebo effect
Day 3: Adverse Drug Reactions and Pharmacovigilance
Day 4: The process of drug selection.
Day 5: Prescription of medicines and the health system. Advertising and media communication.
Day 6: Use of drugs in special populations (renal / hepatic insufficiency).
Day 7: Antibiotics (urinary infection and pneumonia).
Day 8: Cardiovascular-I
Day 9: Cardiovascular-II
Day 10: Respiratory
Day 11: Diabetes
Day 12: Psychiatric diseases
Day 13: Polypharmacy
Day 14: Dementia
Day 15: Acute pain
Day 16: Chronic pain
Day 17: Alternative medicines

Methodology

This Guide describes the framework, contents, methodology and general rules of the subject, in accordance with the current curriculum. The final organization of the subject in relation to the number and size of groups, distribution in the calendar and dates of exams, specific criteria for evaluation and review of exams, will be specified in each of the Hospital Teaching Units (UDH), which they will make explicit in their web pages and the first day of class of each subject, through the teacher responsible for the subject in the UDH.

For the 2015-2016 academic year, the professors appointed by the Departments as responsible for the subject at the Faculty and the UDH level are:

Department responsible: Department of Pharmacology, Therapeutics and Toxicology

Head of the Faculty: Josep Mª Castel Llobet (jmc@icf.uab.cat)

Responsibles UDH

Responsibles UDHSP	Responsibles UDHVH	Responsibles UDGTiP	Responsibles UDHPT
Josep Torrent josep.torrent@uab.cat	Eduardo Diogène Fadini ed@icf.uab.cat	Magí Farré mfarre.germanstrias@gencat.cat	Caridad Pontes García Cpontes@tauli.cat

General teaching methodology:

Credits subject: 5.5 ECTS = 137.5 hours

AUTONOMOUS WORK (50% total = 69 hours).

Comprehensive reading of texts and articles, study and realization of schemes, summary and conceptual assimilation of the contents. Preparation of presentations and deliveries.

EVALUATION (5% total = 6.5 hours): 2 partial exams and 1 final synthesis exam, continuous evaluation of the seminars.

DIRECTED TEACHING TYPOLOGIES: up to 45% total 62 hours

Theory (TE typology). Group size: registration group. Scheduled sessions 28 (1h per session).

Clinical practices (PCA typology):

Clinical case seminars (SCC) also includes problem-based learning (PBL) activities. Group size: 2-10 students. Scheduled sessions: 17 sessions of 2 hours. The students, in small groups, will discuss typical clinical assumptions, under the direction of a tutor.

In the current exceptional circumstances, at the discretion of the teachers and also depending on the resources available and the public health situation, some of the theoretical classes, practicals and seminars organized by the Teaching Units may be taught either in person or virtually.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Clinical cases workshops	34	1.36	35, 3, 36, 10, 11, 25, 24, 31, 26, 29, 33, 28, 30, 27, 4, 41
Theoretical lectures	28	1.12	1, 36, 37, 7, 8, 9, 10, 6, 5, 15, 14, 18, 19, 20, 12, 13, 16, 17, 21, 22, 23, 25, 34, 32, 33, 28, 30, 40, 27
Type: Autonomous			

Personal study time	36	1.44	38, 39
Readings:articles and reports	17	0.68	11, 24, 31, 26, 38, 2, 41
Reports and essays	16	0.64	11, 24, 31, 26, 38, 41

Assessment

The evaluation system will be based on a theoretical part (70% of the final grade) and a practical part (30% of the final grade).

For the theoretical part:

Two partial theoretical examinations will be programmed, of eliminatory type when the obtained grade is superior to 5.0.

For the practical part:

Attendance at practices is mandatory. According to the particularities of each Teaching Unit, the practices / seminars can be evaluated continuously. According to the UDH, complementary practical activities can be carried out. The continuous evaluation will be specified in the program of each HDU.

The student who has not passed the partial exams and / or has not passed the practices, can submit to the final test of recovery that contains a theoretical part and a practical part.

Final score

The final grade is the weighted average of the theoretical knowledge (70%) and the clinical evaluation (30%). The average between the theoretical evaluation and the clinical evaluation can not be made if a minimum score of 5/10 is not obtained in both tests. In case of not being able to do the average, the final qualification will correspond to the lowest quantitative value among those obtained in the theoretical and clinical evaluations.

When the student does not show up for the scheduled partial tests or the recovery test, it will be considered non-evaluable.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Practical cases and problem solving tests	30	3.5	0.14	35, 3, 36, 10, 11, 25, 24, 31, 26, 29, 33, 28, 30, 38, 39, 27, 4, 2, 41
Written assessment by objective test	70	3	0.12	1, 36, 37, 7, 8, 9, 10, 6, 5, 15, 14, 18, 19, 20, 12, 13, 16, 17, 21, 22, 23, 25, 34, 32, 33, 28, 30, 38, 39, 40, 27

Bibliography

Specific bibliography

Rang HP, Dale MM, Ritter JM, Flower R. Rang & Dale's Pharmacology. 7th ed. Elsevier, Philadelphia, 2012.

Wecker L (ed.) Brody's Human Pharmacology. Molecular to clinical. 6th ed. Mosby Elsevier, Canadà, 2018.

Reference bibliography

Baños JE, Farré M. Principios de Farmacología clínica, Masson, Barcelona, 2002.

Brunton L, Lazo J, Parker K (Eds.). Goodman & Gilman's The Pharmacological Basis of Therapeutics, 13ed. Mc Graw Hill, Nova York, 2018.

Software

No cal programari específic