MEDI210

Pharmacology Fundamentals

S2 Day 2019

Medicine and Health Sciences Faculty level units

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Disclaimer

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General Information

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Credit points
3

Prerequisites
(12 cp at 100 level or above) and (admission to BClinSc)

Corequisites

Co-badged status

Unit description
In this unit you will be introduced to fundamental principles of drug action. You will learn key concepts of the four stages of drug disposition (pharmacokinetics) and how drugs act on the human body (pharmacodynamics). You will build your knowledge of chemical substances, from both outside and inside the body, and how they influence human health and disease. You will explore the mechanism of action and disposition of some commonly-used groups of drugs, as well as reasons for variability in individual drug responses. Topics covered in this unit will help you to integrate knowledge of molecular biology, chemistry, biochemistry and physiology with the science of drugs.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

Understand fundamental concepts in pharmacology.

Apply the principles of pharmacokinetics in describing drug entry, distribution, metabolism and removal from the body.

Identify drug targets and major mechanisms of drug action.

Use pharmacodynamic principles to relate concepts of agonists and antagonists to the quantification of drug effects.

Describe the mechanism of action, adverse effects and drug interactions of some commonly used therapeutic agents.

Outline the principles involved in individual variability of drug response and interactions between drugs.

Effectively participate in scheduled activities and in peer teams, seeking and reflecting on feedback, to improve individual and group performance.

General Assessment Information

Grade descriptors and other information concerning grading are contained in Schedule 1 of the Macquarie University Assessment Policy, which is available at: https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/assessment.

Further details for each assessment task will be available on iLearn.

All final grades in the Bachelor of Clinical Science are determined by a grading committee and are not the sole responsibility of the Unit Convenor.

Students will be awarded a final grade plus a Standardised Numerical Grade (SNG). The SNG is not necessarily a summation of the individual assessment components. The final grade and SNG

that are awarded reflect the corresponding grade descriptor in the Grading Policy.

To pass this unit, students must demonstrate sufficient evidence of achievement of the learning outcomes, attempt all assessment tasks, meet any ungraded requirements including professionalism and achieve an SNG of 50 or better.

Student Professionalism

In the Faculty of Medicine and Health Sciences, professionalism is a key capability embedded in all our courses. As part of developing professionalism, students are expected to attend all small group interactive sessions including tutorials, as well as clinical- and laboratory-based practical sessions.

Furthermore, lectures and seminars are key learning activities that you are expected to attend throughout completion of the Bachelor of Clinical Science. While audio recordings and lecture slides may be made available following these large group sessions, it is important to recognise that such resources are a study aid - and should not be considered an alternative to lecture or seminar attendance.

Students are required to attend a minimum of 80% of all small group interactive sessions. Students that do not meet this requirement may be deemed unable to meet expectations regarding professionalism and may be referred for disciplinary action (which may include exclusion from assessments and unit failure).

Similarly, as part of developing professionalism, students are expected to submit all work by the due date. Applications for assessment task extensions must be supported by appropriate evidence and submitted via www.ask.mq.edu.au. For further details please refer to the Special Consideration Policy available at https://students.mq.edu.au/study/my-study-program/special-consideration.

Late Submission

All assignments which are officially received after the due date, and where no extension has been granted, will incur a deduction of 5% for the first day, and 5% for each subsequent day including the actual day on which the work is received. Weekends and public holidays are included. For example:

Due date	Received	Days late	Deduction	Raw mark	Final mark
Friday 14th	Monday 17th	3	15%	75%	60%

Assessment Tasks

Name	Weighting	Hurdle	Due
Short Quizzes	30%	No	Weeks 2, 4, 7 and 11
Group Presentation	20%	No	Week 8 or 9

Name	Weighting	Hurdle	Due
Final Exam	50%	No	Exam perioid

Short Quizzes

Due: **Weeks 2, 4, 7 and 11**
Weighting: **30%**

Students will complete these quizzes on weeks 2, 4, 7 and 11. Best 3 marks will count towards the final mark (10% weight each). Quizzes will have different formats and will be delivered in-class.

On successful completion you will be able to:

- Understand fundamental concepts in pharmacology.
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- Identify drug targets and major mechanisms of drug action.
- Use pharmacodynamic principles to relate concepts of agonists and antagonists to the quantification of drug effects.
- Describe the mechanism of action, adverse effects and drug interactions of some commonly used therapeutic agents.
- Outline the principles involved in individual variability of drug response and interactions between drugs.
- Effectively participate in scheduled activities and in peer teams, seeking and reflecting on feedback, to improve individual and group performance.

Group Presentation

Due: **Week 8 or 9**
Weighting: **20%**

Students will use the knowledge acquired from week 1 to 7 to prepare an in-class group presentation.

On successful completion you will be able to:

- Understand fundamental concepts in pharmacology.
- Apply the principles of pharmacokinetics in describing drug entry, distribution, metabolism and removal from the body.
- Identify drug targets and major mechanisms of drug action.
- Use pharmacodynamic principles to relate concepts of agonists and antagonists to the

quantification of drug effects.
- Describe the mechanism of action, adverse effects and drug interactions of some commonly used therapeutic agents.
- Outline the principles involved in individual variability of drug response and interactions between drugs.
- Effectively participate in scheduled activities and in peer teams, seeking and reflecting on feedback, to improve individual and group performance.

Final Exam

Due: **Exam perioid**
Weighting: **50%**

The final exam will consist of a mix of multiple-choice questions and open-ended questions. All content will be assessed.

On successful completion you will be able to:

- Understand fundamental concepts in pharmacology.
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- Identify drug targets and major mechanisms of drug action.
- Use pharmacodynamic principles to relate concepts of agonists and antagonists to the quantification of drug effects.
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Delivery and Resources

Technology Used

Active participation in the learning activities throughout the unit will generally require students to have access to a tablet, laptop or similar device. Students who do not own their own laptop computer may borrow one from the university library.

Recommended Readings

Unit readings are available via Leganto and the university library website.

The recommended textbook for this unit is:

1. Rang and Dale's Pharmacology, 8th Edition. H. P. Rang, J. M. Ritter, R. J. Flower, and G. Henderson, (Elsevier 2016)

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy *(**Note:** The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)*

Undergraduate students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/study/getting-started/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- Workshops
- StudyWise
- Academic Integrity Module for Students
- Ask a Learning Adviser

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Graduate Capabilities

Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

Learning outcome

- Effectively participate in scheduled activities and in peer teams, seeking and reflecting on feedback, to improve individual and group performance.

Assessment task

- Group Presentation

Commitment to Continuous Learning

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally

and socially.

This graduate capability is supported by:

Learning outcome

- Effectively participate in scheduled activities and in peer teams, seeking and reflecting on feedback, to improve individual and group performance.

Assessment task

- Group Presentation

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

- Understand fundamental concepts in pharmacology.
- Apply the principles of pharmacokinetics in describing drug entry, distribution, metabolism and removal from the body.
- Identify drug targets and major mechanisms of drug action.
- Use pharmacodynamic principles to relate concepts of agonists and antagonists to the quantification of drug effects.
- Describe the mechanism of action, adverse effects and drug interactions of some commonly used therapeutic agents.
- Outline the principles involved in individual variability of drug response and interactions between drugs.

Assessment tasks

- Short Quizzes
- Group Presentation
- Final Exam

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to

critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- Understand fundamental concepts in pharmacology.
- Apply the principles of pharmacokinetics in describing drug entry, distribution, metabolism and removal from the body.
- Identify drug targets and major mechanisms of drug action.
- Use pharmacodynamic principles to relate concepts of agonists and antagonists to the quantification of drug effects.
- Describe the mechanism of action, adverse effects and drug interactions of some commonly used therapeutic agents.
- Outline the principles involved in individual variability of drug response and interactions between drugs.
- Effectively participate in scheduled activities and in peer teams, seeking and reflecting on feedback, to improve individual and group performance.

Assessment tasks

- Short Quizzes
- Group Presentation
- Final Exam

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

- Understand fundamental concepts in pharmacology.
- Apply the principles of pharmacokinetics in describing drug entry, distribution, metabolism and removal from the body.
- Identify drug targets and major mechanisms of drug action.
- Use pharmacodynamic principles to relate concepts of agonists and antagonists to the quantification of drug effects.

- Describe the mechanism of action, adverse effects and drug interactions of some commonly used therapeutic agents.
- Outline the principles involved in individual variability of drug response and interactions between drugs.
- Effectively participate in scheduled activities and in peer teams, seeking and reflecting on feedback, to improve individual and group performance.

Assessment tasks

- Short Quizzes
- Group Presentation
- Final Exam

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcome

- Effectively participate in scheduled activities and in peer teams, seeking and reflecting on feedback, to improve individual and group performance.

Assessment tasks

- Short Quizzes
- Group Presentation

Engaged and Ethical Local and Global citizens

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

Learning outcomes

- Describe the mechanism of action, adverse effects and drug interactions of some commonly used therapeutic agents.

- Outline the principles involved in individual variability of drug response and interactions between drugs.

Assessment task

- Group Presentation