Introduction to Clinical Pharmacology Module

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WELCOME & STAFF

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Variety of lecturers – see timetable

2020 Evaluations

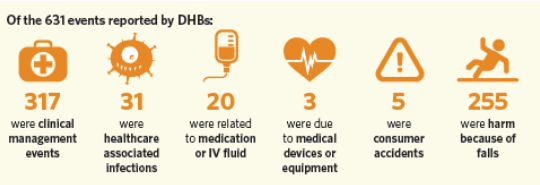
- The good:
  - Lectures – interesting, clear and concise
  - Practice questions embedded in lectures
  - Provision of slides
- The not-so-good:
  - Students would appreciate more overt structure to the module and guidance through it
  - Clarification of how much you need to now
  - More guidance with assessments

Why This is Important

"The **largest** category was the 357 medication-related events which might include wrong medicines being given, incorrect labelling, **underdoses or overdoses**, and doctors' illegible handwriting."

New Zealand Herald 27 Feb 2003 Page A13
Report of incidents in Waitemata District Health Board Hospitals

Why This is Important



Health Quality & Safety Commission. 2018. *Learning from adverse events: Adverse events reported to the Health Quality & Safety Commission 1 July 2017 to 30 June 2018.* Wellington: Health Quality & Safety Commission.
This document is available on the Health Quality & Safety Commission website at: www.hqsc.govt.nz

LEARNING OUTCOMES & MODULE STRUCTURE

- For you to learn principles of clinical pharmacology and therapeutics
  - Based on previous medical sciences
  - Foundation to be built on
  - Details via course website
- Learning is primarily concept-based rather than rote learning
- Lectures, tutorials and self-directed learning

Point 2 – the main exception is the Medicines List, but even that has been streamlined to minimize its size while reinforcing fundamental concepts.

LECTURE SCHEDULE

Topic	Lecturer
CP Module Introduction	Liam Anderson
Mechanisms of Drug Action 1	
Mechanisms of Drug Action 2	Liam Anderson
Targets and the Renin Angiotensin Aldosterone System	Liam Anderson
Clearance	Steve Jamieson
Volume of Distribution	Steve Jamieson
Absorption and Half-life	Steve Jamieson
Drug Metabolism	Steve Jamieson
Mid-semester module review	Liam Anderson
Mid-semester break	
Variability Due to Environmental Differences	Anna Ponnampalam
Variability Due to Genetic Differences	Nuala Helsby
Clinical Pharmacology & Prescribing	Adele Print
Medicine Regulation in New Zealand	Sanya Ram
Adverse Medicine Reactions	Mark McKeage
Medicine Interactions	Mark McKeage
Time Course of Immediate Drug Effect	Nick Holford
Time Course of Delayed & Cumulative Drug Effects	Nick Holford
Target Concentration Intervention	Nick Holford
Poisons & Poisoning	Nick Holford
Drug Development & Clinical Trials	Mark McKeage
Principles of Cancer Therapy	Mark McKeage
Targeted Cancer Therapies	Mark McKeage

TUTORIALS

- Smaller classes, more interactive

1. What Do I Need to Know About A Medicine
2. Dosing
3. Target Concentration Intervention

COURSE MANUAL

- Key course information
- Lecture Notes
- All available via Canvas/course website

MEDICINES LIST

- List exists in Clinical Scenarios section of MBChB portal (240 medicines)
- CP Module has shorter version of every medicine referred to in class (approx. 120)
- Mechanism of action, primary indication, major adverse effect(s)
- Via CP website

The CP module list is to emphasise concepts. You won't be directly assessed on every drug and they may not be the most current, but they support key concepts. It will then be up to you to apply these concepts to relevant clinical medicines as you encounter them over the next 4-5 years. Concepts are more important at this stage than immediate clinical use.

MEDICINES LIST

- "I don't think we should be asked to memorise the medicines list. I spent lots of time memorising drugs and in the exam it was hardly necessary to know any of them. It seemed like a bit of a waste of time, because it's so much effort to learn all those medications when we haven't seen them used in a clinical setting. And in practice, surely we will just use NZ Formulary and such." – 2020 evaluation
- "Update the medications used as examples, to ones that are current." – 2020 evaluation comment

ASSESSMENT

- Assignment 20%
  - Dose calculation
  - Prescription
- Module Test 80%
  - SAQs
  - Based primarily on lecture material, some crossover with tutorials 2 and 3

The test will not normally focus on specific drugs, but may use them to assess your knowledge of fundamentals – see next slide for examples.

1. “Reliever” medications for treating asthma often contain beta-2 receptor agonists, while “preventer” medications usually contain a corticosteroid like fluticasone. Using your knowledge of drug targets, briefly explain why:

    - Glucocorticoids don’t provide immediate symptom relief

2. A 76 year old man weighing 70 kg has been hospitalised with liver disease and experiences several epileptic seizures. The patient is on daily simvastatin to lower his cholesterol and cimetidine for a gastric ulcer. You prescribe the anti-epileptic drug phenytoin aiming to achieve a target concentration within the narrow therapeutic range of 10-20 mg/L. Phenytoin has concentration-dependent clearance, a volume of distribution of approx. 0.7 L/kg and high oral bioavailability. It is extensively bound to plasma proteins (90%) and is primarily eliminated by the cytochrome P450 enzymes CYP2C9 and CYP2C19.

    - Describe the patient factors that may influence the clearance of phenytoin and how these would affect plasma concentrations