

Therapeutics and Safety in Medicine Management

PHRM1203

Lecture 1: Course Introduction and Medication Safety

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Acknowledgement of Country

UQ acknowledges the Traditional Owners and their custodianship of the lands on which we meet today. We pay our respects to their Ancestors and their descendants, who continue cultural and spiritual connections to Country. We recognise their valuable contributions to Australian and global society.



Hello from your Course Coordinator!

My name is **Will Olsen**

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- BPharm (Hons) and PhD (*under examination*) at UQ
- Lecturer in the School of Pharmacy and Pharmaceutical Sciences
- My research: pharmacy ethics, professional responsibility, pharmacy practice



Course staff

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Lecture Overview

- Introduction to the course
 - Learning activities
 - Assessment
 - Answer any questions

Week 1 topic: Medication Safety

Course aim:

To introduce students to safe medication management practices by developing knowledge in clinical therapeutics and pharmacology and the processes and responsibilities of administering medications.

Learning objectives

1. Explain principles that determine the **absorption, distribution, metabolism and excretion of medications**.
2. Discuss how medications administered for their clinical use act on their target(s) to produce both beneficial **pharmacological actions and adverse drug reactions**.
3. Demonstrate how the **mechanisms of actions and clinical use of medications** affect the **cardiovascular, gastrointestinal, renal, respiratory and nervous systems** when administered to patients.

Learning objectives (cont.)

4. Demonstrate the mechanisms of actions and clinical use of **antibiotic, antifungal, antiviral, anti-inflammatory and analgesic medications**, guide therapeutic use when administered to patients.
5. Apply the principles that determine the **quality use of medicines** to patient therapy in healthcare including **complementary and alternative medicines**.
6. Demonstrate the **legal, ethical and professional requirements** associated with quality use of medicine are part of safe nursing and midwifery practice.

Week	Week Focus and UQ Extend Module	Lectures x 6 Mondays 2pm – 4pm 23 – 101 (Abel Smith Lecture Theatre)	Workshops x 3 (Tues/Wed) see timetable for date/time/room 2 hours	Assessment
Week 1 Start 28 th July	Medication Safety			
Week 2 Start 4 th August	Pharmacokinetics and Pharmacodynamics	Lecture 1		
Week 3 Start 11 th August	Clinical Evidence and Therapeutic Decisions			
Week 4 Start 18 th August	Cardiovascular System	Lecture 2		
Week 5 Start 25 th August	Asthma and Chronic Obstructive Pulmonary Disease	Lecture 3	Workshop 1	Peer Assessment Case Study 1 due in Workshop
Week 6 Start 1 st September	Central Nervous System			
Week 7 Start 8 th September	Anti-Microbial Medications	Lecture 4	Workshop 2	Peer Assessment Case Study 2 due in Workshop
Week 8 Start 15 th September	Analgesics			
Week 9 Start 22 nd September	Gastrointestinal and Vaccination	Lecture 5	Workshop 3	Peer Assessment Case Study 3 due in Workshop
IN SEMESTER BREAK 29th – 5th October				
Week 10 Start 6 th October	Complementary medicines and VTE prophylaxis			Case study Reflection Video due
Week 11 Start 13 th October	Medication Safety Scenarios			
Week 12 Start 20 th October	Revision			
Week 13 Start 27 th October	Revision			
STUDY PERIOD 3rd – 7th November				
EXAM PERIOD 8th – 22nd November				

Learning activities

UQ Extend:

- The bulk of the **knowledge content**
- Week 1 to 11
- *All assessable content*

Lectures:

- Interactive - Application of knowledge from UQ Extend
- Case scenarios, etc.
- 5x 2 hour lectures throughout semester
- *All assessable content*

Learning activities (cont.)

Workshops:

- Focus on working through cases
- 3x 2 hour workshops (Week 5, 7 and 9)
- Assessment during each workshop

UQ Extend

- Provides the flexibility of self-paced learning wherever you like
- Be thinking, questioning and reflecting as you watch, listen and read
- Do the activities in UQ extend (knowledge checks give you an indication of how you are performing)
- Lectures are useful to make sure you understand the key take-home points from UQ Extend content
- Studying for 4x 1 hour sessions is better than 1x 4 hour session!
- Need more help navigating UQ Extend and self-paced learning?
 - *Book a one-on-one consult with a Learning Advisor through Student Hub*

Resources

Australian medicines handbook

MIMs

Therapeutic Guidelines

Accessible through [UQ Library](#)

Category	Assessment task	Weight	Due date
Presentation	<u>Inquiry Based Learning</u> <u>Case study</u>	15%	26/08/2025 - 27/08/2025 9/09/2025 - 10/09/2025
	 Team or group-based  In-person		23/09/2025 - 24/09/2025
			This assessment will be completed during THREE allocated workshop times.
Reflection	<u>Case study reflection video</u>	35%	8/10/2025 1:00 pm
	 Identity Verified		
Examination	<u>Online invigilated on campus exam</u>	50%	End of Semester Exam Period 8/11/2025 - 22/11/2025
	 Identity Verified  In-person  Online		

Case studies

3 x 5% group-based case studies to be completed during your assigned workshop

- Small groups (approx. 6 students)
- Inquiry-based learning case
 - Medication safety principles
 - Pharmacology
 - Clinical Therapeutics
 - Legal, ethical and professional practice
- Presentation
- Peer feedback

WK 1
Cardiology
Respiratory

WK 2
CNS
Antimicrobials

WK 3
Analgesia
GIT

Case Study Reflection Video

35% of overall grade

Find a case to reflect on:

- Identify a case from your experience (or provided examples) that involves medication safety
- Suitable cases can be from any clinical area but must involve medicines

End of Semester Written Exam

50% of overall grade

- Inspera, online invigilated exam
- 90 minutes + 10 minutes planning
- During end of semester examination period

| Practice exam will be provided via Blackboard on the Inspera platform

Any questions so far?

Week 1: Medication Safety

Learning Objectives

- Describe the key principles of medication safety
- Explain why medication errors occur
- Explain the significance of medication errors
- Reflect on medication incidents, errors and near misses in practice
- Describe some of the approaches to medications safety to prevent errors
- Describe some standardised systems to support medication safety such as the National Inpatient Medication Chart
- Describe common high-risk medications and approaches to reduce medication incidents associated with these
- Describe tools that evaluate medication administration by nurses and midwives to reduce errors

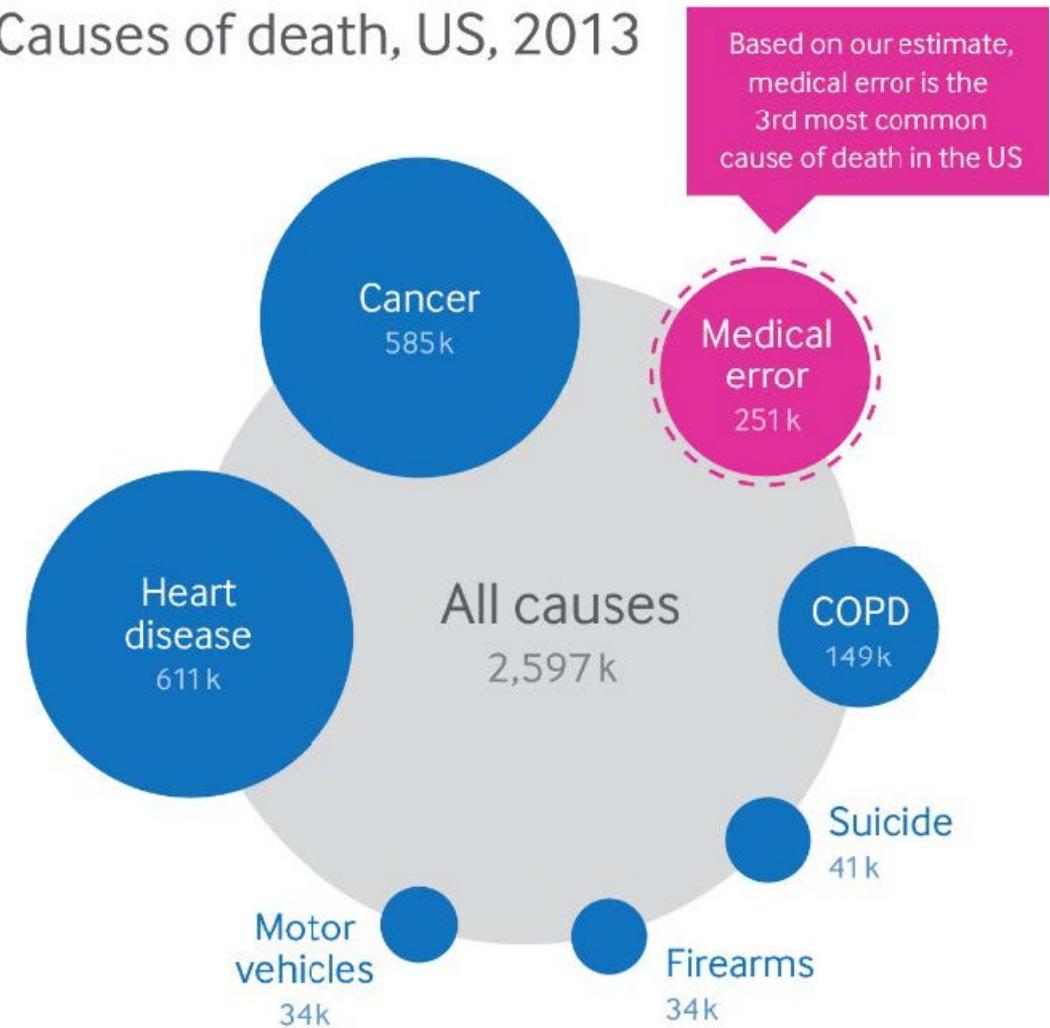
Medication errors

Significant driver for medication-related harms

- Medical error is the 3rd leading cause of death in the US (Makary et al., 2016)

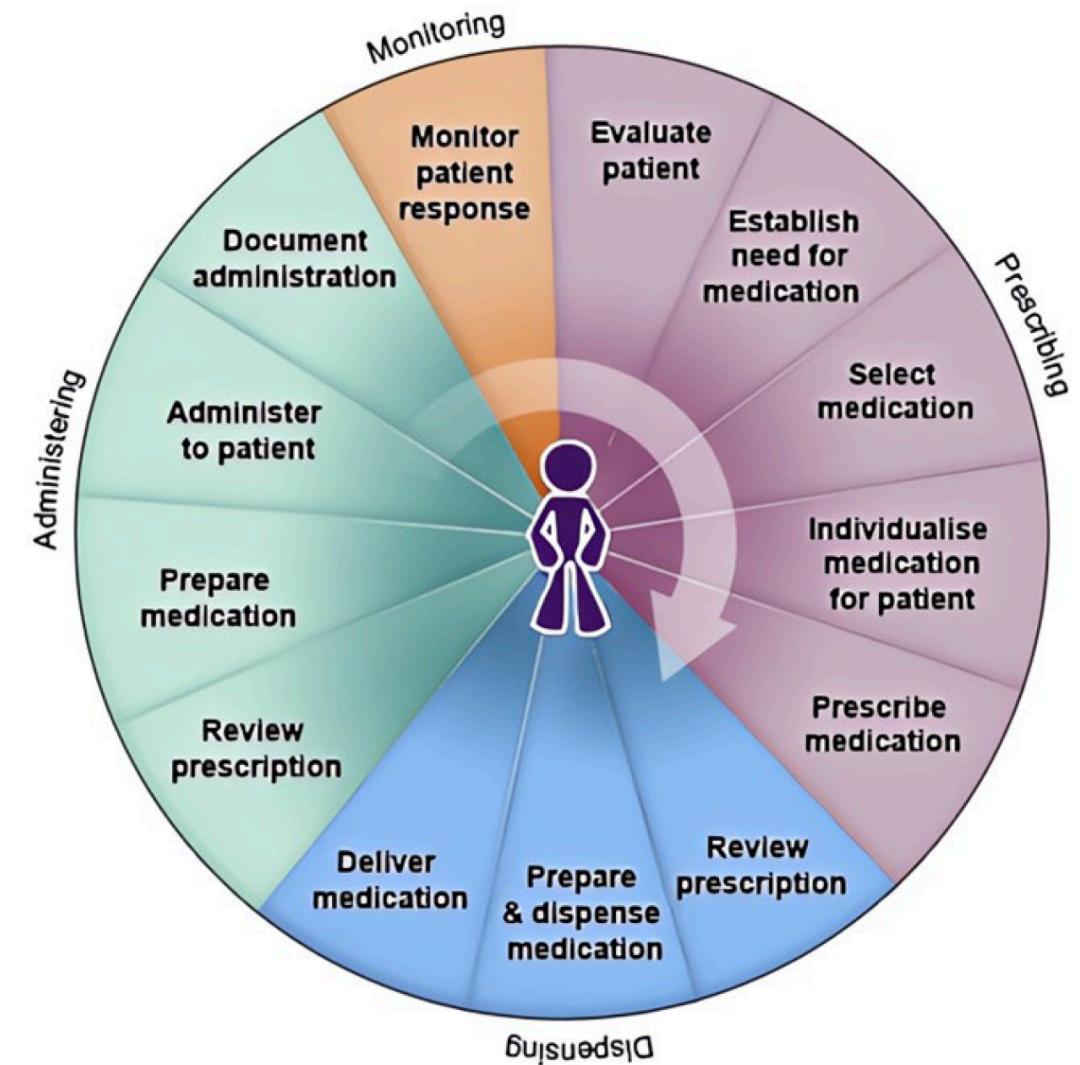
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Causes of death, US, 2013



What is your role in medication safety?

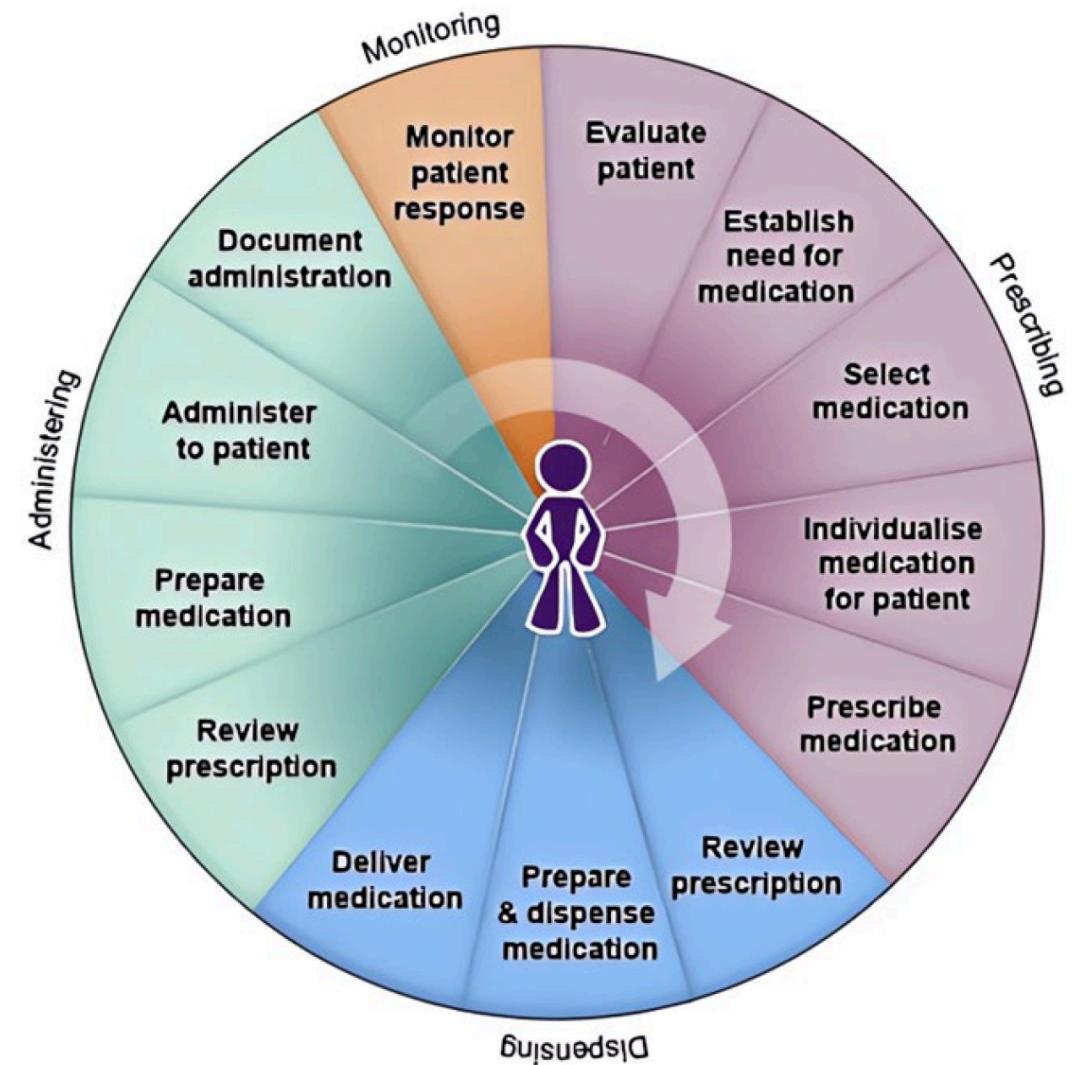
- Administering
- Monitoring



What is your role in medication safety?

- Administering
- Monitoring

Do you have a role in prescribing and dispensing?



Terminology

Medication incident

- Any problem that arises in prescribing, dispensing or administering a medicine. They do not need to cause harm.

Medication error

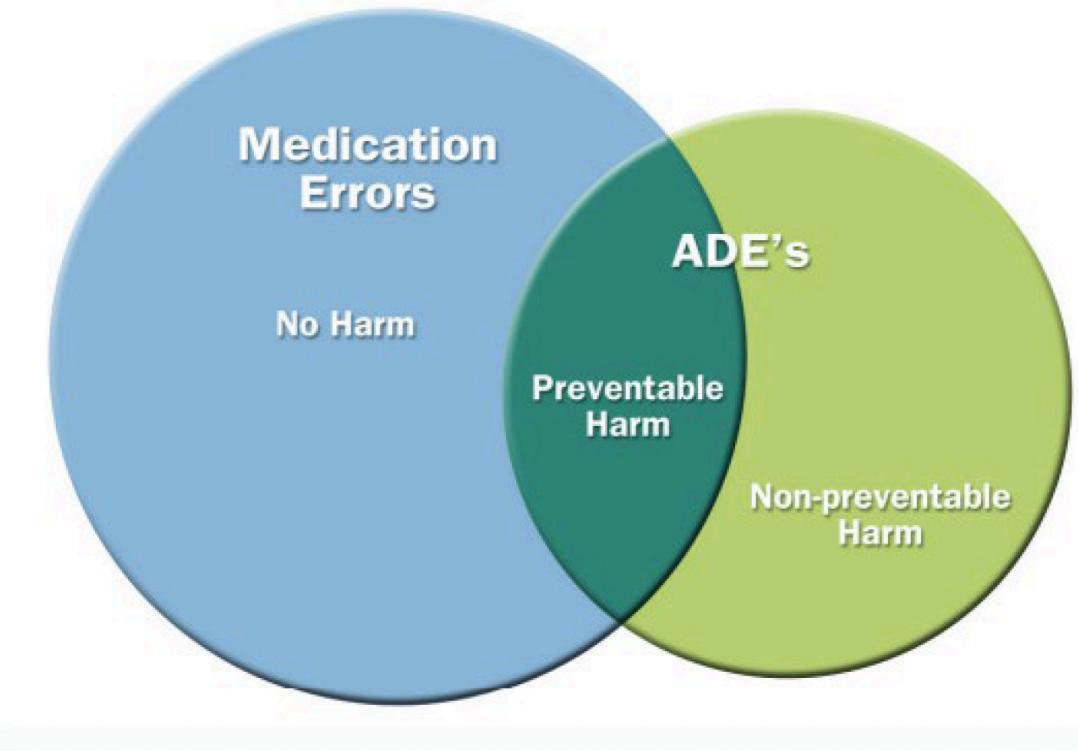
- Any preventable event that may cause or lead to inappropriate medication use or patient harm
- Can result in
 - Adverse event
 - Near miss where a patient is nearly harmed
 - Neither harm nor potential for harm

Terminology (cont.)

Adverse Drug Event (ADEs)

- A medication incident that causes patient harm
 - Includes harm caused by medication errors and harm caused by an expected (but unfortunate) side effect of the medication
 - Classified in terms of severity, reversibility and preventability

Relationship between medication errors and ADEs

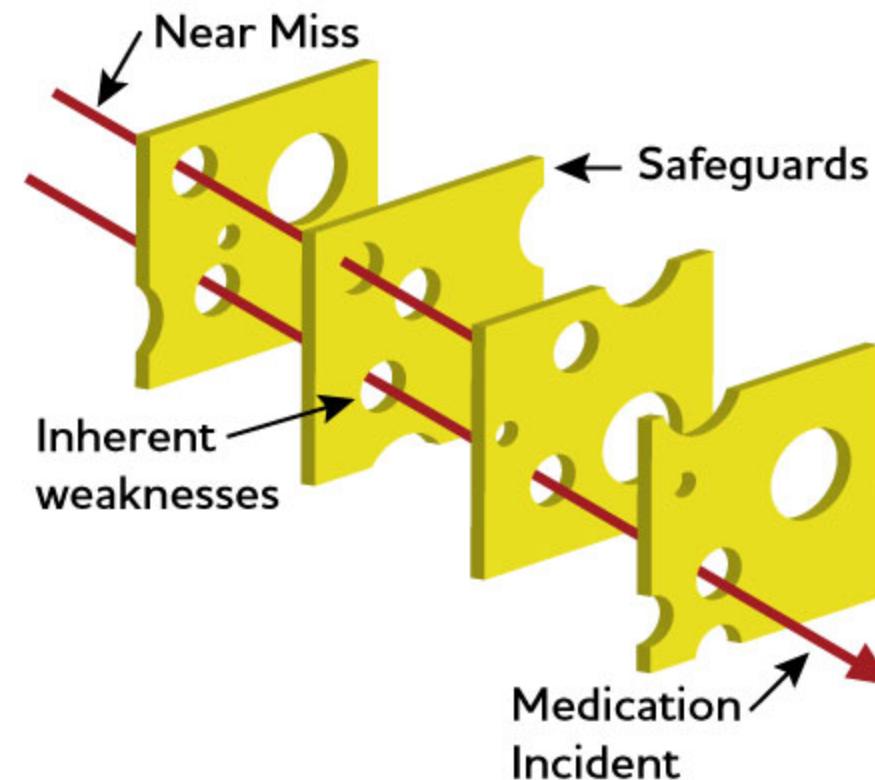


National Coordinating Council for Medication Error Reporting and Prevention (2015)

Human error is inevitable

Models of care to address medication errors

SWISS CHEESE MODEL



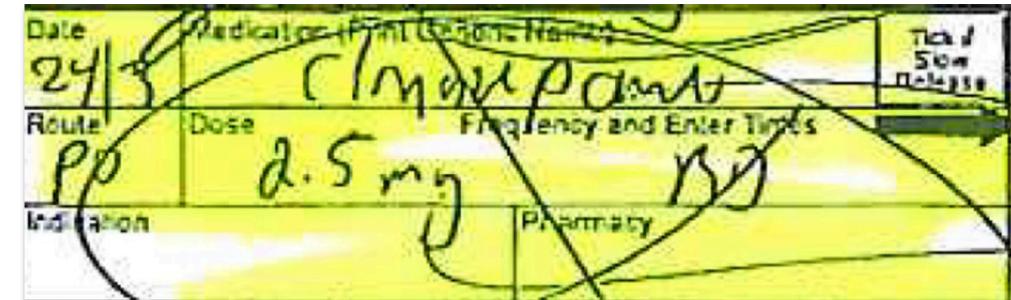
Case example: Daisy

15 year-old female admitted to hospital following seizure

Treatment: Levetiracetam infusion, midazolam, clonazepam

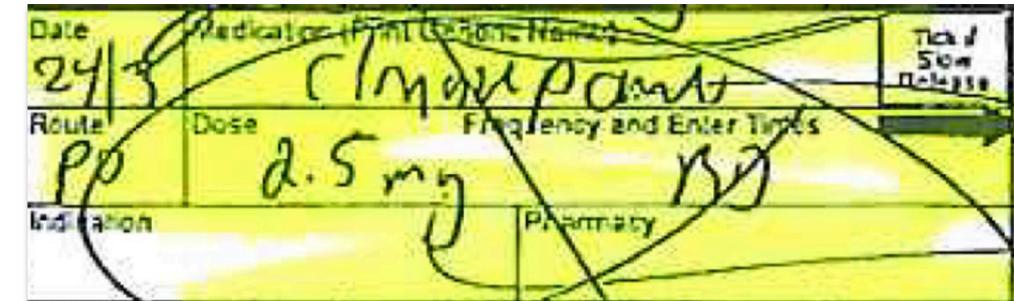
Order was not written by current treating team

- Order for clonazepam (not on imprest)



Case example: Daisy

- Two treating nurses were unfamiliar with the appropriate dose for clonazepam interpreted the prescription:
 - Clonazepam 2.5mg (instead of 0.5mg)
 - Administered 5x 0.5mg tablets
- Patient transferred to ICU overnight for monitoring



Case example: Deborah

55 year old male post cardiothoracic surgery

Registrar instructed by consultant to chart

bisoprolol.

Registrar unfamiliar with this medicine
(usually used metoprolol) charts

bisoprolol 12.5mg

- Nurse administers bisoprolol 12.5mg
- Patient outcome: bradycardia - needs temporary pacing



How would you classify these?

- a. Medication incident
- b. Medication error
- c. A near miss
- d. An Adverse Drug Event



A pharmacist example

Tribunal reprimands pharmacist for unsafe dispensing

News

22 Jan 2021

Recommendations from the
Coroner



A pharmacist who dispensed medication in an unsafe dosage has been reprimanded by a tribunal and ordered to do more education.

Web service announcements



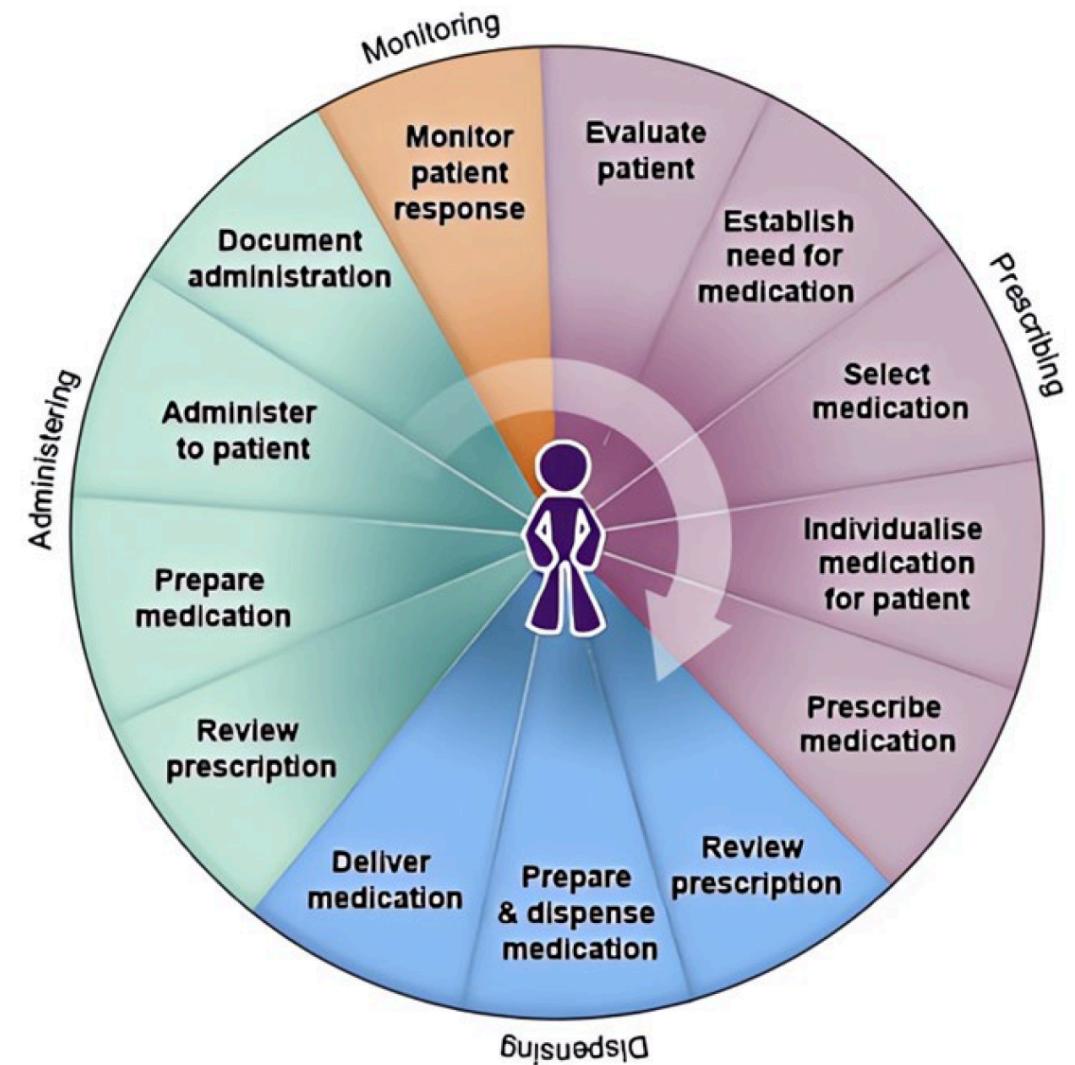
Consultations



In January 2015, pharmacist Jennifer Barca dispensed an unsafe dose of methotrexate to a patient who subsequently died from complications of methotrexate toxicity.

Where do these errors occur?

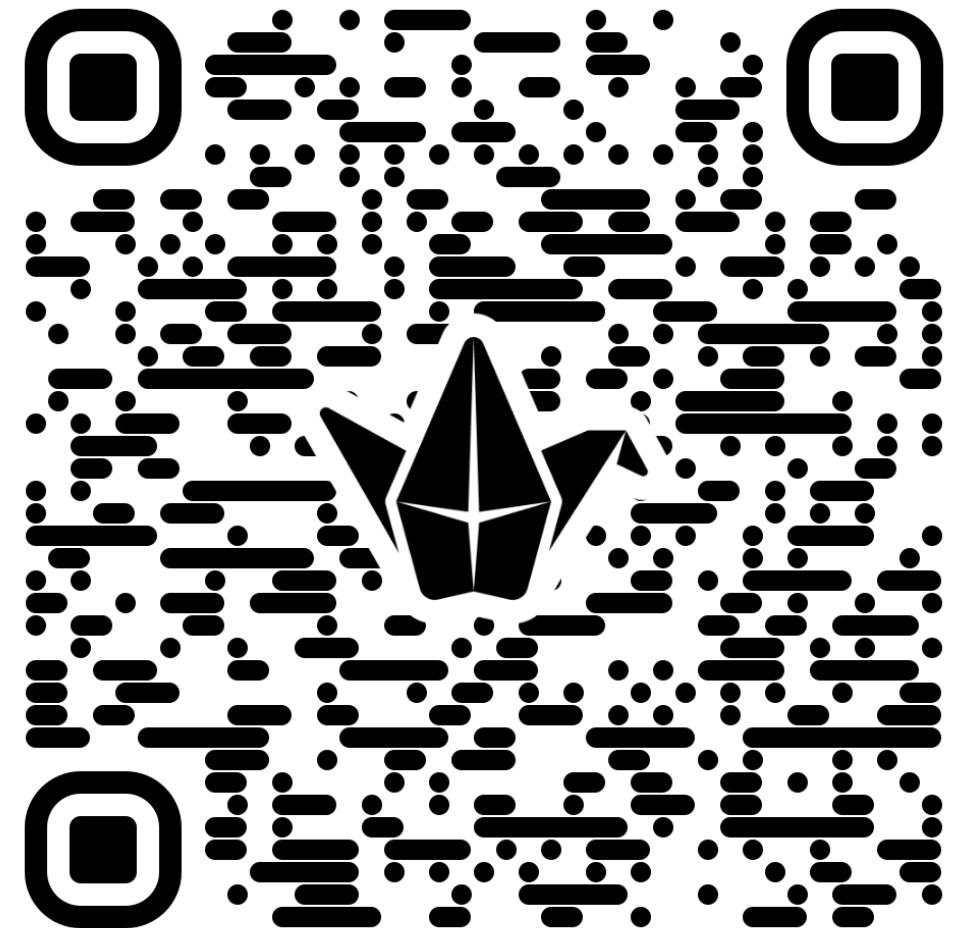
A midwife is about to administer a prescribed dose of 600mg of benzylpenicillin for prevention of Group B streptococcal disease. The order is for 600mg every 4 hours until birth. The midwife checks the protocol and realises the recommended dose is 1.8 grams every 4 hours until birth. The midwife contacts the prescriber and the medication order is changed.



Medicines management is complex

What can we do to minimise medication error?

Write down some practical ways we can prevent medication-related harms from occurring



Approaches to medication safety

- Standardised medication charts
- IV safety software (live/labels)
- The 5/6 rights
- Involve the patient/consumer

Frequent sources of medication errors

- Incorrect strength of medication given when multiple are stocked
- Immediate release vs. slow release
- Medication patches
- Similar names

Know, check, ask

Know what you are giving and where to go if you don't (AMH, MIMs, ward pharmacist)

Check requirements for legal prescription

Ask the patient (and involve them)

National and state-level standards

- 5 rights
- 6 rights - Right to...:
 - Patient
 - Drug
 - Dose
 - Route
 - Time
 - Refuse
- Hospital-specific guidelines

Thanks! Any Questions?