Promoting patient safety through pharmacy practice, technology and research: a view from the UK

Professor Bryony Dean Franklin

Questions

- Patients and healthcare professionals have a shared view of safety
  - YES / NO

- The best way to find out about medication errors is to introduce incident reporting systems
  - YES / NO

Learning objectives

- **By the end of this session, participants should be able to:**
- Describe the advantages and disadvantages of different approaches to identifying medication safety issues
- List some challenges in introducing and evaluating medication safety interventions
- Describe ways in which patients and carers can be involved in medication safety in the hospital context

Most common healthcare intervention

But...

Prescribing errors in median **7% medication orders / 52% admissions** (Lewis et al 2009)

Administration errors occur in **8% of doses**, higher for IV doses (Keers et al 2013)

Dispensing error rates in community pharmacies vary **0.04% - 24% of dispensed items** (Reynolds et al 2014)

4.3% of admissions are preventable drug-related admissions (Winterstein et al 2002)

1-2% of inpatients suffer harm due to medication error

Medication safety

Avoiding adverse drug reactions

Avoiding medication errors

Optimising use by the patient

Challenges

1. • Understanding the problems
2. • Potential solutions
3. • Specific challenges
4. • What next?

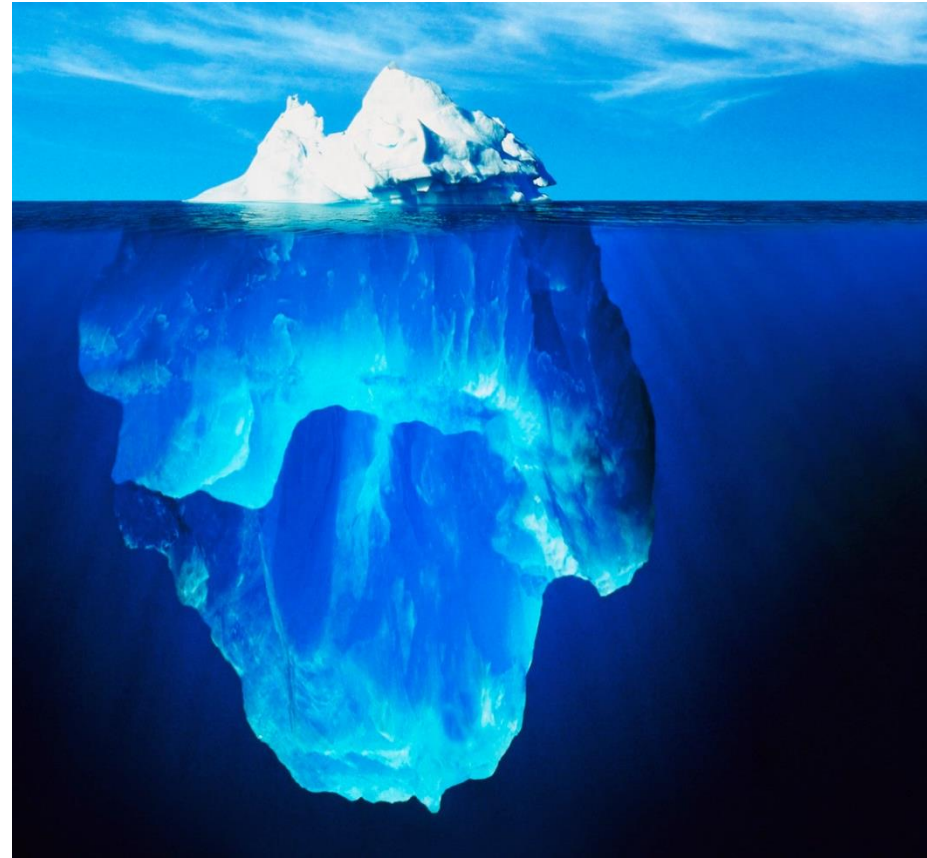Part 1

UNDERSTANDING THE PROBLEMS

Do not rely on incident reports…

- …certainly not for quantitative data!
- Only an estimated 1 in 100 prescribing errors and 1 in 1,000 medication administration errors are reported as incident reports
- Only the tip of the iceberg!

What are the questions?

How to increase patient safety?

What are the questions?

How to increase patient safety?

| What are the problems? | How often do they occur? | Why do they occur? | What might the solutions be? | What works? | What works best? | Which are cost-effective? |

Types of question

How many?

Quantitative methods

- Audits
- Surveys
- Observations
- Clinical outcomes
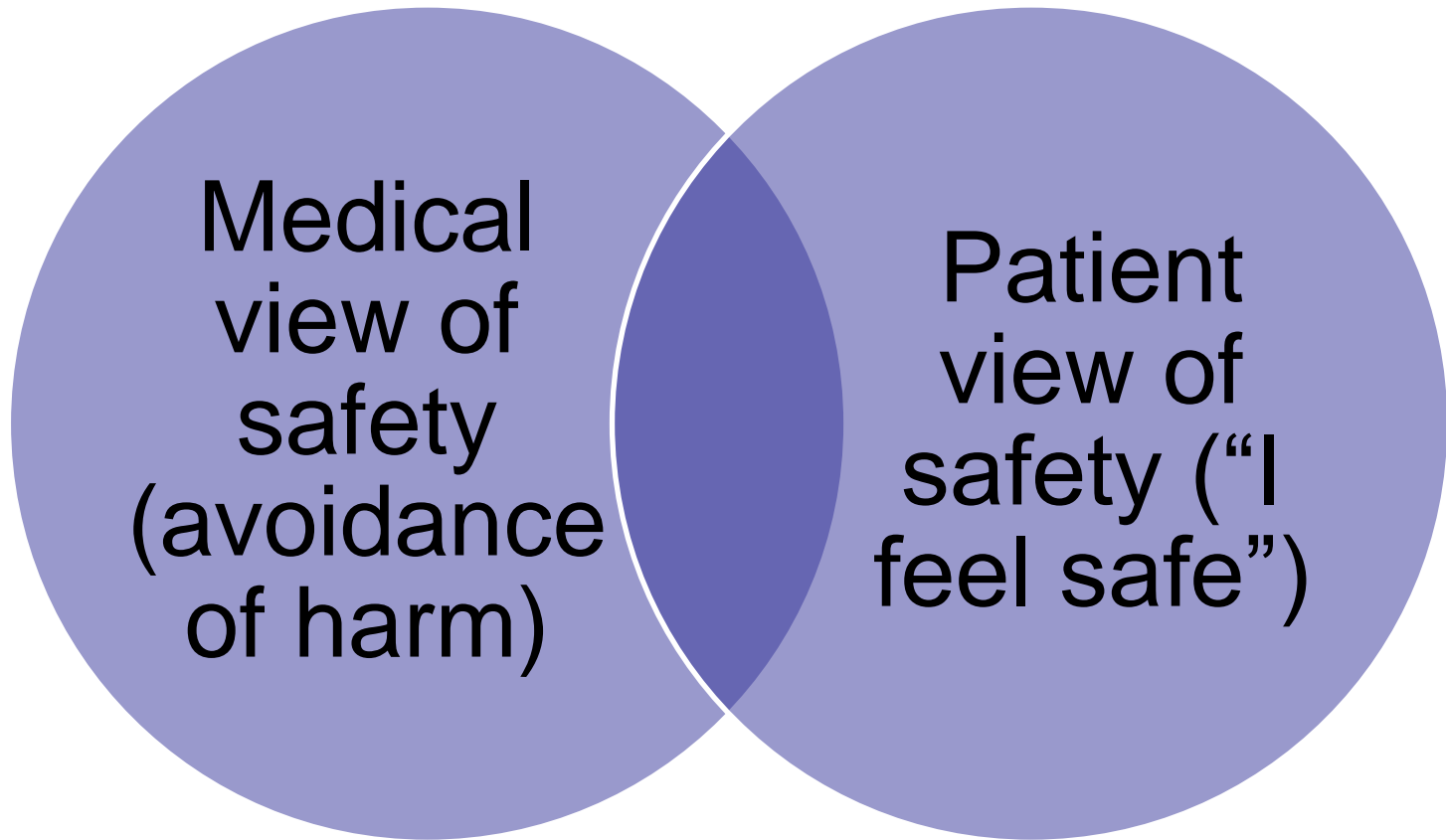
Why? How?

Qualitative methods

- Observations
- Interviews
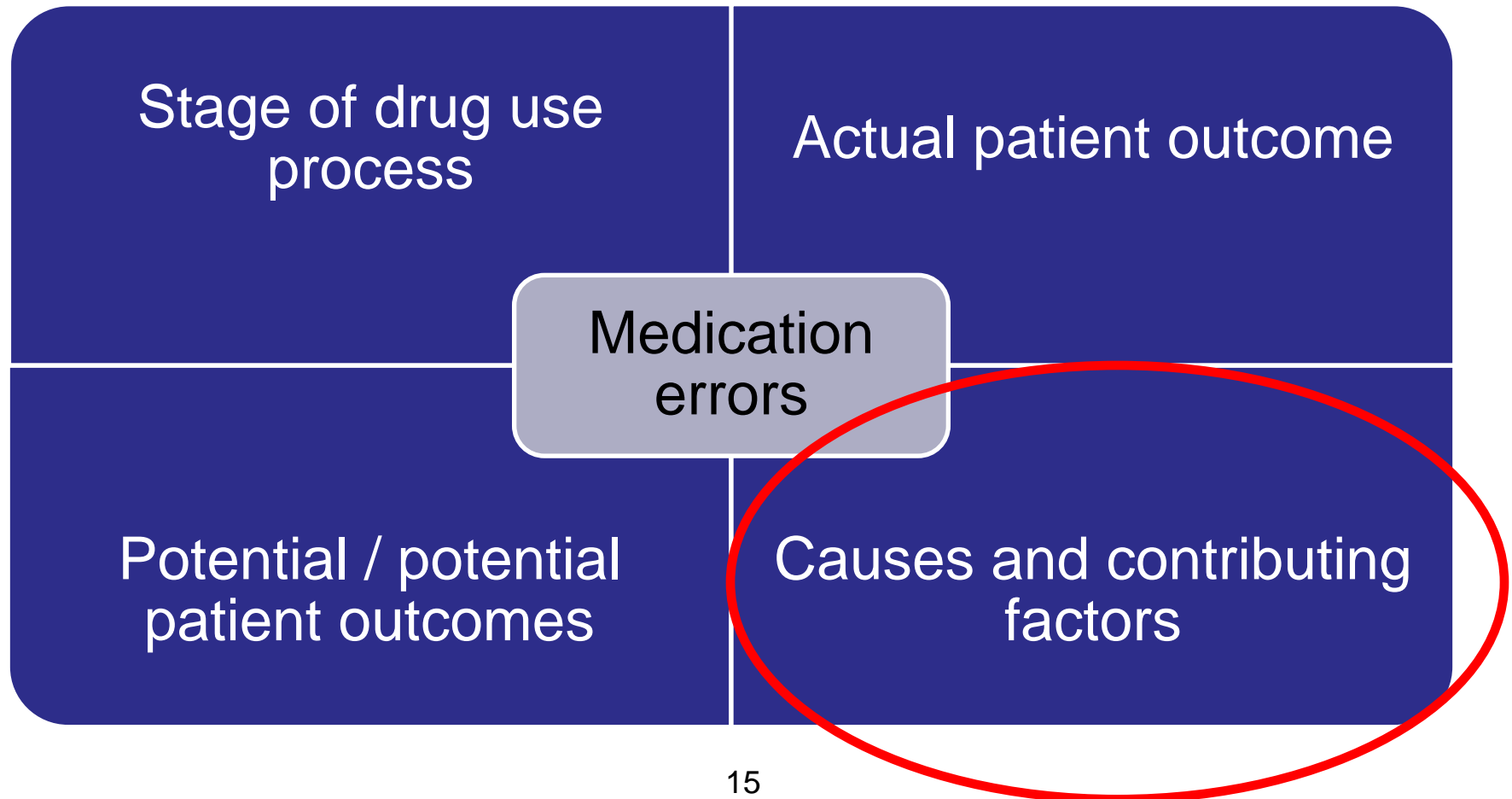- Focus groups

Quantitative v qualitative

- QUANTITATIVE
- Measuring/counting
- Hypothesis testing
- Random sampling
- Scientific empiricism
- Statistical analysis

- QUALITATIVE
- Exploring/qualifying
- Generates hypotheses
- Purposive sampling
- Naturalistic
- Eg. Content analysis, framework analysis

Two views of safety

Medical view of safety (avoidance of harm)

Patient view of safety ("I feel safe")

Understanding the problems

| Stage of drug use process	Actual patient outcome
Medication errors	
Potential / potential patient outcomes	Causes and contributing factors

Understanding the problems

Various theoretical frameworks for causes of problems in healthcare:

- Accident causation model (Reason)
  - London Protocol (Vincent et al)
- Yorkshire contributory factors framework (Lawton et al)
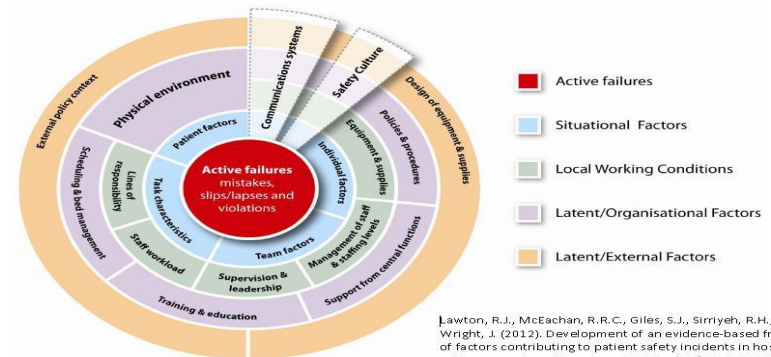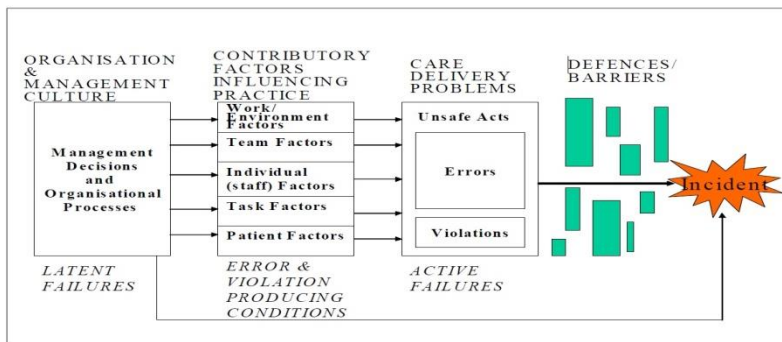
Lawton, R.J., McEachan, R.R.C., Giles, S.J., Sirriyeh, R.H., Watt, I.S., Wright, J. (2012). Development of an evidence-based framework of factors contributing to patient safety incidents in hospital settings: a systematic review. *BMJ Qual Saf* 2012;**21**:369-380 doi:10.1136/bmjqs-2011-000443
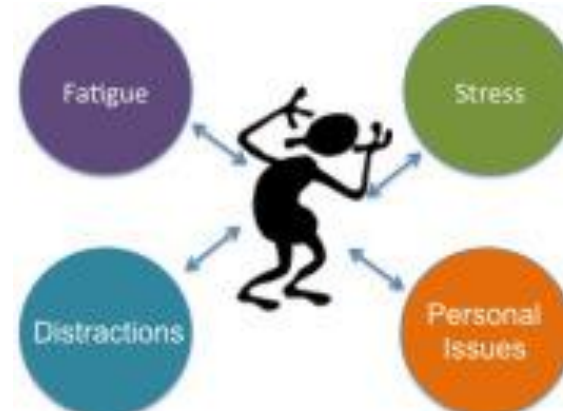
Part 2

POTENTIAL SOLUTIONS

Potential solutions

Technology?

Human factors?

Systems design?

Communication?

Evidence-based interventions

- Electronic prescribing / computerised prescriber order entry / computerised decision support?
- Barcode verification?
- IV pumps incorporating dose error reduction software?
- Clinical pharmacists?
- Medication reconciliation?
- Educational interventions?
- Audit and feedback?
- Reducing interruptions?

Patient safety strategies

The Top Patient Safety Strategies That Can Be Encouraged for Adoption Now

Paul G. Shekelle, MD, PhD; Peter J. Pronovost, MD, PhD; Robert M. Wachter, MD; Kathryn M. McDonald, MM; Karen Schoelles, MD, SM; Sydney M. Dy, MD, MSc; Kaveh Shojania, MD; James T. Reston, PhD, MPH; Alyce S. Adams, PhD; Peter B. Angood, MD;

- Strongly encouraged:
  - "Do not use" list for hazardous abbreviations
- Encouraged:
  - Clinical pharmacists
  - Medication reconciliation
  - Complementary methods to detect adverse events
  - Computerised prescriber order entry (CPOE)

Part 3

SPECIFIC CHALLENGES

Context
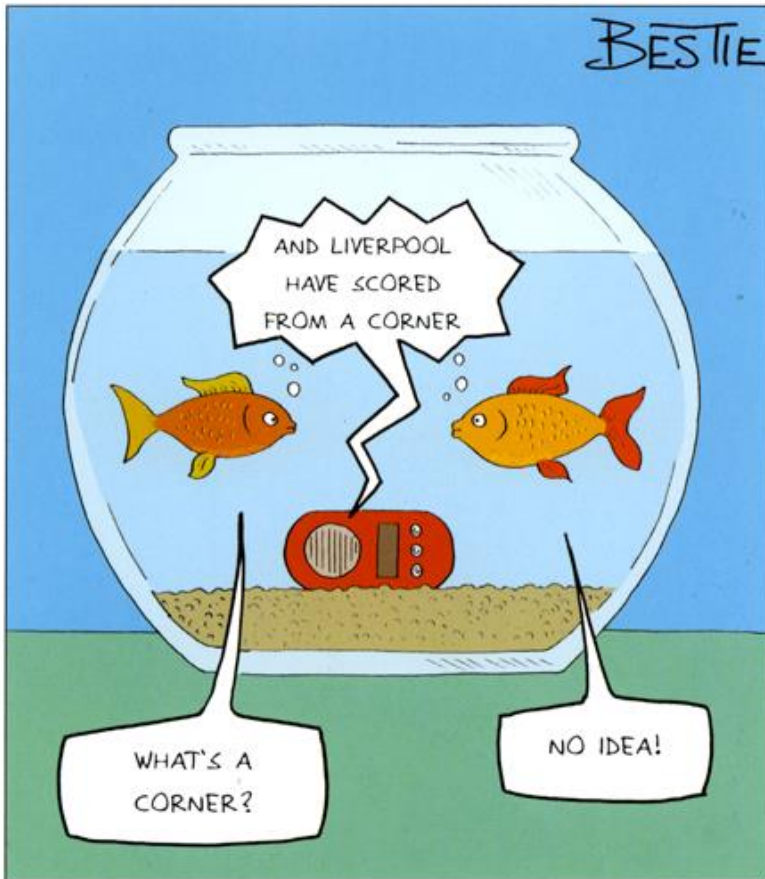
- What is relevant in one context may not be relevant in another
- IV antibiotics are likely to be equally effective from one hospital to another – but the effectiveness of smart pumps used to administer them is likely to vary considerably

Unintended consequences

- May be either positive or negative
- Eg for CPOE:
  - New error types
  - Extra workload
  - Workflow issues
  - "Illusion of communication"
  - Paper persistence
  - "Never ending hardware demands"

Unintended Consequences
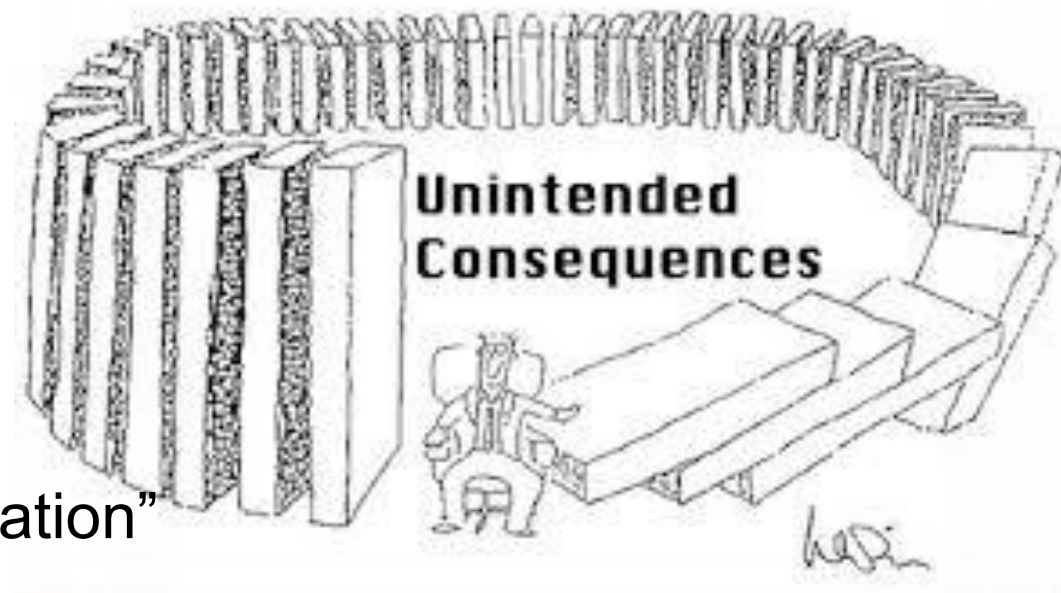
Wide range of stakeholders
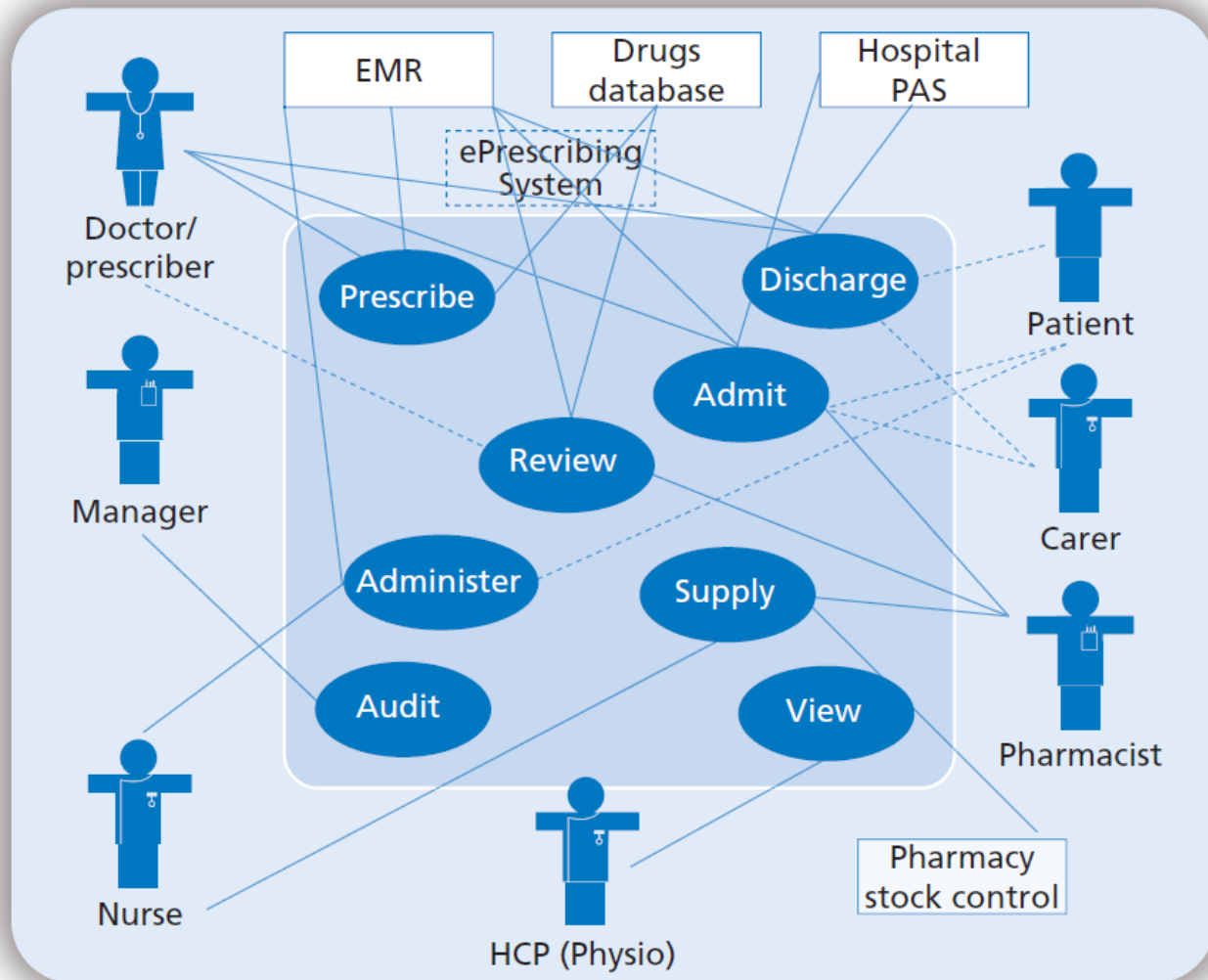
Complexity

How do I receive my medication when I'm in hospital?

Admission to hospital

1. Doctor writes a hospital prescription on a paper or electronic chart

The doctor prescribes medication which is needed to manage the patient's immediate problem.

The doctor talks to the patient, relative and/ or GP to determine the patient's usual medication.
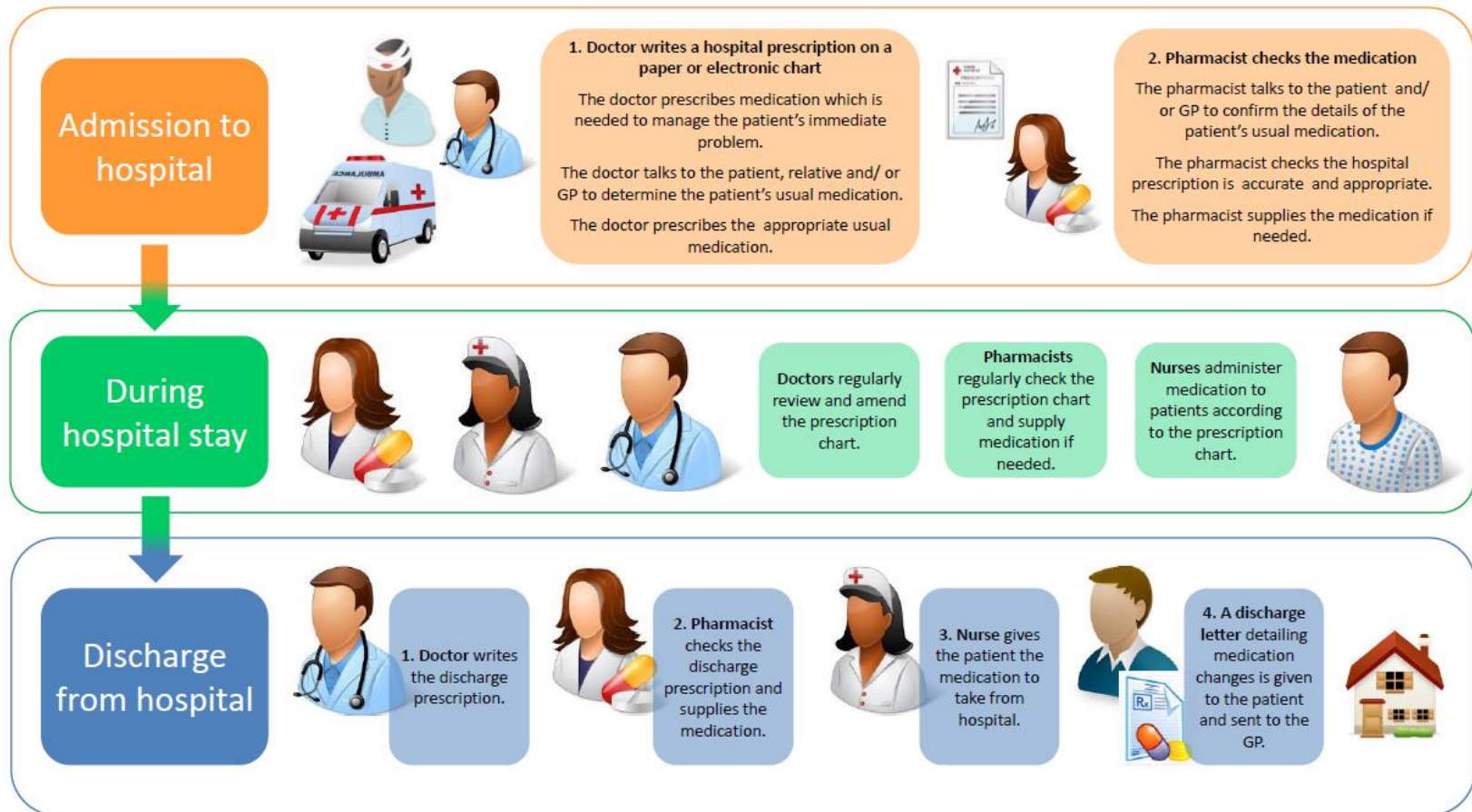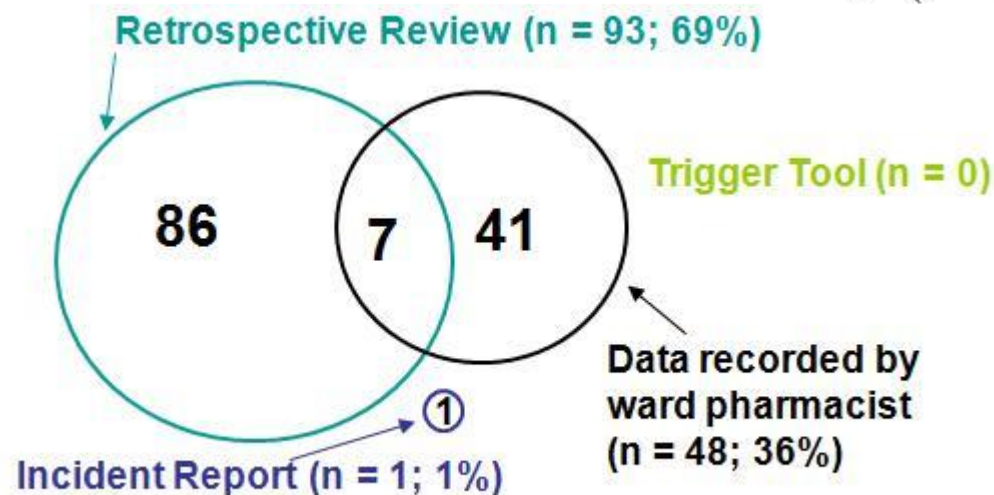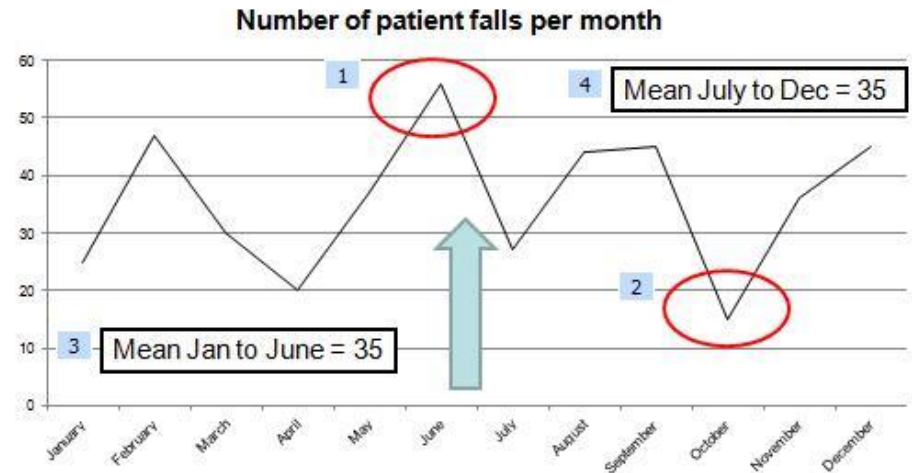
The doctor prescribes the appropriate usual medication.

2. Pharmacist checks the medication

The pharmacist talks to the patient and/ or GP to confirm the details of the patient's usual medication.

The pharmacist checks the hospital prescription is accurate and appropriate.

The pharmacist supplies the medication if needed.

During hospital stay

Doctors regularly review and amend the prescription chart.

Pharmacists regularly check the prescription chart and supply medication if needed.

Nurses administer medication to patients according to the prescription chart.

Discharge from hospital

1. **Doctor** writes the discharge prescription.

2. **Pharmacist** checks the discharge prescription and supplies the medication.

3. **Nurse** gives the patient the medication to take from hospital.

4. **A discharge letter** detailing medication changes is given to the patient and sent to the GP.

Measurement

- Study design
- Definitions
- Data collection method

Number of patient falls per month

Mean July to Dec = 35

Mean Jan to June = 35

Retrospective Review (n = 93; 69%)

86 7 41

Trigger Tool (n = 0)

Data recorded by ward pharmacist (n = 48; 36%)

Incident Report (n = 1; 1%)

(Franklin et al. 2009)

Part 4

WHAT NEXT?

What about our patients?

 Patient involvement in their own safety

 Patients guiding service development

 Patients and the public involved in patient safety research

Patient involvement in safety

- Patient involvement in safety increases satisfaction and health outcomes, and reduces avoidable harm (Weingart 2011)
- Medication safety in the inpatient setting
  - Involvement in medication reconciliation?
  - Self administration?
  - Aware of current medication and encouraged to prompt if potential errors identified?

Hospital electronic prescribing

The Use and Functionality of Electronic Prescribing Systems in English Acute NHS Trusts: A Cross-Sectional Survey

Zamzam Ahmed[1,2], Monsey Chan McLeod[1,2], Nick Barber[1], Ann Jacklin[1], Bryony Dean Franklin[1,2]*

1 The Centre for Medication Safety and Service Quality, UCL School of Pharmacy, London, United Kingdom, 2 Pharmacy Department, Imperial College Healthcare NHS Trust, London, United Kingdom

Are electronic prescribing (EP) systems a barrier or facilitator to patient involvement?

…EP systems could potentially create a barrier if patients have reduced access to their medication records…

…or conversely, facilitate the production of patient-specific interfaces which could be used to support increased patient involvement

Research question…

Do EP systems support inpatient involvement?

We aimed to identify whether EP systems commercially available in England had features which support inpatient access and interaction with their electronic medication record

Methods

- Commercially available EP systems used in England were identified (Ahmed et al 2013, Cresswell et al 2013)

- Websites were searched to identify features which allow inpatient interactions or access to their EP record

- Findings summarised descriptively

Results

- 14 different commercial EP systems identified to be used in England
  - RiO®
  - Galileo®
  - MedChart®
  - System C®
  - Tpp®
  - ChemoCare®
  - Aria®
  - Sunquest ICE®
  - JAC®
  - PICS®
  - Metavision®
  - Cerner®
  - iCM®
  - Mosaiq®

- 11 general EP systems, 3 specialist oncology systems
- Only 1 website referred to possible inpatient involvement via an 'interactive patient console'

Do EP systems support inpatient involvement?

- **One system has an interactive patient console**
  - Potential to provide access to medical information, educational materials and allow communication with healthcare professionals
  - Limited in that it requires installation of additional hardware such as televisions, microphones and keyboards to be used

Do EP systems support inpatient involvement?

Conclusion

inpatient EP systems are not currently designed to accommodate patient access and interaction.

Greater patient involvement with medication may help improve medication safety in the hospital setting; EP suppliers and healthcare providers should consider how inpatients could best be involved in their medication with EP systems.

Concluding thoughts

- Understand the local problems

- Be aware of context

- Look for and mitigate unintended consequences of any interventions

- Involve patients and carers as much as possible

- Do not rely on incident reports

Questions

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