Overview of Medication Errors

Basic Medication Safety (BMS) Certification Course
King Saud bin Abdulaziz University for Health Sciences
Ministry of National Guard – Health Affairs
Learning Objectives

- Identify Human Factors associated with medication errors
- Explain the concept of a Just Culture
- Review definitions related to medication safety
- Discuss the impact of latent failures on medication safety
To Err is Human
• Occupational injuries cause 6,000 deaths per year

• 7,000 deaths yearly are caused by medication errors\(^1\)

\(^1\)Institute of Medicine (IOM) USA, 1999
Human Factors – Confront Two Myths

The perfection myth:
If people try hard enough they will not commit medication errors.

The punishment myth:
If we punish people when they make an error they will make fewer of them.
Human Factors – Error Types

Unintended Actions (Right idea, wrongly actioned)

Lapses

Slips

Errors in performance of a skill based behaviour, typically occur when attention is diverted

Mistakes (wrong idea)

Rule & knowledge based errors arise when a situation is misinterpreted or a rule is misapplied

Violation (rule breaking)

Errors resulting from intended deviation from accepted standards, procedure and rules

Unsafe actions

Intended Actions
The Three Behaviors

**Human Error**
Product of Our Current System Design and Behavioral Choices

Manage through changes in:
- Choices
- Processes
- Procedures
- Training
- Design
- Environment

**At-Risk Behavior**
A Choice: Risk Believed Insignificant or Justified

Manage through:
- Removing incentives for at-risk behaviors
- Creating incentives for healthy behaviors
- Increasing situational awareness

**Reckless Behavior**
Conscious Disregard of Substantial and Unjustifiable Risk

Manage through:
- Remedial action
- Punitive action
JUST CULTURE / CULTURE OF ACCOUNTABILITY

**Punitive Culture**
- Before the 1990s
- Frontline workers were afraid to report their own errors or those of a colleague
- Missed enormous opportunities to learn about Errors
- Little insight into System-based causes

**Just Culture**
- NEW
- Recognize that humans are imperfect so errors will and can happen to anyone
- Staff are encouraged (even rewarded) for reporting errors
- There is a well-established system of accountability
- High insight into System-based causes

**Blame-Free Culture**
- By the mid 1990s
- Supported a "no-blame" response to errors
- Unsafe acts were the result of mental slips or lapses, or honest mistakes
- Fails to tackle individuals who make unsafe / reckless behavioral choices
Just Culture Algorithm

1. Categories that best describes the caregiver’s action
   • Impaired Judgment
   • Malicious Action
   • Reckless Action
   • Risky Action
   • Unintentional Error

2. If three other caregivers with similar skills and knowledge would do the same in similar circumstances

APP 1434-07 Adverse Drug Events
Adverse Drug Events (ADEs)

- Medication Error
  - Near Miss / Close Call
  - Actual Medication Error
- Adverse Drug Reaction (ADR)
Definitions

- **Adverse Drug Event (ADE)**
  An injury from a drug-related intervention, and can include Adverse Drug Reaction and can result from errors in prescribing, dispensing and administration.
  
  *(APP 1434-07 Adverse Drug Events)*

- **Adverse Drug Reaction (ADR)**
  A response to a medicinal product which is noxious and unintended and which occurs at doses normally used for the prophylaxis, diagnosis or therapy of disease or for restoration, correction or modification of physiological function.

  *(APP 1434-07 Adverse Drug Events)*
• **Medication Error**
  Any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient or consumer.

Such events may be related to professional practice, health care products, procedures, and systems, including prescribing; order communication; product labeling, packaging, and nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use.

*(APP 1434-07 Adverse Drug Events)*
Definitions

- **Near Miss (Close Call)**
  An event, situation, or error that took place but was captured **BEFORE** reaching the patient.

  **Example:** The wrong drug was dispensed by pharmacy, and a nurse caught the error **before** it was administered to the patient.

*(APP 1434-07 Adverse Drug Events)*
**Definitions**

- **Latent Failure** *(hidden / dormant errors)*

  Refer to less apparent failures of organization or design that contributed to the occurrence of errors or allowed them to cause harm to patients.

  *(Agency for Healthcare Research and Quality)*
Latent Failures

- Environmental Factors
- Technology Factors
- Lack of and/or complex policies and procedures
- Communication Factors
  - **ISBAR**
    - (Identification - Situation – Background – Assessment – Recommendation)

APP 1435-07 Patient Care Handover and Verbal/Telephone Communication
Examples of Medication Errors

- Prescribing errors
- Dispensing and preparation errors
- Administration errors
- Monitoring and dose adjustment errors
- Wrong patient
- Wrong medicine
- Wrong formulation
- Wrong calculation
- Wrong dose and frequency
- Wrong rate of administration
- Wrong route
- Known medication allergy
- Expired medicine
- Omitted and delayed medicine doses
Rapid Response Report NPSA/2010/RRR009: Reducing harm from omitted and delayed medicines in hospital
February 2010

**Review of evidence of harm**
Table 1 below shows the clinical outcomes of incident reports of omitted or delayed medicine reported to the RLS between 29 September 2006 and 30 June 2009. (RLS datafields IN05=medication incident and MD02=omitted or delayed medicine†).

<table>
<thead>
<tr>
<th>Care Setting</th>
<th>Clinical Outcome of Incident Reports</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Death</td>
<td>Severe Harm</td>
<td>Moderate Harm</td>
<td>Low Harm</td>
<td>No Harm</td>
<td></td>
</tr>
<tr>
<td>Acute / general hospital</td>
<td>27</td>
<td>68</td>
<td>975</td>
<td>4,430</td>
<td>13,027</td>
<td>18,527</td>
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<tr>
<td>Community nursing, medical and therapy service (incl. community hospital)</td>
<td>67</td>
<td></td>
<td>239</td>
<td>1,211</td>
<td>1,517</td>
<td>1,517</td>
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<tr>
<td>Mental health service</td>
<td>33</td>
<td></td>
<td>150</td>
<td>1,156</td>
<td>1,339</td>
<td>1,339</td>
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<tr>
<td>Total</td>
<td>27</td>
<td>68</td>
<td>1075</td>
<td>4819</td>
<td>15394</td>
<td>21,383</td>
</tr>
</tbody>
</table>

Table 1
• Defective Medicine
  It is a medicine where the product presentation and quality is not in accordance with regulation and professional standards. (National Patient Safety Agency, UK)

• Counterfeit Medicine
  It is a special form of defective medicine that is produced or sold with the intent to defectively represent its origin, authenticity or effectiveness. (Council of Europe)
Risk Exists All Around Us
Errors In Medication Use Process

Potential For Harm\(^{(1)}\)
(Rate per 100 patients)

<table>
<thead>
<tr>
<th>Prescribing</th>
<th>Transcribing</th>
<th>Dispensing</th>
<th>Administering</th>
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</thead>
<tbody>
<tr>
<td>63.69</td>
<td>0.28</td>
<td>0.28</td>
<td>3.37</td>
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</table>

Errors NOT Intercepted (ADE)\(^{(2)}\)

High incidence for ADEs due to medication administration errors justify the need to target interventions to prevent these errors in a hospital setting.

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Swiss Cheese Model

Lack of Training Programs (Competencies & Orientation)

Fatigue & Stress

Poor Lighting, Temperature & Noise

Patient receives wrong drug

James Reason, 1991
Verbal and Telephone Orders

Why Standardize Verbal / Telephone Orders?
Inherently problematic: Different accents and limited short-term memory.

When do you take a telephone order?
1. Emergent situation
2. Urgent situation: The prescribing practitioner has determined that the patient is in need of a medication within a specific time period and he / she is unable to physically enter the order in the patient's clinical record due to his / her physical location.

APP 1429-03 Prescribing and Dispensing Medication Guidelines
Telephone Order Procedure

• 1st Nurse records, 2nd Nurse “Reads Back”

• “Read Back” – NOT repeat back

• Spell out 1-5 for 15 [confused with 50]
Verbal / Telephone Orders

NOT allowed for the following:

• Chemotherapeutic agents
• Parenteral nutrition

• **Initiation of:**
  • Epidural medications
  • Patient Controlled Analgesia / narcotic drips
  • Parenteral pressor agents
  • Parenteral skeletal muscle relaxants

APP 1429-03 Prescribing and Dispensing Medication Guidelines
System Focused Thinking

- Humans are imperfect
- Accept that errors will occur
- Focus on the system, not the people
Safe Patient Care Is Our Goal