MEDICATION ERRORS AND PHARMACY

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The prognosis was good for tiny Jose Eric Martinez. A small dose of Digoxin would control his heart-failure symptoms. The appropriate prescription was

.09 milligrams. The order was placed for

0.9 milligrams.

The attending doctor missed the error. No doctor, no nurse, no pharmacist, no technician corrected it. The drug was administered. Soon after, Jose Eric Martinez died.

Who’s to Blame? It’s the Wrong Question.

By Lisa Belkin
Medication Use Process

- Complex system
- Opportunities for error
- Impacts patient care
Defensive Layers in the Medication System
Latent Medication System Errors

Latent Errors

- handwriting
- incomplete information
- MAR transcription
- unclear labeling
- high workload
- etc
Latent Error and the Preventable ADE
Relationships Among Medication Misadventures

Medication Errors

ADRs

ADEs

Adapted from Bates et al.
Framework for Identifying Errors

- Patient Receives Treatment
  - No Error Made
    - Good Outcomes
      - Bad outcomes (Unpreventable ADE due to underlying disease)
  - Error Made
    - Minor
      - Caught → Close Call
      - Not Caught → Minor or no injury (Preventable ADE)
    - Serious
      - Caught → Close Call
      - Not Caught → Patient Injury (Preventable ADE)
Causes of Medication Errors

• Nature of drugs
• Gaps in biomedical knowledge
• Difficulties in training
• Time constraints and interruptions
• Incomplete access to patient specific data

Hennessy, E. AJHP 2000; 57:543-548
Causes of Medication Errors

- Ambiguities in Professional Practice roles
- Reliance on error prone processes
- Pervasiveness of commercial influence
- Economic barriers
- Multiple and changing formularies
- Patient non-adherence to therapy

Hennessy, E. AJHP 2000; 57:543-548
Cost of Adverse Drug Events

- Diversion from therapeutic objective
- Negative outcome from event
## Cost Impact of ADE’s

<table>
<thead>
<tr>
<th>ADE</th>
<th>Increased LOS</th>
<th>Increased Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADE</td>
<td>2.2</td>
<td>$3,244</td>
</tr>
<tr>
<td>Preventable ADE</td>
<td>4.6</td>
<td>$5,857</td>
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</tbody>
</table>

Unfortunately the way we often calibrate our medication system is with Sentinel Events.
Airline Safety

• Redundancy built into system
• Interface between equipment and people
• “But my luggage!!”
Preventable ADE’s

Order Written (56%)

Interpreted by Nurse

Transcribed to MAR (6%)

Administered to patient (34%)

Interpreted by Pharmacist

Prepared and dispensed (4%)

Bates Data in Red
Pharmacy

A key in medication safety
BUILD

Patient centered systems

NOT

Department centered
Take responsibility for the Medication Use system
IOM Report on Medical Errors

- Create the Center for Patient Safety
- Required reporting of serious mistakes to state agency
- Encourage voluntary reporting
- Extend peer-review protection to safety data used for quality improvement
IOM Report on Medical Errors

- Focus performance standards on patient safety
- FDA to focus on safe use of drugs
- Continually improved patient-safety as a goal
- Implement proven medication safety systems
IOM Report and Pharmacy

“Implement proven medication safety systems”
Patient Information systems

- Physician order entry
- Pharmacy computer system
- Automated dispensing system
- Point of care system

Murray, M. AJHP 2000;57:565-571
Interruptions

• Pay attention to Physical environment
• Minimize interruptions
  – Order Entry
  – checking
Staff Training

- Orientation
- Training
- Evaluation of Competency
- Continuous Learning
Patient Education

- Educate patients on medications
- Empower patients
Pharmacist Instant Action Items

- Question unclear & unusual orders
- Focus on high-alert drug issues
- Reduce interruptions and distractions
- Read labels three times
- Report errors
- Eliminate the culture of blame
Process Improvement

• Continuous Quality Improvement
• Data driven
• System focused
Ideal System

- Electronic order entry
- Pharmacy system with checks
- Single dose dispensing
- Bar-codes
- Point of care system
- Patient involvement
Summary