Curriculum Development Centers Program

Awardee of The Office of the National Coordinator for Health Information Technology

Learning From Mistakes: Error Reporting and Analysis and HIT

Unit12a: The Role of HIT in Error Detection & Reporting

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Objectives

At the end of this segment, the student will be able to:

• Explain how reporting errors can help to identify HIT system issues,

• Describe ways in which HIT can facilitate error reporting and detection.

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Learning From Mistakes

Let's start with a story.

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Learning From Mistakes

"A new delivery system must be built to achieve substantial improvements in patient safety – a system that is capable of preventing errors from occurring in the first place, while at the same time incorporating lessons learned from any errors that do occur."
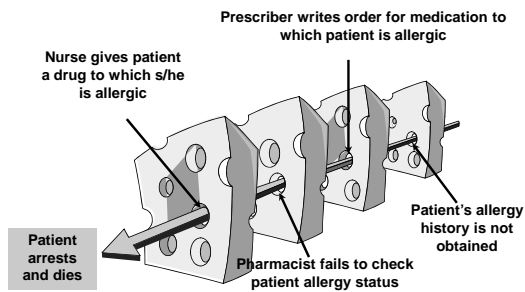
IOM (2004). Patient Safety. Achieving a New Standard for Care

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A Medication Error Story

Prescriber writes order for medication to which patient is allergic

Nurse gives patient a drug to which s/he is allergic

Patient's allergy history is not obtained

Pharmacist fails to check patient allergy status

Patient arrests and dies

How Can Technology Help?

Prescriber enters order in CPOE for drug to which patient is allergic; System triggers alert

Pharmacy System alerts Pharmacist to allergy

Prescriber overrides alert

Patient forgets to mention allergy

Prescriber changes order
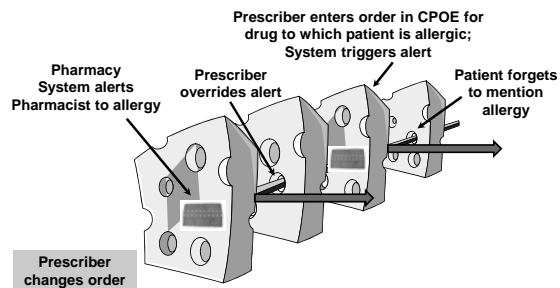
Culture of Safety

- Admit that providing health care is potentially hazardous
- Take responsibility for reducing risks
- Encourage error reporting without blame
- Learn from mistakes
- Communicate across traditional hierarchies and boundaries; encourage open discussion of errors
- Use a systems (not individual) approach to analyze errors
- Advocate for multidisciplinary teamwork
- Establish structures for accountability to patient safety

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The Role of HIT

How can Information Technology assist in error detection and analysis?

- Automated surveillance systems
- On-line event reporting systems
- Predictive analytics and data modeling

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Automated Surveillance Systems

- Do not rely on human cues to determine when events occur
- Use electronically detectible criteria

> "Such surveillance systems typically detect adverse events at rates four to 20 times higher than those measured by voluntary reporting."

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Automated Surveillance Systems

Decision Support Logs	• summarize number/types of decision rules fired, user interactions with decision rules, outcomes of interactions.
Medical Logic Modules	• define how a provider should apply knowledge for health care decision-making given specific patient data in the EHR.

Automated Surveillance Systems

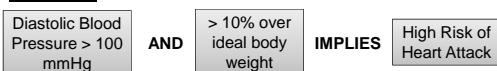|	
Clinical Data Scan	• use automated triggers for chart review to detect adverse drug events.
Claims Data Mining	• looks at coding sets for patient quality-related conditions and events used in claims data.

Predictive Analytics

- Good for large complex data sets
- Use rules of logic to predict outcomes based on the presence of certain identified conditions
- Help us find associations among variables that could be useful in future decision-making

Example:

Diastolic Blood Pressure > 100 mmHg	**AND**	> 10% over ideal body weight	**IMPLIES**	High Risk of Heart Attack

On-line Event Reporting Systems

Voluntary	• Non-punitive • Reporter motivated to tell the complete story to prevent future harm
Mandatory	• Punitive • Reporter motivated by self-protection rather than preventing future harm

On-line Event Reporting Systems

Barriers to Reporting	• Embarrassment • Fear of reprisal • Fear of legal repercussions • Lack of time • Not recognized
Facilitators to Reporting	• Culture of safety • Effective, timely system changes in response to error review and analysis

Event Reporting Taxonomies
Patient

- Medication Error
- Adverse Drug Reactions (not medication error)
- Equipment/Supplies/Devices
- Error related to Procedure/Treatment/Test
- Complication of Procedure/Treatment/Test
- Transfusion
- Behavioral
- Skin Integrity
- Care Coordination/Records
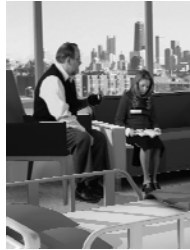- Other

University Health Consortium, 2004

Event Reporting Taxonomies Staff or Visitors

- Assault by patient
- Assault by staff
- Assault by visitor
- Exposure to blood or body fluids
- Exposure to chemicals or drugs
- Fall
- Injury while lifting or moving
- Other

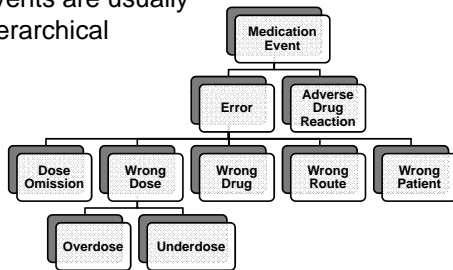University Health Consortium, 2004

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On-line Event Reporting Systems

Events are usually hierarchical

Medication Event
- Error
  - Dose Omission
  - Wrong Dose
    - Overdose
    - Underdose
  - Wrong Drug
  - Wrong Route
  - Wrong Patient
- Adverse Drug Reaction

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On-line Event Reporting Systems

Supplement electronic surveillance systems
Capture actual events and near misses
Catalogue event outcomes
Depict trends & potential areas of concern
Allow password-protected event analysis
Facilitate follow-up by key stakeholders
Increase efficiency by reducing time from reporting to analysis and action

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Type of Outcomes

Near Miss

| No error |
| Error, did not reach patient |
| Error, reached patient, no harm |

Harm

| Error, temporary harm |
| Error, permanent harm |
| Error, death |

Types of Error

Commission	Omission
• Doing something wrong	• Failing to do the right thing
• <u>Example</u>: ordering medication for a patient with a documented allergy	• <u>Example</u>: failing to prescribe medications to prevent blood clots in patients at high risk for clots

Types of Error

Active Failures	Latent Conditions
• Occur at the point of contact between a human and the system • Readily apparent • At the "sharp end" • <u>Example</u>: pushing an incorrect computer key	• Failure of design or organization • Less apparent • At the "blunt" end • <u>Example</u>: facility has multiple types of infusion pumps, increasing likelihood of programming error

Types of Error

Slips	Mistakes
• Lapses in concentration • Arise with competing sensory or emotional distractions, fatigue or stress while performing reflexive activity • <u>Example</u>: overlooking a step in a routine task due to lapse in memory	• Incorrect choices • Arise during active problem solving • <u>Example</u>: selecting the wrong diagnostic test

Summary

People and IT systems are subject to error.

Health IT can assist in detecting and reporting errors so that we can learn from our mistakes.

Voluntary error reporting systems are most effective in health care settings that embrace a culture of safety.

Health IT professionals should be aware of the various types of error that can occur in the interaction of users with IT systems.