

Making Health IT a Team Player



Ken Wong, Ph.D., Senior Systems Analyst
McKesson Medical Imaging Group
VanQ, January 29, 2009

Dec 2008 – Health IT alert

- ▶ *Technology-related adverse events also happen when health care providers and leaders do not carefully consider the impact technology can have on health care processes, workflow and safety.*
 - Sentinel Alert Event, Issue 42, December 11, 2008, The Joint Commission

Overview

- ▶ Medical Error
- ▶ Unintentional Consequences of IT
- ▶ IT as a Team Player
- ▶ Being User Centered
- ▶ Conclusion

Medical Error



To err is human

▶ *As many as 98,000* people die each year from medical errors that occur in hospitals. That's more than die from motor vehicle accidents, breast cancer and AIDS—making medical errors the fifth leading cause of death in this country.*

– **To Err Is Human: Building a Safer Health System,**
Institute of Medicine, 1999

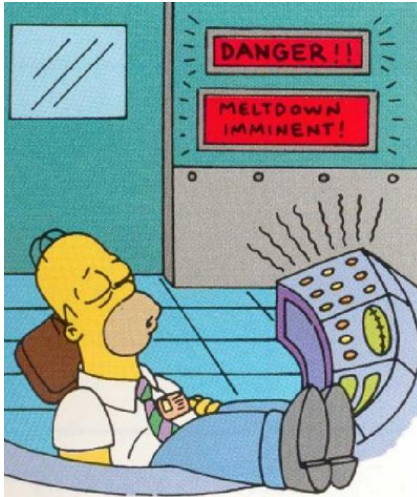
* 195,000 according to HealthGrades 2004 report

Human error ... again?



Homer effect

MCKESSON
Empowering Healthcare



1/30/2009

7

But ...

MCKESSON
Empowering Healthcare

- ▶ Who put Homer in charge?
- ▶ How was Homer trained?
- ▶ Why did the system get into this state?
- ▶ What other safeguards are in place?
- ▶ Etc.

1/30/2009

8

Approaches to human error²

MCKESSON
Empowering Healthcare

▶ Person approach

- Aberrant mental processes
- Human error as causes of accidents
- Focus on those at the “sharp end” of the stick
- Goal: Reduce human variability

▶ System Approach

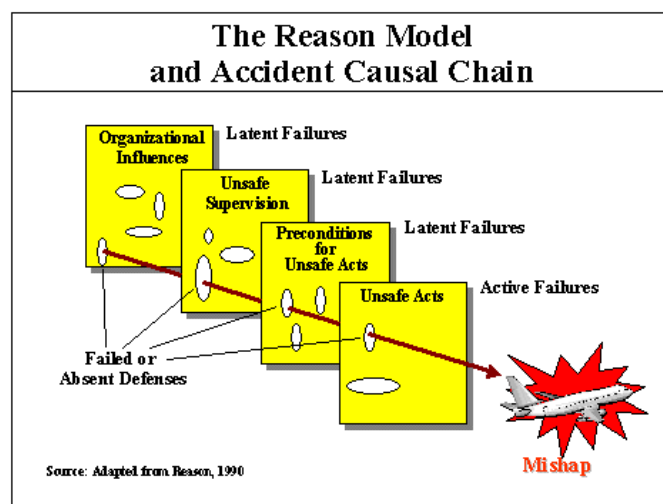
- Humans are fallible
- Human error as consequences
- Focus on upstream systemic factors
- Goal: Build system defences

1/30/2009

9

Swiss Cheese Model

MCKESSON
Empowering Healthcare



1/30/2009

10

Unintended Consequences of IT



Can you read my mind?



IT to the rescue



e.g., Computerized Physician Order Entry (CPOE)

We all fall down

- ▶ *... we found that a leading CPOE system often facilitated medication error risks, with many reported to occur frequently.*
 - **Role of Computerized Physician Order Entry Systems in Facilitating Medication Errors**, Ross Koppel, et al., JAMA, March 2005

Human error .. yet again?

MCKESSON
Empowering Healthcare



1/30/2009

15

Unintended consequences of IT

MCKESSON
Empowering Healthcare

- ▶ *As a consequence, PCISs might not be as successful in preventing errors as is generally hoped. Worse still, PCISs could actually generate new errors.*
 - **Some Unintended Consequences of Information Technology in Health Care: The Nature of Patient Care Information System-related Errors**, Joan S. Ash, et al., JAMIA, Mar/Apr 2004

1/30/2009

16

IT as a Team Player



User (and workflow) is king

- ▶ E.g., FAA controller requirements
 - Conservative
 - Safety-critical



- **Standard Terminal Automation Replacement System (STARS)**
From hf.tc.faa.gov

Workflow interruptus

- ▶ Health IT implicit assumptions⁴:
 - Workflow is continuous and uninterrupted
 - Complete and structured information entry/retrieval
 - Workflow is linear, clear and predictable
 - Making information available is sufficient notification

IT – savior vs team player

- | | |
|---|--|
| <ul style="list-style-type: none">▶ IT as savior<ul style="list-style-type: none">– IT replaces fallible people– People adjust to IT– Health IT “experiments”⁵ | <ul style="list-style-type: none">▶ IT as team player<ul style="list-style-type: none">– IT supports workflow– IT & people work together– User-Centered Design |
|---|--|

Being User Centered



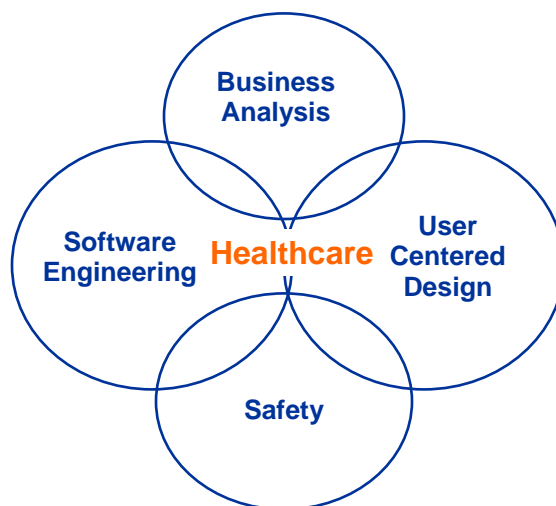
Being User Centered (at MIG)

- ▶ Understand users and their workflows
 - Personas
 - Use Cases
 - Usability Testing
- ▶ Identify use-related hazards
 - Hazard Analysis

E.g., Usability Testing and Safety

- ▶ Run through anticipated tasks and scenarios:
 - Identify any usability problems
 - Collect quantitative performance data
 - Determine participants' satisfaction
- ▶ Incorporating safety:
 - Validate likelihood of identified hazards
 - Identify new hazards

Worlds collide



Conclusion



Jan 2009 – Health IT chasm

- ▶ *The nation faces a health care IT chasm that is analogous to the quality chasm highlighted by the IOM over the past decade.*
 - **Computational Technology for Effective Health Care: Immediate Steps and Strategic Directions**, Institute of Medicine, 2009

Human error ... never again?

MCKESSON
Empowering Healthcare



1/30/2009

27

Changing the world

MCKESSON
Empowering Healthcare

- ▶ *We cannot change the human condition, but we can change the conditions under which humans work*
 - **Human error: models and management**, James Reason, BMJ, March 2000

1/30/2009

28

References



1. *To Err Is Human: Building a Safer Health System*, Institute of Medicine, 1999
2. *Human error: models and management*, James Reason, BMJ, March 2000
3. *Role of Computerized Physician Order Entry Systems in Facilitating Medication Errors*, Ross Koppel, et al., JAMA, March 2005
4. *Some Unintended Consequences of Information Technology in Health Care: The Nature of Patient Care Information System-related Errors*, Joan S. Ash, et al., JAMIA, Mar/Apr 2004
5. *Hiding in plain sight: What Koppel et al. tell us about healthcare IT*, Nemeth et al., JBI, June 2005
6. *Computational Technology for Effective Health Care: Immediate Steps and Strategic Directions*, Institute of Medicine, 2009
7. *Medical Device Use-Safety: Incorporating Human Factor Engineering into Risk Management*, FDA, July 2000