Usability Lessons Applicable to MI

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AHRQ’s Health IT Division

• Produces and disseminates evidence about how health IT can make health care safer, higher quality, more accessible, equitable, and affordable

• Invests in a range of health IT usability research and evidence-based tools
Usability Issues are Associated with Patient Harm
36% of the 9,000 safety reports analyzed had a usability issue as a contributing factor to the safety event.

Majority of Usability Issues

• System feedback
  ► Suboptimal clinical decision support or error prevention
  ► No feedback to user about system actions
  ► Automation or conversion with no clear feedback
  ► Wrong feedback about system actions

• Visual display
  ► Suboptimal interface between applications
  ► Hard to find or confusing information display
  ► Wrong information displayed
  ► Alert difficult to interpret
Applicability to MI

• MI explainability (i.e., part of “system feedback”), will be a key factor affecting usability for many MI applications

• MI needs to plan for unforeseen circumstances
  ▶ Such as recognizing that a device reading or piece of data is incorrect

• Visual displays/interfaces need to be user-centered
  ▶ Will likely need “explanation interfaces” too
Lesson 2

Context matters!
A Systems Approach

- Healthcare is a complex socio-technical system
  - Workflow
  - Time pressures
  - Cognitive needs of the healthcare team
- Not considering the system the technology will be embedded in, can compromise safety and effectiveness
How can we design a work system (and design its technology) to support care processes that result in desired outcomes?

*(Carayon et al., 2006, 2014)*
SEIPS Applied to CDS for Venous Thromboembolism (VTE)

• Address the issues that have limited the effectiveness of prior health IT for VTE prevention
• Evaluate the cognitive and team work involved in VTE prevention and management
• Develop design requirements for a CDS that supports cognitive and team work for preventing and managing VTE
• Long-term goal: to develop an approach for designing health IT applications that can benefit from improved integration in clinical workflows.
Applicability to MI

• When should we use a socio-technical approach?

• Which frameworks?
  ▶ SEIPS? CDS Five Rights?

• Different frameworks for different purposes?
  ▶ A framework for assessing utility*

Applicability to MI

- Incremental gain versus transformation
  - Understanding the current workflow and its constraints may help before we radically alter it for the better
  - In some cases, we may want to ask “How does the work process (including the MI) support the cognitive work we really need to do but aren’t?”

- In a CER study, interventions should be compared on the basis of some health-related outcome measure

- Comparative effectiveness against usual care in cases where usual care is being upended may require us to think differently about the outcomes we measure
Lesson 3

Pay attention to usability sooner rather than later
Can Help to Avoid

- Safety issues
- Adoption issues
- Legal and regulatory intervention
“To guard against the proliferation of misinformation in this emerging field, support the engagement of learned bodies to encourage and endorse best practices for deployment of AI applications in health.”

JASON. Artificial Intelligence for Health and Health Care, December 2017
Thank You!

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