Improving Discharge Documentation to Support Care Coordination
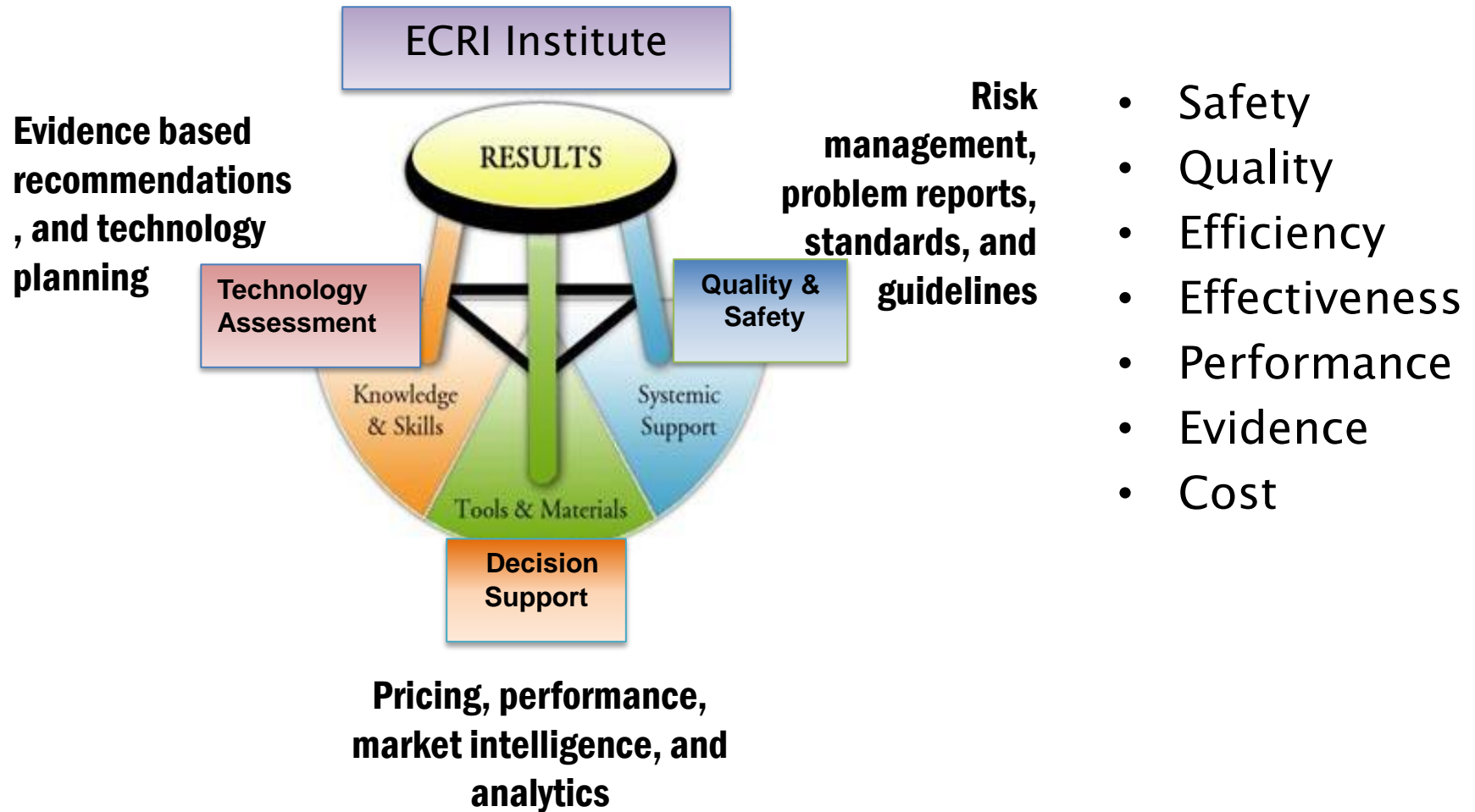
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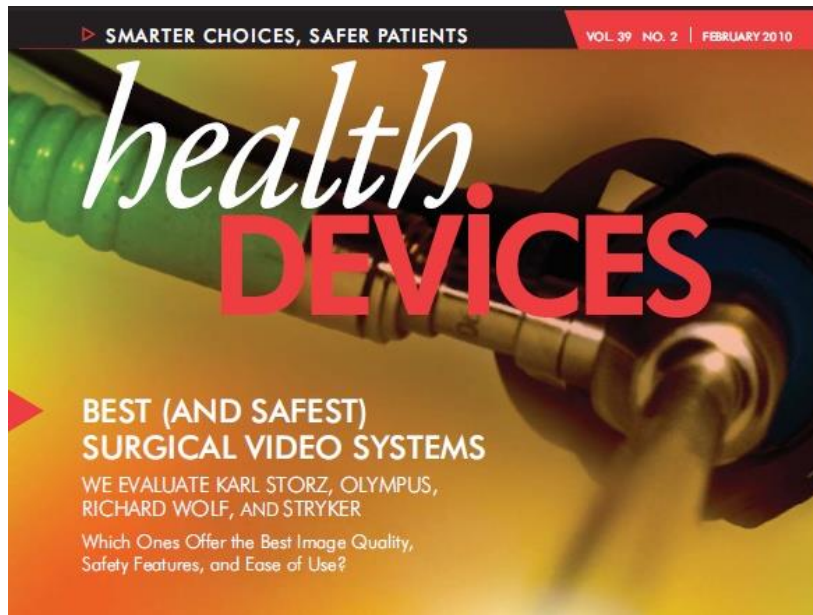The Discipline of Science. The Integrity of Independence.

Overview

▶ Introduction: ECRI Health Devices Program

▶ Health Information Technology (HIT) usability evaluation

- Defining scope: candidate topics
- Final selection: patient discharge documents
- Evaluation method: expert reviews of simulated documents

▶ Two types of recommendations:

- Long term (fix big problems)
- Short term (support current work-around)

▶ Future research directions

ECRI Institute – What We Do

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RESULTS

Knowledge & Skills

Systemic Support

Tools & Materials

Technology Assessment

Quality & Safety

Decision Support

Evidence based recommendations, and technology planning

Risk management, problem reports, standards, and guidelines

Pricing, performance, market intelligence, and analytics

- Safety
- Quality
- Efficiency
- Effectiveness
- Performance
- Evidence
- Cost

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Health Devices Program

Discovering what devices/ technologies work best...

Health Devices evaluation of HIT usability

▶ Goals:

- Identify usability issues with Health-IT systems
- Develop solutions for specific identified problems
- Publish recommendations and best practice guidelines
  - ▷ Star ratings not appropriate

Model	Date Last Updated	Rating	Performance	Safety	W
	12/2016	★★★☆☆	Good	Good	E:
	12/2016	★★★★★	Excellent	Good	E:

HIT selection: Electronic Health Records (EHRs)

▶ General challenges in evaluating EHR usability:

- Large complex entities with unclear boundaries
- Highly customizable systems, usability depends on both
  ▷ EHR product design
  ▷ Implementation
- No requirement to use standardized test scenarios
- No objective test-based assessments of implemented EHRs

▶ ECRI-specific challenges:

- No internal access to EHR/HIT systems
- Publication deadlines

Ratwani, R. M., Hettinger, A. Z., & Fairbanks, R. J. (2016). Barriers to comparing the usability of electronic health records. *Journal of the American Medical Informatics Association*, *24*(e1), e191-e193.

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HD's Initial set of candidates

▶ Usability of Copy-Paste modules provided by different EHR vendors

▶ Transfer of weight information between the in-patient EHR and pharmacy systems

▶ Use of photographs for patient identification

▶ Quality of images attached to a patient's record

▶ Usability of information presented in discharge documentation handed to patients

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Making healthcare safer together

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Why assess EHR-generated discharge documents?

▶ Care coordination documents generated by inpatient providers often do not reach outpatient providers.

- poor integration/ lack of interoperability among EHR systems
- inaccurate or missing contact information

▶ Will take significant time and effort to fix this

▶ Meanwhile, outpatient providers may rely on patient instructions for care coordination

- Happens more often than inpatient providers realize

▶ Critical need to improve discharge documents

- To better support care coordination (off label use)
- AND to be more usable by patients and caregivers

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Discharge Documentation (DD) Evaluation

▶ Scope:

- Usability from out-of-network outpatient provider perspective
- Primary care providers and not specialists
- Pediatric use cases seen inpatient and need follow-up
- Templates from two hospital systems with different EHR vendors

▶ Specific challenges:

- Different templates within a single facility
- In-network vs. out-of-network physician access to patient data
- No standard templates (in the US)
- No required timeframe for sending discharge documentation to outpatient physicians

DD Evaluation Approach

▶ Analysis & literature review

- long term recommendations to improve care coordination

▶ Expert Reviews

- Created discharge document mock-ups
- Developed 'medical documentation heuristics'
- Experts applied heuristics to identify usability issues
- Consolidated results
- Generated recommendations to improve discharge documents

Lit Review: Care Coordination (CC) Issues

▶ Technical
  - The promise/potential for interoperability far exceeds reality
  - Lack of integration

▶ System Design
  - No feedback about whether cc documents sent or received

▶ Social / organizational
  - Physician unaware document was faxed
  - Faxes delivered to wrong person, accidentally discarded, lost

▶ National policy
  - No deadlines for sending care coordination documents
  - No standard template or required organization : inconsistency

Improving CC in the long term

▶ Preliminary recommendations based on our analysis include:

- ■ Adopt Continuity of Care Document (CCD) standard for sharing information between providers during transitions of care.

- ■ Establish policies on timeliness of distributing cc documents.

- ■ Adopt Joint Commission mandate on discharge summary components:
  - ▷ Reason for hospitalization
  - ▷ Significant findings
  - ▷ Procedure and treatment provided
  - ▷ Patient's discharge condition
  - ▷ Patient instructions
  - ▷ Attending physician's signature

ECRI HD report to provide comprehensive set of recommendations

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Expert Reviews, part 1: Defining heuristics

▶ Review software user interface heuristics

▶ Assess medical device usability heuristics
  - ■ eliminate those that don't apply

▶ Consult literature on "good" writing
  - ■ Generic guidelines
  - ■ Medical documentation specific guidelines
    - ▷ Many articles available

▶ Extract relevant recommendations, and nominate as candidate heuristics

▶ Consolidate candidates

Defining Heuristics Contd…

▶ Organize candidates into heuristic categories

▶ Develop positive examples and violation examples for each retained candidate

Color and Contrast	Does the text have sufficient contrast to ensure easy readability? Examples: 1. Favor black text on white or pale yellow backgrounds. Avoid gray backgrounds.
Layout and Position	Is the layout of the text appealing, clear and consistent across the document? Examples: 1. It is preferable that text and headings have left justification. 2. There should be good balance between use of text, graphics, and clear or "white space". 3. Use right edge "ragged" or unjustified for the best readability.
Font and Capitalization	Is the font and size consistent and readable? Examples: 1. A single material should not have more than 3 different typefaces 2. To the extent possible, avoid underlining or all CAPS. Consider using other forms of emphasis such as italics or bold. 3. Headers and sections may have different fonts and sizes as long as there is consistency among the different headers and different sections within the document

Full set of heuristics being written up for publication

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Expert Reviews, part 2: Generating examples

▶ Created mock ups based on hospital templates/examples
- IRB exemptions granted at each participating hospital
- Populated templates with NIST pediatric use cases
- Physicians validated mock-ups

▶ Different approaches for creating mock-ups:
- Confederate creates EHRs based upon NIST test patients in 'test system' & generates discharge documents
  ▷ ECRI recreates documents, using fictitious hospital and physician information
- Confederate sends anonymized discharge documents:
  ▷ ECRI recreates documents with fictitious hospital and physician information and replaces patient data with NIST test patient data

▶ Documents based upon examples from organizations with systems provided by two different EHR vendors

Preliminary Results of Expert Reviews

▶ Short-term recommendations to improve patient DD:

- ■ Establish standardized order and format to present information

  - ▷ Logical structure, important information upfront

- ■ Ensure headings and sub headings match the content

- ■ Ensure appropriate use of billing, medical and non-medical terminology

- ■ Emphasize important information in each section.

Full set of recommendations to appear in ECRI Health Devices report

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Summary / Conclusions

- ▶ Evaluating HIT usability hard, not (always) impossible
- ▶ Expert reviews can help identify significant problems
  - ■ Can also provide ideas for how to resolve them
- ▶ HD's heuristics: new tool to assess medical documents
  - ■ particularly EHR-generated CC documents
- ▶ Heuristics can serve as guidelines
  - ■ for creating or modifying medical document templates

Summary / Conclusions Contd

▶ Long term: better EHR interoperability will help improve coordination of care

▶ Short term, improve discharge documents
  ▪ Make them more usable for both providers and patients

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"Somehow your medical records got faxed to a complete stranger. He has no idea what's wrong with you either."

Next Steps: Future Research

▶ Follow-on studies

- Expand scope of study
  - ▷ Team with Partnership for HIT patient safety
  - ▷ Care coordination between different types of providers
  - ▷ Patient usability of discharge documents
- Select another original candidate
  - ▷ Many require access to the EHR systems: hospital collaborators

▶ Usability of other aspects of HIT

- Decision support systems
- Medication reconciliation systems
- Patient handoff tools

Questions?

Thank You!

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