Improving Discharge Documentation to Support Care Coordination

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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

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

Evidence based recommendations, and technology planning

Risk management, problem reports, standards, and guidelines

Pricing, performance, market intelligence, and analytics
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

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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

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
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
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
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 |
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
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

“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!
References


▶ Maher B., Drachsler H., Kalz M., et al. Use of mobile applications for hospital discharge letters – improving handover at point of practice. [https://pdfs.semanticscholar.org/6d6c/4af54b15e26f167f7be6db106094f54c4bd5.pdf](https://pdfs.semanticscholar.org/6d6c/4af54b15e26f167f7be6db106094f54c4bd5.pdf)

References, continued