Veterans Health Administration
Office of Informatics and Analytics

Building More Usable Electronic Health Records (EHRs) Supporting the Needs of Developers "Focus on Faster & Usable Clinical Documentation"

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VA HEALTH CARE Defining EXCELLENCE in the 21st Century

Outline

- Usability references
- Usability framework of future Electronic Health Records (EHR)
- Recommendations from literature

Electronic Health Record (EHR) References

- **Study:** Physician Perceptions of Two Electronic Medical Records (EMRs): VistA* (VA) and GE Centricity
  Lisa Grabenbauer, University of Nebraska Medical Center (2009)
- **Research Objective:** Examine physicians' perspectives on the objective benefits and limitations of current EMR
- **Conclusions:** Current EMR frustrates physician collection of data to improve patient care with cumbersome interfaces and processes
- **Recommendations:**
  - EMR must provide seamless and flexible interfaces across system boundaries, **<u>for data input as well as data retrieval</u>**
  - EMR should facilitate patient and team interactions, not inhibit them

*Veterans Health Information Systems and Technology Architecture

Knowledge Engineering Group

UNIVERSITY OF NEBRASKA MEDICAL CENTER

A Qualitative Study of the Electronic Medical Record

Lisa Grabenbauer, M.S., Anne Skinner, B.S., John R. Windle M.D.
University of Nebraska Medical Center, Omaha, NE

Introduction

Research Objectives

- Explore the sources of resistance to EMR adoption by the physician community
- Examine physicians' perspective on the benefits and limitations of current Electronic Medical Records (EMR)

Research Context

- Compare environments and culture between
  - Veteran's Administration Medical Center (VAMC) paperless system (VistA and CPRS)
  - The Nebraska Medical Center's (TNMC) GE Centricity Enterprise system

Study Design

- Grounded theory
- Small group semistructured interviews
- 19 participants practicing at both institutions, including residents, house staff and academic physicians
- Open-ended questions about EMR interaction
- Conducted in November and December 2008

- Groups audio-recorded and transcribed
- Data elements coded using NVivo v8.0 software
- Iterative identification of emergent themes
- Themes revised until consensus achieved
- Triangulation with existing research

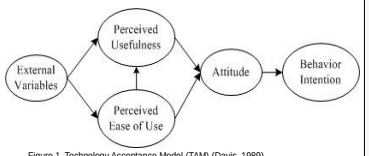
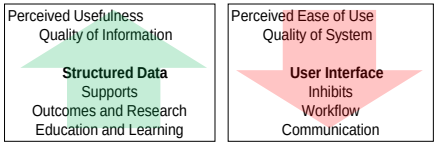


Figure 1. Technology Acceptance Model (TAM) (Davis, 1989)

Findings

Theme	Benefit	Cost	Impact on Patient Care
Workflow	•Availability of patient data both spatially and temporally •VA system more comprehensive •University system better organized •Templated notes save time and improve documentation	•Time consuming retrieval of select patient information •VA system difficult to search with significant redundancy •University system less comprehensive , requires disconnected data sources •Templated notes decrease readability and comprehension •Too much "copying and pasting" in the VAMC's EMR	•Availability at point of care •Information input and retrieval overhead reduces time with patient
Communication	•Ability to share patient-centric information •Other providers •Patients	•Reduced direct communication between health care providers •No transparency between VAMC and TNMC EMR systems or external EMR	•Patient access to information •Redundancy creates frustration
Outcomes and Research	•VA system is comprehensive and can link across the country •Reliable data at the point-of-care can improve outcomes	•VAMC data entry driven by and through physicians at the expense of patient care •TNMC's EMR doesn't support structured data	•The potential to improve patient outcomes holds great promise •That promise is not easily recognized in either current system.
Education and Learning	•Faculty and housestaff were positive about the impact of web-based educational content using Up-to-date and Google scholar •Housestaff were more positive about its impact than faculty	•Positively cited materials were outside of either EMR •Internal alerts were viewed as "fairly useless" and forced workarounds	•Availability at point of care, just-in-time learning •Alerts require over-ride to prescribe, perceived as larger problem at the VAMC than TNMC

Discussion



	TNMC	VAMC
Strength	Logically organized	Comprehensive
Weakness	Limited information in primary EMR Too many different clinical databases that don't work together	Not intuitive Labor intensive Too much information repeated
Meets physician needs	NO	NO

Summary of Conclusions

- Physicians are optimistic about EMR potential for systematic collection of data to improve patient care
- Current EMR systems frustrate physicians with cumbersome interfaces and processes
- EMR systems must provide seamless and flexible interfaces across system boundaries, for data input as well as data retrieval.

Limits to physicians' perceived ease of use must be further explored to improve physicians' attitude and intent to use EMR functionality.

"I don't think that you can rely on the medical record system to provide you all the communication that you need because any electronic system still needs to be overridden by human initiation in terms of a phone call or a page."

"…on the whole, both systems are better than the paper systems we had years ago."

"… it's like six clicks away…"

"I want it to be intuitive … I don't want to have to ask somebody to make it for me."

"I just finished clinic and I now have 12 charts to dictate sometime today."

"… the medical records becomes kind of the all, the omni-present power … you actually have more interaction with the damn computer than the patient."

"When I go back to the VA, I've got to page and scroll back through things or I got to know specific archaic commands."

"… literally you're looking at a list that for one patient's hospitalization may be a list of 300 notes."

"… the issue related to templates and progress notes has made every note look identical … it's watered down the quality of the documentation … the history and physical."

AMIA 2009, American Medical Informatics Association poster section.

Electronic Health Record References

- **Ben-Tzion Karsh, Matthew B Weinger, Patricia A Abbott, Health Information technology: fallacy and sober realities, *JAMIA 2010 17: 617-623.***
- ***"THE 'WE COMPUTERIZED THE PAPER, SO WE CAN GO PAPERLESS' FALLACY"***
- Taking the data elements in paper-based healthcare system and computerizing them is unlikely to create an efficient and effective paperless system
- This surprises and frustrates Health Information Technology (HIT) designers and administrators
- The reason is designers do not fully understand how the paper actually supports users' cognitive needs
- Computer displays are not yet as portable, flexible or well-designed as paper

Electronic Health Record References

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- Paper persistence problem recently explored at large Veterans Affairs Medical Center where EHRs have existed for 10 years
  - Paper continues to be used extensively
  - Why? Paper forms are not simple data repositories that, once computerized, could be eliminated
- User-created paper artifacts typically support patient-specific cognition, situational awareness, task and information communication, and coordination, all essential to safe, quality patient care
- Paper will persist and should persist, if HIT is not able to provide similar support

Usability Framework for Electronic Health Records

- We must produce faster and usable clinical documentation solutions which:
  - Are easy to learn (and re-learn)
  - Are efficient to use (performance)
  - Are effective to use (completion)
  - Prevent errors (not cause harm)
  - Are satisfying to use (subjective impression)

Recommendations From Literature

- Remove tension between free text versus structured documentation
- Clinical documentation needs to support both seamlessly
- Usability and semantic interoperability go hand in hand
- Refuse systems that do not deliver both
- Remove tension between clinician/physician documentation as a billing vehicle and as a clinical documentation tool
- Improved data input and richness of documentation can coexist if you design the system properly
- Usability is perhaps more crucial than interoperability
- The question of interoperability will be unresolved if clinicians fail to accurately record the data

William Osler, M.D.
Focus on “clinical documentation”

“Observe, record, tabulate, communicate. Use your five senses. Learn to see, learn to hear, learn to feel, learn to smell, and know that by practice alone you can become expert.”

“There is no more difficult art to acquire than the art of observation, and for some men it is quite as difficult to record an observation in brief and plain language.”

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