

# Physician Perceptions of Two EMRs: CPRS and GE Centricity

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# Disclosures

John Windle-No conflict of interest

Anne Skinner-No conflict of interest

Lisa Grabenbauer-No conflict of interest

# Research Overview

## Objective

- Examine physicians' perspective on the benefits and limitations of current Electronic Medical Records (EMR)

# Research Overview

## Context

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

# Poll#1

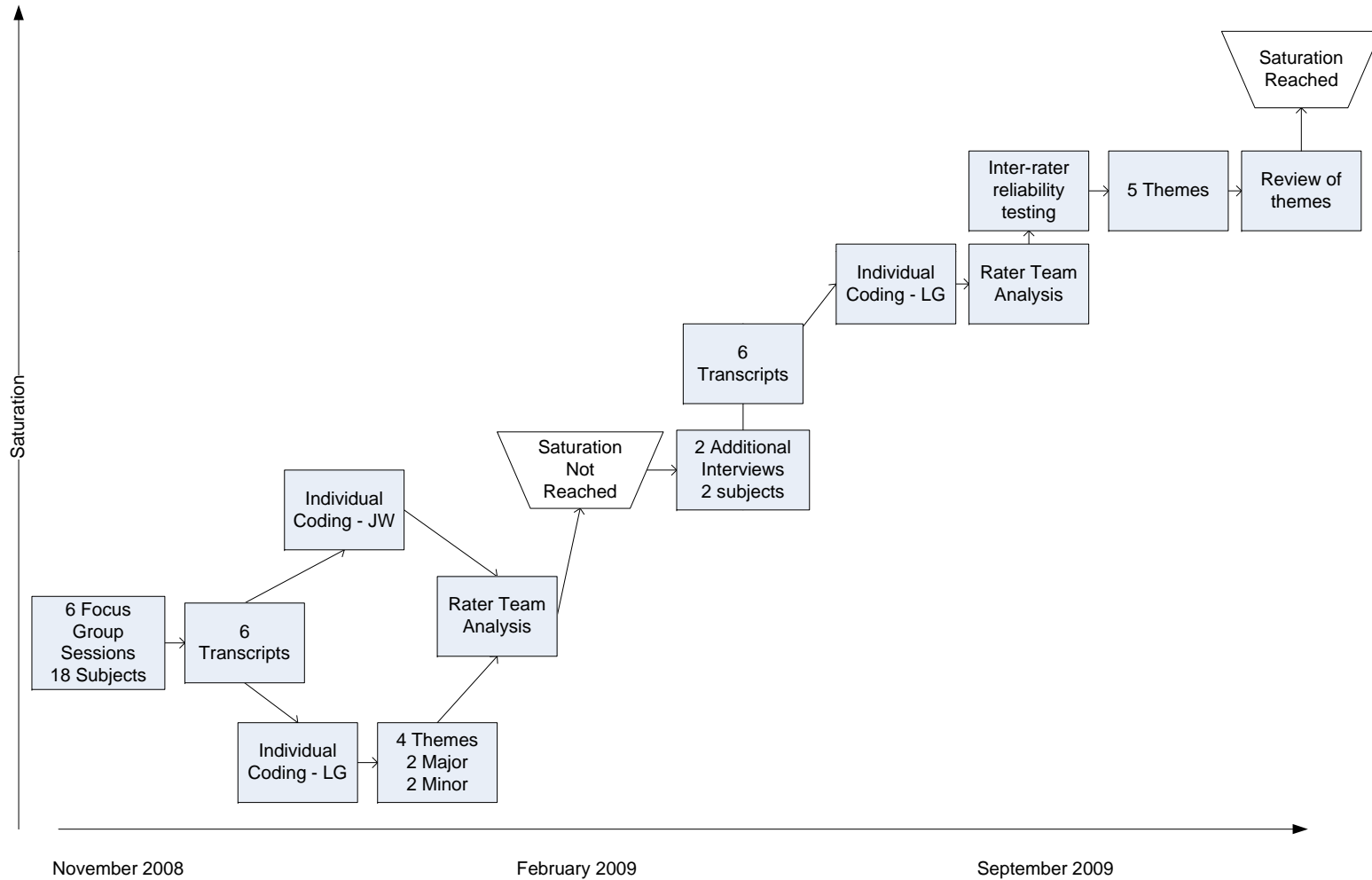
- What is your role?
  - Clinician
  - Researcher
  - Administrator
  - Other (fill in the blank)
- How long have you been using CPRS?
  - Don't use
  - Less than 3 years
  - 3-5 years
  - 5-10 years
  - Longer than 10 years

# Study Design

## Participant Profile

- 18 physicians who practice at both institutions
- 9 academic faculty
- 9 residents and fellows

# Study Design



# Study Design

## Data Collection

- Focus group format
- Open-ended questions about interaction with respective EMR systems and the systems perceived benefits and limitations
- Conducted in November 2008 through February 2009

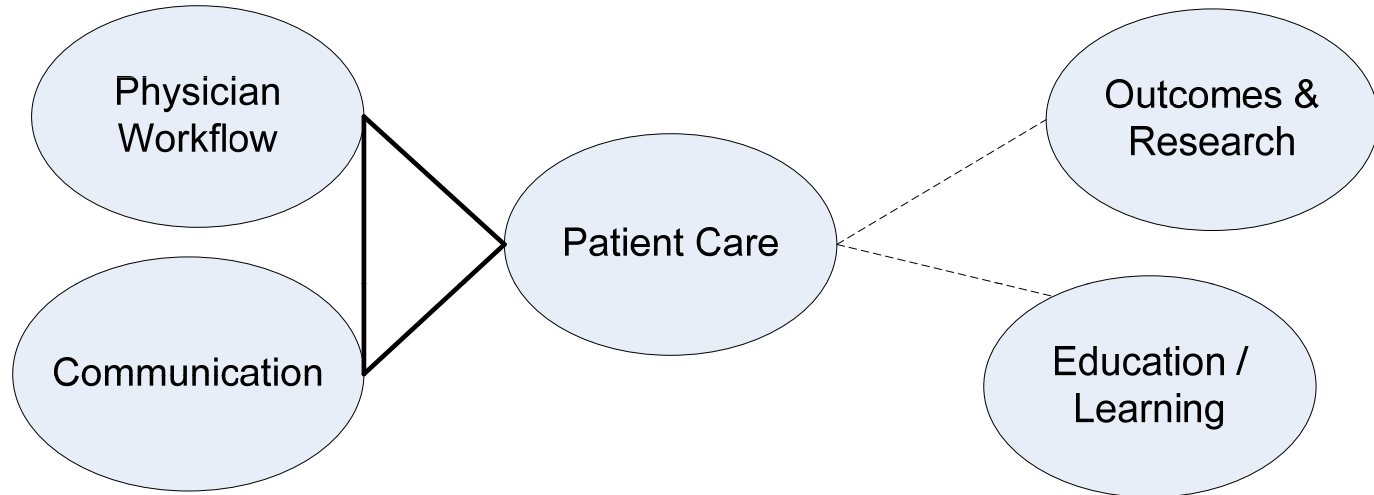


# Study Design

## Analysis

- Group proceedings audio-recorded and transcribed
- Data elements systematically coded and analyzed using NVivo v8.0 software
- Iterative identification of themes unique and similar across all groups
- Themes revised until consensus achieved

# Findings



## Major themes

- Workflow
- Communication
- Outcomes and Research
- Education and Learning

# Major Themes Defined

## Workflow

- Physical interaction of the healthcare provider with information and with patients, which includes the amount of time needed to capture, retrieve and process information.

# Major Themes Defined

## Communication

- Interaction between the healthcare provider team, and the methods needed to facilitate the exchange of information.

# Major Themes Defined

Research/  
Outcomes/  
Billing

- Use of data in a structured and summarized way to satisfy research, outcomes and billing, including capture of data in the appropriate formats.

# Major Themes Defined

## Education/ Learning

- Use of HIT to support the provider's medical education, as well as any learning that is required to effectively use the EHR system.

# Workflow

## Benefit

- Availability of patient data both spatially and temporally
  - VA system more comprehensive
  - University system better organized
- Templated notes save time and improve documentation

# Workflow

## Cost

- Time consuming retrieval of select patient information
  - VA system very difficult to search, contained significant redundancy
  - University system less comprehensive and required searching several disconnected data sources



# Workflow

Cost

- Templated notes decrease readability and comprehension
- Too much “copying and pasting” in the VAMC’s EMR

# Workflow

Impact  
on  
Patient  
Care

- ↑ Availability at point of care
- ↓ Information input and retrieval overhead reduces time with patient

# Workflow

## Physician Quotes

- “So, we don’t type in our clinic notes at this point. But we spend a lot of time outside of clinic documenting.” (TNMC - FAC)
- “I just finished clinic and I now have 12 charts to dictate sometime today.” (TNMC - FAC)

# Workflow

## Physician Quotes

- “Follow up involving order entry takes at least 5-10 minutes per patient, so if you add that on to the end of your day – it is at least an extra hour, because nothing goes on paper, and it’s not convenient to enter info until you’re finished with seeing all patients. (VA – RES)”

# Workflow

## Physician Quotes

- “The longer you are at the VA, the more tricks you learn about using it and it becomes more and more powerful but sometimes that learning curve is very steep. “ (VA – FAC)

# Workflow

## Physician Quotes

- “I want it to be intuitive ... I don’t want to have to ask somebody to make it for me.” (VA - FAC)
- “... 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.” (VA – FAC)

# Workflow

## Physician Quotes

- “You have chaplain notes, you have PT notes, you have everything and literally you’re looking at a list that for one patient’s hospitalization may be a list of 300 notes. “ (VA – FAC)

# Workflow

## Physician Quotes

- “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.” (VA – FAC)
- “... the medical records becomes kind of the all, the omni-present power ... you actually have more interaction with the damn computer than the patient.” (VA – FAC).



# Communication

Benefit

- Ability to share patient-centric information
- Other providers
- Patients

# Communication

Cost

- Reduced direct communication between health care providers
- No transparency between VAMC and TNMC EMR systems or external EMR

# Communication

Impact  
on  
Patient  
Care

- ↑ Patient access to information
- ↓ Redundancy creates frustration

# Communication

## Physician Quotes

- “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.”  
(BOTH – FAC)

# Communication

## Physician Quotes

- “Lots of interaction with nurses, they get to know who you are and often provide additional information about your patient - that happens just because of physical presence – it provides another opportunity to share relevant information that doesn’t happen at the VA because there is less interaction. This collaboration also provides more reliability that orders are followed.” (TNMC – RES).

# Poll #2

- Are your perceptions of the impact of EMR workflow on patient care ...
  - Mostly negative
  - Mostly positive
  - Balanced
- Are your perceptions of the impact of communication using EMR on patient care ...
  - Mostly negative
  - Mostly positive
  - Balanced

# Outcomes and Research

## Benefit

- VA system is comprehensive and can link across the country
- Reliable data at the point-of-care can improve outcomes

# Outcomes and Research

## Cost

- VAMC data entry is driven by and through physicians and impacts on time with patient
- TNMC's EMR doesn't support structured data



# Outcomes and Research

## Impact on Patient Care

- ↑ The potential to improve patient outcomes holds great promise
- ↓ That promise is not easily recognized in either current system.

# Education and Learning

## Benefit

- Both faculty and residents were positive about the impact of web-based educational content such as Up-to-date and Google scholar.
- Residents were more positive about its impact than faculty.

# Education and Learning

## Cost

- The positively cited materials were outside of either EMR
- Internal alerts were viewed “fairly useless” and in many cases forced workarounds.

# Education and Learning

## Impact on Patient Care

- ↑ Availability at point of care, just-in-time learning
- ↓ Alerts require an over-ride to prescribe, this was perceived as larger problem at the VAMC than NMC

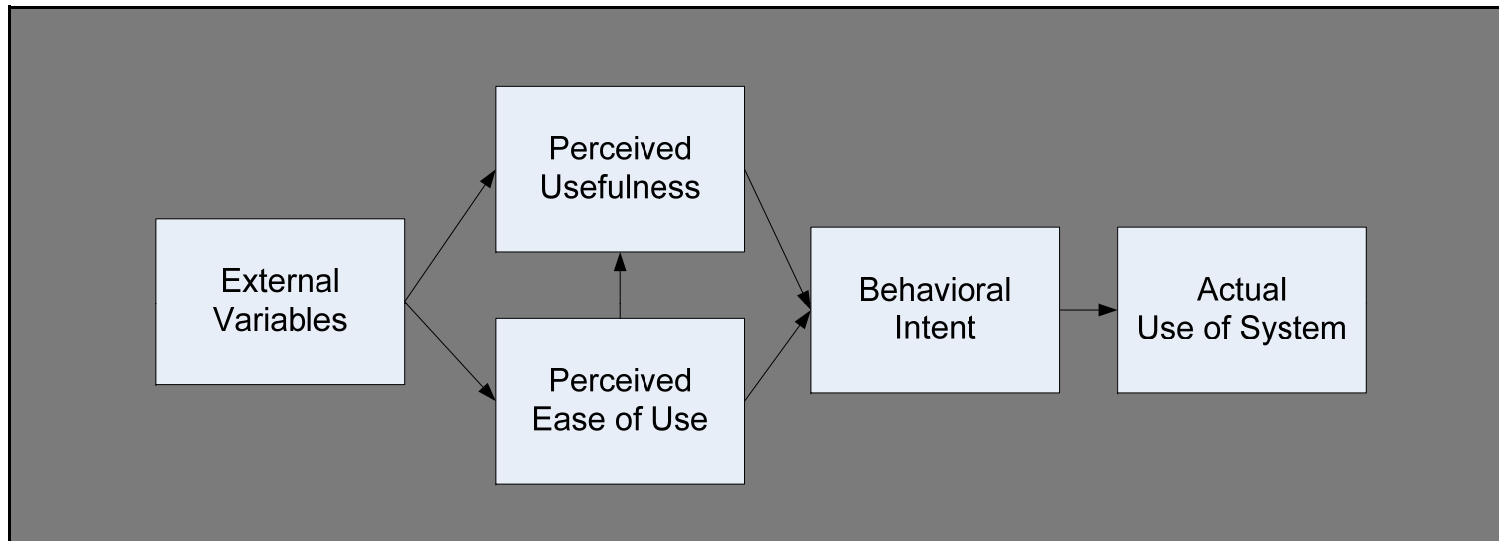
# Poll #3

- Are your perceptions of the impact of outcomes and research using EMR data on patient care ...
  - Mostly negative
  - Mostly positive
  - Balanced
- Are your perceptions of the impact of education using EMR on patient care ...
  - Mostly negative
  - Mostly positive
  - Balanced

# EMR Comparison

	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

# Technology Acceptance Model (TAM)



Proposed by Davis, 1989

- Predictor of acceptance of an information system
- Valuable in systems design

•User acceptance can be measured by their behavior, and is determined by two beliefs

- Perceived usefulness – how well does it help me do my job?
- Perceived ease of use – how much effort is required to use it?

# Physician Perceptions

## Perceived Usefulness

- Quality of Information
  - Structured Data supports outcomes, research, education

## Perceived Ease of Use

- Quality of System
  - User Interface inhibits workflow and communication



# Research Direction → Workflow

Identify needs of physicians

- Identification of values
- Prototype design features

Explore collaborative design methodologies

Test usefulness and usability of interfaces

# Conclusions

Physicians  
optimistic about  
EMR potential for  
systematic  
collection of data  
to improve patient  
care



Current EMR  
frustrates physician  
with cumbersome  
interfaces and  
processes

EMR must provide seamless and flexible interfaces across system boundaries, for data input as well as data retrieval. The EMR should facilitate patient and team interactions, not inhibit them.

# Adoption of Technology

“...on the whole, both systems are better than the paper systems we had years ago.”

# Questions

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# Contact Info

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