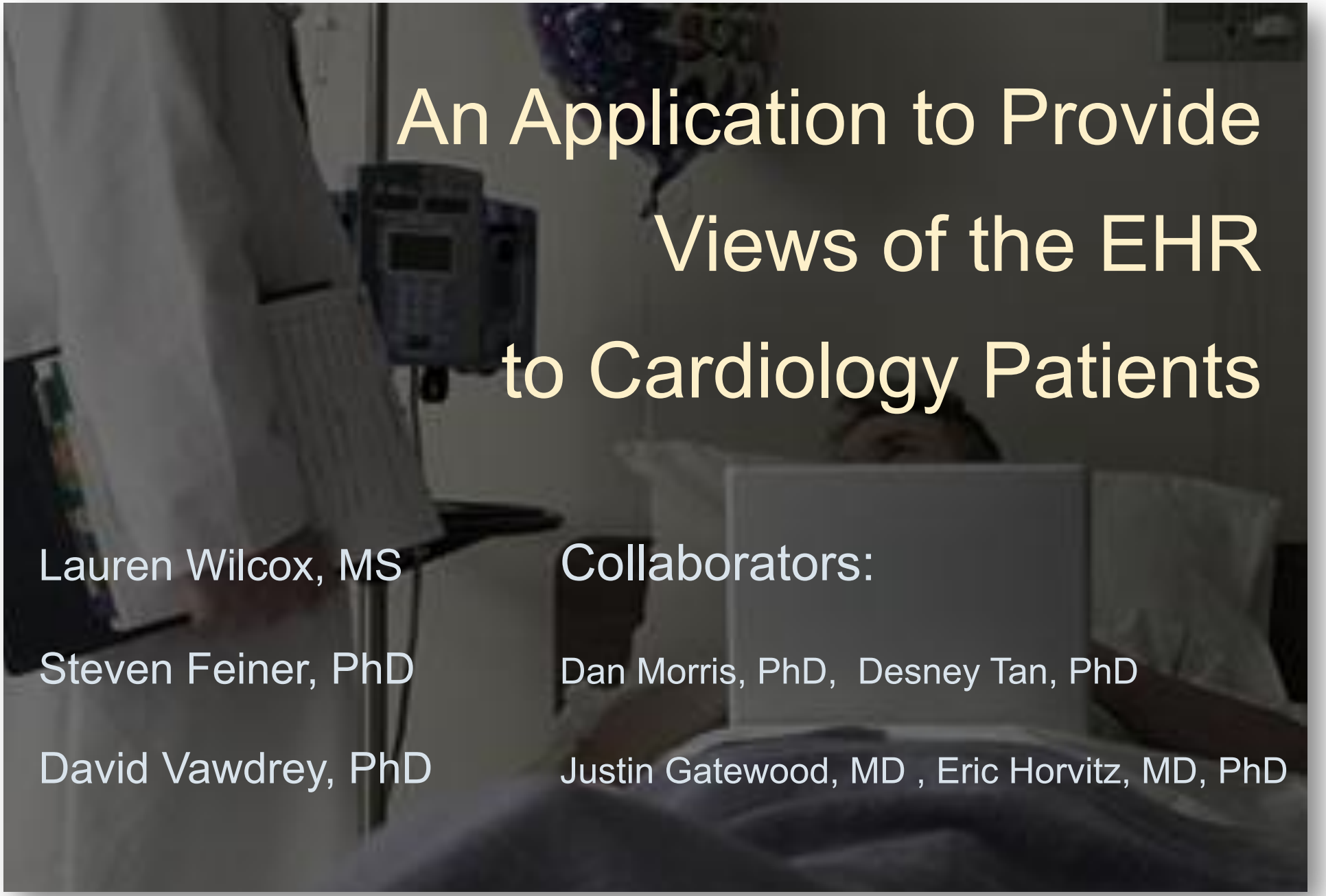

An Application to Provide Views of the EHR to Cardiology Patients

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Collaborators:

Dan Morris, PhD, Desney Tan, PhD

Justin Gatewood, MD , Eric Horvitz, MD, PhD

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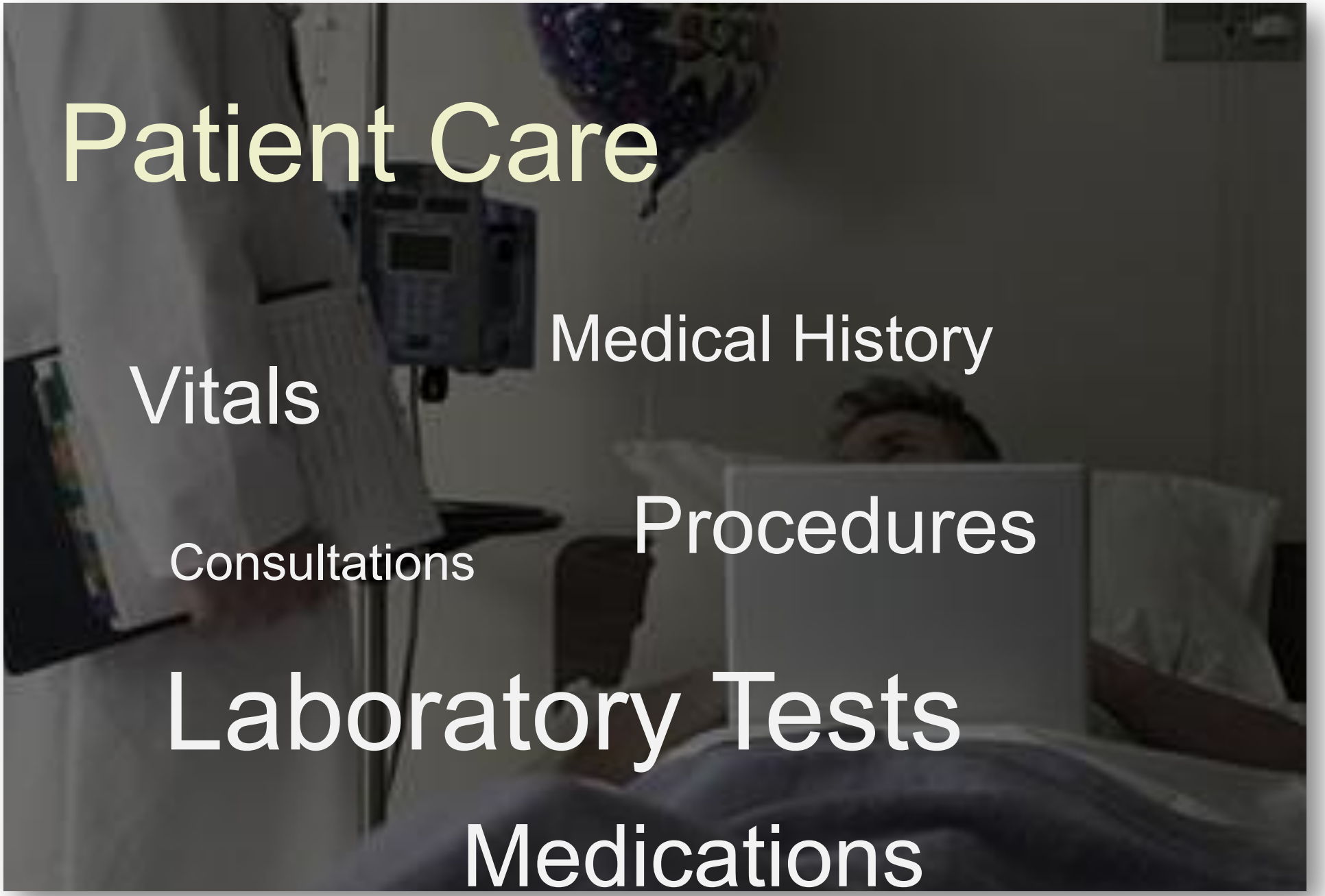
IN THE CITY OF NEW YORK



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Hospital patients and their loved ones are starving for information.

Information delivery to patients

ED patients disoriented, anxious

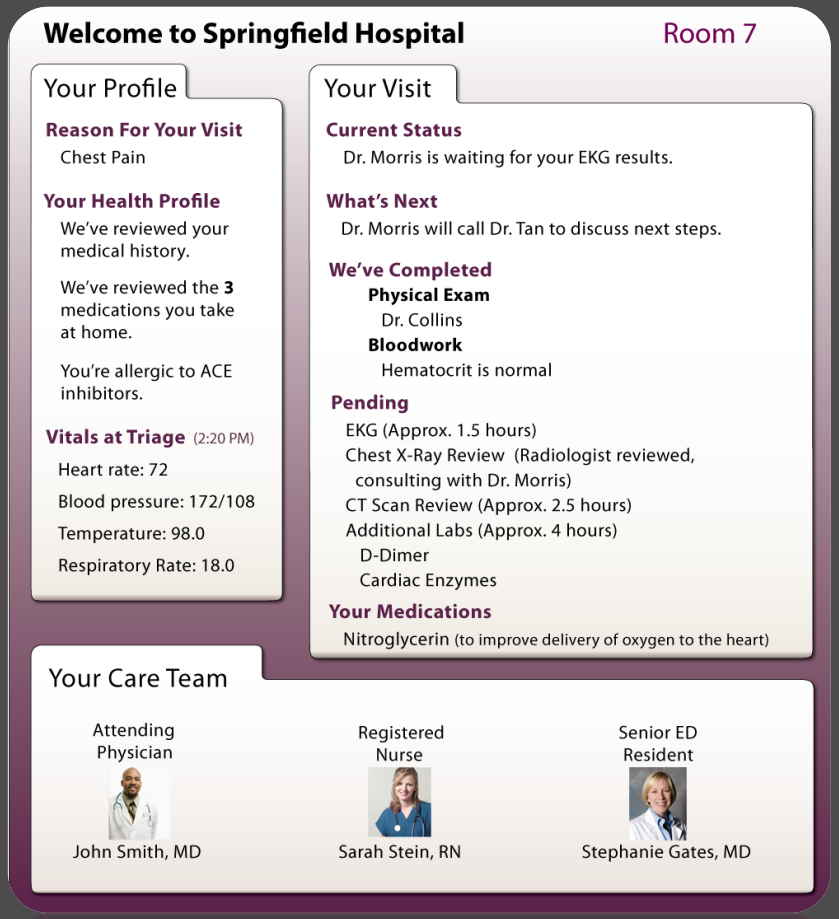
[Byrne 97] [Dahlen, Janson 02]

Anxiety correlated to negative outcomes

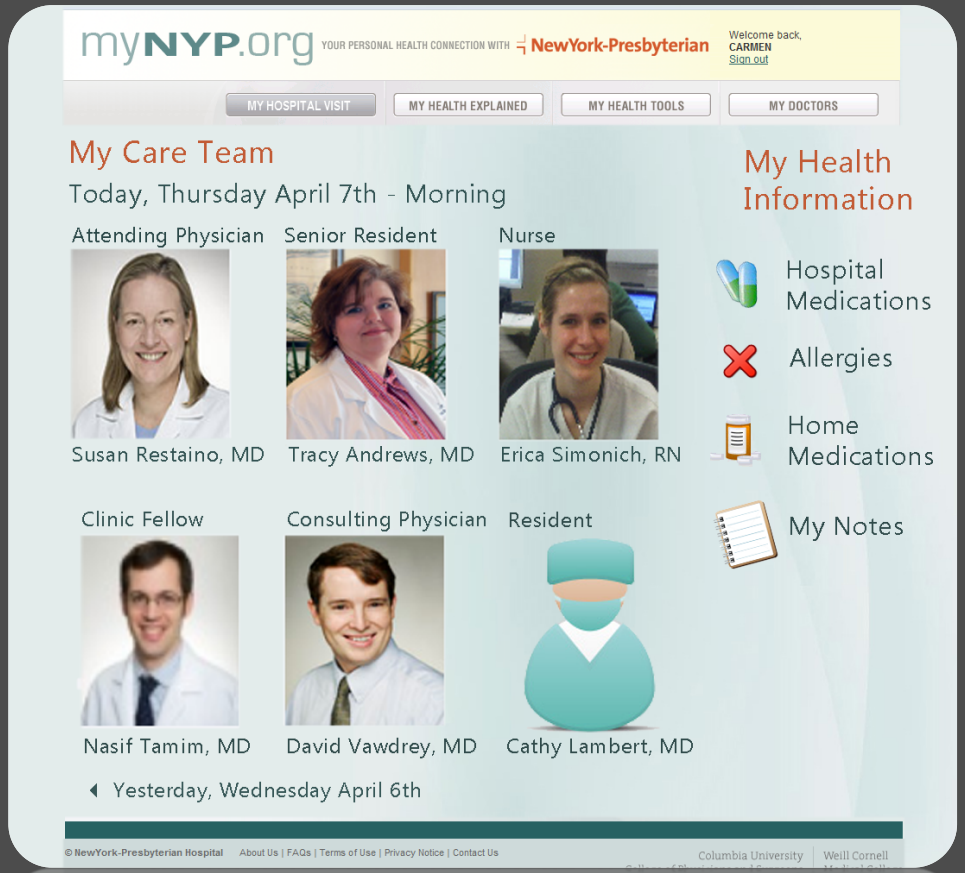
[Moser 07, Huffman et al. 07, Bruggemann, Nixon, Cavenett 07, Austin, Tully & Parker 07, Jones et al 07]

Increasing amount of information a patient receives in the clinical setting can help

[Björvell,Stieg 91]



Wilcox, Morris, Tan, Gatewood, Horvitz
CHI '10, CHI '11



Wilcox, Liu, Collins, Feiner, Restaino, Vawdrey (Forthcoming)

Vawdrey, Wilcox, Collins, Bakken, Feiner, Boyer, Restaino (Forthcoming)

Patient-Facing Views of the EHR

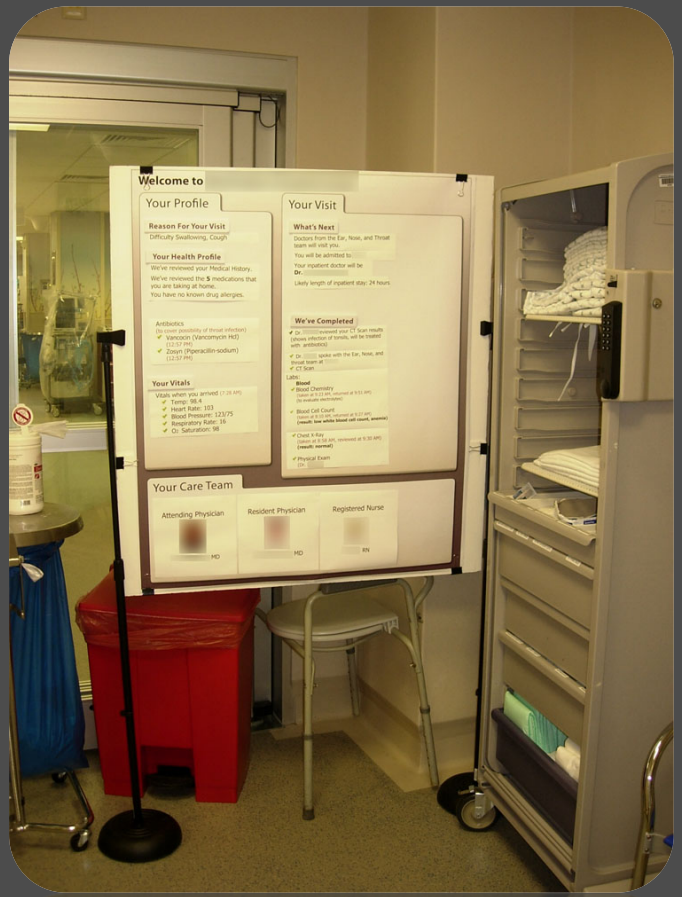
Do patients benefit from electronic displays of health info in the clinical setting?

How should we structure information for a patient-centric information display?

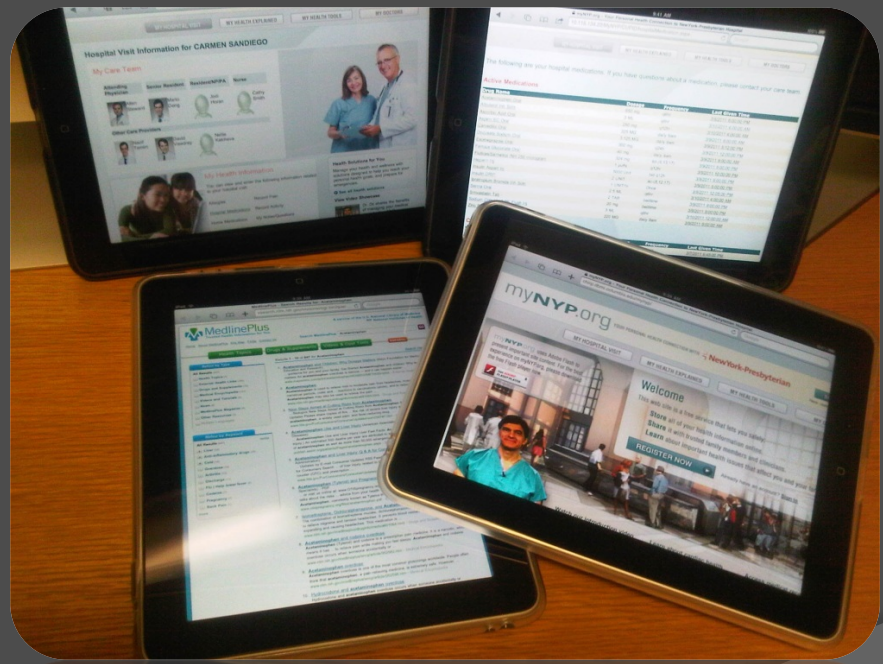
What technological problems do we need to solve?

Preliminary Studies

Emergency Department



Cardiology Step-Down



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Microsoft Research

Preliminary Studies: Emergency Department

18 Patients (11 female, 7 male)

11 Visitors (8 female, 3 male)

(age range 29–84, mean = 54)

Large Display Prototypes

Some 8.5 x 11 Handouts

COLUMBIA UNIVERSITY

Microsoft Research

Preliminary Studies: Emergency Department - Results

Benefits:

- Communication
- Archive
- Summarization
- Calming Effect
- Needed memory aids in the ED

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Microsoft Research

Preliminary Studies: Emergency Department

18 Patients (11 female, 7 male)

11 Visitors (8 female, 3 male)

(age range 29–84, mean = 54)

22 Attending Physicians

(follow up survey)

(AMIA '10)

Large Display Prototypes

Some 8.5 x 11 Handouts

Columbia University

Microsoft Research

Preliminary Studies: Cardiology Step-Down

11 Patients (2 female, 9 male)

(age range 23– 79, mean = 53)

6 Nurses

(2 – 12 yrs experience)

Semi-Structured Interviews:

Medication Info Needs
Explanation Strategies

Preliminary Studies: Cardiology Step-Down - Results

(Results in forthcoming paper)

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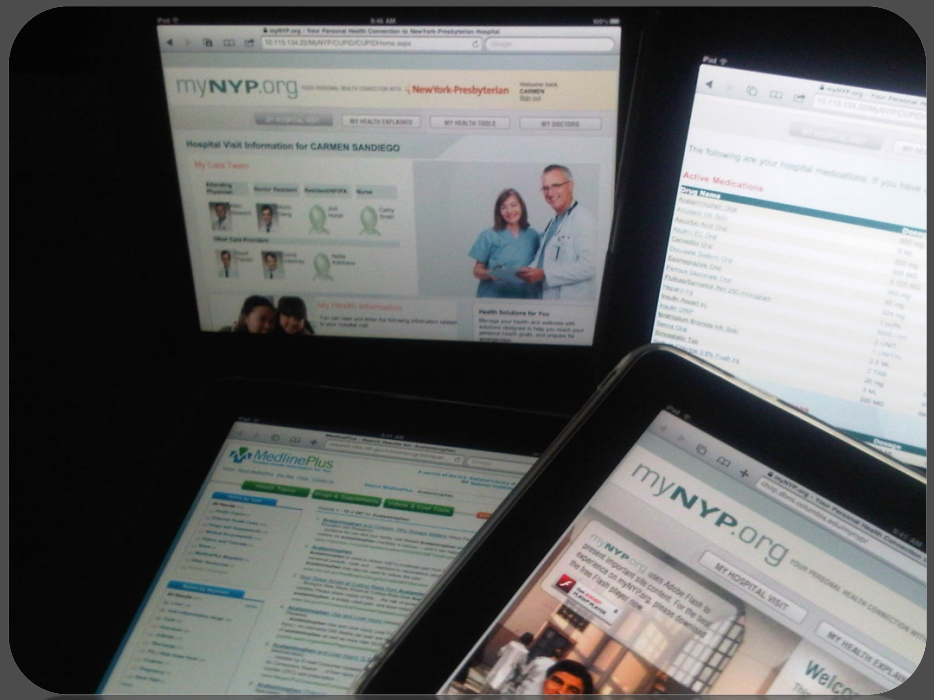
Patient Application: Cardiology Step-Down

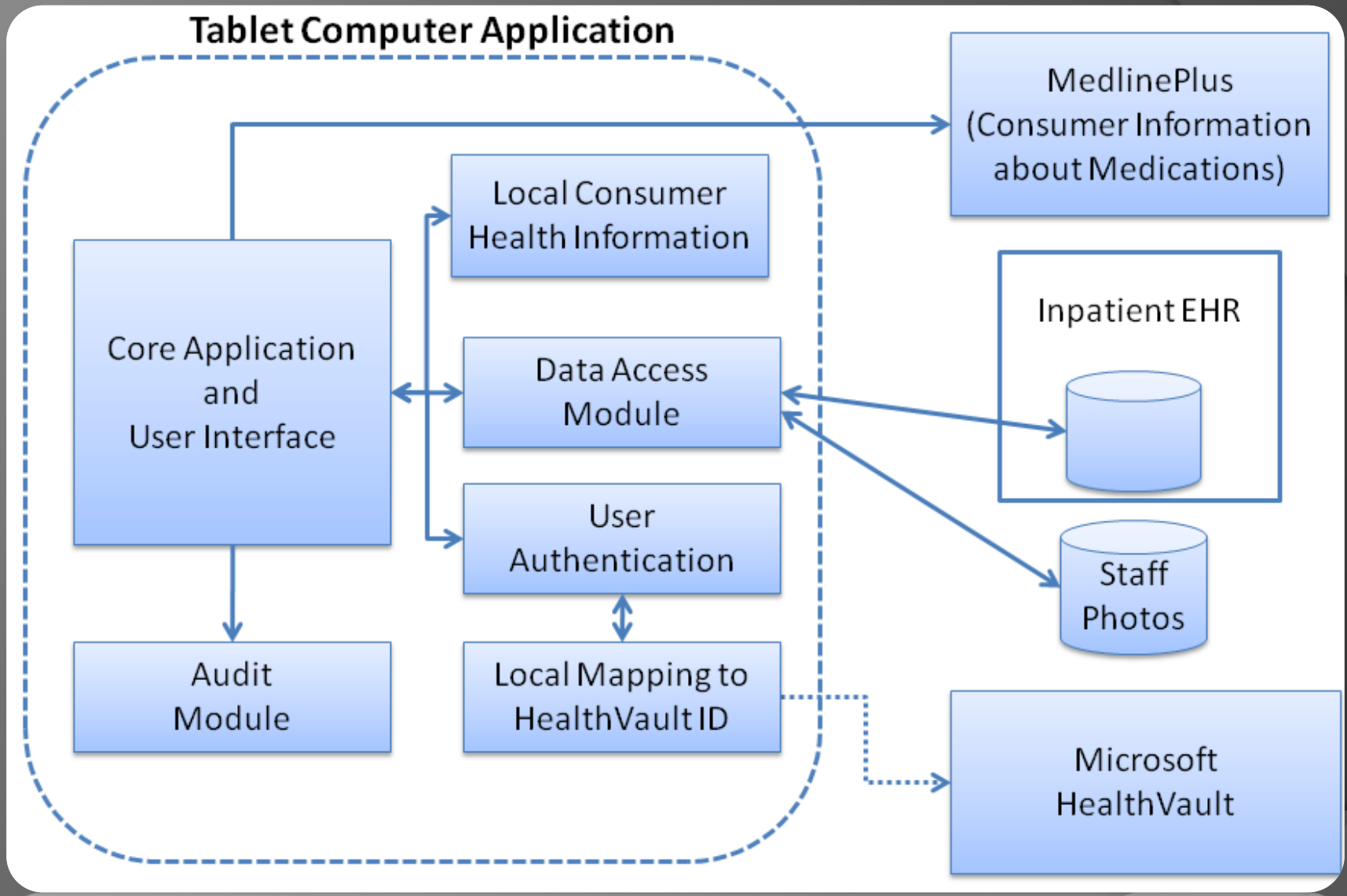


Usage Sessions

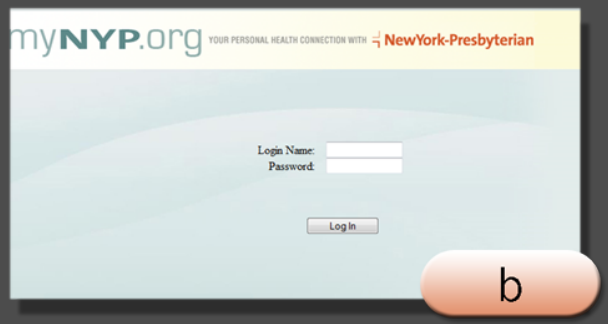
5 Patients (5 male)

Mean age= 55.4

Avg hospital stay = 5.4 days


Tablet Computer Application
MedlinePlus (Consumer Information about Medications)
Local Consumer Health Information
Core Application and User Interface
Data Access Module
Inpatient EHR
User Authentication
Staff Photos
Audit Module
Local Mapping to HealthVault ID
Microsoft HealthVault

Usage Session Flow: Cardiology Step-Down



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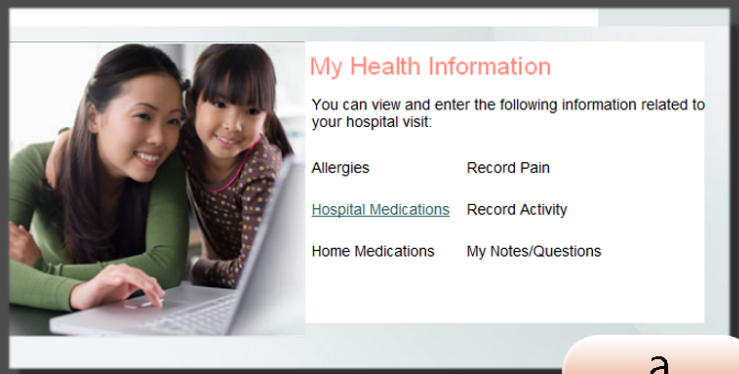
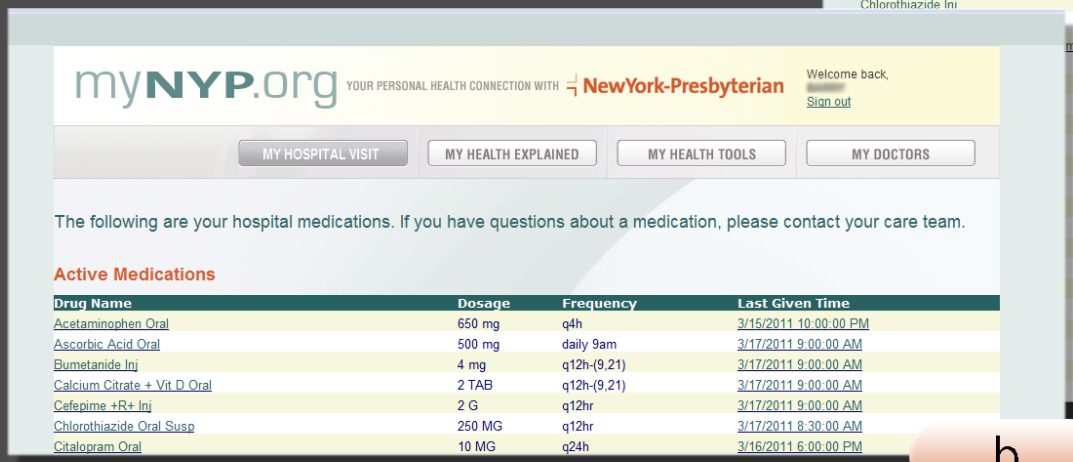
Usage Session Flow: Cardiology Step-Down



a



b

c

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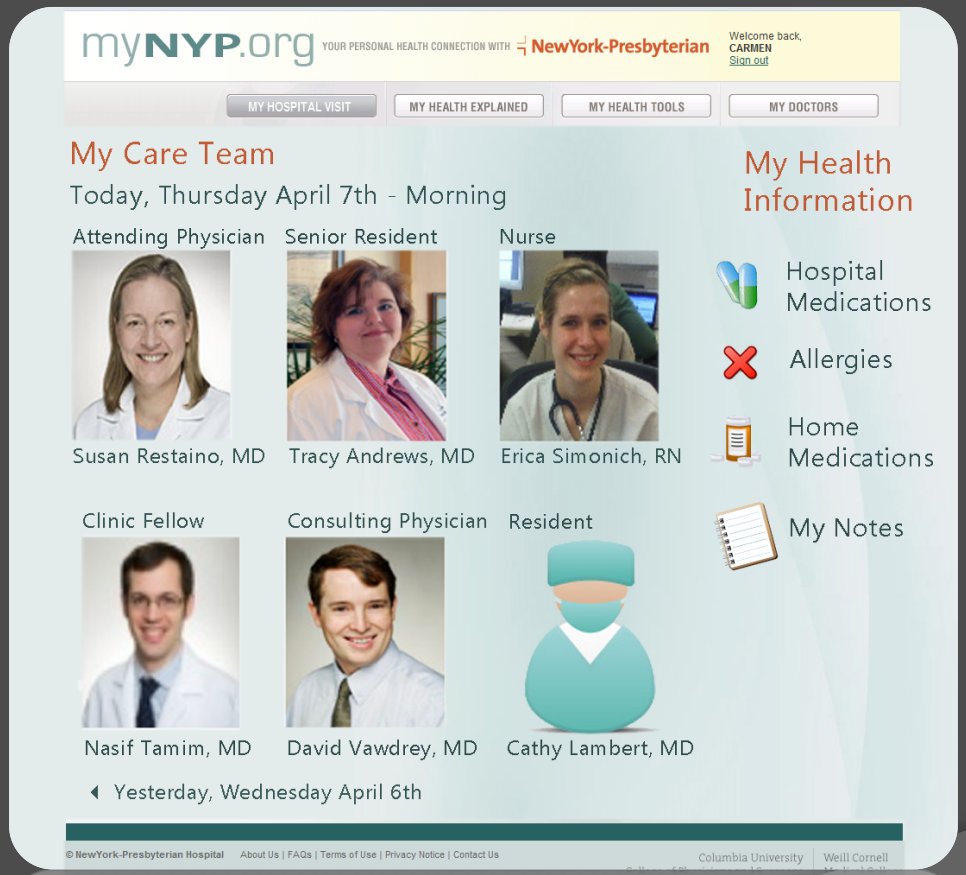
Usage Session: Cardiology Step-Down - Results

(Results in forthcoming paper)



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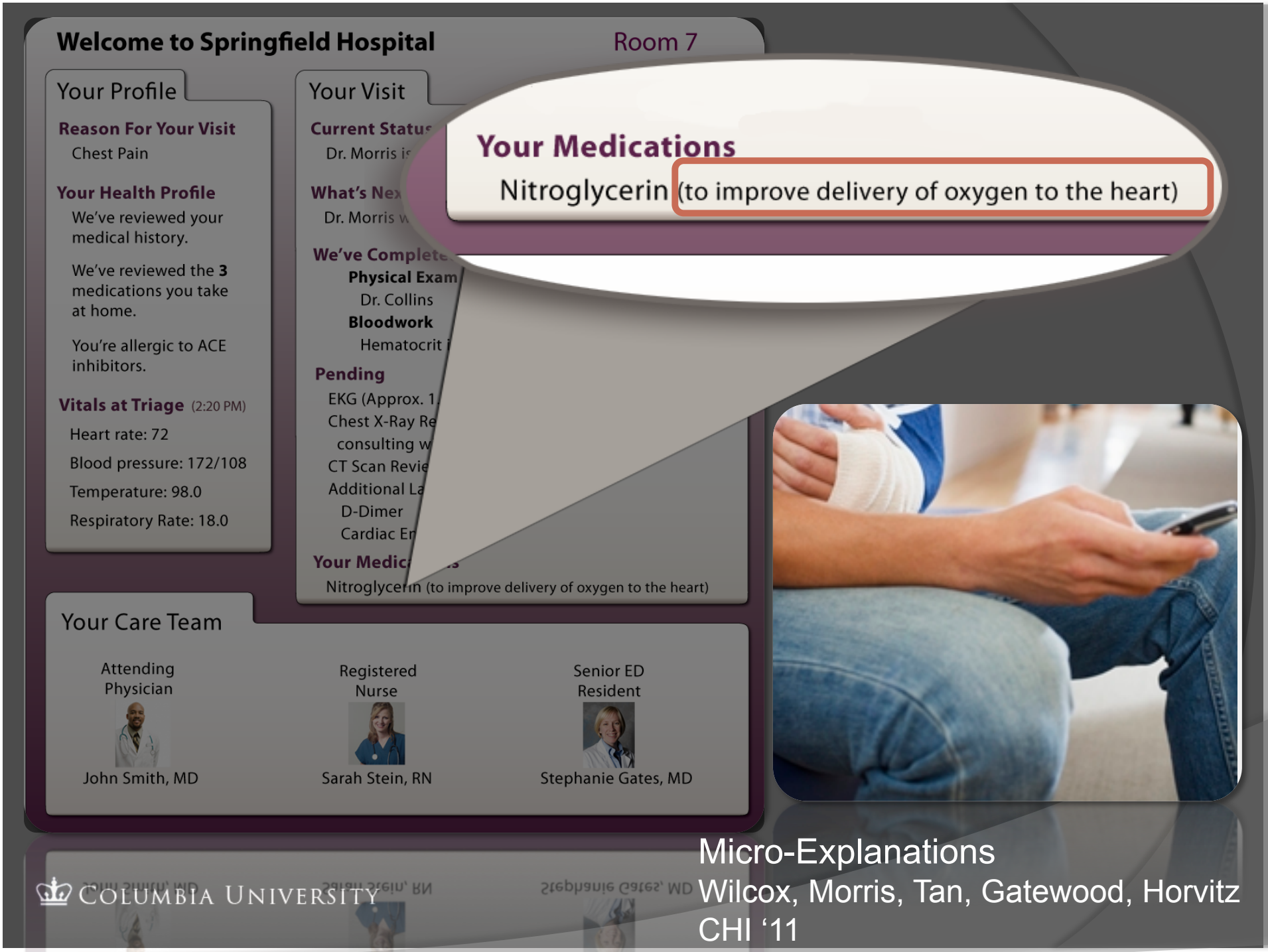

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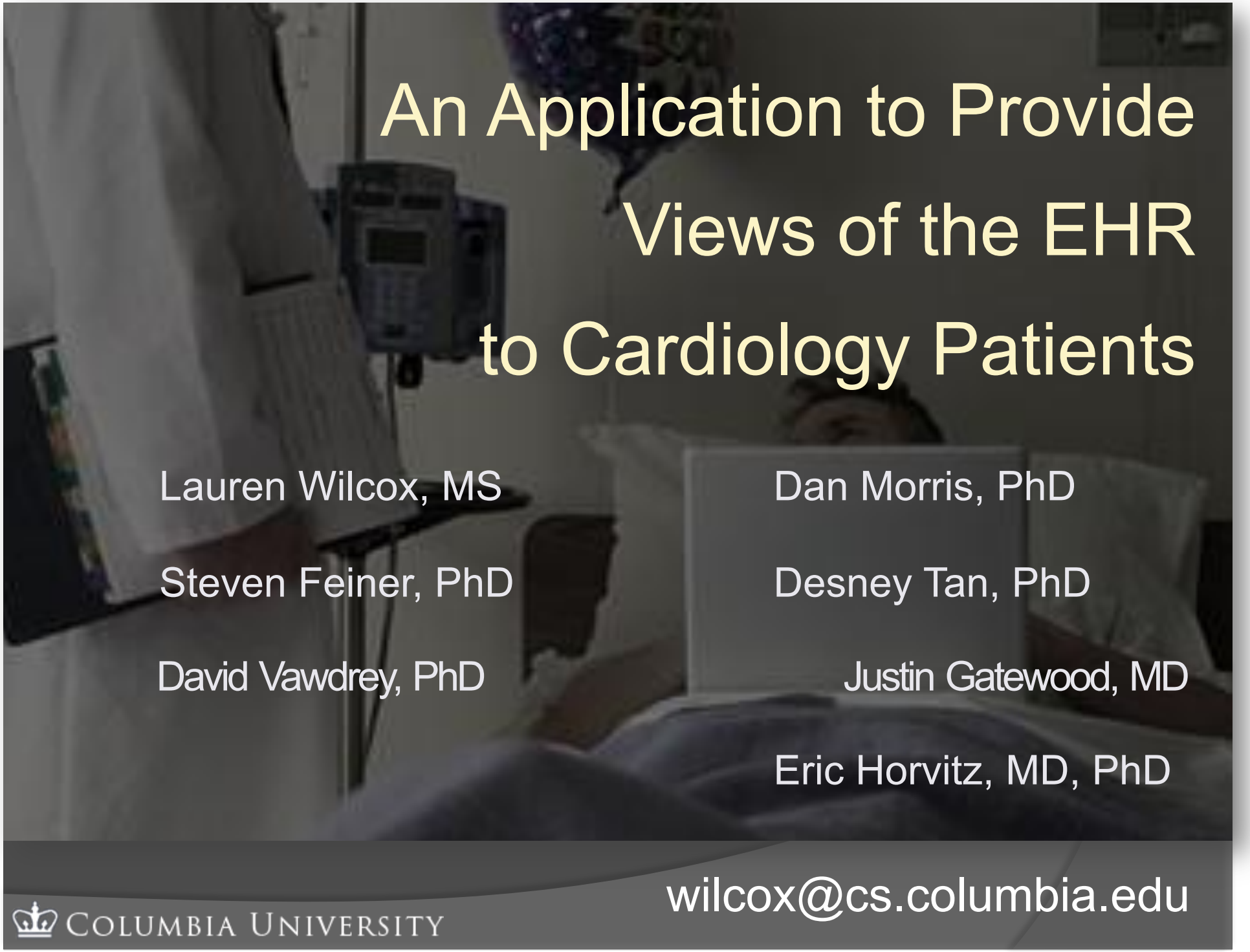
Micro-Explanations
Wilcox, Morris, Tan, Gatewood, Horvitz
CHI '11

Next Steps – Data Browsing

1. Associate multiple attributes of data in representations of the data
   Bade et al. ‘04, Plaisant et al. ‘96, Wang et al. ‘08
2. Browse several levels of detail
   Bade et al. ‘04, Chen et al. ‘04, Lam et al. ‘06, Pieczkiewicz et al. ‘07, Plaisant et al. ‘96, Powsner & Tufte ‘94, Wang et al. ‘08
3. Show qualitative scales
   Bade et al. ‘04, Powsner & Tufte ‘94
4. Show relationships to other data over time
   Bade et al. ’04, Plaisant et al. ‘96, Wang et al. ’08
5. Allow browsing on small screens (mobile views)
   Chen et al. ‘04, Lam et al. ‘06



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