Jointly Visualizing Patient-Generated and Clinic Blood Pressure Readings

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The authors have no conflicts of interests to disclose
Vision

• Seamlessly integrate patient-generated data into the EHR
  – Engage and empower patients
  – Improve basis for shared decision-making
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Information overload?

Data reliability?

Meaningfulness?
Vision

• Seamlessly integrate patient-generated data into the EHR

Our Goal:
Create a well-designed data visualization that explicitly addresses these concerns

Information overload?
Data reliability?
Meaningfulness?
CONtrolling Disease Using Inexpensive IT - Hypertension in Diabetes (CONDUIT-HID)

(1) Patients ideally upload their data into HealthVault from their homes or workplaces

(2) Patients without computers, and those who feel uncomfortable using the application, upload their data into HealthVault at the clinic

(3) Patients allow HealthVault to send their blood pressure readings to their clinic’s EHR

(4) Protocol-driven feedback loop to adjust medications if BP is not controlled

(5) Monthly call to patient to discuss BP control and make any medication changes, or to remind if no uploads in the past month

Primary Care Provider

Medical Assistant or Receptionist

HealthVault

HL7 Interface

Epic

Diabetes Care Nurse

UMASS Amherst

University of Massachusetts Medical School

Reliant Medical Group

Atrius Health

Agency for Healthcare Research and Quality

Advancing Excellence in Health Care

www.ahrq.gov
Visualization Overview

• Individuals with hypertension and diabetes (n=99)
  – Clinic readings
  – Home BP readings from Omron electronic cuff

• Visualization users
  – Primary care physicians
  – Chronic care nurses

• Prototype visualization tool built using Tableau
Conclusions

• We can create well-designed data visualizations that
  – Integrate PGHD and clinically-generated EHR data
  – Explicitly addresses concerns of information overload, reliability, and meaningfulness
Limitations and Future Work

• Initial iterative design by our engineering + clinician team
  – Need to formally evaluate the design

• Used Tableau to give us (a good deal of) control over the design
  – Integrated PGHD into the EHR
  – Integrate new viz into the EHR?
Thank you

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To view a system demo