Staying Connected with Patient-Generated Health Data

April 14, 2015

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Conflicts of Interest

Dr. Danny Sands and Dr. Philip Marshall are employees of Conversa Health, Inc. and have financial interests in the company.

Dr. Sands is also a consultant to Kinergy Health and has a financial interest in the company, and advisor to Navis Health, and is a physician at Beth Israel Deaconess Medical Center (Boston, MA).
Learning Objectives

At the end of this presentation, the attendee will be able to:

1. Describe the state of the emerging “between-visit” patient-provider communication industry and specifically the collection and use of Patient-Generated Health Data (PGHD), and the potential value of staying connected between visits to physicians, patients, and payers.

2. Define the key success metrics when deploying between-visit patient-provider communication strategies, defined for the physicians and health system, for the patient, and for the payers of health care services.

3. Illustrate the industry's achievements to date when it comes to using digital technology to stay in touch with patients between visits, including the financial impact, patient satisfaction impact, and the effect on achieving clinical quality metrics.
The Value of PGHD (HIMSS STEPS model)

Staying connected with patients between visits strengthens the doctor-patient relationship.

Using PGHD to monitor patients between visits or post-discharge helps care teams to adjust care plans based upon the individual patient’s progress and needs.

PGHD helps ensure that patient populations are staying on track with their care plans, and identifying patients early that are having difficulty. This will improve quality metrics and achieve the goals of pop health.

Using PGHD in conjunction with other profile information can drive personal prevention and educational materials specific to the individual.

By identifying and mitigating patient complications early, downstream costs such as avoidable admissions are avoided.

http://www.himss.org/ValueSuite
Our care systems were organized historically to respond rapidly and efficiently to any acute illness or injury that came through the door. The focus was on the immediate problem, its rapid definition and exclusion of more serious alternative diagnoses, and the initiation of professional treatment.

http://content.healthaffairs.org/content/20/6/64.full
We Still Have a Visit-Centric System

Health care delivery today is similar to care delivery a century ago (with fewer house calls)

Epidemic of acute conditions drove care model

Payment for services based on episodic visits

Logical approach to manage acute conditions
Failings of a Visit-Centric System

Cost
- $200B avoidable chronic condition costs
- $125B routine and/or unnecessary visits
- This does not include costs to patients

Quality
- Infrequent measurement
- Sampling errors of measurement
- No real incentives for improving quality

Engagement
- Little inter-visit engagement (on either side)
- Hard to maintain behaviors & adhere to plan
150,000 physician shortfall; 50,000 in primary care alone

100M more primary care office visits needed for newly insured (20M+) and aging population with chronic conditions

By 2025

150,000 physician shortfall; 50,000 in primary care alone

Kaiser Family Foundation
We Must Re-Imagine Visit-Centric Care

Today we have epidemic of chronic conditions and complex care transitions from hospital to home: 2/3 of Medicare FFS recipients have multiple chronic conditions (2010)
We Must Focus More on Chronic Disease Prevention and Management

The Chronic Care Model

Community
- Resources and Policies
- Self-Management Support

Health Systems
- Organization of Health Care
- Delivery System Design
- Decision Support
- Clinical Information Systems

Improved Outcomes
- Informed, Activated Patient
- Prepared, Proactive Practice Team
- Productive Interactions

Developed by The McColl Institute® ACP-ASIM Journals and Books
“Do I know how my patients are doing between visits? Are they getting the guidance they need?”

“Is my health getting better or worse? What should I be doing to stay on track?”
What Are Patients Really Doing Between Visits?
It’s Time to Bring Patients and Providers Together

“Health IT should play a crucial role in supporting care delivery systems and individuals coming together (e.g. partnership) around shared goals for their care, and aligning patient engagement efforts as well as quality measurement, reporting and payment efforts around those objectives.”

Health IT Policy Committee Consumer Engagement Workgroup on Federal Health IT Strategy
Massive Change is Driving The Need for Between-Visit Engagement

Consumer Change

Payment Change

Volume → Value

- Pay for performance
- Data-Driven
- Patient outcomes
- Population Health

What Happens Inside the Visit

Consumer Change:
- Amazon
- Apple
- Google
- Uber
- Airbnb
Massive Change is Driving The Need for Between-Visit Engagement

Consumer Change

What Happens Outside the Visit

- Amazon
- Apple
- Google
- Uber
- Airbnb

Payment Change

What Happens Inside the Visit

Volume → Value

- Pay for performance
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Volume          Value
Evolving from Reactive to Proactive Communications

Reactive Communications

- Patients call for routine or urgent appointments

Outcome 1: Patients didn’t need to be seen
Outcome 2: Patients seen too late to avoid complications

Proactive Communications

- Step 1: Proactive telephonic outreach to assess patient status and provide reminders
- Step 2: Digital sharing of care plan information
- Step 3: Automated continuous clinical outreach, i.e. “Digital Checkups”

Just the right patients are seen at the right time to optimize patient outcomes
This is the True “Gap in Care”
But Health Happens Between Visits

- Establish topic literacy (Medications, diagnoses, tests, etc.)
- Set and track personal goals (weight management, diet, etc.)
- Monitor clinical progress (Blood sugar control, pain, blood pressure, etc.)
Considerations for PGHD Use

- Automated personalized outreach
- Workflow: clinician, pop health manager, *patient*
- Separate signal from noise
- Integrate with EHR/practice systems
- Benefits to both practice *and* patient
It can be argued that the largest yet most neglected health care resource [...] is the patient...

Warner V. Slack, MD

Case Study: Greenfield Health
Primary Care Pilot

- Adult primary care practice
- Patient-Centered Medical Home
- Pilot started with 100 patients, expanding to over 1300 hypertensive patients followed by diabetic population
- Technology:
  - GE Centricity EHR and patient portal
  - Stage 2 MU Certified
  - Kryptiq Care Manager
Value-Based Care Requires System Support

- Clinical Data (EHR)
  - Transactional data
  - Clinical workflow
  - Clinical decision support

- Patient-Generated Health Data (PGHD)
  - Continuous monitoring
  - Shared Decision-making

- Quality Measurement (Pop Health)
  - Registries
  - Continuous Quality Improvement
  - Performance reporting

- Patient Engagement

Patient Engagement

Clinical Data (EHR)

Quality Measurement (Pop Health)
Using EHR Data to Drive Outreach

Data Intake

Clinical, Biometric & Patient-Reported Data

EHR Data
<code code="64572081" codeSystem="2.1"
displayName="condition"/>
<text>
<reference value="#problem3"/>
</text>
<statusCode code="completed"/>
<effectiveTime>
<low value="20081101"/>
</effectiveTime>
<value xsi:type="CD" code="44054006"
codeSystemName="SNOMED CT" display>

Biometric Data

Self-Reported Data

Have you been taking your bloc
☐ Yes, as prescribed

Taxonomy

Conversa Master Profile

Diabetes Mellitus Type 2
Source: C-CDA
(ICD9 250.00)

Blood sugar control
every 2-4 weeks

Diabetes Mellitus
C0011849

Blood Sugar Disorders
C3494579

Atenol 50mg tablet
Source: C-CDA
(NDC 00310-0105)

Beta blocker side effects
every 3 months

Atenol 1202

Beta Blockers
C07

Rules engine

Digital Checkups

Analytics and EHR/Portal Integration

Actionable Patient-Generated Health Data

Blood sugar control
every 2-4 weeks

Diabetes symptoms
every month

Beta blocker side effects
every 3 months

Beta blocker compliance every month

Diabetes Mellitus Type 2
Source: C-CDA
(ICD9 250.00)

Blood Sugar Disorders
C3494579

Atenol 50mg tablet
Source: C-CDA
(NDC 00310-0105)

Beta Blockers
C07
Using EHR Data to Drive Outreach

PGHD Collection
Targeting Rules (Authoring system)
Conversa Master Profile (CMP)
Taxonomy

Data Integration & Automation

Clinical Workflow Integration

HL7 Integration of PGHD into EHR

Population Health Management Registry

Electronic Health Record

Consumer Biometric Aggregators

Triggered Patient Interaction
Clinical Workflow Integration

- Clinical outreach to collect PGHD is automated using CCD documents
- PGHD is collected, analyzed and summarized and brought back to the EHR using HL7 messaging
- Task list is updated for team members, with routing of results per care team roles
- Flow sheet and population management systems updated with latest biometric values
Personalization based on EHR Data

- CCD, biometric and patient-generated health data combine to create a unique profile for each patient.
- Taxonomy facilitates normalization of imported data and enables clinical rules to be targeted.
- User experience is personalized based on that profile, including comorbidities, with tailored messaging and PGHD collection.

Great! We’re glad you have an automatic blood pressure cuff and wish to upload your values to us. We’ll send you a separate message to get your device data automatically imported into your Digital Checkups. For today, we’d still like to know your numbers.

What are your usual or average blood pressure numbers?

Your range (12 values since 1/10/16)

Systolic blood pressure (top number)

92

Diastolic blood pressure (bottom number)

Your blood pressure is running much higher than we’d like. Having consistently high blood pressures (top number over 140 or bottom number over 90) raises your risk of heart attack, stroke and damage to your organs. We’d like to look closely at your medications, your blood pressure monitor and other factors that may be causing your high levels. Please click HERE or call us at 555-555-5555 to make an appointment to see us.
Population Health Results

- PGHD results show how patient populations are doing in the “real world”
- Primary care populations are monitored for chronic conditions, medication compliance and illness recovery
- Post-surgical populations are monitored for recovery and possible complications
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Pilot Results – Demonstrating Clinical Impact

Patients stay engaged with 29% requiring a clinical intervention

High patient engagement

- Completed one or more Digital Checkup: 73%
- Stay engaged after their first Checkup: 81%

Uncovering patient issues

- Respondents have one or more chronic condition: 97%
- Patient responses triggered a “red” or “yellow” alert: 45%
- Clinical Intervention (medication change, diet, monitoring frequency): 29%

Greenfield Health Pilot March – September, 2014
Pilot data shows improved patient adherence

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<th>Percentage</th>
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<td>Got on track</td>
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<td>Improved</td>
<td>23%</td>
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<tr>
<td>Stayed off track</td>
<td>19%</td>
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<tr>
<td>Got off track</td>
<td>9%</td>
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</tbody>
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“This has helped me to get real about my health condition.”
— Patient

Greenfield Health Pilot March October, 2014
Standards-Based Approach

Treating Digital Checkups like a lab order – Issuing the checkup, and getting results back:

- HL7 MDM messaging for a summary of results
- HL7 ORU messaging for biometric values
Conclusions

• Visit-based care deliver being forced to change, pushed by:
  – Epidemic of chronic conditions
  – Push for value-based care
  – Need to expand provider capacity
• Engaging patients via frequent light touches offers better solution:
  – Automate and personalize outreach
  – Incorporate filtered PGHD into population health management
  – Perform focused outreach
• Workflow considerations are critical to adoption:
  – Clinician
  – Population health manager
  – Patient
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