The IT Response to an Extraordinary Decade: The Perspective of a CEO, CIO and Former Fed

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Increasing Growth in Healthcare Costs

Uneven Care Quality

Diabetes
Percent of adults with diagnosed diabetes whose HbA1c level <9.0%

Hypertension
Percent of adults with hypertension whose blood pressure <140/90 mmHg

Several Years of Major Changes in Reimbursement

Accountable Care Risk Spectrum

Performance Utilization Risk

Never Events
Nonpayments
Readmissions
Penalties
Patient Centered Medical Home
Medicare ACO
Shared Savings
Episodic or Bundled Payments
Other Arrangements

Health Care-Acquired/Provider-Preventable Condition Adjustments
Medicare Acute IP Value-Based Purchasing
Direct Employer Contracting
Provider-Sponsored Health Plan
Capitation
Full Risk ACO

Commercial insurance offering
Voluntary participation
FFS-oriented
Hybrid: FFS with patient cohorts aspects
Medicare/Medicaid offering
Currently out of scope
Patient cohorts-oriented
Membership population/premium oriented

Note: Diabetes includes ages 18–75; hypertension includes ages 18–85.
Data: Healthcare Effectiveness Data and Information Set (NCQA 2007).
Source: Commonwealth Fund National Scorecard on U.S. Health System Performance, 2008
The Evolution of the Provider Market will Have Several Characteristics

**Consolidation**
- Acute care providers and integrated delivery systems will continue to consolidate
- IDNs are fragmented and heterogeneous and will remain so.

**Provider Relationships & Collaboration**
- There will continue to be a variety of provider relationships that will require a variety of tools and resources to manage both financial and clinical needs
- Strong collaboration and connectivity between all stakeholders will be needed

**Utilization Patterns**
- The proportion of healthcare in inpatient settings will continue to fall; increased emphasize will be needed on comprehensive, chronic and preventive care
- The total amount of acute (inpatient) care will not fall due to aging population needs

**Accountability**
- The transition to accountable care will be evolutionary, creating a need to support multiple care delivery and financial models (and HIT environments) simultaneously
- Provider payments will be lower, more risk-based and holistic for targeted conditions and procedures.

As collaboration slowly takes hold, we are focused on supporting the transition to increased coordination and accountability, with the ability to engage players that are today operating on different systems.

Thriving in the Era of Accountable Care will Require a Strong IT Foundation

- An electronic health record that spans the continuum of care
- A revenue cycle and contracts management application that spans the continuum of care
- Care management systems that span the continuum for individuals and populations
- Rules engine, workflow engine, and intelligent displays of data to enable intelligent processes across the continuum, defined by best practices
- Sophisticated business intelligence and analytics
- Systems that enable interoperability between closely affiliated providers
- Technologies that support patient engagement
- High availability and low TCO infrastructure and applications

The Ambulatory EHR must be Designed for the Future; Not the Past

- Support collaboration
  - Inter-disciplinary and multi-disciplinary teams
  - Shared worklists
- Enable personalized care
  - Treatment decision support
  - Predictive models
  - Intelligent order sets and documentation templates
- Enables reliable processes
  - Workflow engine
  - Health information exchange
- Manage populations
  - Disease registries
  - Referral management
- Provides introspection
  - Guideline adherence assessment
  - Quality measures capture and real time display
  - Financial optimization analyses

Sample Desired Patient Summary

- **Hypertension**: The patient’s last TSH was 6.5. The patient’s levothyroxine dose is 30 mcg. If they are compliant with their medication, the patient appears to be undertreated. You might consider increasing the levothyroxine dose and then rechecking the TSH in 6 weeks.
- **Weight**: Patient weighs 210 pounds (90 kg, 6 pounds from last visit on 12/30/07) and is 5’10” with a BMI of 31 (click here for a BMI trend graph). At the last visit patient reported counseling on weight loss and a referral to a nutritionist however no follow-up visit occurred. Consider counseling patient today and referring to the dietitian.
- **Diabetes**: Patient has Type 2 DM diagnosed on 7/1/01 which is currently well-controlled on metformin and insulin. Most recent A1c was 6.3% on 12/9/07 (down from 7.2% six months prior). Other parameters are all up to date and in range. Patient is overdue for an A1c at this visit - click here to order.
- **BP**: BP today 110/70. Patient is on metoprolol and hydrochlorothiazide. Blood pressure has been normal for the last three visits (click here to see BP trend graph). Last K 4 weeks ago 4.4.
- **Opioid narcotics**: Patient is receiving oxycodone/nortriptyline 5 mg/325 mg q6h for pain and hydrocodone 4 mg pm for breakthrough pain not to exceed q6h. The oxycodone/nortriptyline was last refilled 8/9/2008 with 99 tablets, a 30 day supply that should run out on 8/8/2008. The patient has had 6 early refills in the past 12 months. The patient had scheduled visit to the pain clinic on 6/18/2008 at 10:00am with Dr. Jones but did not attend. The patient has a narcotic contract with Dr. Jones.
**Acute Stroke Scenario**

**Stroke Workflow**

1. The nurse initiates the hospital's stroke protocol.
2. Notification sent to physician.
3. Care team initiates orders.
4. Symptoms present 45 minutes prior.
5. Labs are drawn and patient sent for CT.
6. CT is completed.
7. Patient is transferred to ICU.
8. Physician is notified that CT and lab results are available; reviews results and suggests orders; orders stat TPA.

**Tailoring Cancer Therapy**

**Molecular Level**
- SNP, mRNA, Proteomics...

**Cell Level**
- Circulating Tumor Cells

**Tissue Level**
- Histopathology

**Organ Level**
- Spectroscopy, CEUS

**Patient Observations**

**Computational Models**
- Shape and Appearance
- Molecular Networks

**Individualized Treatment**
- Immuno and Gene Therapy
- Ablative Therapy
Quality Measurement and Reporting Becomes an Important Clinical and Financial Capability

Annotation - Evidence

"In-Silico Intelligence": Predictive Output

Leveraging Electronic Health Record Data for Post-Market Surveillance
Email and Page Alerts – Admissions and Discharges

From: Care Coordination Program Admit Notification
Sent: Thu 01/01/2011 12:00 PM
To: Smith, Mary
Subject: ABC Patient MRN 123456 Has Been Admitted to the ED at approx 17:26 on 07/10/2011 (AMN)

Smith, Mary, your patient ABC Patient MRN: 123456 Has Been Admitted to the ED at approx 12:00 on 01/01/2011 (AMN)
With a Chief Complaint of: CP/ SOB

*** This alert is generated when a patient is REGISTERED in the ED ***
*** Clinical information may not be immediately available ***

Decrees in Blood Pressure from Self Monitoring

<table>
<thead>
<tr>
<th>Proportion with 10mmHg or greater drop in SBP</th>
<th>Proportion with 5mmHg or greater drop in DBP</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.7</td>
<td>22.3</td>
</tr>
<tr>
<td>16.2</td>
<td>28.7</td>
</tr>
</tbody>
</table>

\( P < 0.05 \)

Source: Center for Connected Health
C = Control Group  I = Intervention Group
Care Management Spans all of the Above

Based on Partners Healthcare / Michael Gustafson, MD (BWH / BWPO)

Questions

Care Management System

Care Navigator
Health Coaching
Case Manager Models
Chronic Disease Management
Medical Home Model
Home Telemonitoring