Technology Driving Performance Improvement

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VHA-UHC Alliance NewCo
RESPONDING TO AN EVOLVING LANDSCAPE

• Contemplating the Future
• What is innovation?
• Innovative Strategies to Improve Patient Outcomes and Care
CROSSING THE QUALITY CHASM

The 2001 IOM Recommendations Advanced our Thinking

CARE SYSTEM

Supportive payment and regulatory environment

Organizations that facilitate the work of patient-centered teams

High performing patient-centered teams

Outcomes:
- Safe
- Effective
- Efficient
- Personalized
- Timely
- Equitable

REDESIGN IMPERATIVES: SIX CHALLENGES

- Reengineered care processes
- Effective use of information technologies
- Knowledge and skills management
- Development of effective teams
- Coordination of care across patient-conditions, services, sites of care over time

STEEEP
THE 2009 STIMULUS PACKAGE PROVIDES A FRAMEWORK FOR FOCUS AND INVESTMENT

• The American Recovery and Reinvestment Act Provided $150B for healthcare
• **BUT must…Reduce Healthcare Costs: 630B Over 10 Years to Offset the Investment**
  • Readmissions
  • Complications
  • Regional variation
  • Reimbursement models
  • Fraud and abuse
PROVIDERS ARE FACING HEIGHTENED EXPECTATIONS AND EXPANDING CHALLENGES

- Technology Investments
- Smart Use of Exponentially Expanding Data
- Cost Management
- Performance Improvement
- Personalized Medicine
- Integration Across the Continuum of Care
- Consumerism
- Population Health Management
- Physician Alignment

#VITAL2015
SHIFT FROM FEE-FOR-SERVICE TO VALUE-BASED CARE

Percent of Hospital Pay Tied to Performance
(*ACO Amount Depends on Model*)

- Health-Acquired Conditions
- Accountable Care Organizations
- Readmissions Reduction
- Risk-Based Purchasing

Current and Projected Mix of Payment Models within Organizations

<table>
<thead>
<tr>
<th>Model</th>
<th>Today</th>
<th>5 YRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other (e.g. Shared Savings)</td>
<td>3%</td>
<td>7%</td>
</tr>
<tr>
<td>Global Payment</td>
<td>6%</td>
<td>10%</td>
</tr>
<tr>
<td>Episode of Care/Bundled</td>
<td>8%</td>
<td>14%</td>
</tr>
<tr>
<td>Pay-for-Performance</td>
<td>10%</td>
<td>18%</td>
</tr>
<tr>
<td>Capitation</td>
<td>17%</td>
<td>19%</td>
</tr>
<tr>
<td>Fee-For-Service</td>
<td>56%</td>
<td>32%</td>
</tr>
</tbody>
</table>

Source: McKesson Health Solutions: The State of Value-Based Reimbursement and the Transition from Volume to Value in 2014
MARKET PRESSURES AND VALUE-BASED PURCHASING HAVE WEAKENED MARGINS

And are Forcing Providers to Set Steep Cost Reduction Goals
WHERE IS THE COST AND POTENTIAL WASTE?

- Unnecessary Services: $210 Billion
- Fraud: $75 Billion
- Excessive Administrative Costs: $190 Billion
- Inefficiently Delivered Services: $130 Billion
- Prices That Are Too High: $105 Billion
- Missed Prevention Opportunities: $55 Billion
FOUR TYPES OF INNOVATION

Transformational
A paradigm shift that changes society

Category
Building new industry within transformation

Marketplace
Builds or expands markets, reach new customers

Operational
Redesign to improve business processes and customer experience
THE NATURAL MARKET EVOLUTION OF INNOVATION

Installation Period ---------------------------------- Deployment Period

Immaturity
Question of value

Excitement
Promise

Flood of Capital & Entrepreneurs

Irrational Exuberance

Carnage

Sustained Value

The longer the Irrational Exuberance, the greater the Carnage
Through the Dense Fog;
Important to Differentiate the New from the Duplicative
INNOVATION = NEW IDEA, DEVICE OR METHOD

ReferralMD’s Top Healthcare Technology Innovations

1. Clinical Trial Microchips
2. Google Glass
3. 3D Printed Biologic Materials
4. Hybrid Operating Rooms
5. Digestible Sensors
6. Cloud Based Provider / Patient Relationship Management
7. Optogenetics
INNOVATION = \textit{ANYTHING THAT CREATES \\& SUSTAINS VALUE}

HBRs 10 Innovations that will Revolutionize Healthcare

1. Checklists
2. Behavioral Economics
3. Patient Portals
4. Payment Innovations
5. Evidence-Based Decision Making
6. ACO’s
7. Regenerative Medicine
8. Virtual Visits
9. Genetics
10. Surgical Robotics

\textit{The first 5 are focused on increasing value rather than new ideas, devices or methods}
VALUE” REQUIRES MATCHING PATIENT NEEDS WITH AGNOSTICS AND SITE OF SERVICE

DIAGNOSTICS
• Rational Diagnosis—as the Cochrane Collaboration has done for treatment
• Computer-guided diagnostics
• Home diagnostics, with wireless connectivity

SITE OF SERVICE
• Retail clinics, expanding into chronic care
• Urgent care, tightly affiliated with networks
• Telemedicine / telehealth
• Hospital At Home programs
• Home-based chronic care
• Online/email consultations
VALUE REQUIRES APPROPRIATE LEVEL OF CARE PROVIDER

• Specialist vs Generalist
• MD → NP → RN → LPN → Tech
• Community Worker
• Do it yourself

The Future: Cyberphysicians

• “Information available to professional will be available to patients
• Cyberphysicians will look after people’s health, detecting changes through sensors, prompting preventive activities and treatments
  • Wearable computers; “intelligent clothing”
  • Personal agents-- “digital butlers”; smart sensing
  • Electronic circuitry connected to nerves and tissues
CMO-CNO Leader Rounding

Improving Nurse, Physician and Patient Communication

*Just say No to*
“white boards”

*Say Hello to*
Patient Communication Boards

Meeting the patient where they are…. Change your position!

*Provide individualized feedback; how am I doing compared to my peers*
CHANGING THE WAY WE COMMUNICATE WITH PATIENTS
INDIVIDUALIZED FEEDBACK DRIVES SWIFT CHANGE
Goals
• Improve access to Primary Care, extend the patient-provider relationship
• Provide appropriate site/scope of care for patients with low-acuity conditions
• Reduce use of ED for low acuity issues
• Reduce cost of care for residents of the Birmingham MSA; actual dollar (cost) and time savings

• Solution
• Online diagnosis and treatment for common medical conditions—
  » upper respiratory infections, flu, UTI, etc. (many of the conditions most commonly treated in an urgent care setting)
• Uses adaptive, evidence-based practice logic-based software (Inst. Clinical Systems Improvement; Infectious Disease Society, etc.)
• Administered by UAB Medicine primary care MD’s and NP’s
Patients can access the service from any desktop or mobile device 24/7

Online visit takes ~5 minutes for patient to complete

Guaranteed 1 hour response time during current hours of operation (congruent with UAB urgent care hours)

$25 charge only incurred if patient completes visit and is not triaged out for additional care -- true retail model/no insurance data collected or billed

If a prescription is required, patients can have it e-prescribed to the pharmacy of their choice
UAB eMEDICINE RESULTS

• Total UAB eMedicine.com page views: 260,831
• Total encounters initiated: 7,756
• Total completed visits: 2,308 (30% completion rate)

• Those triaged out of the program or abandoned the system during the visit,
  » 11% of patients completed a face to face visit at UAB (Urgent Care or Prime Care) within 2 weeks*
• Top conditions treated: Upper Respiratory Infection (67%), UTI (16%), Pink Eye (7%)
• 77% patients are female
• 61% of patients are between the ages 20-39
• 48% of eMedicine patients are brand new to the UAB system
Early Warning - Patient Trend

Name: Smith, C
MRN: 3856205762
Age: 66
Sex: M
Room: 620

Score: 59
Date: 17-Apr-2015 08:28
Prior ICU: No
Temperature: 36.5 (°C)
Heart Rate: 130 (bpm)
Diastolic BP: 70
Resp Rate: 27 (bpm)
O2 Saturation: 97%
Mental Status: Alert
Potassium: 5.3 (mEq/L)
BUN: 27 (mg/dL)
Anion Gap: 14 (mEq/L)
WBC: 8.2
Hemoglobin: 99 (g/dL)
Platelets: 187
Age: 66
Suppl O2: Yes
### UNIVERSITY OF CHICAGO: REAL-TIME PATIENT DASHBOARD

**Early Warning - Patients**

<table>
<thead>
<tr>
<th>Name</th>
<th>MRN</th>
<th>Age</th>
<th>Sex</th>
<th>Room</th>
<th>Risk</th>
<th>Trend</th>
<th>Last Updated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johnson, R</td>
<td>3297845295</td>
<td>64</td>
<td>M</td>
<td>784</td>
<td>High</td>
<td></td>
<td>17-Apr-2015 13:32:01</td>
</tr>
<tr>
<td>Wilson, C</td>
<td>1298495234</td>
<td>72</td>
<td>M</td>
<td>849</td>
<td>High</td>
<td></td>
<td>17-Apr-2015 13:37:54</td>
</tr>
<tr>
<td>Brown, W</td>
<td>3759274021</td>
<td>45</td>
<td>M</td>
<td>927</td>
<td>Moderate</td>
<td></td>
<td>17-Apr-2015 13:34:36</td>
</tr>
<tr>
<td>Jackson, T</td>
<td>1485945453</td>
<td>60</td>
<td>F</td>
<td>594</td>
<td>Moderate</td>
<td></td>
<td>17-Apr-2015 13:40:44</td>
</tr>
<tr>
<td>Miller, D</td>
<td>5234656234</td>
<td>73</td>
<td>M</td>
<td>465</td>
<td>Normal</td>
<td></td>
<td>17-Apr-2015 12:42:09</td>
</tr>
<tr>
<td>Thompson, D</td>
<td>2342366948</td>
<td>52</td>
<td>F</td>
<td>236</td>
<td>Normal</td>
<td></td>
<td>17-Apr-2015 13:07:12</td>
</tr>
</tbody>
</table>
UNIVERSITY OF CHICAGO: eCART OUTPERFORMS MEWS FOR ALL OUTCOMES

Published in: Matthew M. Churpek; Trevor C. Yuen; Christopher Winslow; Ari A. Robicsek; David O. Meltzer; Robert D. Gibbons; Dana P. Edelson; *Am J Respir Crit Care Med* 190, 649-655.
DOI: 10.1164/rccm.201406-1022OC
Copyright © 2014 by the American Thoracic Society
UNIVERSITY OF CHICAGO:
REAL-TIME VALIDATION OF eCART

• eCART identified 8x as many cardiac arrests and 52% more ICU transfers

• eCART trigger was met a median of 31 hr prior to the event vs 1.7 hours for the RRT
DEVELOPING PREDICTION MODELS TO IDENTIFY PATIENT AT RISK AND INTERVENE EARLY

- Predicting the need for Rapid Rescue/Cardiac Arrest
- Predicting Readmission
- Predicting which patients needs additional support

Challenges
- Prediction relies on timely and accurate inputs to models
- Models have to consider unique characteristics of the population; need to be updated regularly
- More important than flagging patients; What will you do differently?
VCU SUPPORTS PATIENTS TO NAVIGATE A COMPLEX SYSTEM
FOCUSED ON THE MOST COMPLEX PATIENTS WHO ARE “SUPERUTILIZERS”

- Patients with a primary diagnosis and high utilization of services and high costs
- Patients with complex medical conditions and/or multiple chronic diseases
- Patients with trauma, high acuity or conditions that result in costly interventions

Cumulative number of patients paneled to the Complex Care Clinic by Fiscal Year

- **FY12***: 264
- **FY13**: 571
- **FY14**: 806
- **FY15TD****: 870

Number of patients paneled to CCC
# CARE MANAGEMENT TEAM

<table>
<thead>
<tr>
<th>ROLES</th>
<th>RESPONSIBILITIES</th>
</tr>
</thead>
</table>
| Patient and Support System | • Identifies problems and priorities  
• Communicates needs to team  
• Engages in participation with plan  
• Identifies and communicates when plan and/or team are not meeting expectations |
| Provider              | Diagnosis, treatment and management of chronic disease                                                                                         |
| Pharmacist            | • Medication therapy management  
• Dose optimization  
• Monitoring for side effects & adverse reactions                                                                                             |
| Clinical Nurse        | Provides education and clinical support to patients with new diagnosis of DM, CHF, COPD, Asthma and other diseases                              |
| RN Case Manager       | Coordination and management of the care plan assisting the patient with navigation throughout the care continuum                                  |
| Social Worker         | Coordination and management of psychosocial problems, barriers, unmet needs                                                                  |
| Outreach Worker       | Assist clients/family in health education, access to health and community resources. Health coaching to promote self-management of health and social challenges. |
REDUCED COST AND BETTER OUTCOMES

Complex Care Clinic Summary – Lower Cost
Percent changes in cost of care after first year in the clinic among newly engaged patients

<table>
<thead>
<tr>
<th>Year 1 (N=365)</th>
<th>Year 2 (N=154)</th>
<th>Year 3 (N=114)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient cost</td>
<td>-66%</td>
<td>-68%</td>
</tr>
<tr>
<td>ED cost</td>
<td>-36%</td>
<td>-49%</td>
</tr>
<tr>
<td>MCVH cost</td>
<td></td>
<td>-47%</td>
</tr>
</tbody>
</table>

Complex Care Clinic Summary – Better Health
Percent changes in clinical outcomes after first year in the clinic among newly engaged patients

<table>
<thead>
<tr>
<th>% change in # of diabetic patients with poor glycemic control (HbA1c missing or ≥ 9%)</th>
<th>% change in # of patients with good cholesterol control (LDL &lt; 100 mg/dL)</th>
<th>% change in # of patients with good blood pressure control (BP &lt; 140/90 mmHg)</th>
<th>% change in # of patients with good weight control (normal BMI, adjusted for age)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-49%</td>
<td>29%</td>
<td>49%</td>
<td>8%</td>
</tr>
<tr>
<td>-46%</td>
<td>43%</td>
<td>2%</td>
<td>25%</td>
</tr>
<tr>
<td>-2%</td>
<td>42%</td>
<td>26%</td>
<td>-9%</td>
</tr>
<tr>
<td>Innovation Area</td>
<td>Strategic Focus Well/very well aligned (4-5)</td>
<td>Level of Activity Piloting/Impl a solution (3-4)</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>---------------------------------------------</td>
<td>-----------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Patient Experience:</strong> Real-time satisfaction data collection tools that allow for immediate service recovery and care delivery enhancements. Data collection beyond existing CAHPS measures.</td>
<td>84% (43/51)</td>
<td>43% (22/51)</td>
<td></td>
</tr>
<tr>
<td><strong>Referral Management:</strong> Solutions that facilitate referrals within a defined provider network, ensuring that the referral is appropriate, convenience is optimized, and the patient is well prepared for the visit.</td>
<td>73% (37/51)</td>
<td>22 43% (22/51)</td>
<td></td>
</tr>
<tr>
<td><strong>Virtual Access:</strong> Web-based applications to enter information about an existing illness, quickly diagnosing low-acuity conditions and routing to the appropriate provider. Solutions complement telemedicine initiatives, creating improved patient flow and physician efficiency.</td>
<td>61% (31/51)</td>
<td>41% (21/51)</td>
<td></td>
</tr>
<tr>
<td>Innovation Type</td>
<td>Strategic Focus</td>
<td>Level of Activity</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>--------------------------</td>
<td>---------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Mobile Patient Engagement:</strong></td>
<td>Well/very well aligned (4-5)</td>
<td>Piloting/Impl a solution 3-4_</td>
<td></td>
</tr>
<tr>
<td>Digital technology that supports chronic disease management, allowing for communication between patients and caregivers in between scheduled visits and/or treatments.</td>
<td>71% (36/51)</td>
<td>24% (12/51)</td>
<td></td>
</tr>
<tr>
<td><strong>Post-Acute Placement:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technologies that improve the process post-discharge, ensuring that patients are routed to the appropriate care setting (and the right facility) based on location and need.</td>
<td>78% (40/51)</td>
<td>33% (17/51)</td>
<td></td>
</tr>
<tr>
<td><strong>Bedside Tools:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systems that leverage existing in-room technology (e.g. televisions and mobile devices) to engage inpatients in their care by providing educational resources, access to dining services, and a means for providing feedback to caregivers.</td>
<td>66% (34/51)</td>
<td>39% (20/51)</td>
<td></td>
</tr>
</tbody>
</table>
HOW BEST TO THINK ABOUT THE FUTURE?

*The point is not to predict the future but to prepare for it and to shape it*

- No ONE answer to the question
- Not just simply extrapolating current trends
- Contemplate the drivers of change
- Use the drivers to imagine different scenarios of the future
- Extrapolate future scenarios to think about what to do
- Now prepare; It is a marathon not a sprint

*People consistently overestimate the effect of short term change and underestimate the effect of long term change*

Ian Morrison, former president of the Institute for the Future