Healthcare IT: Transforming Healthcare
April 19, 2010

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Presentation overview

• Healthcare challenges & trends

• Addressing disparity of care:
  – Healthymagination
  – Challenges introduced by technology
  – Benefits of healthcare IT: LEAN approach with decision support

• Use case: Community Health Access Network (CHAN) & Alliance of Chicago
Quality challenge - How good are we doing?

American patients get the recommended treatments only 54.9% of the time

The clinical knowledge-processing burden

“Current medical practice relies heavily on the unaided mind to recall a great amount of detailed knowledge – a process which, to the detriment of all stakeholders, has repeatedly been shown unreliable”

Crane and Raymond
The Permanente Journal
Winter 2003 Volume 7 No.1
Kaiser Permanente Institute for Health Policy
‘The complexity of modern medicine exceeds the inherent limitations of the unaided human mind.’

David M. Eddy
MD, Ph.D.
Addressing Disparity of Care: Healthymagination
healthyagination
A new business strategy to address global healthcare needs

15% ↓ **Reduce the cost** of health procedures and practices through GE technologies and services

15% ↑ **Improve quality** by simplifying ways of driving best standards of care

15% ↑ **Increase access** to better health for more people through low-cost innovation, education, and financing

$6 billion commitment to make health sustainable
The framework
What it will take to fix this problem

- Government relations
- Community engagement
- Research collaborations
Leading through partnerships

Example: Hip Hop Stroke: an innovative community engagement model

Goal: disseminate critical stroke information to the public

Method: uses popular culture & multi-media to motivate and educate children about stroke

Results:

Clinical: Patients arriving at the ER within the 3 hour tPA window increased from 10% to 33%

Recognition: California Department of Health's Master Plan for Heart Disease and Stroke Prevention

Creating Channels to influence Funding, Policy, Prevention....

Patient Advocacy
- Work w/ NSA to create Imaging education programs for the “Stroke team”
- NSA Public Health campaign- Stroke Ctr certification.

Government Relations
- Congressman Charles Rangel (NY) & NYC Dept of Education roll out of Hip Hop Stroke to 300 schools Fall ‘08
- Congressman Jim Clyburn SC Stroke Project

Research Collaborations
- Stroke Innovation Lab -using Harlem as a pilot showcase re: the effect of inadequate imaging on patient outcome and ER costs. Partners are:
  - GE Government Relations..toolkit
  - NMF
  - NAHSE
  - OMH

Influencing Policy

Community Engagement
- Nat’l Health Fairs (CBC HMHY Program Appalachian Program
- Lorena Hernandez ‘08 Philippe Award

Example: Hip Hop Stroke: an innovative community engagement model

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Creating Channels to influence Funding, Policy, Prevention....
The BEE Healthy Childhood Obesity Program

Balance  Exercise  Eat Well
Flexibility  Endurance & Strength  Healthy Diet

OBSTACLE COURSE CHALLENGE - 9 Activities

• Families learn about healthy options at fast food restaurants
• Families learn simple exercise moves and stretching activities with basic equipment: mats, stretching bands, weighted balls

PASSPORT – learning tool for kids

<table>
<thead>
<tr>
<th>Balance!</th>
<th>Exercise!</th>
<th>Eat Well!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trend Twist w/Ball</td>
<td>Sit-up/Push-up (5-10)</td>
<td>Fast Food Challenge</td>
</tr>
<tr>
<td>Toe Reaches</td>
<td>Jumping Jacks (5-10)</td>
<td>Food Pyramid Game</td>
</tr>
<tr>
<td>Flexibility Stretch</td>
<td>Discy Casts (5-10)</td>
<td>Label Reading Game</td>
</tr>
</tbody>
</table>

GIVEAWAYS – promoting healthy living

*BEE HEALTHY design is a trademark of General Electric Company
Challenges Introduced by Technology
Challenges to care: Technology

General State History
Empowering the patient

15M Americans look online for health information every day
• Remote caregiver
• Limited service clinics
• MD’s office
• Hospital
• Research

Source: Pew Internet & American Life Project, October 2006; comScore Media Metrix, January 2008
Decision Support & LEAN SIX SIGMA: Breakthrough Benefits of IT
IF
HEALTH
CARE
IS GOING
TO
CHANGE,
HIS IDEAS
WILL
CHANGE
IT

DR. BRENT JAMES,
WILL MAKE IT BETTER
BY DAVID LEONHARDT
Example: IHC process

Generate evidence

The New England Journal of Medicine

INTENSIVE INSULIN THERAPY IN CRITICALLY ILL PATIENTS

Monitor success

Provide intervention

Create tools
Assess…

Deliveries w/o Complications Resulting in NICU Admissions
By Weeks Gestation 2000-2001

Percent Admitted to NICU

Gestational Age

<table>
<thead>
<tr>
<th>Week</th>
<th>Percent Admitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>37th</td>
<td>5.3%</td>
</tr>
<tr>
<td>38th</td>
<td>3.0%</td>
</tr>
<tr>
<td>39th</td>
<td>2.1%</td>
</tr>
<tr>
<td>40th</td>
<td>2.6%</td>
</tr>
<tr>
<td>41st</td>
<td>2.9%</td>
</tr>
<tr>
<td>42nd</td>
<td>7.3%</td>
</tr>
</tbody>
</table>

(Numbers in parentheses indicate sample sizes.)
...Implement change
## Agents of change to decrease health disparities

<table>
<thead>
<tr>
<th>Tool</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic Health Records</td>
<td>• Standard data collection fields</td>
</tr>
<tr>
<td></td>
<td>• Evidenced-based care</td>
</tr>
<tr>
<td></td>
<td>• Population based monitoring, management, and reporting</td>
</tr>
<tr>
<td>E-Prescribing</td>
<td>• Intuitive – cost data, drug to drug interactions etc</td>
</tr>
<tr>
<td>Personal Health Records, Patient Portals</td>
<td>• Interactive, bi-directional communication channels</td>
</tr>
<tr>
<td></td>
<td>• Physician to patient and patient to physician</td>
</tr>
<tr>
<td></td>
<td>• Physician to Physician</td>
</tr>
<tr>
<td>Health Information Exchange</td>
<td>• “Healthcare Glasnost”</td>
</tr>
</tbody>
</table>
# Real-time best practice dashboard

<table>
<thead>
<tr>
<th>Room</th>
<th>Patient</th>
<th>LOS</th>
<th>Attending</th>
<th>Onset of Symptoms</th>
<th>NIHSS Scale</th>
<th>Door to CT</th>
<th>Fibrinolitics</th>
<th>Risks</th>
<th>Stroke Order Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>W119</td>
<td>Barley, Catherine</td>
<td>12 hours</td>
<td>Ling</td>
<td>14 hours</td>
<td>6</td>
<td>✔️</td>
<td>1 hr 10 min</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>ER1</td>
<td>Pips, John</td>
<td>20 min</td>
<td>Greenlee</td>
<td>1 hr 20 min</td>
<td>5</td>
<td></td>
<td>25 min</td>
<td>DM, HTN</td>
<td>✔️</td>
</tr>
<tr>
<td>ER2</td>
<td>Mendex, Gloria</td>
<td>2 hours</td>
<td>Allen</td>
<td>3 hrs 30 min</td>
<td>2</td>
<td>✔️</td>
<td>N/A</td>
<td>History of CVA, Heart valve, Coumadin</td>
<td>✔️</td>
</tr>
<tr>
<td>PICU</td>
<td>Tuttle, Tommy</td>
<td>2 days</td>
<td>Sorenson</td>
<td>25 min</td>
<td>6</td>
<td>✔️</td>
<td>N/A</td>
<td>Post-op PFO</td>
<td></td>
</tr>
<tr>
<td>ER3</td>
<td>Lurch, JoAnn</td>
<td>6 hours</td>
<td>Greenlee</td>
<td>12 hours</td>
<td>3</td>
<td>✔️</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MICU</td>
<td>Brown, Keith</td>
<td>1 day</td>
<td>Morris</td>
<td>Unknown</td>
<td>2</td>
<td>✔️</td>
<td>N/A</td>
<td>Non-compliant HTN</td>
<td></td>
</tr>
<tr>
<td>MICU</td>
<td>Gilbert, John</td>
<td>1.5 days</td>
<td>Chachart</td>
<td>36 hours</td>
<td>5</td>
<td>✔️</td>
<td>55 min</td>
<td>A-fib, Cardioversion resulted in clot</td>
<td>✔️</td>
</tr>
</tbody>
</table>
Assessment #1: Select problem; enter assessment, orders, and meds; then click 'Commit Assessment'.

- Hypertension (ICD-401)
- Hyperlipidemia (ICD-272.4)
- Diabetes Non-Insulin Dependent (ICD-250.00)
- Family History Coronary Heart Disease Male < 55 (ICD-V17)
- Family History Colon Cancer-Mother (ICD-V16.0)
- S/P Cholecystectomy (CPT-47600)

Centricity:
The patient has diabetes and is currently not on an ACE-I or ARB. If the patient has coexisting hypertension or renal disease, consider starting an ACE-I or ARB as long as there are no contraindications. Click 'Yes' to add a medication; otherwise, click 'No'.

Yes  No

Centricity:
The following tests/services are now due:

- HbA1c
- Lipid Profile
- Microalbumin
- TSH
- Dilated Retinal Exam
- Pneumovax
- Flu Shot

Would you like to review the indications? Click 'Yes' to review the indications; otherwise, click 'No'.

Yes  No
Customized physician & patient education at the point of care and beyond

- **Point of care access to physician and patient education**
- **Patient education site**
- **Physician education site**

- **Point of care ‘quick tips’**

*GERD Example*
## Diabetes Summary Report

**Provider:** [Redacted]

**Period:** Jan 2005 - Dec 2005

### Patients Tested (Prop of Tot Pts%) - All Patients

<table>
<thead>
<tr>
<th>Test</th>
<th>Provider (%)</th>
<th>Region (%)</th>
<th>System (%)</th>
<th>Total Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>HbA1c</td>
<td>188 (97%)</td>
<td>158 (90%)</td>
<td>25,429 (83%)</td>
<td></td>
</tr>
<tr>
<td>LDL</td>
<td>190 (98%)</td>
<td>165 (94%)</td>
<td>25,040 (85%)</td>
<td></td>
</tr>
<tr>
<td>Eye Exam</td>
<td>159 (82%)</td>
<td>123 (70%)</td>
<td>6,509 (21%)</td>
<td></td>
</tr>
<tr>
<td>Microalbuminuria</td>
<td>159 (82%)</td>
<td>14,960 (49%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>188 (97%)</td>
<td>1,248 (71%)</td>
<td>15,344 (65%)</td>
<td></td>
</tr>
<tr>
<td>Total Patients</td>
<td>194</td>
<td>1,757</td>
<td>30,470</td>
<td></td>
</tr>
</tbody>
</table>

1. LDL measures represent two years ending in the close period.
2. Eye exam % calculated using Health Plan patients only. Includes spot microalbumin, 24 hour urine for protein and microalbumin/creatinine ratios within the reporting period, or any history of treatment for nephropathy.
3. Blood pressure data only available for physicians with access to Clinical Workstation and/or Results Review.

### LDL mg/dl

<table>
<thead>
<tr>
<th>LDL</th>
<th>Provider (%)</th>
<th>Region (%)</th>
<th>System (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;100</td>
<td>65%</td>
<td>61%</td>
<td>65%</td>
</tr>
<tr>
<td>100-130</td>
<td>22%</td>
<td>22%</td>
<td>22%</td>
</tr>
<tr>
<td>130-150</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>&gt;150</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
</tr>
</tbody>
</table>

### Eye Test

<table>
<thead>
<tr>
<th>Test</th>
<th>Provider (%)</th>
<th>Region (%)</th>
<th>System (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1y</td>
<td>68%</td>
<td>68%</td>
<td>68%</td>
</tr>
<tr>
<td>&lt;2y</td>
<td>32%</td>
<td>32%</td>
<td>32%</td>
</tr>
</tbody>
</table>

### Microalbuminuria

<table>
<thead>
<tr>
<th>Test</th>
<th>Provider (%)</th>
<th>Region (%)</th>
<th>System (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pts Tested</td>
<td>52%</td>
<td>52%</td>
<td>52%</td>
</tr>
</tbody>
</table>

### HbA1c mg/dl

<table>
<thead>
<tr>
<th>Test</th>
<th>Provider (%)</th>
<th>Region (%)</th>
<th>System (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HbA1c &lt;7</td>
<td>81%</td>
<td>81%</td>
<td>81%</td>
</tr>
<tr>
<td>7 &lt; HbA1c &lt;8</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>HbA1c &gt;8</td>
<td>19%</td>
<td>19%</td>
<td>19%</td>
</tr>
</tbody>
</table>

### Blood Pressure

<table>
<thead>
<tr>
<th>BP</th>
<th>Provider (%)</th>
<th>Region (%)</th>
<th>System (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;130/80</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>&lt;140/90</td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
</tr>
</tbody>
</table>

CONFIDENTIAL: This material is prepared pursuant to Utah Code Ann. 26-25-1 et. Seq., or Idaho Code Ann. 39-1392 et seq., for improvement of the quality of hospital and medical care rendered by hospitals or physicians.
CDC Adopts New, Near Real-Time Flu Tracking System

By LUCAS MEARIAN

"The U.S. Centers for Disease Control and Prevention (CDC) launched an effort to better and more easily track for H1N1, or Swine Flu, and other seasonal influenza activity throughout the United States.

The CDC said it is now tracking data on 14 million patients from physician practices and hospitals that is stored on a relational database hosted by GE Healthcare, General Electric Co.'s health care division. The data is submitted daily from physician's offices and hospitals that use GE's electronic medical record (EMR) system. The data is then uploaded to GE Healthcare's Medical Quality Improvement Consortium (MQIC), a database repository designed with HIPAA-compliance parameters of patient anonymity and best practices where it can be the subject of medical data queries.

The CDC can perform queries to look for flu-like symptoms being reported by physicians, and then disseminate the data for health care providers and local government officials throughout the country, who can alert businesses and others about flu outbreak hot spots.
Comparison of select ILI complaints – Flu vs. non-flu season

<table>
<thead>
<tr>
<th>Month</th>
<th>FLU SEASON</th>
<th>NON-FLU SEASON</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan-09</td>
<td>Feb-09</td>
</tr>
<tr>
<td>Temp &gt;100</td>
<td>23,621</td>
<td>36,595</td>
</tr>
<tr>
<td>ILI</td>
<td>42,731</td>
<td>57,632</td>
</tr>
<tr>
<td>ILI: Chief Complaint AND Temp &gt;100</td>
<td>3,811</td>
<td>5,852</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>7,194</td>
<td>7,587</td>
</tr>
<tr>
<td>ILI + Antiviral Medication</td>
<td>465</td>
<td>1,476</td>
</tr>
<tr>
<td>Vaccinations Administered</td>
<td>58,516</td>
<td>29,639</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Month</th>
<th>FLU SEASON</th>
<th>NON-FLU SEASON</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan-09</td>
<td>Feb-09</td>
</tr>
<tr>
<td>Pregnant</td>
<td>493</td>
<td>752</td>
</tr>
<tr>
<td>Diabetes</td>
<td>2,272</td>
<td>2,534</td>
</tr>
<tr>
<td>Age &gt;= 85</td>
<td>471</td>
<td>423</td>
</tr>
<tr>
<td>Immunosuppressive Condition</td>
<td>287</td>
<td>289</td>
</tr>
<tr>
<td>Asthma</td>
<td>6,600</td>
<td>8,680</td>
</tr>
<tr>
<td>COPD</td>
<td>2,148</td>
<td>2,486</td>
</tr>
</tbody>
</table>

* ILI defined by chief complaint of ILI symptoms or temperature >100

Seasonal & monthly variation in the database highlights the dynamic nature of health in the U.S. across time, risk profiles & clinical variables.
Use Case:
Community Health Access Network (CHAN) & Alliance of Chicago
Community Health Access Network (CHAN)

- HIMSS Davies Award-winning HCCN utilizing Centricity EMR across all thirteen member sites, with 100 percent system adoption by staff at all levels
- From 2003 to 2008, improved on all 12 clinical outcome indicators being tracked for diabetes patient care and compliance

"Due to its flexibility, the GE Centricity EMR has been one of the smartest IT and clinical investments CHAN has ever made."

— Kirsten Platte, Executive Director
Diabetes indicators and performance
THANK YOU to Fred Rachman, MD – Alliance of Chicago

Combined Health Center Service Delivery System

- 27 service delivery sites *
- Users ~80,000; Encounters ~340,000
- Annual Budgets ~$50 million
- 580 total FTE across the network:
  - 44 Physicians and Dentists
  - 24 Nurse Practitioners, Certified Nurse Midwives, and Physician Assistants
  - Primary Care: Pediatrics, Internal Medicine, Family Practice, OB/Gyn, Psychiatry, Dentistry
  - Specialists: Infectious Disease and Perinatology, Ophthalmology, Podiatry
  - 109 FTE Medical Personnel Nursing, lab, etc.

Of the 22 Alliance sites, 11 are medical, three are dental, one is medical and dental, four are mental health, two are nutritional, and one is social service.
Potential for HIT to impact health disparities

- Increased access to information
- Facilitation of multidisciplinary care model
- Increased efficiency – reduction in duplication of efforts and resources
- Redirection of human effort from clerical to direct patient service activities
- Application of evidence based practice
- Access to more sophisticated data at individual and population basis
Alliance of Chicago
Community Health Services

• HRSA-funded HCCN leverages GE EMR and quality outcomes reporting solution to measure and improve their active disease management and prevention programs

• Between 2007 and 2009, the average hemoglobin A1c level across diabetic patients at all 95+ Alliance sites dropped from **8.0 to 7.8**

• Documentation of patient self-management goals improved from **six percent to 31 percent** during that same time period

“Centricity enables us to capture data in a very structured way – and easily retrieve the data – to create an aggregate report of quality measures and act on it proactively. Provider- and practice-level data helps us to identify areas for improvement and benchmark best practices.”

— Fred Rachman, MD, CEO
Alliance of Chicago
Community Health Services
Health Outcomes Dashboard for the Year Ending September 2008

HDC Diabetes Metrics by Race

Key: AA=African American, H/L=Hispanic/Latino, W=White, A/O=Asian/Oriental
THANK YOU!

QUESTIONS???