HARVARD QUALITY COLLOQUIUM

August 18, 2009

MAeHC
Massachusetts eHealth Collaborative
AGENDA

Level-setting: US system performance today

MAeHC background and some lessons learned

The Federal Government to the Rescue!
International Comparison of Spending on Health, 1980–2006

Average spending on health per capita ($US PPP*)

* PPP = Purchasing Power Parity.

Mortality Amenable to Health Care: U.S. Failing to Keep Pace with Other Countries

Deaths per 100,000 population*

* Countries’ age-standardized death rates before age 75; including ischemic heart disease, diabetes, stroke, and bacterial infections.
Data: E. Nolte and C. M. McKee, London School of Hygiene and Tropical Medicine analysis of World Health Organization mortality files (Nolte and McKee, Health Affairs 2008).
Failure to Improve: National Scorecard on U.S. Health System Performance

Healthy Lives

Quality

Access

Efficiency

Equity

OVERALL SCORE

New National Policy Leadership

- Health Information Technology
- All-Population Data and Transparency
- Center for Comparative Effectiveness
- Insurance Exchange and Market Reforms
- Medicare Payment Reform

Early 1900s

Early 2000s
Early 1900s

Early 2000s
Early 1900s

Early 2000s
THE EHR MARKET IS MOVING, SLOWLY, BUT ALSO CREATING A DIGITAL DIVIDE IN THE PROCESS

Sources: CDC; Center for Health Systems Change; National Ambulatory Care Survey

911 million visits in 2004

50+ physicians

1-9 physicians

Growing at about 1.5 percentage points per year

110 million
801 million

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WHY DO SO MANY PHYSICIANS OFFICES LOOK LIKE THIS?

“Hey Sally! Where is Mrs. Jones x-ray?”

Printer with results from one lab

Unsorted results

About to ring with stat results

Unopened mail

Prescription refill request on fax machine (Right behind the joke of the day)

Courier just dropped off more envelopes

Web portal (from one hospital)
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MAeHC ROOTS ARE IN MOVEMENT TO IMPROVE QUALITY, SAFETY, EFFICIENCY OF CARE

• Company launched September 2004
  – Non-profit registered in the State of Massachusetts
• CEO on board January 2005
• Backed by broad array of 34 MA health care stakeholders
MAeHC ARCHITECTURE AND DATA FLOWS

MAeHC-level: Analysis

MAeHC-level: QDC

Community-level: HIE

Provider-level: EHR

Outcomes analysis

Benchmarking

Negotiated reporting to plans
- P4P
- Chart review

MAeHC

MAHOP

Massachusetts Medical Society

CSC

Experience. Results.

Brockton

Newburyport

North Adams

Wellogic

Wellogic

eClinicalWorks

NextGen

ALLSCRIPTS

GE

eClinicalWorks

hurtters Healthcare Management System

EMDs

MEDITECH

Massachusetts eHealth Collaborative

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MAeHC CURRENT ORGANIZATION

Other
- Legal
- Evaluation

Operations
- Contract admin & HR
- Data manager
- Evaluation coordinator
- Communication
- Project Mgmt

Technology & Vendor Mgt
- Support
- Health information exchange

Practice Services
- Practice consultants

Program Leader Newburyport
Program Leader Brockton
Program Leader North Adams

Shared services
- Design, deployment, & support
- Community coordination
- Project management
- Program integrity

More communities

CEO
### MAeHC PILOT PROJECT EXPENDITURES 2005-2008

<table>
<thead>
<tr>
<th>Category</th>
<th>$M</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAeHC G&amp;A</td>
<td>1.7</td>
<td>3%</td>
</tr>
<tr>
<td>Professional fees</td>
<td>2.9</td>
<td>6%</td>
</tr>
<tr>
<td>CPOE readiness</td>
<td>4.0</td>
<td>8%</td>
</tr>
<tr>
<td>Evaluation</td>
<td>5.9</td>
<td>12%</td>
</tr>
<tr>
<td>HIE</td>
<td>5.9</td>
<td>12%</td>
</tr>
<tr>
<td>MAeHC business services</td>
<td>9.8</td>
<td>19%</td>
</tr>
<tr>
<td>EHR</td>
<td>20.2</td>
<td>40%</td>
</tr>
</tbody>
</table>

Total: $50.4M
ACTUAL COST PER PHYSICIAN FOR EHR

$42.8K

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost (K)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support (6 mos)</td>
<td>2.8</td>
<td>7%</td>
</tr>
<tr>
<td>MAeHC support</td>
<td>9.3</td>
<td>22%</td>
</tr>
<tr>
<td>EHR software</td>
<td>7.9</td>
<td>18%</td>
</tr>
<tr>
<td>EHR hardware</td>
<td>22.8</td>
<td>53%</td>
</tr>
</tbody>
</table>
CLINICAL USE OF DEPLOYED EHRs
% of Encounters Documented Clinically in EHRs (Q2 2006 – Q2 2008)

Community 1: 82%
Community 2: 81%
Community 3: 75%
## BREAKOUT OF CLINICAL USE MEASUREMENT

<table>
<thead>
<tr>
<th>Community</th>
<th>Brockton</th>
</tr>
</thead>
<tbody>
<tr>
<td>PracticeName</td>
<td>(All)</td>
</tr>
<tr>
<td>Quarter</td>
<td>(Multiple Items)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data</th>
<th>Specialty Groups</th>
<th>Specialty Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Enc</td>
<td>90.7%</td>
<td>82.6%</td>
</tr>
<tr>
<td>Follow-up</td>
<td>82.8%</td>
<td>76.2%</td>
</tr>
<tr>
<td>HPI</td>
<td>68.5%</td>
<td>41.1%</td>
</tr>
<tr>
<td>Allergies</td>
<td>34.4%</td>
<td>23.3%</td>
</tr>
<tr>
<td>Vitals</td>
<td>65.0%</td>
<td>22.5%</td>
</tr>
<tr>
<td>Current Meds</td>
<td>42.3%</td>
<td>50.2%</td>
</tr>
<tr>
<td>Medical Hx</td>
<td>45.9%</td>
<td>33.1%</td>
</tr>
<tr>
<td>Social Hx</td>
<td>23.3%</td>
<td>21.7%</td>
</tr>
<tr>
<td>Family Hx</td>
<td>19.5%</td>
<td>11.7%</td>
</tr>
<tr>
<td>Surgical Hx</td>
<td>14.2%</td>
<td>16.3%</td>
</tr>
<tr>
<td>ROS</td>
<td>22.7%</td>
<td>17.6%</td>
</tr>
<tr>
<td>Rx</td>
<td>41.6%</td>
<td>15.2%</td>
</tr>
<tr>
<td>Phys Exam</td>
<td>11.8%</td>
<td>14.4%</td>
</tr>
<tr>
<td>Exam</td>
<td>68.0%</td>
<td>32.7%</td>
</tr>
<tr>
<td>Total Office Encounters</td>
<td>204,079</td>
<td>213,134</td>
</tr>
</tbody>
</table>
DATA BEING SENT TO THE MAEHC QDC TODAY

- Problems
- Procedures
- Allergies
- Medication
- Demographics[de-identified]
- Social/Family hx if it can be sent in discrete data
- Smoking status- if it can be sent over in discrete data
- Visits
- Diagnosis
- Lab results
- Rad results
- Future[ inpatient data to include surgical history]
Records Received By MAeHC QDC
Through May 2009

- 437,000 total records since Jul 2008
- 57,000 records received in May 2009

Visits
Medications
Lab/Rad
Vaccinations
Problems

Brockton
Newburyport
North Adams
MAEHC QDC DATA COUNTS (I)

Patients

Patient visits

Diagnoses

Procedures
MAEHC QDC DATA COUNTS (II)

Problems

- Brockton
- Newburyport
- North Adams

Lab results

Medications

Vaccinations
MAEHC QDC LOG-IN SCREENSHOTS
END-TO-END PROJECT MANAGEMENT IS THE KEY TO SUCCESS

Illustrative EHR Implementation Value Chain

- Overall project management
- Vendor contracting and management
- Readiness assessment & planning
- Practice transformation & workflow planning
- System deployment & Implementation
- Reporting, decision support, and performance measurement
- Inter-operating with internal and external systems
- Post-implementation support

• Who will provide each of these functions?
• Who will coordinate each of these functions?
AGENDA

Level-setting: US system performance today

MAeHC background and some lessons learned

The Federal Government to the Rescue!
THE GOVERNMENT TO THE RESCUE!

American Recovery and Reinvestment Act (ARRA)  
(aka “the Economic Stimulus”)
Recovery Act...Funding Flows

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>Program</th>
<th>Distribution Agency</th>
<th>Funding Use</th>
<th>Fund Recipients / Beneficiaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entitlement Funds</td>
<td>Medicare Payment Incentives ~$20B</td>
<td>CMS</td>
<td>Medicare Carriers &amp; Contractors</td>
<td>Acute care hospital</td>
</tr>
<tr>
<td></td>
<td>Medicaid Payment Incentives ~$14B</td>
<td>CMS</td>
<td>State Medicaid Agencies</td>
<td>Physicians</td>
</tr>
<tr>
<td></td>
<td>HIE Planning &amp; Development (at least $300M)</td>
<td>ONC</td>
<td>Planning Grants</td>
<td>Children’s hospitals</td>
</tr>
<tr>
<td></td>
<td>EHR Adoption Loan Program</td>
<td>ONC</td>
<td>Implementation Grants</td>
<td>Nurse Practitioner</td>
</tr>
<tr>
<td></td>
<td>Health IT Extension Program</td>
<td>HHS, Agency TBD</td>
<td>Loan Funds for States</td>
<td>Midwife</td>
</tr>
<tr>
<td></td>
<td>Workforce Training Grants</td>
<td>HHS, NSF</td>
<td>Loan Funds for Indian Tribes</td>
<td>Federally Qualified</td>
</tr>
<tr>
<td></td>
<td>New Technology R&amp;D Grants</td>
<td>NST, NSF</td>
<td>Medical Health Informatics</td>
<td>Health Care Information</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EHR in Med School Curricula</td>
<td>Enterprise Integration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Health Care Information Enterprise Integration Research Centers</td>
<td>Research Centers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Least Advanced Providers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Provider Organizations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Non-profit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Consulting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vendors</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Federal Gov’t Labs</td>
</tr>
</tbody>
</table>

Requires 'Meaningful' use of EHR

Notes:
- Requires 30% share of Medicaid (except Children's Hospitals)
HEALTH IT SPENDING IN ARRA

Various studies and reports
Health information exchanges
Regional health IT resource center
Regional health IT extension centers
State implementation and planning grants
EHR loan funds
NIST certification infrastructure

Direct payments to individual providers

$47B
$45B
$2B
THE INCENTIVES THEMSELVES ARE SPREAD OUT OVER A NUMBER OF YEARS...

<table>
<thead>
<tr>
<th>First Payment Year</th>
<th>First Payment Year Amount, and Subsequent Payment Amounts in Following Years</th>
<th>Reduction in Fee Schedule for Non-Adoption/Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>$18k, $12k, $8k, $4k, and $2k</td>
<td>$0</td>
</tr>
<tr>
<td>2012</td>
<td>$18k, $12k, $8k, $4k, and $2k</td>
<td>$0</td>
</tr>
<tr>
<td>2013</td>
<td>$15k, $12k, $8k, and $4k</td>
<td>$0</td>
</tr>
<tr>
<td>2014</td>
<td>$12k, $8k, and $4k</td>
<td>$0</td>
</tr>
<tr>
<td>2015</td>
<td>$0</td>
<td>-1% of Medicare fee schedule</td>
</tr>
<tr>
<td>2016</td>
<td>$0</td>
<td>-2% of Medicare fee schedule</td>
</tr>
<tr>
<td>2017 and thereafter</td>
<td>$0</td>
<td>-3% of Medicare fee schedule</td>
</tr>
</tbody>
</table>

• Represents maximum allowable payments
• Actual incentive equals LOWER of 75% of annual Medicare Part B professional services charges or $44K
US GOV’T EXPECTING TO GET 50% PAYBACK ON ARRA HEALTH IT INVESTMENTS

Financial benefit: $16B

Net cost: $20B

Incentives & ONC funding: $33B

Cost of administration: +$1B

Savings to government: -$13B

Increased tax revenues: -$3B

Financial benefit: $16B

Net cost: $20B

Incentives & ONC funding: +$35B

Cost of administration: -$3B

Savings to government: $1B

Increased tax revenues: $2B

Financial benefit: $16B

Net cost: $20B
ANING
USE
Achievable Vision for 2015

Prevention, and management, of chronic diseases
  • A million heart attacks and strokes prevented
  • Heart disease no longer the leading cause of death in the US

Medical errors
  • 50% fewer preventable medication errors

Health disparities
  • The racial/ethnic gap in diabetes control halved

Care Coordination
  • Preventable hospitalizations and re-admissions cut by 50%

Patients and families
  • All patients have access to their own health information
  • Patient preferences for end of life care are followed more often

Public health
  • All health departments have real-time situational awareness of outbreaks
Vision gets boiled down to Policy Priorities and Care Goals....

**Improve quality, safety, efficiency & reduce health disparities**
- Provide access to comprehensive care data
- Use evidence-based order sets and CPOE
- Apply clinical decision support at the point of care
- Generate lists of patients who need care and use them to reach out to patients (e.g., reminders, care instructions, etc)
- Report to patient registries for quality improvement, public reporting, etc

**Engage patients & families**
- Provide patients and families with access to data, knowledge, and tools to make informed decisions and to manage their health

**2015 Vision**

**Improve care coordination**
Exchange meaningful clinical information among professional health care team

**Improve population and public health**
Communicate with public health agencies

**Ensure adequate privacy & security protections for PHI**
- Ensure privacy and security protections for confidential information through operating policies, procedures, and technologies and compliance with applicable law
- Provide transparency of data sharing to patient
…which turn into Objectives....

<table>
<thead>
<tr>
<th>Item</th>
<th>Outpatient</th>
<th>Inpatient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achieve minimal levels of performance on quality, safety, and efficiency measures</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Use CPOE for all order types including medications</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Implement drug-drug, drug-allergy, drug-formulary checks</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Maintain an up-to-date problem list</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Generate and transmit permissible prescriptions electronically</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Maintain active medication list</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Maintain active medication allergy list</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Record primary language, insurance type, gender, race, ethnicity</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Record vital signs including height, weight, blood pressure</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Incorporate lab-test results into EHR</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Generate lists of patients by specific condition to use for quality improvement, reduction of disparities, and</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Send reminders to patients per patient preference for preventive /follow up care</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Use evidence-based order sets</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Record clinical documentation in EHR</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Generate and transmit permissible prescriptions electronically</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Manage chronic conditions using patient lists and decision support</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Provide clinical decision support at the point of care (e.g., reminders, alerts)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Report to external disease (e.g., cancer) or device registries [OP (esp. specialists)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Conduct medication administration using bar coding</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Implement clinical decision support for national high priority conditions</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Medical device interoperability</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Multimedia support (e.g. x-rays)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Document a progress note for each encounter</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>19</strong></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>
...and corresponding reportable Measures

<table>
<thead>
<tr>
<th>Item</th>
<th>Outpatient</th>
<th>Inpatient</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of orders entered directly by physicians through CPOE</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Report quality measures, including: % diabetics with A1c under control</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Report quality measures, including: % hypertensive patients with BP under control</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Report quality measures, including: % of smokers offered smoking cessation counseling</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>% of patients with recorded BMI</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>% eligible surgical patients who received VTE prophylaxis</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Use of high-risk medications in the elderly</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>% of patients over 50 with annual colorectal cancer screenings</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Additional quality reports using HIT-enabled NQF-endorsed quality measures</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>% of all orders entered by physicians through CPOE</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Potentially preventable Emergency Department Visits and Hospitalizations</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Inappropriate use of imaging (e.g. MRI for acute low back pain)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Other efficiency measure (TBD)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Clinical outcome measures (TBD)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Efficiency measures (TBD)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Safety measures (TBD)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>% of females over 50 receiving annual mammogram</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>% patients at high-risk for cardiac events on aspirin prophylaxis</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>% of patients with current pneumovax</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>% eligible patients who received flu vaccine</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>% lab results incorporated into EHR in coded format</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Stratify reports by gender, insurance type, primary language, race, ethnicity</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Grand Total</td>
<td>19</td>
<td>14</td>
</tr>
</tbody>
</table>
Strength of health exchange objectives in current version of MU rises substantially by 2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Meaningful Use objectives requiring health exchange</th>
</tr>
</thead>
</table>
| 2011 | • Lab results delivery  
      • Prescribing  
      • Claims and eligibility checking  
      • Quality & immunization reporting, if available  
      | Increases volume of transactions that are most commonly happening today  
      • Lab to provider  
      • Provider to pharmacy |
| 2013 | • Registry reporting and reporting to public health  
      • Electronic ordering  
      • Health summaries for continuity of care  
      • Receive public health alerts  
      • Home monitoring  
      • Populate PHRs  
      | Substantially steps up exchange  
      • Provider to lab  
      • Pharmacy to provider  
      • Office to hospital & vice versa  
      • Office to office  
      • Hospital/office to public health & vice versa  
      • Hospital to patient  
      • Office to patient & vice versa  
      • Hospital/office to reporting entities |
| 2015 | • Access comprehensive data from all available sources  
      • Experience of care reporting  
      • Medical device interoperability  
      | Starts to envision routine availability of relatively rich exchange transactions  
      • “Anyone to anyone”  
      • Patient to reporting entities |
MEANINGFUL USE DOESN’T HAPPEN, IT GETS DONE

Current approach funds the pieces, but doesn’t connect them

RHITECs and HIEs will be the key to getting to a higher level of meaningful use at a lower cost, but only if they are tied to the incentives
PAYMENTS MAY NOT COVER THE OUTLAYS AT AN INDIVIDUAL PHYSICIAN-LEVEL

Net gap: -$21K

Who’s going to help physicians fill the gap?
THIS IS GOING TO BE VERY, VERY, VERY MESSY

THE TELEPHONE BUSINESS.

Statistics Showing Growth and Development of the Telephone Industry in the United States.

In its current issue The Electrical Review contains a study of the telephone situation, in which it is shown that the amount invested in the telephone industry in the United States is nearly half a billion of dollars. This estimate includes both the lines and instruments of the American Telephone and Telegraph Company, generally called the Bell Company, and of the opposition or independent companies.

A table is published showing that all the states of the Union, with the exception of Nevada, Rhode Island, and Utah, are provided with opposition telephone exchanges, the total number of exchanges of this character being 2,811, and the number of telephones connected to them being 708,717. The largest extension of the independent telephone business is in the State of Ohio, which has 226 exchanges and 155,604 independent telephones. In order, Indiana and Pennsylvania come next, having respectively 192 and 195 exchanges and 88,099 and 64,604 telephone connections. The total capital invested in the independent telephone business, including toll lines and manufacturing establishments, is estimated at from $120,000,000 to $150,000,000.

- Change stinks
- Users will be unforgiving and impatient
- The market is restless and will outguess you every time
- The technology is immature but fast-moving
- Even when it’s wildly successful on the ground it will feel like it’s failing
- This is inevitable, so it’s not about demonstrating value, it’s about designing and enforcing value
- There is no substitute for creative, collaboration-oriented leadership
- Need to have concrete, incremental goals that show success along the way

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