How the Evolution of Technology Has Improved Delivery of Care

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Objectives

• Discuss the costs, quality, and regulatory forces driving the integration of communications and information technology into care delivery

• Discuss type and uses of information technology in care coordination. Explore the cost and quality forces driving the integration of technology into the delivery of care.

• Discuss roles of the healthcare provider in demonstrating meaningful through clinical quality measures

• Describe perils and success of care management using technology across the healthcare continuum

• Discuss future innovation in healthcare using technology
Cost of vs. Cost of Not

• “If this is a cost saver then I don’t get it…”


Real Cost Implications to Hospitals

• 2012 studies conducted by Cisco and the University of Maryland reported:
  
  – $24B lost annually due to poor communications
  
  – $11.7M is the burden for a single 500 bed acute care facility
  
  – 4% negative impact on hospital revenue from poor communication
Predicted Savings for the US Healthcare System

At 90% adoption, over $77B savings per year

Really?

But what will it take to get there?

Patient Benefits

- Average minutes saved per med. refill: 4
- Patient no-shows w/ online scheduling: 20%
- Costs per lab result delivered online: $3
- Patient perception of quality: 97%
- More likely to receive suggested routine screening: 30%
- Days shaved off A/R with online bill pay through a patient portal: 1
- Physicians agree patient portals improve patient/physician interaction: 73%

Patients say a patient portal is important in their choice of where to receive care.
Costs to Implement EHR

- MaineHealth reports $160M for Electronic Health Record. Upfront rollout costs usually include software licenses, interfaces, implementation, and training costs.
- Annual maintenance and support costs are customarily 18-20 percent of rollout costs, which would be $28.8M in this instance.

But what Else?

- Hospital Boards approve millions of dollars for software, hardware, and consultants.
- New positions are often required to build an effective team and ongoing support structures
- New space requirements to house the teams, training costs (who pays), support costs
- Additional hardware (for new spaces, appropriate sizing, etc)
But what Else? - continued

- Reduced office visits
- Extended OR times
- Backfilling staff to cover superusers
- New technology to support new processes such as single sign on, biometric authentication.
- Additional hardware for caregiver space, bar code scanners and label printers, outlets, datadrops, wireless hubs...

Quality Forces

Improve:
Quality of care outcomes, Patient Safety
Patient satisfaction and experience
Patient Care
Convenience
Staff satisfaction and retention
Staff productivity

Reduce:
Supply chain reimbursement
Care delivery cycle time
Reduce manual work
Streamline workflow processes
Simplify care giver information sharing and communication
Quality of Diabetes Care: Patients treated by Physicians using EHR vs. Paper Medical Records

A significantly higher proportion of patients being treated by physicians with EHRs received care that aligns with accepted treatment standards.

<table>
<thead>
<tr>
<th>Care Measure</th>
<th>EHR Practices</th>
<th>Paper-based Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehension of diabetes care</td>
<td>95%</td>
<td>86%</td>
</tr>
<tr>
<td>Measurement of glycated hemoglobin</td>
<td>93%</td>
<td>78%</td>
</tr>
<tr>
<td>Kidney management</td>
<td>63%</td>
<td>31%</td>
</tr>
<tr>
<td>Pneumococcal vaccination</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>Eye examination</td>
<td>63%</td>
<td>31%</td>
</tr>
</tbody>
</table>

*Even after adjusting for patient demographic characteristics and insurance type, differences remain significant (p<0.005).

9/16/2013

Health Outcomes for Diabetes Patients: Physicians using EHR vs. Paper Medical Records

A significantly higher proportion of patients being treated by physicians with EHRs obtained better outcomes.

<table>
<thead>
<tr>
<th>Outcome Measure</th>
<th>EHR Practices</th>
<th>Paper-based Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite: at least four of five outcomes standards</td>
<td>87%</td>
<td>56%</td>
</tr>
<tr>
<td>LDL cholesterol ≤100 mg/dl or use of statin drug</td>
<td>56%</td>
<td>52%</td>
</tr>
<tr>
<td>Non-smoker</td>
<td>71%</td>
<td>65%</td>
</tr>
<tr>
<td>Glicated hemoglobin ≤9%</td>
<td>56%</td>
<td>35%</td>
</tr>
<tr>
<td>Blood pressure ≤140/90 mm Hg</td>
<td>33%</td>
<td>24%</td>
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</tbody>
</table>

*Even after adjusting for patient demographic characteristics and insurance type, differences remain significant (p<0.005).

9/16/2013
Regulatory Forces

- American Recovery and Reinvestment Act 2009
  - The Health Information Technology for Economic and Clinical Health (HITECH) Feb 2009
    - Meaningful Use (July 2010)

- The US Healthcare System faces significant challenges that will require greater collaboration and coordination among all stakeholders

- Substantial shortage of medical professionals in both urban and rural communities by 2020

- New models of care such as ACO and Medical Homes

Types and uses of IT Technology

- Telephone (95%) and fax (63%) are still the primary forms of communication in 2012.

- Fax is kingpin supporting handwritten notes, orders, insurance forms, and test results.

- Fax and text are not defined as secure channel by HIPAA.
Dilaudid: 1 or 10 mg?
Misread Isordil for Plendil
Buspar dispensed instead of Prozac
Patient received Vasotec 20mg instead of Vantin 200mg
Patient received Fiorinal instead of Florinef

Types of Technology

COW
WOW
BMW
Types of Technology - Continued

- eICU

Command Center Located Remotely
Types of Technology - Continued

- iPads & iPhones

Humor

“I hear there's a new ICD-10 code for carpal tunnel syndrome caused by clicking too many times in an EMR system.”
Physicians Role in Meaningful Use

- Physicians have a very important roles in achieving Meaningful use

- The EHR implemented in the office and hospital environment must be MU Certified by the Office of the National Coordinator (ONC)

- Eligible Professionals (EP) must meet 15 core objectives, 5 of 10 menu set objectives and 6 total quality measures (3 core or alternate core and 3 out of 38 from an additional set)

Physicians Role - Continued

- Eligible hospitals/CAHs need to meet 14 core objectives, 5 out of 10 menu set objectives and 15 clinical quality measures.

- Regardless of the environment, physicians are required to use the technology in the care of their patient. Physician order entry, e-prescribing, maintaining a problem list, and online results reviewing are examples of
### Stage 1 vs. Stage 2 Comparison Table for Eligible Hospitals

<table>
<thead>
<tr>
<th>Measure</th>
<th>Stage 1 Requirements</th>
<th>Stage 2 Requirements</th>
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<tbody>
<tr>
<td>Patient Engagement</td>
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### Meaningful Use Requirements

**Stage 1 vs. Stage 2 Comparison Table for Eligible Professionals**

<table>
<thead>
<tr>
<th>Eligible Professional</th>
<th>Stage 1 Requirements</th>
<th>Stage 2 Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Information Exchange</td>
<td>- Use and-Demonstrate meaningful use of a health information exchange.</td>
<td>- Use and-Demonstrate meaningful use of a health information exchange.</td>
</tr>
<tr>
<td>Clinical Quality Measures</td>
<td>- Use and-Demonstrate meaningful use of clinical quality measures.</td>
<td>- Use and-Demonstrate meaningful use of clinical quality measures.</td>
</tr>
<tr>
<td>Patient-Centered Communication</td>
<td>- Use and-Demonstrate meaningful use of patient-centered communication.</td>
<td>- Use and-Demonstrate meaningful use of patient-centered communication.</td>
</tr>
<tr>
<td>Care Coordination</td>
<td>- Use and-Demonstrate meaningful use of care coordination.</td>
<td>- Use and-Demonstrate meaningful use of care coordination.</td>
</tr>
<tr>
<td>Clinical Decision Support</td>
<td>- Use and-Demonstrate meaningful use of clinical decision support.</td>
<td>- Use and-Demonstrate meaningful use of clinical decision support.</td>
</tr>
<tr>
<td>Meaningful Use</td>
<td>- Use and-Demonstrate meaningful use of a certified electronic health record (EHR) system.</td>
<td>- Use and-Demonstrate meaningful use of a certified electronic health record (EHR) system.</td>
</tr>
</tbody>
</table>

**Eligible Professionals**
- Physician
- Nurse Practitioner
- Clinical Nurse Specialist
- Physician Assistant
- Advanced Practice Nurse
- Certified Nurse Midwife
- Certified Nurse Anesthetist
- Other eligible professionals as defined by the Meaningful Use Program.
Future Innovations

Just for fun!

Paper isn’t Dead
Remember

- No matter how robust the technology, how large the investment, how dazzling the project plans, the “human element”, the institutional will, and the vigorous support of clinical executives is the key to success.


And in the end......

- It is all about the patient