The Roadmap to EMR Adoption and I.T. Hospital Success

November 3, 2009
Speakers

Heidi Blizzard
Nursing Information Project Manager
Crittenton Hospital
Rochester, MI
hblizard@crittenton.com

Jim Deren
Director of IS Planning
CareTech Solutions
jim.deren@caretechsolutions.com
Agenda

- Background on CareTech Solutions
- Industry Trends
- Understand the Need for an I.T. Roadmap
- Review The Planning Process
- Review the Assessment Process
- Case Study – Crittenton Hospital
- Questions
An information technology and web products and services provider for hospitals and health systems

- We create value for clients through customized solutions that contribute to improving patient care while lowering healthcare costs.
- From implementing emerging technologies to supporting day-to-day operations, CareTech offers clients expert services across the entire patient data lifecycle.

“We Do Whatever IT Takes”
Healthcare I.T. Environment – 1980s
Healthcare I.T. Environment – 1990s
Healthcare I.T. Environment - Current
House approved an $819 billion stimulus package with $20 billion for health IT by a vote of 244-188.


“Poor use-ability cuts EMR adoption”; HIMSS Use-ability Taskforce, June 2009.

“EHR adoption will be spurred by penalties, not incentives”; Price, Waterhouse, Coopers, April, 2009.

“Less than 2% of hospitals have comprehensive EHR—stimulus might help”; NEJM, March 2009.
ARRA – Proposed Meaningful Use Definition “Over time”*

2009 Define HITECH Policies & Standards

2011 Meaningful Use Criteria
(Capture/ Share Data)

2013 Meaningful Use Criteria
(Advanced Care Processes with Decision Support)

2015 Meaningful Use Criteria
(Improve Outcomes)

* Report of HIT Policy Sub Committee
### Medicare (ARRA) Incentives to Hospitals for EHR Use

<table>
<thead>
<tr>
<th>Year of Adoption</th>
<th>Must meet Phase 1 Requirements</th>
<th>Must meet Phase 2 Requirements</th>
<th>Must meet Phase 3 Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>100%</td>
<td>75%</td>
<td>50%</td>
</tr>
<tr>
<td>2012</td>
<td>100%</td>
<td>75%</td>
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<td>2016</td>
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<tr>
<td>2017</td>
<td></td>
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If first adopting in 2012:

- 100% 75% 50% 25%

If first adopting in 2013:

- 100% 75% 50% 25%

If first adopting in 2014:

- 75% 50% 25%

If first adopting in 2015:

- 50% 25%

Penalties begin if not adopting by 2015: Three-quarters of the applicable market basket update is reduced by:

- 33.33%
- 66.66%
- 100%
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Data from HIMSS Analytics Database 2009

n=4000  n=4237  n=5073  n=5166  N=5173
Summary of proposed ARRA EHR requirements (2011 standards):

- CPOE for 10% of all orders (any type)
- Basic Clinical Decision Support (CDS) / alerts and reminders for CPOE
- One CDS rule for a high priority hospital specific need
- Home Medications, allergies, vital signs (HT, WT, BP, BMI) in EHR
- Advanced Directives in EHR
- Smoking status in EHR
- Scanned documents in EHR for more complete record – such as advanced directives
- Provide patients access to an electronic copy of their health information
- Provide patients access to patient-specific educational material
- HIPAA compliance including an up-to-date security risk assessment
- Transmission of a summary of care record during transitions of care (fax is acceptable)
Summary of proposed ARRA EHR requirements (2011 standards):

- Electronic submission of data to registries and public health agencies
- Lab results in EHR
- Transcribed reports in EHR
- Active Medication list in EHR
- Demographics in EHR (Language, insurance type, gender, race, ethnicity)
- Problem list based on ICD9 or Snomed (up-to-date current and active problems)
- Ability to generate patient lists by condition
- Ability to report CMS quality measures
- Generating patient reminders for preventative / follow-up care
- Medication Reconciliation
- EDI for Eligibility and Claims (public and private payors)
Do I Really Need A Roadmap?

“I know we have some paper processes but overall we are in pretty good shape. I don’t think we need an I.S. Assessment”
Roadmap to EMR Adoption and I.T. Success
Objectives of Developing an I.S. Roadmap

- To identify opportunities for improvements in efficiency of the Information Services operations from a human resources, environment, applications, labor processes, and technology perspective.

- To provide a clear plan to achieve "meaningful use" of an Electronic Health Record and eligibility for obtaining the maximum ARRA funding.

- To provide information needed to develop or validate the I.S. plan and assure the plan supports achievement of organizational goals.

- To direct the healthcare organization to invest in initiatives that provide the most value.
The I.S. Roadmap – Steps to Success

**Define Business Objectives**
- Regulatory Needs
- Vision
- Goals
- Priorities

**Assess I.S. Capacity**
- Current State
- Staff
- Processes
- Applications
- Culture
- Infrastructure

**Develop I.S. Plan**
- Align Projects to Goals
- Tactical Plan
- Operational Needs
- Strategic Plan
- Capital Needs

**Build Foundation**
- Staffing Model
- Training
- Network / Servers
- Desktops
- Methodology
- Governance
- Support Plan

**Strategic Project Phases**
- EMR
- Decision Support
- Ambulatory
- Healthcare Information Exchange
Key Things an Assessment Should Tell You

- What does our organization need to do in order to achieve “meaningful use” of our systems as defined by U.S. government regulations?

- How do our technology capabilities compare to our competition and other similar hospitals?

- What is the TRUE perception of hospital staff and clinicians regarding the level of technology available to them?

- What are future technology and regulatory trends and how can I be prepared for them?

- Does our I.S. organization work efficiently and on the right things to provide value?

- What are our risks and how can we address them?
Assessment Steps - Real Information to Design An I.S. Roadmap

1. Establish The Project Organization
   - Project coordinator
   - Stakeholders to interview
   - Finalize project scope & objectives

2. Fact Finding and Validation
   - Interviews, documentation, survey, walkthroughs

3. Analysis and Planning
   - Review information

4. Assess Information
   - Evaluate feedback
   - Comparative analysis

5. Solution Development and Management Approval
   - Compile and update assessment report / proposal
# The Assessment Process

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Benchmarks</strong></td>
<td><strong>Interviews</strong></td>
<td>I.S. Business Planning / Governance / Alignment with Business Plan</td>
</tr>
<tr>
<td><strong>Industry Trends</strong></td>
<td><strong>Walkthroughs</strong></td>
<td>I.S. Processes</td>
</tr>
<tr>
<td><strong>Case Studies</strong></td>
<td><strong>Documentation</strong></td>
<td>Staffing – Organization Structure / Capacity / Skill Level / Training of Staff</td>
</tr>
<tr>
<td><strong>I.S. Research Reports</strong></td>
<td><strong>Plans</strong></td>
<td>Staff workflow - Utilization and Use of Technology</td>
</tr>
<tr>
<td><strong>Comparison with Similar Institutions</strong></td>
<td><strong>Strategies</strong></td>
<td>Completeness of Applications / Systems</td>
</tr>
<tr>
<td><strong>Best Practices</strong></td>
<td><strong>Infrastructure Review</strong></td>
<td>Environment &amp; Culture – Community / Teamwork / IS Communications</td>
</tr>
<tr>
<td></td>
<td><strong>Web Site Review</strong></td>
<td>Infrastructure – Hardware / Network / Operations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I.S. Budget</td>
</tr>
</tbody>
</table>
Input Needed

IS Assessment Questionnaire
- Background Information
- Application Inventory
- IS Projects
- System Risks
- Servers
- Computer Operations Environment
- Infrastructure Background
- Staffing Information

Additional Documents
- Strategic Business Plan
- Latest IS Strategic Plan
- Downtime Procedures
- Network Diagrams
- IS Organization Chart
- Capital Budget – Current, Last Year & Next Year
- Operational Budget – Current & Last Year
## Deliverables

<table>
<thead>
<tr>
<th>I.S. Assessment Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare Industry Trends</td>
</tr>
<tr>
<td>I.S. Project Mapping to Business Plan</td>
</tr>
<tr>
<td>Current State Risks</td>
</tr>
<tr>
<td>I.S. Organization</td>
</tr>
<tr>
<td>Regulatory Needs / Status</td>
</tr>
<tr>
<td>Infrastructure</td>
</tr>
<tr>
<td>Workflow /Processes</td>
</tr>
<tr>
<td>Governance / Planning Review</td>
</tr>
<tr>
<td>Budget Analysis</td>
</tr>
<tr>
<td>Recommended Portfolio and Timeframe</td>
</tr>
<tr>
<td>Information Services</td>
</tr>
<tr>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>I.S. Application Manager /Staff</td>
</tr>
<tr>
<td>IS Director / CIO</td>
</tr>
<tr>
<td>I.S. Infrastructure Manager</td>
</tr>
<tr>
<td><strong>Clinical Areas</strong></td>
</tr>
<tr>
<td>Hospital Physician IS Champion(s)</td>
</tr>
<tr>
<td>Nursing Champion(s)</td>
</tr>
<tr>
<td>Ambulatory Physicians</td>
</tr>
<tr>
<td><strong>Executive Leadership</strong></td>
</tr>
<tr>
<td>Chief Medical Officer</td>
</tr>
<tr>
<td>Chief Executive Officer</td>
</tr>
<tr>
<td>Chief Financial Officer</td>
</tr>
<tr>
<td>Chief Nursing Officer</td>
</tr>
<tr>
<td>Chief Operating Officer</td>
</tr>
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<td></td>
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</table>
Staff and Physician Survey

- Used to solicit input from ground-level staff
- Input into risk assessment
- ~ 20 questions
- Separate surveys for:
  - Physicians
  - Hospital Staff
Information to be Collected - via interviews

**Interview Topics**

- I.S. Priorities / Desires
- Identification of Key I.S. Related Issues
- Systems and General IS Knowledge & Work Processes
- Perception of I.S. Support / Capabilities
- Additional Information to Complete Documents
The Evaluation Process – (Measuring HEALTH)

**Human Resources**
- IS Capacity
- End user Roles
- Education / Training
- End-User IS Skills

**Environment**
- Budget
- Regulatory
- Community Image
- Cooperation

**Applications**
- Patient Care
- Hospital Operations
- Ancillary Services
- E-Healthcare

**Labor Processes**
- IS Processes
- Staff Workflow
- Governance
- IS Business Planning

**Technology**
- Hardware
- Network
- Operations
- IS Support
Our customers utilize an assessment tool that collects information on 250+ key success indicators in the areas of Human Resources, Environment, Applications, Labor Processes, and Technology
Measuring Maturity - Assessment Tool Sample
## Assessment Key Risk Areas

<table>
<thead>
<tr>
<th>KSI - High Risk Areas</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>The hospital is not leveraging information technology to care for patients</td>
<td>1.2</td>
</tr>
<tr>
<td>Timely response to end-user support needs are not being met</td>
<td>1.2</td>
</tr>
<tr>
<td>Business continuity is at risk due to poor system administration and backup processes and an incomplete recovery plan</td>
<td>1.2</td>
</tr>
<tr>
<td>Lack of an I.S. governance structure</td>
<td>1.3</td>
</tr>
<tr>
<td>The hospital is not adequately funding the I.S. budget to support its needs</td>
<td>1.4</td>
</tr>
<tr>
<td>No defined standards for project management put project success at risk</td>
<td>1.5</td>
</tr>
<tr>
<td>No defined plans for Web strategies and no customer driven applications are implemented</td>
<td>1.6</td>
</tr>
<tr>
<td>Lack designated clinicians to represent I.S. direction in planning &amp; support of clinical initiatives</td>
<td>1.7</td>
</tr>
<tr>
<td>Staffing levels are not sufficient to meet hospital needs to leverage existing technology</td>
<td>1.8</td>
</tr>
<tr>
<td>I.S. activity is not consolidated in the central I.S. Department and lacks organizational oversight.</td>
<td>2.0</td>
</tr>
</tbody>
</table>

*10 point scale: the lower the numbers the higher the risk*
Assessment Results

Average Assessment Score Changes of 9 Hospitals (1-6 years)
Case Study – Crittenton Hospital

Award Winner

- 2006
- 2007
- 2008
- 2009

Vital Statistics

- Rochester, Michigan
- 290 Beds
- 1600 employees
- 500 non-employed physicians
- 18 I.S. based employees
- 13 Remote locations
- 12,000 Discharges, 200,000 OPD Visits, 30,000 ER Visits

Vendors

- EMR: Cerner Millennium
- ERP: Lawson
- Financials: McKesson
- Web Site: CareTech
- Ancillary: Cerner Millenium
- QA: MIDAS

2009: HealthGrades Patient Safety Excellence Award

Patient safety in the top 5% of the Nation’s Hospitals
## HIMSS Clinical Transformation Stages EMR Adoption Model (Q1 – 2009)

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CHMC – Current Technology State
## Crittenton Hospital – Technology Progression

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<th>Year</th>
<th>Infrastructure</th>
<th>EMR</th>
<th>Financials</th>
<th>Help Desk</th>
<th>Web Site</th>
<th>Disaster Recovery</th>
<th>EMRAM Score</th>
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<tr>
<td>2003</td>
<td>375 PCs Partial Network</td>
<td>Legacy - non integrated Lab, Pharmacy, RIS</td>
<td>Legacy - Non Integrated</td>
<td>none</td>
<td>basic information only</td>
<td>none</td>
<td>1.75</td>
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<tr>
<td>2006</td>
<td>500 PCs Portable Devices</td>
<td>Result Reporting Order Entry Radiology PACS Emergency eMar Electronic Signature Nurse Charting Integrated Cardiology Lab Pharmacy</td>
<td>Legacy - Non Integrated</td>
<td>24 x 7 Outsourced</td>
<td>basic information only</td>
<td>Core</td>
<td>3.00</td>
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CHMC IT Progress (Key components implemented vs. resource investment)

- **Base FTEs**
- **Capital FTEs**
- **Modules**

Year wise progress:
- 2003: Base 14, Capital 0
- 2004: Base 15, Capital 3
- 2005: Base 14, Capital 3
- 2006: Base 14, Capital 3
- 2007: Base 15, Capital 6
- 2008: Base 15, Capital 6
- 2009: Base 18, Capital 6
- 2010 (estimate): Base 20, Capital 6

Total for 2003-2010:
- Base: 28, Capital: 35, Modules: 45
- Base: 60, Capital: 65, Modules: 60
- Base: 70, Capital: 70, Modules: 70
- Base: 80, Capital: 80, Modules: 80
- Base: 90, Capital: 90, Modules: 90

**Key Takeaways**
- Significant increase in Base FTEs and Modules from 2003 to 2010.
- Capital FTEs have also shown a gradual increase.
- The investment in modules has been substantial over the years.
Crittenton Hospital - Current EMR State

- 100% Nursing Adoption Inpatient
- 100% Physician Electronic Signature
- 100% Emergency Department CPOE
- 100% Lab orders
- 100% Radiology orders
- 25% Inpatient Therapy Documentation
- 40% CPOE (inpatient)
- Integration with Document Imaging, PACS, Registration, Orders
- Partial Clinical Decision Support – Alerts
- Partial Ambulatory Office EMR
- Electronic Medication Administration – (not bar coded)

EMRAM SCORE 4.25
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<th>Industry Recommendations for Physician Adoption of CPOE</th>
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<td>▪ Provide one-on-one <strong>training anywhere and anytime</strong></td>
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<td>▪ Provide <strong>24-hour support</strong> coverage during go-live</td>
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<td>▪ Make it easy to establish <strong>remote access</strong> from office and home</td>
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<tr>
<td>▪ Assign high priority enhancements that benefit <strong>ease of task completion</strong> - one hospital is implementing new functionality that will allow physicians to convert medications to scripts at discharge</td>
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<tr>
<td>▪ Invest in <strong>order sets</strong> and help physicians build Favorites Lists</td>
</tr>
<tr>
<td>▪ Build a track record of <strong>highly responsive support</strong> and system changes to meet physician needs</td>
</tr>
<tr>
<td>▪ <strong>Empower nurses</strong> to serve as super users and encourage physician direct entry (some hospitals establish a policy that nurses only enter verbal orders under specified circumstances)</td>
</tr>
<tr>
<td>▪ <strong>Remove all paper</strong> order sheets from the floor</td>
</tr>
<tr>
<td>▪ Train physicians in what they need to know at that time and do not expect more than 20 minutes of attention - <strong>training is an ongoing program</strong>, not just a one-time event</td>
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Nursing EMR Roles - Lessons Learned & Recommendations

- **Train Management:** Make sure all leadership is trained to use CPOE so they can complete audits and monitor documentation.

- When planning processes that **involve other departments**:
  - get official sign-off
  - teach everyone HOW TO TEST the system
  - instill ownership for testing on those who will be using the system.

- **Maintain The System After Go-Live:** Identify ongoing resource needs for training and modifications.

- **Limit Quick Changes:** Staff should use the system for a period of time and only make changes that will truly make a difference.

- Incorporate charging into any on-line documentation as it is developed…don't wait until after go-live (there are will be many new issues/developments that will be requested and this important aspect of EMR gets lost…)

- **Discourage Bad Habits:** Insist and train staff to complete documentation as they care for patients.

- **Plan for New Forms:** make sure there is a process for requesting new forms that incorporate getting the documentation developed electronically, and paper is used only for downtime…
- **Ensure that design of the EMR functions and flow is efficient**
  - Categorize nursing documentation to display where it is needed (not all in one place in the EMR)
  - Consider using specialty flow sheets, strategically displaying information in an easy to follow manner.
- **Ensure that it is easy and quick to print a chart.** Make sure the printed chart is user-friendly and easy to read
- **Create downtime procedures and policies as the EMR is developed**
  - Very labor intensive to go back and find all the policies that you changed in the development of the EMR.
  - Downtime needs to be developed by all departments
  - A master all-inclusive downtime procedure manual should be developed & kept up-to-date
  - Provide easy access to view and update (such as hospital intranet)
- **Have a defined process for changes to Care Sets**
  - the Electronic version should be considered the truth
  - Any paper order sets MUST match what is in the EMR
Crittenton Hospital EMR - Next Steps

- Complete O.R. Documentation
- Expand Inpatient CPOE
- Expand Outpatient CPOE
- Bar Coded eMar
- Add Clinical Content
  - Outpatient Therapy Notes
  - Other
- Build Surveillance Alerts
- Security Audit
- Evaluate Radiology PACS replacement
- Interoperability – Health Information Exchange
- Patient Health Record
- Decision Support Enhancements
The Roadmap: Summary of Recommendations

1. Determine Current State – Assess and Plan
2. Secure Administrative Support – Resources, Funding, Commitment
3. Define Risks and Dependencies
4. Align / Build I.S. Organization – Governance, System Wide Involvement, Skills, Clinicians
5. Build / Validate Technical Architecture
6. Analyze and Adjust Workflow Processes
7. Build / Validate Support & Training Mechanisms
8. Address Major Risks
9. Implement Core Strategic Functions
10. Implement Additional Strategic Functions
11. Re-Evaluate and Adjust
Questions?

Heidi Blizzard
Nursing Information Project Manager
Crittenton Hospital
Rochester, MI
hblizzard@crittenton.com

Jim Deren
Director of IS Planning
CareTech Solutions
Troy, MI
jim.deren@caretechsolutions.com