The Healthcare Provider Industry Short List: Inpatient Electronic Medical Records

Judy Hanover
Research Manager, Healthcare Provider IT Strategies
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About Our Speaker

- Judy Hanover: Research Manager, Health Industry Insights
  - Healthcare provider practice
  - Healthcare informatics
  - Previously served as a senior product marketing manager for drug safety
  - Research expertise in regulatory compliance, clinical trial IT infrastructure, drug development and performance management, pharmacovigilance and drug safety technology
Agenda

- Inpatient EMR Introduction
- Application Definition, Market Segmentation and Differentiators
- Inpatient EMR Vendor Landscape
- Evaluation Process – Methodology
- Evaluation Process – Assessment Criteria
- Reference Feedback Inpatient EMR Vendor Assessment
- Essential Guidance
- Question & Answer Session
The market for inpatient clinical electronic medical records (EMRs) remains strong.

Facilities installing, replacing, upgrading, and adding functionality to systems.

The market's strength is due to a number of factors, including:

- Public and government attention
- Market factors forcing healthcare institutions to seek efficiencies in both the delivery of care and the administration of facilities
- Hospitals facing an ongoing need to measure and evaluate performance of clinical and administrative teams in the inpatient setting
60% percent of respondents indicated they have widespread adoption

30% indicated they have implemented or have plans to implement some or all of these processes on a pilot basis

5% indicated they have plans to implement it on a pilot basis in the next 12 months, and 5% are currently evaluating it
Inpatient EMR – Short List Definition

- Applications used to support clinical EMRs in the inpatient care setting

- Key components that are integrated for common access by users:
  - Computerized physician order entry (CPOE)
    - Place, document and communicate details of all types of patient orders, including lab, radiology, medication, and nursing
    - Requires integration with other hospital systems that receive, process, and return electronic information about order execution
  - Electronic medication administration records (eMARs)
    - Point-of-care documentation of medication administration
    - Usually utilizes a combination of application software and barcode technology
  - Electronic chart

- Other functionality:
  - Clinical data repository (CDR)
  - Clinical decision support (CDS)
  - Patient and problem lists, task lists, reporting and business intelligence functionality, and integration
Inpatient EMR Segmentation

- Inpatient EMR systems support all sizes of inpatient facilities
  - For-profit and not-for-profit hospitals
  - Health systems
  - Community hospitals

- Report examines EMRs at hospitals from 20 beds to 200+

- Inpatient EMR technology:
  - Confusing, fragmented market
  - Difficult to assess
  - Complicated by integration and sourcing decisions
Inpatient EMR Differentiators

- Type of solution
  - Installed vs. hosted
  - Integrated suite vs. best-of-breed

- Organization type, size and specialty

- Breadth of functionality

- Price
  - Delivery
  - License options

- Maturity of solution

- CCHIT Certification
CCHIT Inpatient Certification Context

- CCHIT inpatient EHR Certification program established 2006

- CCHIT Inpatient Certification:
  - Minimum standards for the functionality, interoperability, and security of an inpatient EMR
  - Industry-standard starting point for the evaluation of inpatient EMR products
  - Recognized by the U.S. DHHS

- The market definition presented in the short list uses the CCHIT standard as the baseline but considers functions beyond that set

- The Short List considered CCHIT certification, but not in isolation
  - CCHIT certification was considered for those factors it addressed
  - Other considerations relative to this analysis were taken into account
# Inpatient EMR Vendor Landscape

<table>
<thead>
<tr>
<th></th>
<th>CCHIT Certified?</th>
<th>Target Market Served</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cerner</td>
<td>✓</td>
<td><img src="image" alt="Large (&gt;200 beds)" /></td>
</tr>
<tr>
<td>CPSI</td>
<td>✓</td>
<td><img src="image" alt="100-200 beds" /></td>
</tr>
<tr>
<td>Dairyland</td>
<td></td>
<td><img src="image" alt="Small (&lt;100 beds)" /></td>
</tr>
<tr>
<td>Eclipsys</td>
<td>✓</td>
<td><img src="image" alt="Large (&gt;200 beds)" /></td>
</tr>
<tr>
<td>Epic</td>
<td>✓</td>
<td><img src="image" alt="Large (&gt;200 beds)" /></td>
</tr>
<tr>
<td>GE</td>
<td></td>
<td><img src="image" alt="Large (&gt;200 beds)" /></td>
</tr>
<tr>
<td>M2</td>
<td></td>
<td><img src="image" alt="Large (&gt;200 beds)" /></td>
</tr>
<tr>
<td>McKesson</td>
<td></td>
<td><img src="image" alt="Large (&gt;200 beds)" /></td>
</tr>
<tr>
<td>MEDITECH</td>
<td>✓</td>
<td><img src="image" alt="Large (&gt;200 beds)" /></td>
</tr>
</tbody>
</table>
Short List Evaluation Process - Methodology

- The methodology of this report is designed to provide an objective analysis of the inpatient EMR space that functions to assist hospitals in determining the inpatient EMR technology and vendor best suited to their clinical operations, existing IT environment, and business needs.

- In the course of developing this evaluation, we undertook the following steps:
  - Market scope definition
  - Target vendor identification and notification
  - Evaluation criteria and weighting determination
  - Vendor data collection and briefings
  - End user interviews
  - Evaluation
  - Extensive review and fact-checking
  - Publication & periodic updating
Evaluation Process – Assessment Criteria

- Each technology provider evaluated in the Industry Short List is assessed based on how well its product fits market needs and our confidence that the technology provider will provide the customer with a satisfactory ownership experience.

- Two categories for assessment criteria:
  - Application's fit to market needs (x-axis) – 10 criteria
  - Ownership confidence (y-axis) – 5 criteria

- On the basis of the data compiled, each vendor was given a rating of 1, 2 or 3, for each individual criteria in each category – and the criteria were weighted to calculate a score, which is the basis for the analysis presented.
## Fit to Market Needs Assessment - I

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feature/function</td>
<td>1: Product is not CCHIT certified and/or has significant gaps when mapped to other products in this product category</td>
</tr>
<tr>
<td></td>
<td>2: Product is CCHIT certified and/or presents substantially all the features and functionality that other products within this product category have</td>
</tr>
<tr>
<td></td>
<td>3: Product has several significant advances in features and functionality not offered by other products in this product category</td>
</tr>
<tr>
<td>Integration capability</td>
<td>1: Product is not CCHIT certified and/or has limited integration options</td>
</tr>
<tr>
<td></td>
<td>2: Product is CCHIT certified and/or provides support for enterprise application integration</td>
</tr>
<tr>
<td></td>
<td>3: Product provides business process–level application integration via service-oriented architecture technology including XML and Web services</td>
</tr>
<tr>
<td>Architecture</td>
<td>1: Legacy — monolithic/proprietary</td>
</tr>
<tr>
<td></td>
<td>2: Client/server — three tiered with limited access via Web services</td>
</tr>
<tr>
<td></td>
<td>3: Thin- and no-client, Intranet or Internet-based applications — leverage Internet technology to deliver connectivity to the EMR across the organization and into the community</td>
</tr>
<tr>
<td>Scalability: users</td>
<td>1: 100 users or fewer</td>
</tr>
<tr>
<td></td>
<td>2: 101–999 users</td>
</tr>
<tr>
<td></td>
<td>3: 1,000 users or more</td>
</tr>
<tr>
<td>Scalability: data capacity</td>
<td>1: Terabytes</td>
</tr>
<tr>
<td></td>
<td>2: Tens of terabytes</td>
</tr>
<tr>
<td></td>
<td>3: Hundreds of terabytes</td>
</tr>
</tbody>
</table>
## Fit to Market Needs Assessment - II

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hardware platform support</strong></td>
<td>1: Support for wired devices; no support for wireless devices without customization</td>
</tr>
<tr>
<td></td>
<td>2: Support for wireless devices, tablets, and COWs; requires configuration and/or middleware</td>
</tr>
<tr>
<td></td>
<td>3: Support for wireless devices, tablets, COWs, and PDAs without configuration or middleware</td>
</tr>
<tr>
<td><strong>Breadth of services</strong></td>
<td>1: Limited capabilities in maintenance, support, implementation, and training</td>
</tr>
<tr>
<td></td>
<td>2: Broad capabilities (those services listed in number 1 above plus integration with major applications)</td>
</tr>
<tr>
<td></td>
<td>3: Full service capabilities (those services listed in number 2 above plus strategic consulting and change management) with global delivery</td>
</tr>
<tr>
<td><strong>Service quality</strong></td>
<td>1: Inferior service quality; vendor may be the only service provider for the product</td>
</tr>
<tr>
<td></td>
<td>2: Average service quality</td>
</tr>
<tr>
<td></td>
<td>3: Extensive service offering; vendor guarantees performance and is willing to gain share/accept penalties</td>
</tr>
<tr>
<td><strong>Pricing arrangements</strong></td>
<td>1: Complex user purchase requirements; multiple products and licenses required for each user</td>
</tr>
<tr>
<td></td>
<td>2: User-based pricing; single price for all required components</td>
</tr>
<tr>
<td></td>
<td>3: Enterprise pricing; simple administration</td>
</tr>
<tr>
<td><strong>Implementation cost</strong></td>
<td>1: High cost of implementation, &gt;3x license</td>
</tr>
<tr>
<td></td>
<td>2: Implementation cost average relative to industry, 2–3x license</td>
</tr>
<tr>
<td></td>
<td>3: Low cost of implementation, &lt;2x license</td>
</tr>
</tbody>
</table>

Source: Health Industry Insights, 2008
# Ownership Confidence Assessment

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier's market share</td>
<td>1: Not a top 10 share</td>
</tr>
<tr>
<td></td>
<td>2: Top 10 vendor in segment</td>
</tr>
<tr>
<td></td>
<td>3: Top 3 vendor in segment</td>
</tr>
<tr>
<td>Supplier's profitability</td>
<td>1: Not profitable</td>
</tr>
<tr>
<td></td>
<td>2: Profitable/privately held/publicly held on a minor exchange</td>
</tr>
<tr>
<td></td>
<td>3: Profitable/publicly traded on major exchange</td>
</tr>
<tr>
<td>Supplier's R&amp;D investment level</td>
<td>1: &lt;15% of annual revenue</td>
</tr>
<tr>
<td></td>
<td>2: 15–19% of annual revenue</td>
</tr>
<tr>
<td></td>
<td>3: &gt;19% of annual revenue, or 15–19% of revenue with exceptionally well-targeted investment</td>
</tr>
<tr>
<td>Customer satisfaction with implementation</td>
<td>1: Vendor has difficulty producing positive references</td>
</tr>
<tr>
<td></td>
<td>2: Small number of positive reference accounts</td>
</tr>
<tr>
<td></td>
<td>3: Most customers rate implementation positively</td>
</tr>
<tr>
<td>Customer satisfaction with ongoing support</td>
<td>1: Vendor has difficulty producing positive references</td>
</tr>
<tr>
<td></td>
<td>2: Small number of positive reference accounts</td>
</tr>
<tr>
<td></td>
<td>3: Most customers rate ongoing support positively</td>
</tr>
</tbody>
</table>

Source: Health Industry Insights, 2008
Reference Interviews: Inpatient EMR

- Spoke with CIOs at hospitals with recently-implemented inpatient EMRs using the systems provided by the vendors under discussion

- Reference demographics:
  - Smallest was 20 bed community hospital
  - Largest had 1500 beds
  - 50% of the inpatient EMR user hospitals we spoke with had 100 beds or fewer

- Representative feedback, de-identified as to organization and inpatient EMR vendor
Reference Feedback: Initial Objectives for Inpatient EMR Implementation

- Improved quality of care/reduction in medical errors
  - Improve medication safety record

- Streamline documentation and increase productivity in clinical staff, reduce paper costs
  - Efficiency
  - Performance

- Ease of access for information

- Universal access to information

- Support clinical workflow and decision making

- Continuity of care across community
  - Status
  - Billing

- Uplift in revenue

- Get on board – this is the direction healthcare is going in
Reference Feedback: Inpatient EMR Implementation Hurdles

- Getting staff on board
- Practices and processes for using the technology
  - Challenge to change practices, not just to use the software
  - Incorporating software into clinical practices
  - More choices than paper-based order sets
- Ease of integration
  - With radiology, pharmacy, medication administration, PACS, billing and patient administration
  - With other applications in the suite – important to evaluate sign-on, data integration even with single supplier
- Immature functionality and applications
- Awkward workflows
  - Multiple sign-ons
  - Access to information from chart
Reference Feedback: Implementation Hurdles, Community Hospitals

- Cost to maintain the system
  - Infrastructure costs, hosting, servers and storage
  - Control of unexpected costs during implementation
  - Budgeting for ongoing maintenance costs

- Limited resources for change management

- Retaining system/analyst staff (IT issue)

- Shifting focus by facility

- Competitive pressures between local hospitals
Reference Feedback: Important Features and Functionality

- Flexibility surrounding designing of screens, documentation layout, formatting of transcribed reports, results viewing, graphs – and the ability to easily do it ourselves (IT)
  - Ease of use for configuration options
  - Documentation screens
  - Configurability of system processes, care plans, measures, alerts
  - Software quality – product, new functionality, updates and fixes
  - Release frequency
  - Training and documentation

- Web-enabled

- Customer support – expertise as well as availability

- Navigation efficiency – single sign-on? how many clicks?
Short List Vendor Assessment

- Designed to provide an easily understandable tool that facilitates a technology buying decision process
- Presented in a 2 by 2 graphic in order to quickly communicate the relative position of each technology supplier
- Further information about the assumptions behind each vendor's position are included in the full short list evaluation report, available at http://www.healthindustry-insights.com/HII/getdoc.jsp?containerId=HI211721
- Insights analysts are available to consult with technology buyers individually
- Insights analysts can customize the Short List tool to address the specific needs of each organization
Inpatient EMR Vendor Assessment

The top right quadrant represents those vendors who rated highest based on our assessment criteria.
Essential Guidance – IT Selection

- With numerous applications available, hospitals of all sizes need to consider their clinical EMR needs through the lens of their:
  - Organizational goals
  - The functionality they have already invested in
  - Their own strengths and weaknesses (clinical and IT)
  - The architecture and infrastructure they can readily support
  - The resources that are available for projects

- The fit of an application with their existing clinical and IT environment is critical for inpatient EMR selection. Key factors include:
  - Organizational readiness
  - Clinical staff buy-in
  - Budget
  - IT strategy

- The convenience of a single-vendor solution needs to be considered in light of the potential benefits from selecting best-of-breed applications in clinical areas

- Service-based delivery and hosted options should be considered in order to reduce infrastructure burdens
Essential Guidance – Process Improvement

- Process improvement and clinical transformation are tied closely to the ability of an organization to meet the goals of an EMR project.

- Components for successful process improvements include:
  - Evaluating process redesign as appropriate.
  - Involving clinical leadership from the outset.
  - Having appropriate change management processes in place, including strong leadership, and team-based approaches.
  - Ensuring that process redesign decisions are optimally designed for the facility, well understood and accepted by clinical stakeholders.
  - Providing all staff with appropriate training on new applications and processes.
  - Recognizing that attention needs to be paid to change management, and that expert advice on best practices may be key to making changes happen successfully.

- In many cases, EMR implementations that fail, don't hit adoption targets, or face strong resistance from staff failed to provide the underlying support in the form of training, preparedness, and support during the initial stages of implementation.
Essential Guidance – Small and Midsize Hospitals

- Don’t look only at “small hospital” vendors
  - Small hospitals should look outside the vendors traditionally thought to serve this market
  - Non-traditional vendors may offer small hospitals more functionality and other efficiencies that make up for higher cost in some areas

- Consider all of the costs – not only license fees
  - Training
    - Training costs
    - Training time - an application that is easy to use can lower the opportunity costs of implementation by getting staff using the application sooner and reducing training time
  - Configuration options – highly configurable applications can reduce the cost and delays associated with custom coding during implementation, and require less process modification
  - Support cost and complexity - service-based delivery models such as hosting and ASPs can be explored to lower up-front acquisition costs and ongoing support charges
  - Integration costs
    - Single suite options lessen the need for integration
    - Service-oriented architecture can create efficiencies and reduce integration costs for best-of-breed applications
Notes of Interest

- Subscribe to our free newsletter!
  - Register on www.healthindustry-insights.com

- Hear Janice Young speak at AHIP Conference (June)


- Judy Hanover’s report on Ambulatory EMR will be published in June
  - To be personally notified when the research publishes, send an e-mail to: agracey@healthindustry-insights.com
    - Ask to be notified when it’s available

- Check for new research on www.healthindustry-insights.com, under the “research” tab

- Contact Judy Hanover at: jhanover@healthindustry-insights.com
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