The HIMSS Analytics EMR Adoption Model and the New Ambulatory EMR Adoption Model

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What Is HIMSS Analytics?

- A not-for-profit subsidiary of the Healthcare Information and Management Systems Society (HIMSS).
- Dedicated to providing comprehensive *healthcare data, analysis and research* to lead health transformation through effective use of IT
- Collects data related to IT product deployment and plans for deployment, IS department composition, costs and management metrics, healthcare trends and purchasing decisions.
- Data on 5,314 US non-Federal hospitals and the entities they own (LTC, ambulatory practices, home care, etc)
  - Approximately 25,000 ambulatory facilities
- Research supports improved decision-making for healthcare providers, healthcare IT companies, consulting firms, government agencies and pharmaceutical companies

Why Does HIMSS Analytics Collect This Data?

- Supports HIMSS's Global Advocacy role - HIMSS advocates for healthcare IT as a means to improve quality and efficiency
  - Backs up our testimony at state & national dialogues
  - Adds weight & credibility
- Thought leadership based on EMR Adoption Models (EMRAM)
- Publish annual reports providing deeper dive into the data for both the Canadian and US markets (e.g. "Essentials", "Annual Report")
- Provides Primary Market Research on contract basis to providers, vendors and consultants across North America, Europe & AsiaPac

History of Acute EMRAM

- The concept of a Capability Maturity Model, which can be applied to many IT processes, has existed for years.
  - Registered with the U.S. Patent and Trademark Office by Carnegie Mellon University (CMU) and refers to a development model that was created after study of data collected from organizations that contracted with the U.S. Department of Defense[1]
- The HIMSS Analytics EMRAM is a type of maturity model applicable for acute/inpatient and ambulatory/outpatient care
  - Acute EMRAM created in 2005, first published for U.S. in 2006
  - Ambulatory EMR Adoption Model to debut in 2012

[1] http://**en.wikipedia.org/wiki/Capability_Maturity_Model** **May 30, 2011**

Why Would A CIO Participate in this Annual Survey?

- Benchmarking
- 48 Hospital reports
- 19 IDS level reports
- Compare by revenue, bed size, FTE, etc ….
- *Ad Hoc* report writer capability also

EMR Adoption Model℠
2011 Q2 – Q3

		2011 Q2	2011 Q3
Stage 7	Complete EMR; CCD transactions to share data; Data warehousing; Data continuity with ED, ambulatory, OP	1.1%	1.1%
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), full R-PACS	4.0%	4.4%
Stage 5	Closed loop medication administration	6.1%	7.1%
Stage 4	CPOE, Clinical Decision Support (clinical protocols)	12.3%	13.2%
Stage 3	Nursing/clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology	46.3%	46.1%
Stage 2	CDR, Controlled Medical Vocabulary, CDS, may have Document Imaging; HIE capable	13.7%	12.6%
Stage 1	Ancillaries – Lab, Rad, Pharmacy – All Installed	6.6%	5.9%
Stage 0	All Three Ancillaries Not Installed	10.0%	9.6%

Data from HIMSS Analytics™ Database

N = 5310/5299 ©2011 HIMSS Analytics

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The New Ambulatory EMRAM

Data Collection Began

October 2011

Objectives of the A-EMRAM

- To measure IT Adoption in the ambulatory world
  - For tethered and non tethered practices alike
  - Will serve North America, Europe, Middle East, Asia
- "Push the market"
  - Stage 7 should be obtainable with today's software from leading edge suppliers
  - But we do not expect many to make it soon
- Covers the key items that we address at Stage 7
    - HIE participation
    - Medical Device Interface
    - Clinical and Business Intelligence

Stage 0

- Stage 0 – no EMR at all
  - Could have a practice management system for billing, but no EMR

0. Paper Charts
Paper charts are the only means of storing and accessing clinical information (even if there is a computerized billing system).
Web browsers are not routinely used for any clinical purposes. Much of the information is obtained with phone calls to hospitals and the use of faxed or courier delivered results.
Physician notes still handwritten.

Stage 1

- The first use of computers for access to information, but not stored in a patient centric CDR
- Multiple data sources searched with no permanent patient record storage electronically – paper based

1. Desktop access to clinical information, unstructured data, multiple data sources, intra-office/informal messaging
Electronic access on physician and/or nurse desktops to online reference material, eligibility information, lab results, etc. This allows the review of results in an on-line basis although they may be inquiring into multiple database i.e. laboratory outreach, hospital and other services.
Electronic storage of chart notes after transcription, but notes are only free text. Accessible from multiple computers via local area network.
Electronic messaging for informal, unstructured intra-office communication.

Stage 2

- First appearance of a patient centric CDR for core EMR functionality and data storage
- Computer use at point of care is optional, occasional

2. Beginning of a CDR with orders and results, computers may be at point-of-care, access to results from outside facilities
Electronic access to data for results review is available within the EMR from an outside facility (e.g. hospital, laboratory, or diagnostic imaging center).
Computers may be at point-of-care for use by nurses in charting or order entry, but use is partial or optional
Beginnings of a clinical data repository containing orders and results.

Stage 3

- Problem lists, e-prescribing expected
- Reminders to staff pertaining to patients (not to patients directly)
- Physician notes dictation/ transcription or VR with text results scanned to chart with link
- Links to in-office results such as EKG waveform, images
- No CPOE required

Stage 3

3. Electronic messaging, computers have replaced the paper chart, clinical documentation and clinical decision support
Physicians are generating an electronic problem list from their EMR.
Electronically assisted ordering of drugs for new medications and refills with basic drug interaction clinical decision support.
Electronic messaging is the standard means of intra-office clinical collaboration.
Computers have replaced the paper chart, and may be used at the point-of-care (or documentation may be conducted at clinical workstations) - Electronic charting includes height, weight, blood pressure, temperature, etc.
Reminders to staff for required testing or inoculations (e.g. colonoscopy or mammogram – personal information reminders).

Stage 3, continued

3. Electronic messaging, computers have replaced the paper chart, clinical documentation and clinical decision support
Medication reconciliation functions exist to update and validate the active medication list when a patient has crossed care settings
Text dictation software with voice recognition capability used to document current encounter procedures
Exam results sanned and attached to patient record
EKG digital waveform file linked with digital text results and incorporated into electronic record

Stage 4

- CPOE required, physician documentation with structured templates required
- First use of HL-7 inbound results that are stored in the record as discrete data
- Full clinical charting
  - Charting of vitals on line can lead to electronic growth charts
- Summary of care record able to be exchanged externally in CCR,CCD format
- External reporting to state/regional immunization registries and for syndromic surveillance data in the format required by the agency

Stage 4

4 - Capture and storage of structured data for accessiblity in EMR and internal and external sharing of data.
All types of medical orders are electronic and entered by an authorizing provider. Orders may include medication management - electronic prescribing, maintaining medication lists, refill tracking, with some advanced clinical decision support that may include drug/drug, drug/allergy, drug/lab, and drug/food interactions before the patient leaves the office.
Electronic secure messaging is increasingly relied upon for clinical collaboration for consult, referral and patient communication
Physician documentation is electronic with the use of structured templates
Ability to incorporate current encounter procedures into standardized format (e.g., CCD, CCR)
Textual/data exam results returned electronically in formats such as PDF, CCR, CCD, and
Textual/data exam results may be returned vial HL7 transactions and stored directly in patient records
Ability to transmit standardized format (e.g. CCD, CCR) or other standardized individual components of patient's electronic record for summary reporting in transitions of care

Stage 4, continued

4 - Capture and storage of structured data for accessiblity in EMR and internal and external sharing of data.
All data from the hospitals and laboratory outreach are sent back to the physicians EMR and placed in their on-line records as discrete data. All lab results are electronically imported and stored in structured form (e.g. LOINC, SNOMED). This allows for easy access of information. Integrated hospital information exchange (one workstation can access clinic and hospital data seamlessly)
Capture of some structured data from within encounters (vital signs, immunizations, BMI, etc.) leading to ability to create electronic growth charts
The ability to create and exchange key clinical information including summary of care record containing problem lists, medication lists, medication allergies and diagnostic test results with other care providers.
Reporting of patient data to immunization registries (e.g. disease or device)
Capability to submit electronic syndromic surveillance data to Public Health agencies

Stage 5

- Offering a Patient Portal
- Summary record electronically upon request
- CPOE to external entities

5 - Patient Portal, Electronic Exchange of Information for Lab Outreach, Advanced CDS
Provides patient specific medical education content
Provides data to support and maintain personal health information services for patients (e.g. electronic chart, clinical summaries), and provide to patient electronically upon request.
Maintenance of an online tethered patient portal allowing the patient to see personal health information, pay bills, request a schedule, request an appointment, etc.
Electronically assisted ordering to the hospital or laboratory outreach. The orders flow from the EMR to the third party organization(s) and are captured in a patient order list

Stage 6

- Advanced CDS such as protocols and reminders to support clinical guidelines
- Medical device connectivity with rules based output interpretation

6 - Proactive care management, structured messaging, intelligent medical devices,
Advanced clinical decision support such as protocols, preventive care reminders based on diagnoses, medications, results, and orders. Patient follow-up flags can be set by provider.
Structured messaging between physician, physician staff and payers for automation of disease management cases & communication and reminders to support clinical guidelines.
Output from diagnostic and intelligent medical devices are incorporated directly into patient's EMR
Receipt of diagnostic results trigger relevant clinical alerts and clinical guidance/recommended care. Some degree of rules-based clinical intrepretations of output data from diagnostic devices is provided

Stage 7

- Full community health record participation with multiple providers, vendors
- Automated reminders to patients triggered from internal as well as external providers through community HIE
- Data mining capability with compliance reporting
- >95% CPOE
- Objective data will be derived from the survey which will point to “Stage 7 candidates”
  - Final approval of Stage 7 upon on-site validation

Stage 7

7 -Clinical and business intelligence, HIE capability/Community Health Record
Capability for an interconnected regional/community of physicians, hospitals, lab companies, health plans, pharmaceutical industry, imaging companies and patients to easily share and exchange information and collaborate for improved patient care. Must be capable of exchanging data across multiple vendor platforms.
Ability to update the patient's EHR where there is a community-based HIE
Patient follow-up recommendations are compared to care rendered by all providers with access to the community-based EHR and variance and compliance alerts are generated
Ability to mine normalized data for clinical research and improved outcomes from the EMR and community-based EHR
Physicians are entering > 95% of all medical orders directly into the EMR

Bonus Questions

- These might be required some day
  - Context aware access to drug bulletins fires patient specific alerts
    - e.g., FDA & Pfizer issue some alert pertaining to a drug; system responds with rules related to specific patients
  - Genomics profiling fires order alerts
    - Genomics results indicate Coumadin is the inappropriate medication or dose, alert fires related to specific patients
  - Remote device monitoring
    - Weight scales that send your weight to pulmonologist

What Is Next for the A-EMRAM?

- We have been collecting Version 1 questions for over two years
- Based on feedback, we have added additional questions
- The additional questions need to be added to the survey so that we can “populate” the model with the survey answers
  - We are at least four to six months away from being able to publish data in this new model

Conclusion

- HIMSS Analytics wishes to “push the market”
- Northern Europe and southern Asia are way ahead of the US with A-EMR deployments
  - The eastern provinces of Canada are also very advanced in A-EMR deployment
- We will develop a Stage 6 and Stage 7 validation process in due time

What Will the Data Look Like?
Ambulatory EMR Adoption Model℠

2012 Final

DRAFT

Stage 7	Community Health Record Participation with Rules, Clinical & Business Intelligence		0.0%
Stage 6	Medical Device Connectivity, Advanced CDSS to Support Protocols & Health Maintenance		0.0%
Stage 5	Patient Portal, Electronic Exchange of information for Lab Outreach		0.0%
Stage 4	CPOE, full CDSS for e-prescribing, full electronic charting of encounter		0.0%
Stage 3	Computers Have Replaced the Paper Chart, Initial Nursing Documentation		0.0%
Stage 2	CDR with Orders and Results, Computers May Be at Point-of-Care		0.0%
Stage 1	Some Computers, Unstructured Data, Data in Multiple Places		0.0%
Stage 0	Paper chart based		0.0%

Data from HIMSS Analytics™ Database

Thank You for This Opportunity

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