



Stage 6 Hospitals: The Journey and the Accomplishments

by Mike Davis, HIMSS Analytics

Stage 6 Hospitals: The Journey and the Accomplishments

Mike Davis, HIMSS Analytics

Introduction

HIMSS Analytics created the Electronic Medical Record Adoption Model (EMRAM) to provide a methodology for evaluating the progress and impact of electronic medical record (EMR) systems¹ for acute care delivery environments. The introduction of the EMRAM by white paper in 2005 and the subsequent research update in 2006², has led HIMSS Analytics to extend the EMRAM research to correlations with quality of care³. Continuing research will evaluate the impact of the EMRAM on financial components of acute care delivery environments.

As we continue to study the EMRAM and its impacts to various components and functions of acute care delivery, we immediately recognize that some hospitals have achieved IT environments that support higher levels of automated patient care delivery as depicted by the EMRAM graphic (see Figure 1). Approximately 26.5 percent of hospitals have achieved EMRAM levels of Stage 3 or higher, but only 0.3 percent of hospitals have achieved Stage 6 capabilities (HIMSS Analytics Database). Stage 6 hospitals have achieved a significant advancement in their IT capabilities that positions them to successfully address many of the upcoming industry transformations we will be experiencing in the near future (e.g., HIPAA Claims Attachment, pay for performance, and government quality reporting programs).

Stage 6 hospitals are also well positioned to provide data to key stakeholders (e.g., payers, the government, physicians, consumers, and employers) to support electronic health record (EHR) environments and regional health information organizations (RHIOs). The path to achieving Stage 6 is not an easy one. Stage 5 (the closed loop medication stage) is the most costly in terms of both capital investment and labor investment. Stage 5 of the EMRAM model requires the tight coupling of computerized practitioner order entry (CPOE), the pharmacy management system (including the automated dispensing cabinets), and the electronic medication administration record with either bar coding or radio frequency identification (RFID) technology to ensure that the five rights of medication administration are executed and monitored via automation. Not only is the application and technology integration challenging, but the process re-engineering projects touch several key clinician groups – physicians, nurses, and pharmacists.

Stage 4 requires the implementation of CPOE in at least one service area of the hospital, after

¹ As denoted in the ISO Technical Committee 215 specifications for EHR definitions – more specifically identified with the local EHR in those specifications.

² “**Electronic Medical Records vs. Electronic Health Records: Yes, There Is a Difference.**” A HIMSS Analytics™ White Paper; By Dave Garets and Mike Davis; Updated January 26, 2006

³ “**EMR Sophistication Correlates to Hospital Quality Data: Comparing EMR Adoption to Care Outcomes at UHC Hospitals, Including Davies Award Winners, Using HIMSS Analytics’ EMR Adoption Model Scores.**” By Dave Garets, Mike Davis, Pat Becker, et. al.; 2006

nursing applications have been implemented (Stage 3). The press is littered with examples of challenges related to CPOE implementations. Therefore, the path to Stage 6 is challenging to say the least. This white paper is focused on evaluating Stage 6 hospitals to provide a path or guideline for other hospitals to evaluate as they continue their journey to improve care delivery through the advancement of IT solutions by achieving higher EMRAM stages.

Stage 6 Hospitals

This study does not include all Stage 6 hospitals in the HIMSS Analytics™ Database – it only represents the hospitals we were able to validate since June 2007. Stage 6 hospitals may only be running all of the Stage 6 EMRAM applications in one service area – most hospitals are implementing EMR capabilities incrementally versus the “big bang” approach (all services at one time). The database is constantly updated and therefore, some hospitals may have achieved Stage 6 in the EMRAM scoring over this period.

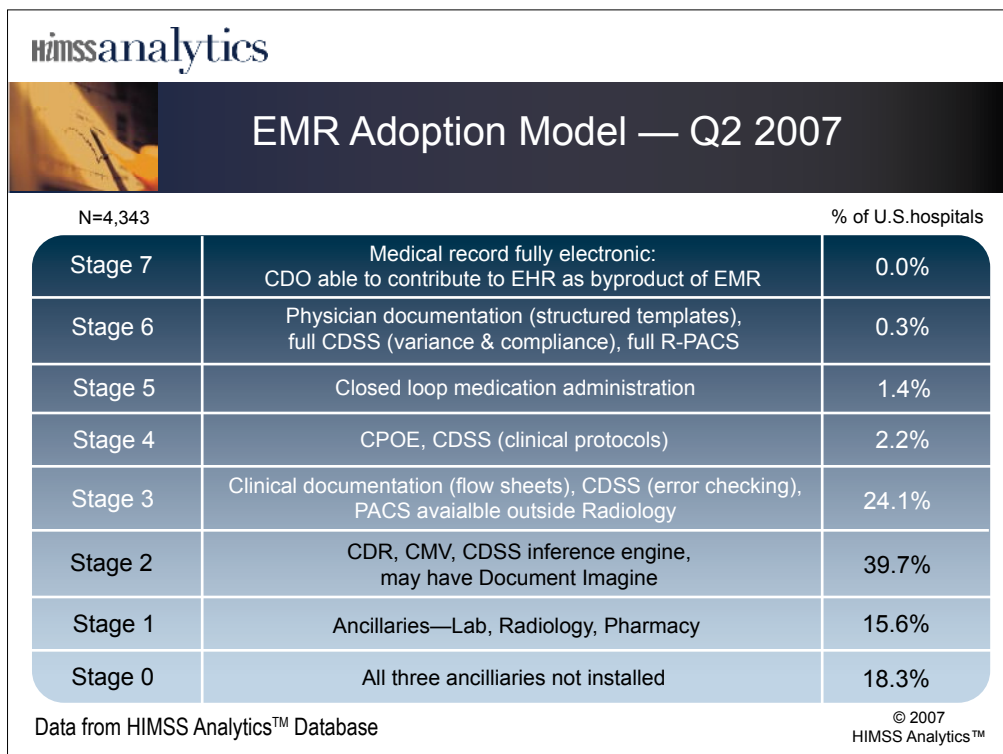


Figure 1

There are Stage 4 hospitals that will automatically achieve Stage 6 once they achieve Stage 5, because they have all of the radiology PACS modalities implemented and they have physician documentation with structured templates that capture discrete data in operation in at least one service – the requirements for Stage 6. We were also able to identify a Stage 6 hospital that did not have time to participate in the validation process because they are moving their operations to a new facility.

The Stage 6 hospitals that are profiled for this study represent general medical/surgical and academic hospitals of integrated delivery systems, and one single hospital system. Several enterprise EMR vendors are also represented in Stage 6 hospitals, but our focus for this study will be on the governance, investment, staffing, and accomplishments that were manifested by this elite group of hospitals. The hospitals that have achieved validated Stage 6 EMRAM status to date are:

- **Our Lady of the Lake Regional Medical Center, Baton Rouge, La.;** IDS – Franciscan Missionaries of Our Lady Health System, Inc.; general medical/surgical; 763 licensed beds/687 staffed beds; 28 operating rooms; 68,350 emergency visits; 129,994 adjusted patient days/year. CEO – Mr. Robert C. Davidge; CFO – Mr. Robert Ramsey; CIO – Mr. Gary Jump.
- **Newport Hospital, Newport, R.I.;** IDS – Lifespan; general medical/surgical; 148 licensed beds/148 staffed beds; five operating rooms; 31,193 emergency visits; 24,000 adjusted patient days/yr. CEO – Mr. Arthur J. Sampson; CFO – Ms. Mamie Wakefield; CIO – Ms. Carole M. Cotter.
- **Clarian North Medical Center, Carmel, Ind.;** IDS – Clarian Health; general medical/surgical; 154 licensed beds/154 staffed beds; 16 operating rooms; 8,932 emergency visits; 43,975 adjusted patient days/yr. CEO – Mr. Jonathan Goble; CFO – Mr. Randall Yust; CIO – Mr. Richard Johnson.
- **St. Clair Hospital, Pittsburgh, Pa.;** single hospital system; general medical/surgical; 329 licensed beds/303 staffed beds; 11 operating rooms; 50,564 emergency visits; 132,850 adjusted patient days/yr. CEO – Mr. James Collins; CFO – Mr. Richard Chesnos; COO – Mr. Thomas Ague; CIO – Mr. Richard Schaeffer.
- **Evanston Northwestern Healthcare, Evanston, Ill.;** IDS – Three hospitals and 68 ambulatory clinics; 858 licensed beds/677 staff beds/36 operating rooms; 93,591 ER visits; 369,572 adjusted patient days. CEO – Mr. Mark Neaman; CFO – Mr. Thomas Hodges; CIO – Mr. Tom Smith. This organization was the winner of the ASHP Award for Medication Safety in 2006.
- **Memorial Health University Medical Center, Savannah, Ga.;** single hospital system; academic, 530 licensed beds/471 staff beds; 21 operating rooms; 83,968 emergency visits; 252,043 adjusted patient days/yr. CEO – Mr. Robert Colvin; Interim CFO – Mr. Phil Norris; CIO – Ms. Patty Massey.

Stage 6 Hospitals — Financial Profiles

The total revenue metrics for Stage 6 hospitals ranged from a little less than \$100 million to over \$1 billion. Two Stage 6 hospitals are running slight revenue deficits due to excess of expenses, but the majority are profitable – some to the tune of tens of millions of dollars in their last fiscal years. What the EMRAM model doesn't measure is how effectively these hospitals are using

the EMR applications to improve care delivery, or how efficiently the process has been tuned to take advantage of the EMR applications. We believe that as Stage 6 hospitals become more experienced and proficient with their EMR applications, they will achieve even greater benefits and value.

The IT budgets of Stage 6 hospitals provide some significant insights into the how budgets are transformed once Stage 6 is accomplished. The average ratio of IT capital budget to IT operating budget for this group is 30 percent, and the median ratio of IT capital budget to IT operating budget is 34 percent. Hospitals that are still implementing major EMR applications will have much higher ratios as they are still budgeting significant capital to extend their EMR capabilities. This is especially true for Stage 5 of the EMRAM model.

The average total capital expenditure to reach Stage 6 for the academic facilities was \$58 million, while the average for the general medical/surgical facilities was \$7.4 million. The average duration for all facilities to achieve Stage 6 starting from the initial EMR project launch was seven years.

Stage 6 — IT Staffing

The total IT staffing for Stage 6 hospitals ranged from six to over 140 full-time equivalents (FTEs). The shops running low numbers were part of remote hosted IT environments.

Outsourced IT positions ran as high as 65 people at one site for supporting older legacy applications, but the majority of Stage 6 hospitals also have some IT functions that are outsourced including help desk, desktop, security, mainframes, and legacy application support. Contract IT staff was used by only two Stage 6 organizations. Clinical IT staff ranged from 11 to 47 FTEs. The average ratio of clinical IT FTEs to total IT FTEs for all Stage 6 facilities is 28 percent, while the median ratio of clinical IT FTEs to total IT FTEs is 23 percent.

Stage 6 Hospitals — Physician and Governance Environment

All Stage 6 hospitals used hospitalists in their care delivery environments. The number of hospitalists by facility ranged from three to 31. Three Stage 6 hospitals have CMIOs. These results show a trend we have been watching where hospitals are hiring hospitalists to use and drive the adoption of EMR applications among physicians.

We believe this trend is in the early adoption phase of the market, but could move to the rapid adoption phase of the market within the next five years.

Executive sponsors for the EMR projects at Stage 6 hospitals are quite similar. Chief executive officers (CEOs) or a combination of CMO/CMIO/CNO/CIO were the executive sponsors of the EMR in the Stage 6 organizations. The steering committees for the EMR projects are quite diverse in structure and included:

- Standard technical committee and a clinical steering committee that both roll up

- to the senior management team (which includes the CIO).
- Project steering, corporate steering, and affiliate steering committees.
- EMR steering committee that includes most of the key clinicians (e.g. CNO, CMO, clinical department heads).
- EMR steering committee of physicians, nurses, HIM, and IT management.
- IT steering committee of CEO, CFO, CIO, COO, CNO, CMIO, president of the hospital group, and president of the medical group.
- IT steering group consisting of the CMIO, CIO, CMO, and VP of Quality.

What is apparent from these steering committees is that they are well represented by top management and executive clinicians.

Stage 6 Hospitals — Clinician Usage

For this group of Stage 6 hospitals, all but one hospital has 100 percent of their medical orders being created and managed electronically; that hospital projects that 82 percent of their orders are electronic. The percentage of physicians entering orders varies from 1 percent to 100 percent.

The general medical/surgical facilities tend to have lower physician usage of CPOE as they are more likely to incrementally implement this application in their organizations, but one of the general medical/surgical facilities has all physicians using CPOE. One hospital with 100 percent electronic order entry has only 4 percent of the physicians entering their own orders – this facility still has ward clerks that enter orders.

The percentage of physicians using clinical documentation with structured templates ranged from two cardiologists in one facility to 100 percent of hospitalists, affiliated physicians, and emergency department (ED) physicians in another facility. In the majority of the Stage 6 hospitals the physician documentation is focused on cardiology or ED functions and represents another incremental adoption strategy for getting physicians to use this automation.

Stage 6 Hospitals — The Path to Paperless

When asked the percentage of their chart that is electronic, the results ranged from 80 percent to 100 percent for Stage 6 hospitals. Hospitals that have 100 percent electronic medical records reported a range for discrete data and document image components that represented 80 to 95 percent discrete data, and from 5 to 20 percent document imaging components.

Document imaging solutions will be a required component of the paperless environment, but hospitals will need to assess what data is required to be discrete data elements in the EMR to ensure the most effective clinical decision support, workflow, and protocol management.

Stage 6 Hospitals — Clinical Achievements

Stage 6 hospitals have achieved significant improvements in care delivery, and in operational efficiency. Among the improvements:

- **Elapsed time from medication orders to medication dispensing.** The Stage 6 benchmarks in this area appear to be 15 to 20 minutes for routine orders, and less than 10 minutes for STATS.
- **Diagnostic report turn-around.** The Stage 6 hospitals are reporting turn-around times in minutes instead of hours.
- **Medication errors.** Stage 6 hospitals are finding more medication errors, but are also able to show significant reductions in medication errors. In one case a hospital has prevented 170 wrong patient errors; 1,500 wrong drug errors; 203 wrong dose errors; 2,947 wrong time errors; and 26 wrong route errors out of 158,684 administered doses. Another facility reports that 42 percent of errors attributed to handwriting have been eliminated, and omitted drugs have been reduced by 70 percent.
- **Reduction in agency nurses.** Two facilities reported a reduction in the use of agency nurses, and one facility does not currently use agency nurses. One facility reports that approximately \$2 million of agency nursing costs has been eliminated at their facility.
- **Reduction in nursing overtime.** Only one facility reports a reduction in nursing overtime that has resulted in a \$300,000 annual savings. Most of the Stage 6 hospitals report they have not seen any reduction in nursing overtime. One of the facilities reported that since nurses are documenting at the bedside, the time saved is being used for patient care. One organization reported that nursing overtime is actually increased. It is apparent from the diversity of results that regional and competitive environments will continue to produce varied results on this subject.
- **Length of Stay (LOS).** The Stage 6 hospitals sharing metrics in this area had either reduced their LOS metrics or maintained the same LOS metrics with increasing census and acuity. HIMSS Analytics is conducting research on the correlation of EMRAM stages/scores and LOS that is projected to be published in September 2007. What we are finding to date is a reverse correlation – higher EMRAM stages/scores have a reverse correlation to LOS (the higher the score the lower the LOS).
- **Billing.** This question was asked relative to the HIPAA Claims Attachment regulations that will be effective within the next 24 to 36 months. Currently one Stage 6 hospital reports a reduction in the time it takes to post both inpatient and outpatient bills. Another hospital reports improvements in charge capture.

- **Coding.** One hospital reported that service coding was now performed from employees that are home based and that they believe there is a relationship between this capability and their EMR. Another Stage 6 hospital reported that it has reduced its uncoded accounts to 5.24 days, while another facility reported that its case mix index improved from 1.39 to 1.47 from 2002 to 2006.
- **Discharged-Not-Final-Billed (DNFB).** One Stage 6 hospital reported a drop of 6.9 days in DNFB from 2002 to the current year to date. Reductions in DNFB have a significant impact on accounts receivable days/billing/claims submission/cash flow metrics.
- **Claims Denials.** Coding denials at one facility dropped from 9.2 to 2.2 percent and overall denials dropped from 23 to 10 percent.
- **Improvements in Physician/Nurse Recruiting.** The responses for the Stage 6 hospitals ranged from “some” to “most definitely.” One facility was able to meet a goal of recruiting 100 nurses within 100 days, and staffers believe their EMR environment was a definite factor. Another organization reports that nurses who move between hospitals in the delivery system always request to return to their facility. One states that “young – new” nurses are very impressed with their EMR environment and that it is definitely a “draw.” Another facility uses this advantage in marketing campaigns against its competitors.
- **Competitive market advantages.** There were many responses given by Stage 6 hospitals in this area. Most of the responses were centered around patient safety and clinician support to facilitate better patient care with aggressive marketing of their EMR advantages to win patients via radio, TV, and Web/portal marketing programs.

Some of the other findings of Stage 6 hospitals relative to their EMR capabilities were:

- One institution reports that its CFO reported to the board that it is saving between \$7 million to \$10 million annually, above and beyond what is spent on IT to support the EMR. This is a significant financial statement for investing in EMRs.
- Forty-five percent of patients that come to one facility’s ED have a complete chart from their previous visit.
- One facility reports that it allocates 16 hours of training for each physician, and that the investment in training cannot be undervalued.

While the above findings may not be conclusive or important to every hospital, they do provide some insights into the impact that Stage 6 EMRs can have on patient safety, clinician support, improving financial operations, clinician recruitment, and marketing advantages.

Conclusion

Hospitals that have achieved Stage 6 of the EMRAM have made significant executive commitments and investments to reach this stage. Once achieved, Stage 6 hospitals appear to have a significant advantage over competitors for patient safety, clinician support, clinician recruitment, and competitive marketing for both consumers and nurse recruitment. Most of the Stage 6 hospitals have almost fully automated/paperless medical records, and are either starting to evaluate their data for care delivery process improvements, or are already documenting significant improvements in this area.

While the investments to achieve Stage 6 of the EMRAM are not insignificant, they are within reach of most hospitals. Once achieved, the IT capital budgets decline, while the IT staffing and IT operating budgets in many cases increase to support the more sophisticated clinical capabilities – but not to the total IT budget level that was in place during the implementation of the more complex EMRAM stages (e.g., Stages 3-6).

The governance models used by Stage 6 hospitals were as varied as the organizations themselves. But, the executive support needed for achieving successful EMR projects cannot be understated. It is obvious that successful governance models are based on the culture and organizational structure of the hospital. There is no silver bullet regarding the governance model required to achieve EMRAM Stage 6.

We believe Stage 6 hospitals are the best prepared for many of the market transformations that hospitals will be exposed to over the next five to ten years (e.g., HIPAA claims attachment, pay for performance, government reporting, employer-/consumer-driven healthcare). Even if the country moves to a model of “Universal Healthcare Coverage,” these hospitals are best positioned to capture and share data that will be necessary to support that model.

Another significant finding of this study is that small- to medium-sized general medical/surgical facilities have achieved Stage 6 of the EMRAM. Therefore, the long-held axiom that sophisticated EMR capabilities are only within the realm of academic medical centers is now being dispelled.

We realize that the academic medical centers represent very complex patient care environments that provide significant financial and cultural challenges for achieving Stage 6 capabilities. Academic medical centers have carried the torch for EMR advancement for too long. It is time to share this responsibility with the other segments of the market.

It is good to see the general medical/surgical hospitals pushing the envelope for adopting and advancing EMR capabilities within their environments.



© 2007 HIMSS Analytics

Requests for permission to reproduce or photocopy
any part of this report should be sent to:

info@himssanalytics.org

230 East Ohio Street | Suite 600 | Chicago, IL 60611-3269
877-364-2500 | <http://www.himssanalytics.org>