



# The State of U.S. Hospitals Relative to Achieving Meaningful Use Measurements

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# Executive Summary

The intent of this document is to provide some insights into the U.S. hospital market relative to potential adoption metrics for electronic medical record (EMR) applications, and other applications that may be required to effectively meet the American Recovery and Reinvestment Act (ARRA) funding requirements.

This document is not an authoritative guide for meeting ARRA measurements. However, it provides a perspective for hospitals to consider in their analysis of EMR strategies and actions. It is our intent that this document will help hospitals make good decisions in their EMR strategies and avoid mistakes that could be extremely detrimental as we transition U.S. healthcare delivery systems to new capabilities that lower healthcare costs while improving quality outcomes and patient safety. While this has been difficult to achieve over the last decade, we believe the industry is poised to leap to a more computerized care delivery environment that will enable effective change management/process re-engineering solutions that will drive dramatic improvements.

Ultimately, the collection of more discrete data by the government across all patient care modalities will allow the U.S. to analyze larger clinical data sets that will drive evidence-based medicine protocols and best practice guidelines that have significant positive impacts on the cost and delivery of patient care.

## EMR Adoption Model<sup>SM</sup> Trends 2007-2008

Stage	Cumulative Capabilities	2007 Final	2008 Final
Stage 7	Medical record fully electronic; HCO able to contribute CCD as byproduct of EMR; Data warehousing in use	0.0%	0.3%
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), full R-PACS	0.3%	0.5%
Stage 5	Closed loop medication administration	1.9%	2.5%
Stage 4	CPOE, CDSS (clinical protocols)	2.2%	2.5%
Stage 3	Clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology	25.1%	35.7%
Stage 2	Clinical Data Repository, Controlled Medical Vocabulary, Clinical Decision Support System, may have Document Imaging	37.2%	31.4%
Stage 1	Ancillaries – Lab, Rad, Pharmacy - All Installed	14.0%	11.5%
Stage 0	All Three Ancillaries Not Installed	19.3%	15.6%

Data from HIMSS Analytics™ Database

N = 5073/5166 ©HIMSS Analytics

## Study Methodology

HIMSS Analytics conducted a mapping between the ARRA meaningful use measurements and the stages of the EMRAM. An overview of the model and stages can be found in Appendix 1. We will also use data from the HIMSS Analytics™ Database to provide an understanding of the current adoption rates of key EMR applications in U.S. hospitals that can be used to establish the baseline necessary for market measurement. This baseline will follow the advancement necessary for the market to achieve the ARRA measurement criteria.

# Review of Market Relative to 2011 Measurements

The 2011 measurements required to achieve ARRA compliance for hospital EMR functions are mapped to the EMR application adoption rates for U.S. hospital types and bed size segments. This provides an overview of market gaps that will need to be addressed to achieve ARRA compliance.

## Improve Quality, Safety, Efficiency, and Reduce Health Disparities

### 2011 Measures:

- Report quality measures, including:
  - Percent of diabetics with A1c under control
  - Percent of hypertensive patients with BP under control
  - Percent of patients with LDL under control
  - Percent of smokers offered smoking cessation counseling (EMRAM Stage 3 for all of the above)
- Percent of patients with recorded BMI (EMRAM Stage 3)
- Percent of eligible surgical patients who received VTE prophylaxis (EMRAM Stage 3)
- Percent of orders (for medications, lab tests, procedures, radiology, and referrals) entered directly by physicians through Computerized Practitioner Order Entry (CPOE) (EMRAM Stage 4)
- Use of high-risk medications (Beer's criteria) in the elderly (EMRAM Stages 1 [Pharmacy], 3, and 4)
- Percent of patients over 50 with annual colorectal cancer screenings (EMRAM Stage 3)
- Percent of females over 50 receiving annual mammogram (EMRAM Stage 3)
- Percent of patients at high-risk for cardiac events on aspirin prophylaxis (EMRAM Stages 1 [Pharmacy] and 3)
- Percent of patients who received flu vaccine (EMRAM Stages 1 [Pharmacy] and 3)
- Percent of lab results incorporated into the EMR in coded format (EMRAM Stage 2)
- Reports stratified by gender, insurance type, primary language, race ethnicity (EMRAM Stage 3)
- Percent of all medications entered into EMR as generic, when generic options exist in the relevant drug class (EMRAM Stages 1 [Pharmacy], 3 and 4)
- Percent of orders for high-cost imaging services with specific structured indications recorded (EMRAM Stages 1 [Radiology], 3, and 4)

- Percent of claims submitted electronically to all payers (Revenue Cycle Management function)
- Percent of patient encounters with insurance eligibility confirmed (Revenue Cycle Management functions)

As noted, most of the 2011 measurements can be achieved by the appropriate implementation of Stage 3 applications to generate meaningful use output. Stage 3 of the EMRAM would require that the following applications have been implemented:

- Laboratory information system
- Pharmacy information system
- Radiology information system
- Clinical data repository
- Rudimentary clinical decision support for functions such as drug/drug interaction checking
- Electronic medication administration record (eMAR)
- Nursing documentation (for vital signs, flow sheets, and care plans) with templates that can be modified to track specific patient indicators (e.g., diabetic and last hemoglobin A1C test result and date)
- Clinical documentation for other clinicians to document patient care (e.g., physical therapy, respiratory therapy)

The current adoption rates for laboratory, pharmacy, and radiology information systems segmented by hospital bed size are depicted in the Table 1.

Hospital Bed Size	Laboratory Information System			Pharmacy Information System			Radiology Information System		
	Segment Count	Percent	Total Count	Segment Count	Percent	Total Count	Segment Count	Percent	Total Count
0-100	2,427	92.81%	2,615	2,285	87.38%	2,615	2,207	84.40%	2,615
101-200	990	99.80%	992	986	99.40%	992	961	96.88%	992
201-300	621	100.00%	621	621	100.00%	621	614	98.87%	621
301-400	396	100.00%	396	396	100.00%	396	393	99.24%	396
401-500	218	100.00%	218	218	100.00%	218	217	99.54%	218
501-600	145	99.32%	146	146	100.00%	146	146	100.00%	146
More than 600	181	100.00%	181	181	100.00%	181	181	100.00%	181
All	4,978	96.30%	5,169	4,833	93.50%	5,169	4,719	91.29%	5,169

Table 1 Source: HIMSS Analytics Database, 2nd Quarter 2009.

Table 1 depicts a market where more than 90 percent of the laboratories, pharmacies, and radiology departments have implemented information systems to improve their operational performance. Therefore, the 2011 measurements that require Stage 1 application functionality will not be a stretch for the majority of hospitals to achieve. But this is a very small component of the ARRA measurements.

The only Stage 2 requirement in the 2011 measurements is the ability to store lab results in coded formats. This will require the clinical data repositories (CDR) to store lab results in structured formats such as Logical Observation Identifiers Names and Codes (LOINC). Most U.S. hospitals have a clinical data repository as shown in Table 2, but the ability to store data in structured formats such as LOINC is where many hospitals may find deficiencies.

Hospital Bed Size	Clinical Data Repository		
	Segment Count	Percent	Total Count
0-100	1,959	74.91%	74.91%
101-200	946	95.36%	95.36%
201-300	607	97.75%	97.75%
301-400	394	99.49%	99.49%
401-500	218	100.00%	100.00%
501-600	146	100.00%	100.00%
More than 600	181	100.00%	100.00%
All	4,451	86.11%	86.11%

**Table 2** Source: HIMSS Analytics Database, 2nd Quarter 2009.

The Stage 3 applications required to achieve 2011 measurements demonstrate where the market will encounter some challenges (see Table 3).

Hospital Bed Size	Clinical Decision Support Systems (CDSS)			Nursing Documentation			CDSS Nursing Guidelines		
	Segment Count	Percent	Total Count	Segment Count	Percent	Total Count	Segment Count	Percent	Total Count
0-100	1,580	60.42%	2,615	2,285	55.07%	2,615	211	8.07%	2,615
101-200	870	87.70%	992	986	79.44%	992	151	15.22%	992
201-300	567	91.30%	621	621	83.74%	621	114	18.36%	621
301-400	364	91.92%	396	396	88.64%	396	81	20.45%	396
401-500	207	94.95%	218	218	86.70%	218	49	22.48%	218
501-600	132	90.41%	146	146	91.78%	146	22	15.07%	146
More than 600	168	92.82%	181	181	85.64%	181	42	23.20%	181
All	3,888	75.22%	5,169	4,833	69.20%	5,169	670	12.96%	5,169

**Table 3** Source: HIMSS Analytics Database, 2nd Quarter 2009.

While the majority of U.S. hospitals across all bed size segments have implemented some clinical decision support system (CDSS) capability (most likely drug/drug interactions for medication orders in pharmacy), a higher level of CDSS for nursing protocols and guidelines has been implemented by less than a quarter of the market. It is this level of CDSS that will deliver the functionality necessary to track and identify clinical conditions that require the necessary measurements documentation:

- Percent of diabetics with A1c under control
- Percent of hypertensive patients with BP under control
- Percent of patients with LDL under control
- Percent of smokers offered smoking cessation counseling
- Percent of patients with recorded BMI
- Percent of eligible surgical patients who received VTE prophylaxis
- Use of high-risk medications (Beer's criteria) in the elderly
- Percent of patients over 50 with annual colorectal cancer screenings
- Percent of females over 50 receiving annual mammogram
- Percent patients at high risk for cardiac events on aspirin prophylaxis
- Percent of patients who received flu vaccine
- Percent of orders for high-cost imaging services with specific structured indications recorded (specific to nurses, physician assistants or nurse practitioners using CPOE to enter orders in Stage 3).

The other important capability of Stage 3 nursing documentation functionality is the ability to create documentation templates that allow nurses to create the necessary addition of data elements that include the required levels of documentation for the measurement criteria. The majority of nursing documentation solutions on the market today provides this functionality, but some provide an easier means for implementing these capabilities than others.

The clinical decision support and documentation template capabilities of nursing documentation solutions need to be thoroughly evaluated by the hospital's nurse managers to determine how effectively their current or planned systems will deliver the capabilities to meet the 2011 measurement needs.

Hospital Bed Size	eMAR			Nursing Documentation		
	Segment Count	Percent	Total Count	Segment Count	Percent	Total Count
0-100	1,169	44.70%	2,615	1,440	55.07%	2,615
101-200	690	69.56%	992	788	79.44%	992
201-300	488	78.58%	621	520	83.74%	621
301-400	321	81.06%	396	351	88.64%	396
401-500	182	83.49%	218	189	86.70%	218
501-600	124	84.93%	146	134	91.78%	146
More than 600	149	82.32%	181	155	85.64%	181
All	3,123	60.42%	5,169	3,577	69.20%	5,169

**Table 4** Source: HIMSS Analytics Database, 2nd Quarter 2009.

The percent of transitions of care for which a care summary record is shared (e.g., electronic paper, e-FAX) could be met by faxing or scanning paper records and sharing them with other patient care providers during the transition of care, but the ability to create a care summary record from the EMR nursing documentation applications should be a near-term strategy for all U.S. hospitals. Again, this measurement should be met by Stage 3 requirements of the EMRAM, and is a capability of the vast majority of current acute care EMR vendors in the market today.

## Improve Population and Public Health

### 2011 Measures:

- Percent of reportable lab results submitted electronically (EMRAM Stage 2)

Hospitals will need to review both their laboratory information systems and CDRs to evaluate this function relative to the ability to transmit laboratory results to requesting parties. Most CDRs capture laboratory results for access by authorized personnel or consumers as part of their functional environment. Hospitals will need to assess whether their laboratory information systems and/or CDR environments can submit laboratory results electronically to support population and public health.

## Ensure Adequate Privacy and Security Protection for Personal Health Information

### 2011 Measures:

- Full compliance with HIPAA privacy and security laws (all EMRAM Stages)
- Conduct or update a security risk assessment and implement security updates as necessary (all EMRAM Stages)

Privacy and security relative to the Health Insurance Portability and Accountability Act (HIPAA) is required for all stages of the EMRAM model. All hospitals are very aware of the implications for failing the regulations of this act and conducting frequent reviews of their capabilities in this area.

# Review of Market Relative to 2013 Measurements

The ARRA measurements become more stringent relative to EMR capabilities in hospitals for 2013. The EMRAM mapping for 2013 measurements is as follows:

## Improve Quality, Safety, Efficiency, and Reduce Health Disparities

### 2013 Measures:

- Additional quality reports using HIT-enabled, NQF-endorsed quality measures (EMRAM Stage 3 and higher)
- Percent of all orders entered by physicians through CPOE (EMRAM Stage 4)
- Number of potentially preventable emergency department visits and hospitalizations (ideally accomplished with business intelligence and/or a clinical data warehouse that can be effectively implemented at Stage 2 or higher)
- Occurrences of inappropriate use of imaging (e.g., MRI for acute low back pain) (ideally accomplished with business intelligence and/or a clinical data warehouse that can be effectively implemented at Stage 2 or higher)
- Other efficiency measure (TBD) [EP, IP]

The majority of nursing documentation systems offered by U.S. health information technology vendors can accommodate the ability to flag and document against National Quality Forum (NQF) metrics for healthcare acquired conditions and patient safety. If hospitals do not have this set up, they need to review the procedures for creating these capabilities in their nursing documentation systems. These capabilities are components of the EMRAM at Stage 3. The one area that all hospitals will have to review is the conversion of documenting these events with ICD-10-PCS from ICD-9-CM. This will be an important component of all hospitals' strategies for converting to ICD-10-PCS by October 1, 2013.

The ability to track the percent of all orders entered through CPOE is a capability of the EMRAM Stage 4. Hospitals that have CPOE are tracking this metric today, but this is one area where hospitals will have to significantly improve adoption if they are going to meet this metric for 2013. As shown in Table 5, less than half of U.S. hospitals have CPOE (the majority of the hospitals under 200 beds are responsible for this low number), less than five percent are mandating CPOE use by their physicians, and approximately 11 percent of physicians managing patients in hospitals are using CPOE. The percentage of physicians using CPOE will increase as more hospitals hire hospitalists who will be mandated to use CPOE.

Hospital Bed Size	CPOE			CPOE Mandated by System			Physicians Using CPOE		
	Segment Count	Percent	Total Count	Segment Count	Percent	Total Count	Segment Count	Percent	Total Count
0-100	818	31.28%	2,615	36	1.38%	2,615	139	5.32%	2,615
101-200	486	48.99%	992	39	3.93%	992	116	11.69%	992
201-300	366	58.94%	621	38	6.12%	621	106	17.07%	621
301-400	252	63.64%	396	18	4.55%	396	56	14.14%	396
401-500	143	65.60%	218	19	8.72%	218	46	21.10%	218
501-600	111	76.03%	146	13	8.90%	146	35	23.97%	146
More than 600	135	74.59%	181	19	10.50%	181	55	30.39%	181
All	2,311	44.71%	5,169	182	3.52%	5,169	553	10.70%	5,169

**Table 5** Source: HIMSS Analytics Database, 2nd Quarter 2009.

The number of potentially preventable emergency department visits and hospitalizations as well as occurrences of inappropriate use of imaging can ideally be provided through business intelligence and/or clinical data warehouse solutions that are effectively implemented at the EMRAM Stage 3 or higher. Business intelligence and clinical data warehouse solutions that can capture clinical data (diagnosis, orders, diagnostic tests, and summary clinical data) and demographic data (age, sex, admitting diagnosis, etc.) can be used to meet current reporting requirements in this area. Table 6 shows that less than 25 percent of all U.S. hospitals have implemented a clinical data warehouse at this time. We believe that demand for these solutions will increase dramatically as healthcare organizations drive to meet the reporting requirements that are tied to ARRA funding.

Hospital Bed Size	Data Warehousing/Mining - Clinical		
	Segment Count	Percent	Total Count
0-100	412	15.76%	2,615
101-200	287	28.93%	992
201-300	195	31.40%	621
301-400	134	33.84%	396
401-500	89	40.83%	218
501-600	45	30.82%	146
More than 600	74	40.88%	181
All	1,236	23.91%	5,169

**Table 6** Source: HIMSS Analytics Database, 2nd Quarter 2009.

# Engage Patients and Families

## 2013 Measures:

- Percent of patients with full access to personal health records (PHR) populated in real time with EHR data (EMRAM Stage 2 and higher)
- Additional patient access and experience reports using NQF-endorsed HIT-enabled quality measures (EMRAM Stage 3 and higher)
- Percent of educational content in common primary languages (EMRAM Stage 3)
- Percent of all patients with preferences recorded (EMRAM Stage 3)
- Percent of transitions where care summary record is shared (EMRAM Stage 3 and higher)

Hospitals are lagging in their ability to implement patient portals that provide access to PHR data, or for functionality that feeds PHRs provided by commercial services (e.g., Google and Microsoft). Table 7 demonstrates the lack of penetration of patient portal solutions in all hospitals, but shows moderate penetration in hospitals above 200 beds today. While data to fill this requirement is included in the CDR, few hospitals have engineered the ability for their CDRs to provide this capability. Some may have the capability, but have currently chosen not to participate in data-sharing projects.

Hospital Bed Size	Consumer Portal		
	Segment Count	Percent	Total Count
0-100	408	15.60%	2,615
101-200	340	34.27%	992
201-300	240	38.65%	621
301-400	139	35.10%	396
401-500	96	44.04%	218
501-600	54	36.99%	146
More than 600	67	37.02%	181
All	1,344	26.00%	5,169

Table 7 Source: HIMSS Analytics Database, 2nd Quarter 2009.

The ability to provide NQF quality measures, percent of educational content in a common primary language, and the percent of patients with preferences recorded can be accommodated in the nursing documentation applications available from most commercial EMR vendor solutions today. The ability to design and implement these capabilities will vary a great deal from system to system, and if a hospital is evaluating nursing documentation solutions, this should become a key selection or elimination criteria.

The criteria for tracking the percentage of time in which a care summary record is shared on transition is another component of Stage 3 in the EMRAM. This capability should also eventually include the ability of the physician documentation to be included in this summary record.



# Improve Care Coordination

## 2013 Measures:

- Access to comprehensive patient data from all available sources (EMRAM Stage 7)
- 10 percent reduction in 30 day re-admission rates for 2013 compared to 2012 (EMRAM Stage 3 or higher with business intelligence and/or a clinical data warehouse)
- Improvement in NQF-endorsed measures of care coordination (EMRAM Stage 3 and higher)

Access to comprehensive patient data from all available resources will require EMRAM Stage 7 capabilities. Clinical documentation will be required to capture more complete patient data relative to clinical status, and the ability to share data with continuity of care document (CCD) standard transactions will be another mandatory capability. As shown in Table 8, physician documentation using structured templates is lagging in the 100 bed and smaller hospitals. The majority of the templated documentation is taking place in the emergency and cardiology departments.

Hospital Bed Size	Physician Documentation - Structured Templates		
	Segment Count	Percent	Total Count
0-100	764	29.22%	2,615
101-200	470	47.38%	992
201-300	356	57.33%	621
301-400	214	54.04%	396
401-500	117	53.67%	218
501-600	88	60.27%	146
More than 600	110	60.77%	181
All	2,119	40.99%	5,169

**Table 8** Source: HIMSS Analytics Database, 2nd Quarter 2009.

The 10 percent reduction in re-admission rates from 2012 to 2013 will be best accomplished at EMRAM Stage 3 or higher with business intelligence and/or a clinical data warehouse that is implemented to gather data from the CDR and the patient access solutions so that both financial and clinical data can be monitored for this improvement.

The improvement in NQF-endorsed measures of care coordination can be accomplished with EMRAM Stage 3 nursing documentation systems that are implemented to track and monitor the NQF measures. The ability to implement clinical decision support systems and guidelines around these measures will increase the ability to improve compliance with these measures.

## Improve Population and Public Health

### 2013 Measures:

- Percent of patients for whom an assessment of immunization need and status has been completed during the visit [EP] (ideally accomplished with CDSS and business intelligence and a clinical data warehouse that can be implemented at Stage 3 or higher)
- Percent of patients for whom a public health alert should have triggered, and audit evidence that a trigger appeared during the encounter (ideally accomplished with CDSS and business intelligence and a clinical data warehouse that can be implemented at Stage 3 or higher)

The ability to evaluate immunization assessments during a visit, and health alerts, triggers, and audit trails will require the ability to analyze clinical data and to monitor clinical documentation processes within a CDSS environment. The CDSS will be implemented at the clinical documentation level (Stage 3) of the EMRAM. The clinical data warehouse will be used to retrospectively analyze missed events for these measures.

## Ensure Adequate Privacy and Security Protections for Personal Health Information

### 2013 Measures:

- Provide summarized or de-identified data when reporting data for health purposes (e.g., public health, quality reporting, and research), where appropriate, so that important information is available with minimal privacy risk (ideally accomplished with business intelligence and a clinical data warehouse that can be implemented at Stage 2 or higher)

This measurement will require a CDR as a minimum, and will probably require a clinical data warehouse to gather the data for de-identification and aggregation to meet these reporting needs.

# Review of Market Relative to 2015 Measurements

The ARRA measurements for 2015 are not as well defined at this point in time, but suggest that substantial data sharing and reporting on defined metrics will be a significant component of meeting this level of measurements. The EMRAM mapping for 2015 measurements is as follows:

## Improve Quality, Safety, Efficiency, and Reduce Health Disparities

### 2015 Measures:

- Clinical outcome measures (TBD) (Projected EMRAM Stages 6 and 7)
- Efficiency measures (TBD) (Projected EMRAM Stage 6 or 7)
- Safety measures (TBD) (Projected EMRAM Stage 5 or higher)

We believe that clinical outcome and efficiency measures will require physician documentation as well as clinical documentation with CDSS to effectively meet this measurement goal. Table 9 shows that the current adoption of CDSS at the physician documentation level is approximately 11 percent. This adoption rate will have to improve dramatically for the majority of U.S. hospitals to effectively meet these requirements by 2015.

We have to extrapolate from what is meant by safety measures at this time, but this will most likely entail closed-loop medication administration (Stage 5) as well as surveillance for hospital-acquired infections (Stage 3).

Hospital Bed Size	CDSS Uses Clinical Guidelines & Pathways for Physicians		
	Segment Count	Percent	Total Count
0-100	171	6.54%	2,615
101-200	130	13.10%	992
201-300	101	16.26%	621
301-400	67	16.92%	396
401-500	39	17.89%	218
501-600	19	13.01%	146
More than 600	37	20.44%	181
All	564	10.91%	5,169

Table 9 Source: HIMSS Analytics Database, 2nd Quarter 2009.

# Engage Patients and Families

## 2015 Measures:

- National Priorities Partnership (NPP; convened by the American Quality Forum) quality measures related to patient and family engagement (EMRAM Stage 7)

We believe the ability to meet this measurement criteria will require the ability to create personal health record services that also incorporate disease management functions and educational services for the patients. This will require that hospitals be able to share significant patient data with a patient's PHR service or with the patient directly. The ability to provide a continuum of data from the patient's services by all entities owned or managed by the hospital will position the hospital to meet these requirements.

# Improve Care Coordination

## 2015 Measures:

- Aggregate clinical summaries from multiple sources available to authorized users (EMRAM Stage 7)
- NQF-endorsed care coordination measures (TBD) (EMRAM Stage 7)

The ability to aggregate clinical summaries from multiple sources for availability to authorized users will require hospitals to implement clinical and physician documentation, and will also require EMR vendors to develop an aggregation functionality within their EMR environments. The ability to normalize data from multiple sources will also increase the requirement for standardized vocabularies and transaction standards (e.g., CCD). Hospitals will need to monitor their vendors regarding the delivery of these capabilities early enough (e.g., 2013) to be implemented in time to meet the 2015 requirements.

NQF care coordination measures will require the ability to share data between all of the patient's care providers, and will emphasize the previous year measurements for processes such as sharing summary data and medication reconciliation with transition of care when treating patients.

## Improve Population and Public Health

### 2015 Measures:

- HIT-enabled population measures (EMRAM Stage 7)
- HIT-enabled surveillance measures (EMRAM Stage 7)

To meet the 2015 measures for improving population and public health, hospitals will have to implement clinical data warehouses to analyze population metrics requested by the government. Hospitals will also need to implement robust clinical and physician documentation environments as well as advanced CDSS environments that will be able to track and monitor data elements from several different environments in real-time and retrospectively. The need for controlled medical vocabularies and standards in this area will also be necessary for hospitals to effectively deliver on this measurement.

## Ensure Adequate Privacy and Security Protections for Personal Health Information

### 2015 Measures:

- Provide patients, on request, with a timely accounting of disclosures for treatment, payment, and healthcare operations, in compliance with applicable law(s) (EMRAM Stage 3)
- Incorporate and utilize technology to segment sensitive data (EMRAM Stage 7)

The ability of hospitals to meet the measures for ensuring adequate privacy and security protection for personal health information will be a journey for all hospitals that involves meticulous evaluation of their IT environments and architectures. This will be an ongoing process for all hospitals, many of which are already well aware of their need to provide constant vigilance for these capabilities regarding their patient environments. No hospital wants to be the “poster child” for mishandling patient data.

# Conclusion

A hospital's clinical applications will only meet the ARRA/HITECH measurements for 2011, 2013, and 2015 if they are effectively implemented to deliver the data and information identified by the measures, in a manner that is a by-product of using these applications to document and manage care delivery. Hospitals must evaluate their prospective and current solutions to ensure that they are architected to allow the hospitals to capture and manage data such that clinicians can intuitively use these solutions in a way that improves their workflow while simultaneously enhancing the ability to improve patient care and safety.

Hospitals can ill afford a miss-step in their EMR strategies if they are to successfully meet the ARRA measures and achieve the level of reimbursements they are expecting.

Hospitals that have achieved a Stage 3 on the EMRAM are well positioned to meet the majority of the 2011 measures, if they have implemented the applications at this stage across all inpatient nursing services. It is not yet clear whether CPOE will have to be implemented and used by physicians for meeting the 2011 measurements. Having nurse practitioners and physician assistants enter orders may meet the requirements for 2011.

By 2013, hospitals must have CPOE implemented with a majority of physicians using the system, and hospitals will need to report physician usage. Hospitals will need to be at Stage 4 of the EMRAM to deliver the majority of measurements for this measurement period. The measurements in 2013 will require more effective data analysis, management, and reporting, and this is when hospitals will begin to move in earnest for implementing clinical data warehouses.

The measurements in 2015 will require the majority of clinicians and physicians to be using documentation systems, and have the ability to document using structured templates to collect discrete data real time to interact with CDSS applications to improve outcomes and patient safety. Hospitals will need to have the majority of their clinicians using applications at Stage 6 of the EMRAM while Stage 7 will be required to meet the requirements for the improvement of care coordination and population and public health.

Hospitals that survive the upcoming healthcare delivery transformation will be organizations that understand the need to use EMRs to collect, manage, share, and analyze data with the intent to continually improve their care delivery processes using best practices and evidence-based medicine protocols.