

# Essentials of the U.S. Hospital IT Market

## 1st Edition

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data from 2006.**

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## Electronic Medical Records

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## Electronic Medical Record Environment Overview

**A**pproximately 75 percent of U.S. hospitals have a foundation clinical data repository operational or in the process of being installed, so that it can be used to extend and expand their clinical automation capabilities.

The vast majority of laboratory, radiology and pharmacy departments in U.S. hospitals are automated. But the key applications for preventing or eliminating medical errors—CPOE/pharmacy dispensing/nursing medication administration as integrated application components—are currently installed and fully utilized in less than 10 percent of U.S. hospitals.

One reason for this low percentage of installed applications for reducing or eliminating medical errors is the relative immaturity of the computerized practitioner order entry applications and its lack of proven integration with pharmacy dispensing and nursing medication administration and documentation applications.

However, over the next 24 months, these applications will become more robust in functionality, stability and scalability. Thus, the risk factors experienced by the pioneers and early adopters of these clinical information systems today will be much reduced for U.S. hospitals that begin to implement these solutions in 2006.

What makes up an electronic medical record (EMR) environment—also known as the computer-based patient record? For this report, it will be defined as a foundation clinical data repository (CDR) that collects information from disparate systems and

provides access and reports to assist clinicians in the delivery of care along with other applications. These are tightly coupled with the CDR to create components of—and eventually the complete—legal medical record. Other components of the EMR that advance the functionality of the clinical systems for supporting patient care delivery are:

- ▶ workflow engines
- ▶ rules engines (e.g., clinical decision support)
- ▶ controlled medical vocabularies—to normalize the various naming conventions used for similar terms in systems providing data (e.g., laboratory, pharmacy, transcription and radiology systems)
- ▶ clinical documentation applications (e.g., care plans, flow sheets, electronic medication administration records, physician templated documentation)
- ▶ order entry
- ▶ computerized practitioner order entry applications.

Because of the need for seamless integration with the other EMR applications, pharmacy information systems are also included in our definition of an EMR environment. We have also chosen to discuss a major component of the EMR, nursing applications, as a separate environment for this report.

The key success criteria for U.S. hospitals transforming their clinical environments with IT solutions will be to incrementally improve their environments. The degree of incremental improvement that can be achieved by any institution will be a factor in the funding and staffing resources available to implement the desired clinical information system strategies.

While some hospitals will implement clinical information systems that impact their entire enterprise operation, most will incrementally implement clinical solutions to address key care delivery service improvement needs.

## ▶ The EMR Market

The applications tracked for this market are the clinical data repository, clinical decision support applications, computerized practitioner order entry, enterprise EMR, medical terminology, order entry, and physician documentation.

The clinical data repository, clinical decision support, order entry and enterprise EMR applications had all exceeded 50 percent contracting or implementation in the U.S. hospital market (see Figure EMR1).

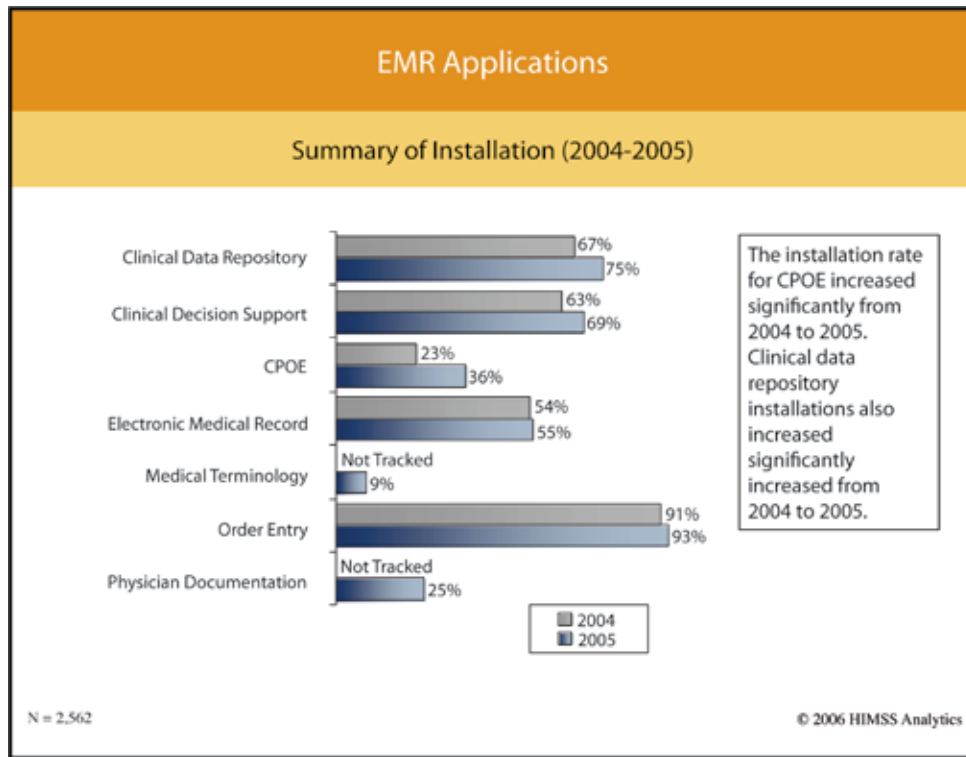


Figure EMR1

Order entry applications, which traditionally were charge capture applications, are being transformed by computerized practitioner order entry (CPOE) applications that are designed to reduce or eliminate medical errors with the use of clinical decision support.

Computerized practitioner order entry is experiencing good growth, and these applications will become more successful as hospitals improve the necessary supporting application infrastructure (e.g. clinical documentation and improved integration between CPOE, pharmacy and eMAR applications).

*CPOE is experiencing good growth, and these applications will become more successful as hospital boost infrastructures.*

An evaluation of hospitals lacking a specific application that they plan to purchase shows that CDR, CPOE and EMR applications will continue to have good buying activity over the next 24 months (see EMR2).

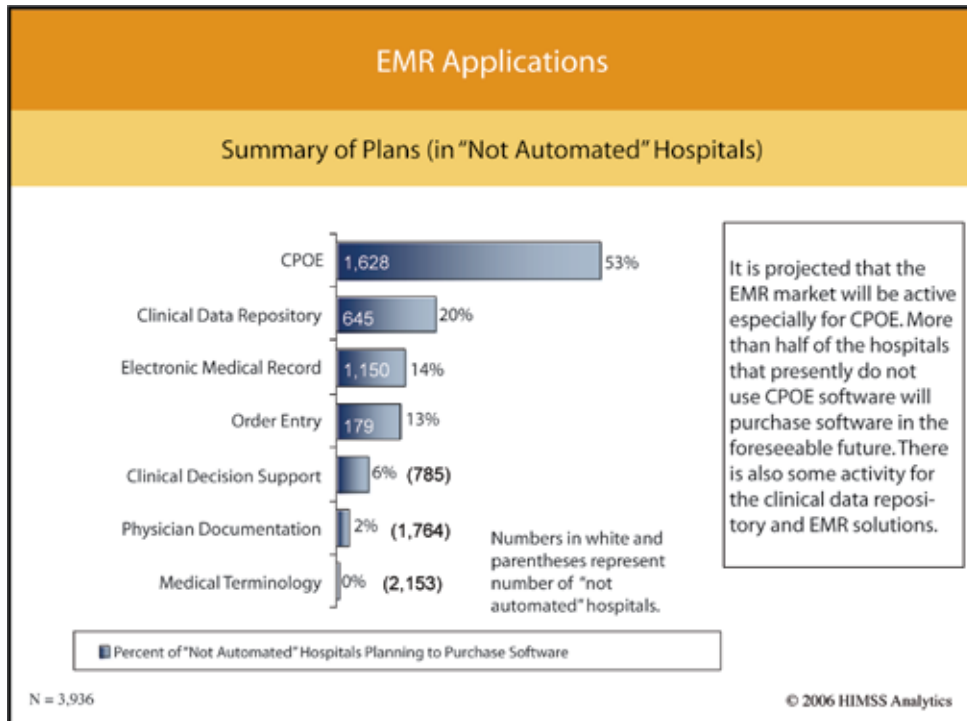


Figure EMR2

The EMR application replacement selling market manifests the highest activity in the order entry application segment (see Figure EMR3).

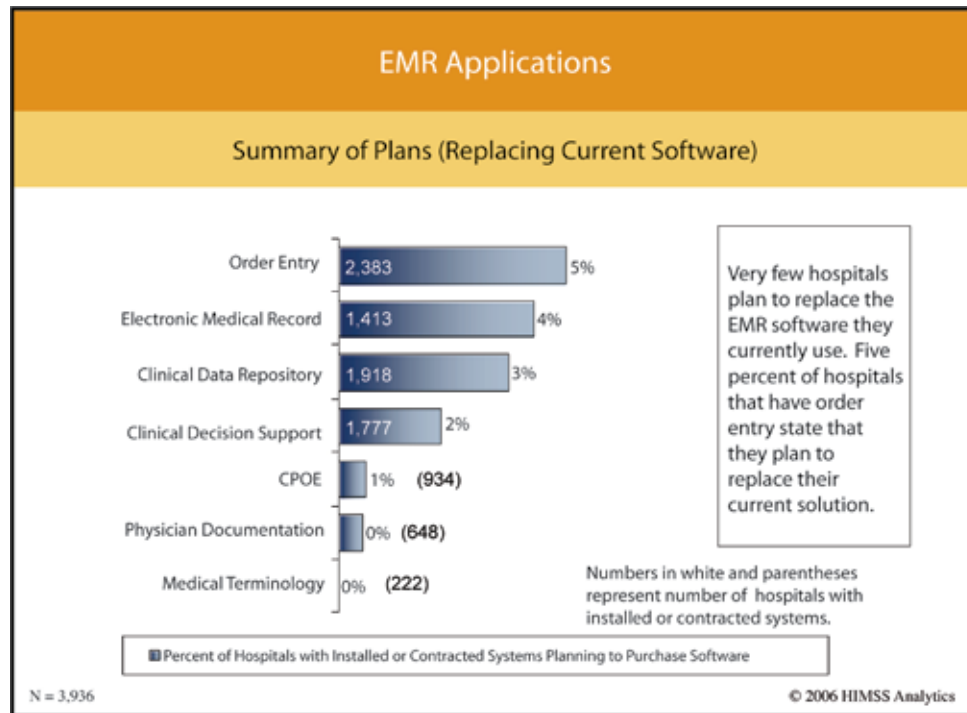


Figure EMR3

This is not surprising; order entry systems traditionally were charge capture systems, but they have begun to transform into true clinical components with the advent of CPOE applications that are used by all practitioners (e.g., nurses, allied health personnel, etc.).

**Market Spend Forecast**

*Please note:* Five-year CAGR spend forecasts will be provided for all applications, with the exception of RPACS, CPACS and Barcodes.

**Clinical Data Repository**

*Market consolidation will continue to play a role in the clinical data repository segment.*

The top four vendors control approximately 61 percent of the market, while the top 10 vendors represent approximately 87 percent of the market (see Figure EMR4). Self-developed applications are the fifth most installed application, and represent a good replacement selling market for the enterprise vendors.

While MEDITECH, McKesson Provider Technologies, Siemens Medical Solutions and Cerner currently represent the top tier of vendors in this market, Eclipsys, Epic Systems and GE Healthcare are beginning to win more market share. Market consolidation will continue to play a role in this segment as evidenced by the recent acquisition of IDX by GE Healthcare.

Clinical Data Repository		
Top 10 Installed and Contracted Systems		
Vendor	# of Installations	% of Market
MEDITECH	685	24.46%
SIEMENS MEDICAL SOLUTIONS	374	13.35%
MCKESSON PROVIDER TECHNOLOGIES	346	12.35%
CERNER CORPORATION	340	12.14%
SELF-DEVELOPED	173	6.18%
ECLIPSYS CORPORATION	115	4.11%
CPSI	110	3.93%
EPIC SYSTEMS CORPORATION	106	3.78%
GE HEALTHCARE	99	3.53%
HEALTHCARE MANAGEMENT SYSTEMS, INC.	80	2.86%
41 vendors share the remaining 13.32% of the market		
N = 2,801		© 2006 HIMSS Analytics

Figure EMR4

## Clinical Decision Support

The top four vendors (not including self-developed) in this market control approximately 58 percent of the market, while the top 10 vendors represent approximately 85 percent of the market (see Figure EMR5).

Clinical decision support applications run the gamut from simple drug conflict-checking algorithms to complex protocol monitoring.

Most of the order entry, CPOE, physician documentation, and clinical data repository environments have some measure of clinical decision support built into their workflow.

Clinical Decision Support		
Top 10 Installed and Contracted Systems		
Vendor	# of Installations	% of Market
MEDITECH	612	24.01%
MCKESSON PROVIDER TECHNOLOGIES	440	17.26%
ECLIPSYS CORPORATION	238	9.34%
SELF-DEVELOPED	201	7.89%
SIEMENS MEDICAL SOLUTIONS	199	7.81%
CERNER CORPORATION	180	7.06%
MISYS HEALTHCARE SYSTEMS	91	3.57%
CPSI	82	3.22%
HEALTHCARE MANAGEMENT SYSTEMS, INC.	60	2.35%
EPIC SYSTEMS CORPORATION	59	2.31%
55 vendors share the remaining 15.18% of the market		
N = 2,549		
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Figure EMR5

## Computerized Practitioner Order Entry (CPOE)

The top four vendors in this market segment control 65 percent of the market, while the top 10 vendors represent 92 percent of the market (see Figure EMR6).

Cerner and MEDITECH have clear leadership positions, but Siemens, Eclipsys and Epic Systems are showing good market growth with their products.

CPOE is an emerging market that will continue to show solid growth for the next five years, especially as the CPOE applications begin to stabilize and mature.

Recent negative publicity about CPOE systems does not appear to have slowed the market, but it has caused hospitals to re-evaluate their CPOE strategies. Most hospitals are implementing CPOE incrementally across services lines, in contrast to attempting enterprise-wide implementation (the “big bang” approach).

*Most hospitals are implementing CPOE incrementally, in contrast to the “big bang” approach.*

CPOE		
Top 10 Installed and Contracted Systems		
Vendor	# of Installations	% of Market
CERNER CORPORATION	343	27.46%
MEDITECH	236	18.90%
SIEMENS MEDICAL SOLUTIONS	139	11.13%
ECLIPSYS CORPORATION	100	8.01%
EPIC SYSTEMS CORPORATION	97	7.77%
MCKESSON PROVIDER TECHNOLOGIES	83	6.65%
GE HEALTHCARE / IDX	65	5.20%
CPSI	38	3.04%
GE HEALTHCARE (CENTRICITY)	27	2.16%
MISYS HEALTHCARE SYSTEMS	21	1.68%
15 vendors share the remaining 8.01% of the market		
N = 1,249		© 2006 HIMSS Analytics

Figure EMR6

## ▶ Electronic Medical Record

This is the environment where clinical data is used as a true medical record, and where that data could be considered the legal medical record.

In this environment, patient care information is charted with clinical documentation and/or physician documentation applications. The top four CPOE vendors control 63 percent of the segment, and the overall top 10 represents 88 percent (see Figure EMR7). While MEDITECH has a significant lead as the top vendor in the category,

McKesson Provider Technologies, Cerner and Siemens Medical Solutions have attained solid market positions. Eclipsys, CPSI, GE Healthcare and Epic Systems represent a second tier of vendors that are very competitive, and that will challenge the market leaders for the specific market sub-segments targeted within this environment.

EMR		
Top 10 Installed and Contracted Systems		
Vendor	# of Installations	% of Market
MEDITECH	514	23.37%
MCKESSON PROVIDER TECHNOLOGIES	352	16.01%
CERNER CORPORATION	298	13.55%
SIEMENS MEDICAL SOLUTIONS	275	12.51%
ECLIPSYS CORPORATION	104	4.73%
CPSI	97	4.41%
GE HEALTHCARE / IDX	95	4.32%
SELF-DEVELOPED	89	4.05%
EPIC SYSTEMS CORPORATION	85	3.87%
QUADRAMED CORPORATION	37	1.68%
45 vendors share the remaining 11.51% of the market		
N = 2,199		© 2006 HIMSS Analytics

Figure EMR7

## Medical Terminology

Due to the current low implementation numbers for medical terminology applications, we are not providing a vendor top 10 listing. This is a very immature market relative to commercial applications, and we believe that, over time, SNOMED will become a *de facto* standard in this area.

## Order Entry

The four top order entry vendors control 69 percent of the market, and the overall top 10 represents 90 percent (see Figure EMR8). The original purpose of order entry applications in the mid-1980s was to provide charge capture mechanisms for services and supplies used in the care delivery process. These have evolved into more

sophisticated clinical applications that supply clinical decision support functions to reduce the number of duplicate, conflicting and unnecessary tests.

Order Entry		
Top 10 Installed and Contracted Systems		
Vendor	# of Installations	% of Market
MEDITECH	1,011	27.93%
MCKESSON PROVIDER TECHNOLOGIES	584	16.13%
SIEMENS MEDICAL SOLUTIONS	535	14.78%
CERNER CORPORATION	351	9.70%
ECLIPSYS CORPORATION	162	4.48%
SELF-DEVELOPED	160	4.42%
CPSI	151	4.17%
GE HEALTHCARE / IDX	126	3.48%
HEALTHCARE MANAGEMENT SYSTEMS, INC.	125	3.45%
EPIC SYSTEMS CORPORATION	71	1.96%
37 vendors share the remaining 9.50% of the market		
N = 2,199		© 2006 HIMSS Analytics

Figure EMR8

Over time, the new CPOE applications will replace order entry applications, which were significant applications for the hospital information system (HIS) market of the 1980s and 1990s.

A vendor's existing order entry client base represents a good market opportunity for that company's CPOE application. But, if the order entry function was a component of an HIS, then it could well be replaced by the vendor that supplies a hospital's EMR applications.

## Physician Documentation

This environment represents documentation created from templates that mimic the charting documents that physicians create today. It does not represent the documentation generated by physicians using dictation/transcription services. The data generated from templated electronic documents is discreet and capable of driving workflow and clinical decision support applications. The top four order entry vendors

control 59 percent of the market, while the entire top ten represents 90 percent of the total (see Figure EMR9).

Physician Documentation		
Top 10 Installed and Contracted Systems		
Vendor	# of Installations	% of Market
MEDITECH	169	26.08%
CERNER CORPORATION	96	14.81%
SIEMENS MEDICAL SOLUTIONS	60	10.49%
MCKESSON PROVIDER TECHNOLOGIES	52	8.02%
ECLIPSYS CORPORATION	39	6.02%
SELF-DEVELOPED	36	5.56%
EPIC SYSTEMS CORPORATION	30	4.63%
CPSI	18	2.78%
GE HEALTHCARE / IDX	15	2.31%
KEANE, INC.	10	1.54%
18 vendors share the remaining 17.76% of the market		
N = 648		© 2006 HIMSS Analytics

Figure EMR9

*This is an emerging market—one that, over the next five years is likely to see many changes in the top 10 market share ranking.*

This is an emerging market, and while MEDITECH currently leads, Cerner, Siemens Medical Solutions, McKesson Provider Technologies, Eclipsys and Epic will all continue to provide competitive solutions that, over the next five years, will generate many changes in this segment's top 10 market share rankings.

An evaluation of the temporal contract signing activity for EMR applications shows that while the CDR application installations have been made evenly from 1995 to 1999, clinical decision support and order entry saw more installations in the 1995-1999 time frame.

All of the other EMR applications have shown more installation activity in the 2000-2005 period (see Figure EMR10).

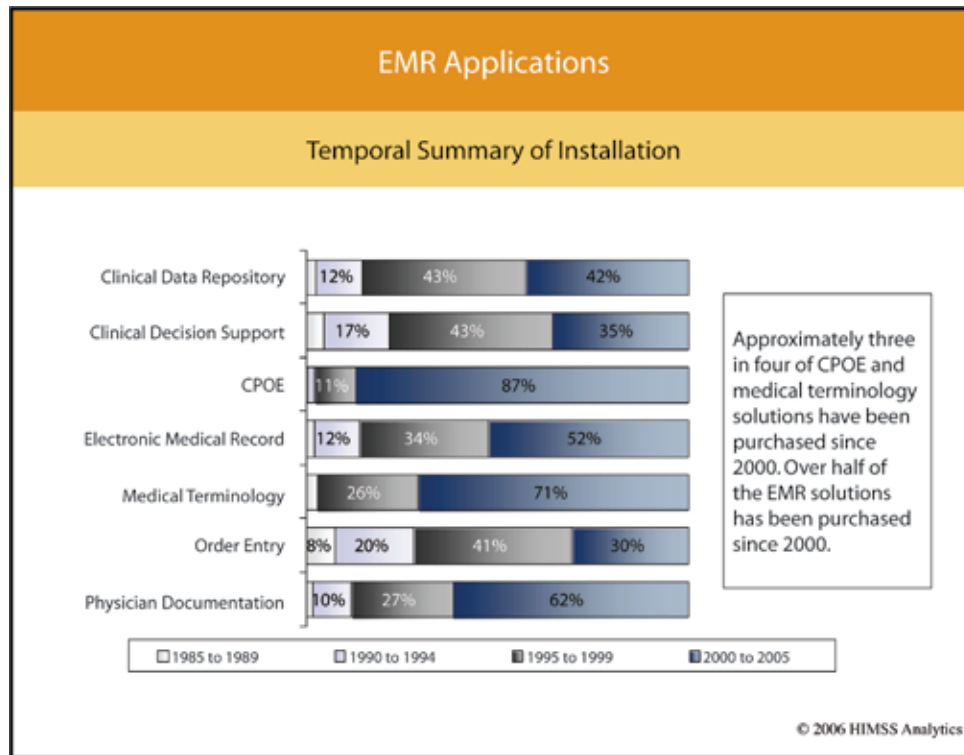


Figure EMR10

**The following is an EMR market summary:**

- ▶ There is substantial market penetration for order entry, installed at 93 percent. Installation rates for clinical data repository and clinical decision support were also strong at 75 percent and 69 percent, respectively. More than half (55 percent) mentioned that they have installed electronic medical records solutions.
- ▶ MEDITECH is mentioned as one of the top two market leaders across all electronic medical records applications except for physician documentation.
- ▶ The majority of CPOE, medical terminology and physician documentation applications were signed from 2000 to 2004. In the same time frame, more than half of the enterprise electronic medical records were purchased.
- ▶ McKesson Provider Technologies lead the market among vendors that are under consideration for future installation of clinical data repository and CPOE systems, while MEDITECH is most frequently identified as a potential vendor in the order entry, clinical decision support and physician documentation markets.
- ▶ Future activity in this market will focus on first-time purchases for

CPOE, medical terminology and physician documentation. The replacing current software indication is highest for the order entry market.

**Our analysis of this market is represented by the following points:**

- ▶ Clinical data repository (CDR) and CPOE showed the best growth over the last 12 months. The CDR is the foundation for the EMR, which supports this growth. CPOE continues to be a hot application to pursue for reducing medical errors, even with several provocative journal articles that question CPOE's benefits.
- ▶ While the percentage of hospitals replacing order entry applications is not high, the true number associated with replacements is well over 100. Most of these replacements will be for older legacy architecture applications.
- ▶ MEDITECH, McKesson Provider Technologies, Cerner and Siemens Medical Solutions have solid positions as leaders of the EMR market segment. Future purchase decisions indicate that Cerner and McKesson Provider Technologies will continue to improve and strengthen their positions, while GE Healthcare begins to move up toward a top five listing.
- ▶ While Cerner, MEDITECH, and Siemens Medical Solutions currently have solid leadership positions in the CPOE market, future purchase decisions indicate that McKesson Provider Technologies will gain significant market share over the next 24 months to challenge the leaders.
- ▶ A top 10 listing of self-developed applications for the CDR, clinical decision support, EMR, order entry and physician documentation portends a future replacement selling market for many hospitals with these applications.
- ▶ The absence of a top 10 listing for self-developed for the CPOE market manifests an acknowledgement by the market that CPOE is best acquired commercially.
- ▶ MEDITECH and Cerner will continue to be leaders in the physician documentation application market when purchase decisions over the next 24 months are factored in.