

# CPOE Usage 2002

## The Realities of Computerized Physician Order Entry in 2002

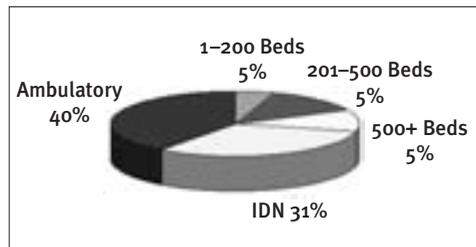
**CPOE Usage 2002.** A previous KLAS study found that 75% of acute care organizations were considering either implementing Computerized Physician Order Entry (CPOE) or augmenting an existing CPOE with wireless. Other recent articles report a rather wide range of observations regarding order entry automation, physician use and CPOE benefits. This heightened interest in CPOE has created a “need to know” more about CPOE: separating fact from fiction and hype from reality, as to the who, what, when, where and why of CPOE.

The objective of the study reported here was to survey every live CPOE site in North America where there was coordinated activity between the inpatient and ambulatory environment and a potential need to affect or be responsible for patient care treatment across these boundaries. The study incorporates the opinions of IT executives, directors, managers, project managers, medical directors, physicians and others. The full report contains more than 160 pages of observations, commentaries and analysis and was published in February 2003<sup>1</sup>. This excerpt focuses primarily on physician use.

**Survey Participants.** To qualify, the participant had to be “live” with CPOE in either an inpatient or ambulatory setting. In an attempt to survey every site possible, all HIT CPOE vendors were invited to provide a list of their live CPOE

clients where computerized physician order entry (emphasis on physician) was part of the healthcare provider’s planned use of the order entry software. Survey participants represent the experiences of a wide variety of care delivery organizations and their CPOE experiences using various products from 11 different vendors (Cerner, CliniComp, Eclipsys, Epic, GE, IDX, McKesson, Meditech, Per-Se, Pyxis and Siemens). In addition, information from customized, one-of-a-kind or in-house developed sites was collected and noted where applicable, all in an effort to better represent the accomplishments with CPOE.

**Figure 1: Bed Sizes of Surveyed Participants**



**Definition of CPOE Used for the Study.** The CPOE software objective is for physicians to electronically enter virtually all clinical orders that they previously ordered via paper. Typical orders include laboratory tests, medications,

other diagnostic tests and all other clinical care orders. CPOE routinely includes alerting, decision logic and knowledge tools to help eliminate errors during the ordering process. CPOE is *not* geared to be the electronic ordering tool for non-physicians to enter orders (typically referred to as order entry, order management or order communications and utilized by nursing, ward clerks, and other care providers).

The survey used for this study focused on various aspects of CPOE including: provider organization details, the foundation for alerting and medication administration, physician interaction, nurse interaction, technology (including wireless) and overall benefits. In addition to the CPOE questionnaire itself, information and commentary was solicited during the interview process regarding:

- Benefits, expected vs. actual
- Motivation to choose the CPOE vendor
- Value proposition
- Voice recognition
- Lapse time from contract to live CPOE physician use
- Percent of total orders still verbal and/or telephone
- Techniques used for training
- Go-live support strategies
- Largest hurdles organization overcame
- Technology used for urgent alerting
- Physician online use
- CPOE orders completed over the Internet
- Use of wireless

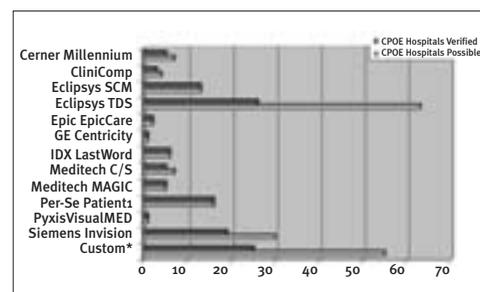
The survey document was designed with assistance and input from the physicians at Cerner Corporation, Eclipsys Corporation, Epic Systems Corporation, McKesson Corporation and Siemens Health Services. Three provider organizations also provided guidance. The final data collection tool met with the approval of all those above.

**Number of CPOE Hospitals Verified vs. Possible.** KLAS’ goal was to contact the most knowledgeable person, from each site, about the live CPOE operation. Out of a potential 208

sites, KLAS was able to contact and validate that 125 U.S. hospitals, or 2% of total U.S. hospitals (using the AHA guideline of just over 6,200 U.S. hospitals) have some COPE in use by physicians. KLAS found that 38% of the live CPOE hospitals are “aggressive” users, with more than 50% of potential orders entered by physicians. This translates into 0.8% of U.S. hospitals aggressively doing CPOE. From the data collected and AHA hospital numbers, actual CPOE use becomes more definitive:

- Fewer than 3.5% of U.S. hospitals are currently doing any organized CPOE (assumes those not validated are all using CPOE).
- Between 0.8% and 1.3% of U.S. hospitals are actively using CPOE (defined as physicians entering more than 50% of patient orders; also assuming that those not validated are all using above the 50% level).
- Finally, fewer than 1% of U.S. hospitals are actively using CPOE with a commercially available software product.

**Figure 2: CPOE Hospitals Verified vs. Possible**

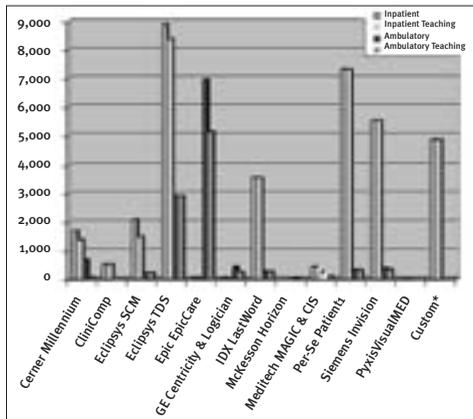


**Definition of Teaching Site.** The question KLAS asked was, “What kind of provider organization are you?” Choices were: (1) IDN (integrated delivery network; more than one acute hospital, all non-teaching); (2) IDN with teaching (interns/residents use systems); (3) children’s hospital; (4) acute community hospital; (5) teaching hospital (interns/residents use systems); and/or (6) clinic. KLAS relied on survey participants to indicate the type of organization. KLAS did not further grade or query (for example, “percent teaching”). Graphs and charts within the report that segregate “teaching” are the combination of

IDNs with teaching and pure play teaching organizations. There was not enough data to separate the two for reporting purposes.

**Number of Physicians Doing CPOE by Vendor/Product.** Overall, the number of physicians doing CPOE exceeds 45,000, the majority of which are from teaching organizations.

**Figure 3: Physicians doing CPOE by Vendor/Product**



**Inpatient CPOE Usage.** Of all the sites surveyed, only five on the inpatient side and 12 on the ambulatory side have accomplished 100% participation by physicians doing CPOE for all medication orders. The range of responses is huge and the use of active complex alerts is in its infancy. In addition, all 100% accomplishing inpatient sites are teaching sites.

**Ambulatory CPOE Usage.** Interestingly enough, the number of sites live on CPOE, ambulatory vs. inpatient, is nearly identical (as KLAS found 53 live on the ambulatory side and 60 live on the inpatient side). However, the ambulatory side (with the exception of alerts) exhibits significantly more use when comparing “% CPOE of All Orders,” “% MDs Doing CPOE,” and “% Med Orders Electronic.”

**Foundation for Alerting and Medication Administration.** The foundation elements for closed-loop medication ordering, alerting, administration and tracking are starting to be offered and used. The ability for physicians to enter all medication orders and to be notified of alerts from decision logic at the time of the medication order is widely available; however, the

**Figure 4: Inpatient CPOE Usage**

Criteria Verified	Range of Responses	Mean	Median	Mode
CPOE of All Orders	1-100	43.82	30	100
MDs Doing CPOE	1-100	49.08	36.50	100
Med Orders Electronic	1-100	57.67	70	100
Active Complex Alerts	1-300	34.53	9	0

**Figure 5: Ambulatory CPOE Usage**

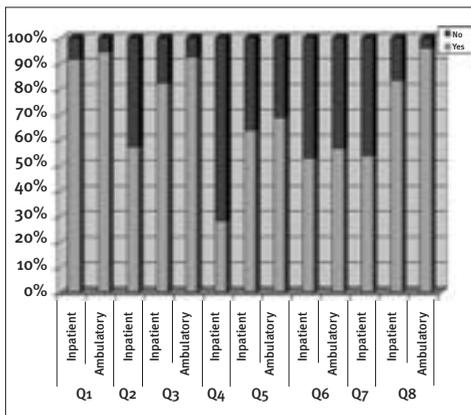
Criteria Verified	Range of Responses	Mean	Median	Mode
% CPOE of All Orders	1-100	64.91	85	100
% MDs Doing CPOE	1-100	74.32	98.50	100
% Med Orders Electronic	1-100	79.65	97	100
% Active Complex Alerts	1-100	21.50	8.5	0

**Figure 6: Key**

Q1	Are physicians able to enter all medication orders?
Q2	Do the physician and pharmacist (or pharmacy) use the same medication ordering and alerting system?
Q3	Physician notification of alerts from decision logic at time of medication orders?
Q4	Positive patient and Med ID at time of medication administration?
Q5	Complex decision support and prompting for all orders, including non-medication orders, with rules-based alerting/guidance (multiple arguments with multiple disciplines) including surveillance-generating alerts outside order entry?
Q6	Immediate access to knowledge content (like Cliniguide) during order process and administration?
Q7	A MAR with all meds dispensed (including Pyxis or Omnicell), and all conflict checking rules applied against all meds?
Q8	Are medication orders stored in the same database used by Physician Order Entry?

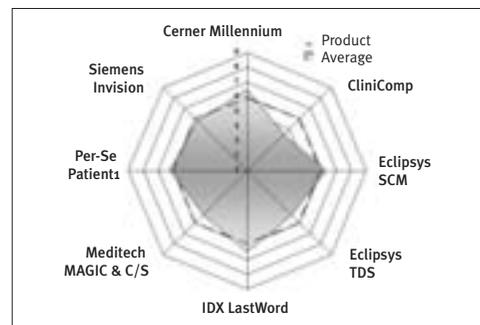
physician and pharmacist may not use the same medication ordering and alerting system. Making this environment more complex is the fact that nearly half (48%) of all pharmacy orders are re-entered by the pharmacy. Access to medical knowledge content during the ordering process, an online MAR (medical administration record) complete with all medications dispensed and positive patient ID at the time of medication administration, appears to be more vendor-related.

**Figure 7: Overall Alerting and Medication**



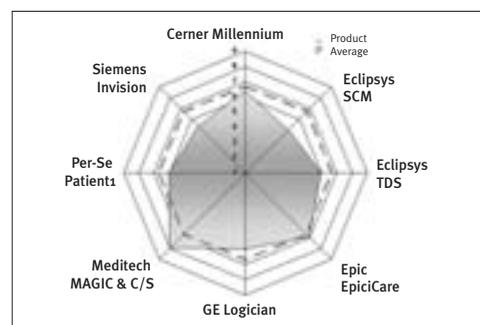
**Physician Satisfaction with CPOE System – Inpatient** (Vendor/Products must have more than one organization reporting to be included in this graph).

**Figure 8: Physician Satisfaction with CPOE System – Inpatient**



**Physician Satisfaction with CPOE System – Ambulatory** (Vendor/Products must have more than one organization reporting to be included in this graph).

**Figure 9: Physician Satisfaction with CPOE System – Ambulatory**



**In Summary.** Today's challenge with CPOE is that it is more theoretical than proven. The gap between the current reality and apparent vision is large in that few sites are actually live on CPOE, and those that are are primarily from teaching organizations. The long list of benefits realized is encouraging and those sites that are live speak to the benefit of reducing errors and enhancing patient safety; however, to date, the expected benefits exceed the actual benefits realized. The largest hurdles to overcome, as reported by survey participants, are: physician acceptance, commitment and change, and pharmacy integration (in that order). Perhaps one user said it best: "This is a very complex system. It takes amazingly long for physicians to learn to use it. It needs to be a lot simpler but it isn't."

**OFFER TO CANADIAN HEALTHCARE FACILITIES.** If you are a Canadian site live on CPOE, please contact KLAS for inclusion in upcoming studies. KLAS did not find enough live Canadian CPOE sites to support delineation of any findings in the 2002 study. In addition, many Canadian healthcare facilities and organizations use vendors who supply solutions unique to Canada. KLAS – the organization rating IT vendors in this and subsequent issues of *ElectronicHealthcare* – is willing to gather confidential and candid data from Canadian healthcare executives and provide all contributors with access to results. The vehicle that will be used is the web-based KLAS vendor evaluation form found at [www.healthcomputing.com](http://www.healthcomputing.com) under the "rate your vendor" button. If you have comments, suggestions or questions about this vendor-rating feature please send an e-mail to [editors@longwoods.com](mailto:editors@longwoods.com).

**About KLAS.** KLAS, founded in 1996, is a research and consulting firm specializing in monitoring and reporting the performance of healthcare's information technology vendors (HIT). Staff and advisory board average 25 years of healthcare information technology experience.

**How We Serve the Healthcare Industry** KLAS, in concert with thousands of healthcare executives, CIO's, directors, managers and clinicians, has created a dynamic database of information on the performance of HIT vendors. The KLAS database represents the opinions of healthcare executives, managers and clinicians from more than 3,000 healthcare facilities on more than 180 vendors and 300 different products. The information is continually refreshed with new performance evaluations and interviews daily. The KLAS database is dynamically and effectively used by:

- Healthcare organizations to align expectations with a vendor's actual performance, to assist in strategic planning and to validate decision processes.
- Vendors to monitor their performance in comparison with competitors.
- Consultants for current performance information on a specific company or product.
- Healthcare investment firms to evaluate publicly traded HIT company trends.

Contact KLAS at [www.healthcomputing.com](http://www.healthcomputing.com) or call toll-free 866-268-9438 for the CPOE Digest.

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