

Toward Meaningful Usability: Five Keys to Creating Physician- Centric CPOE

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More than 10 years after the Institute of Medicine's (IOM) landmark report *To Err is Human* was published, the American healthcare system finds itself at a crossroads. Despite clear evidence of need – the IOM report estimated as many as 98,000 Americans die every year from preventable medical errors – the healthcare industry has failed to capitalize on the promise of better outcomes and lower costs through automation.

Numerous studies have reported opportunities to reduce errors by greater than 80 percent through Computerized Physician Order Entry (CPOE) ^{1,2}. Yet according to KLAS's 2010 survey³, less than one-sixth of U.S. hospitals are doing even nominal CPOE with commercial software, and less than six percent of hospitals have all their physicians engaged with their CPOE system.

Regardless of the reasons for the failure of CPOE, hospitals must now reconsider this functionality as part of the federal government's Meaningful Use objectives, which will require dramatically increased physician adoption over the next several years. New and unique approaches to physician order entry will be needed to drive greater physician adoption and help hospitals maximize their HITECH stimulus incentives.

The Failure of CPOE

The failure of CPOE to date can be attributed to many factors that ultimately lead to a lack of physician adoption. CPOE systems have historically been designed to support the workflow of the departments responsible for fulfilling the orders rather than the physician workflow around entering orders. As a result, entering orders electronically can take significantly longer than written or verbal orders and often requires the physician to change the way they currently practice medicine.

The cost to purchase and implement CPOE systems is very high as it often requires a hospital to rip and replace many of their existing systems. Many vendors require hospitals to not only implement their CPOE software on the front end but also require large-scale upgrades or even full replacement of their back-end order fulfillment systems (laboratory, radiology, etc). Hospitals often purchase CPOE on the premise that standardization of care through evidence-based order sets is the optimal way to improve patient care delivery and reduce healthcare costs. In fact, most standardized care is not supported by evidence so spending months or even years to achieve order set consensus only serves to delay implementation and use while increasing the overall cost of the order entry system.

Most CPOE systems expose physicians to all clinical alerts regardless of severity. The preponderance of these alerts disrupts the ordering process, leads to alert fatigue, and results in frustration on the part of the physician.

Finally, the number of available workstations, including those on the hospital floors and in patient rooms, is limited, and physicians may have to wait in queue to enter their orders. This may lead to an increase in verbal orders from the physician to the nurse, pharmacist, etc. as well as frustration with a process that requires more physician time than simple pen and paper.

Five Tenets of Successful CPOE

CPOE solutions must ultimately save physicians time; if they are merely “time-neutral”, there’s no compelling “tactical” advantage for physicians to use them. To date, such time savings through CPOE has not been widely achieved. However, it *is* possible – *if* CPOE system design is predicated on five key tenets:

- **Order sets must reflect the way individual physicians practice medicine** – CPOE systems must begin with a hospital’s existing standard order sets, third-party evidence-based order sets, order sets designed for each physician based on his or her existing practice, or a combination of all these. Physicians can further modify and personalize order sets over time within their normal workflow. As the system collects data on actual ordering practices, hospitals can incorporate and/or modify order sets as appropriate, creating personalized order sets for each physician.
- **Features must not slow down the ordering process** – CPOE systems must support advanced features like clinical decision support at the point of order entry, such as drug-drug, drug-allergy and duplicate therapy checking. In order to prevent alert fatigue, however, the hospital may choose to tailor the alerts so that only the most critical are presented to the physician. Also, CPOE should not seek to replace the expertise of other clinicians (e.g., clinical pharmacologists, nurses, pharmacists) who perform many valuable roles, as that both upsets existing workflow and undermines an important asset of the healthcare system.
- **Anytime/anywhere order entry must be possible** – Complementary desktop CPOE and mobile CPOE solutions should be made available so physicians have the option of using a workstation, smartphone or other handheld device to quickly and easily enter orders. The more accessible CPOE is, the more physicians will use it.
- **Back-end system flexibility and versatility is vital** – CPOE must work for hospitals anywhere along the “all paper” to “all electronic” order entry spectrum. Hospitals need a practical way to immediately implement – or incrementally evolve toward – a full CPOE process from any starting point, and move at their own pace toward the goal of 100 percent adoption throughout the organization within three years to meet the timeframes of the HITECH Act. Such flexibility allows a hospital to solve existing problems, such as verbal orders, by implementing an electronic-to-paper process as an interim step before having all electronic data interfaces in place. Hospitals should let physicians start to use CPOE even if all back-end departmental systems are not fully automated.
- **CPOE must leverage existing hospital IT investments** – CPOE optimally should exist as a layer on top of a hospital’s current IT infrastructure and route orders to existing departmental systems for processing and fulfillment. Such architecture means hospitals do not have to rip out and replace current systems, which saves time, effort and expense while making Meaningful Use achievable within the required timeframes.

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The 100 Percent Solution

Most physicians who provide care in hospitals do so as independent affiliates, not as direct employees of the hospital, yet the compliance of these physicians – their willingness to use a hospital’s IT platform – is absolutely critical to the hospital’s ability to earn ARRA stimulus funds. The challenge is compounded by the fact that Meaningful Use will require dramatically increased physician adoption of one of the most difficult clinical applications to develop and implement – namely CPOE – over the next several years.

Instead of focusing on the physician’s workflow, traditional CPOE systems have been designed primarily to support the back-end departmental systems responsible for processing orders. Successfully achieving broad-based physician adoption of CPOE will require a unique approach, one that starts from the perspective of supporting the physician first and connecting to the various back-end systems as appropriate.

The next generation of CPOE solutions must ultimately save physicians time, rather than simply being time-neutral. Otherwise, they will suffer the fate of most previous attempts to implement this required functionality – at the cost of improved patient care, better outcomes, and lost ARRA stimulus dollars.

¹ D. W. Bates, J. M. Teich, J. Lee et al., “The Impact of Computerized Physician Order Entry on Medication Error Prevention,” *Journal of the American Medical Informatics Association* 6 (July/August 1999): 13–21.

² D. W. Bates and A. A. Gawande, “Improving Safety with Information Technology,” *New England Journal of Medicine* 348 (June 19, 2003): 2526–34.

³ Jason Hess, KLAS Enterprises (Orem, Utah), “Are We There Yet? Getting to Meaningful CPOE Use”, July 13, 2010

About PatientKeeper: PatientKeeper® Inc., the leading provider of physician health information systems, enables physicians and hospitals to focus on their patients, not technology, by providing highly intuitive software that streamlines physician workflow to improve productivity and patient care. PatientKeeper’s CPOE, physician documentation, HIE and other applications run on desktop and laptop computers and virtually all handheld devices and tablets. PatientKeeper integrates easily with hospitals’ existing IT infrastructure to create the most cost-effective solution for driving physician Meaningful Use.