

How to Architect the Best CPOE Approach

(Computerized Physician Order Entry)

James F. Keel, III, M.D. & Arlo Jennings, Ph.D.

Computerized Physician Order Entry (CPOE) has become a major buzzword throughout the healthcare sector, and presents a perception that is enlightening to administration and frightening to physicians. Software vendors jump at the opportunity to sell this concept and their products that support the physician order entry direction. Hospital administrators react positively to moving in the direction of CPOE technology because of the potential savings and improved quality that may be gained through reduction in medical errors. CPOE is touted to decrease medical errors by several mechanisms.

- Much is attributed to CPOE in the form of improved and readable medication prescriptions. Everyone realizes that physicians have poor handwriting skills, which leads to misinterpretation of the handwritten prescription, resulting in a medication error and possible patient endangerment.
- Errors of omission are common in medical practice, where physicians are accustomed to writing orders from memory. This type of error may be suppressed by the use of computer-generated orders sets, which include all of the order detail that supports consensus and evidence-based care.
- Valuable information may be imbedded in the ordering process at the point of order entry. This may include clinical alerts and rules as well as financially relevant information.

Because of these facts, vendors have an in-road to selling a product, but fail to understand hospital workflow and processes that should be in place before CPOE occurs.

Hospitals are usually the entities who step up to the plate, absorb the risk, and take a chance on what software vendors sell as the "best of breed" CPOE product direction. The major mistake made by hospitals is jumping at the opportunity to implement CPOE without due process of understanding the impact to both patients and staff. The Information Technology (IT) Department usually suffers greatly because of the burden placed on it to ensure appropriate access to the application, adequate response time for entering orders, and the availability of patient information to the physician at point of care.

Many hospitals elect to implement CPOE because of the potential return on investment (ROI) that is put before them by vendors without realizing the potential retaliation from the medical staff. A very real possibility exists that physicians will refuse to use the system, forcing physician assistants (PAs) and residents to use the system to support their physicians, or worse, that physicians may shut down the system entirely because they have not bought into the concept. Either way, the physician is divorced from the ordering process and most of the benefits of CPOE are lost. Most organizations that have attempted CPOE still maintain a paper chart and do not have a flow of patient information to

a central electronic medical record. Most hospitals do not have cost information available to the physicians as part of the embedded data in the computer system. This lack of cost information does not afford the physician valuable information required to order the best medication at the lowest cost to the hospital and patient. Additionally, most hospitals do not have medication alerts to provide information to physicians ordering medications warning them of the potential danger in prescribing a drug that may conflict with the patient's current medications.

If it were possible to attend all the conferences, seminars, and discussions regarding CPOE, an individual would never return to the office. Each conference or seminar lends itself to a stated best direction without considering the total impact to an organization. Having an electronic ordering system is just a small but critical part of a total hospital clinical information system. To make CPOE happen, much should be considered. Regardless of resistance to change, the organization must consider re-engineering both clinical and business processes, including the implementation of standard protocols, procedures, and orders sets prior to jumping on the CPOE bandwagon.

It is understandable that many organizations choose to implement CPOE with no regard to having full patient documentation in place. While this is definitely not the best approach nor the recommended approach, there are no rules in place advising against it. As a result, organizations may fail at implementing CPOE.

Actually, CPOE failure occurs for several other key reasons as well:

- Inadequate up-front physician **involvement** and buy in causes physicians to feel that the implementation is being **forced upon them**.
- Inadequate access points and training can lead to further frustration for the physicians.
- Perception on the part of physicians that CPOE will be time inefficient. Time consumed with redundant logins into multiple systems and applications is just one example.
- CPOE is implemented without regards to the complexity of obtaining **total information** about the patient; i.e., patient information in multiple places and multiple media formats.
- CPOE is implemented first with the belief that **substantial ROI** will be gained, only for the organization to realize how difficult ROI is to accurately measure. This may result in the need to step away from the implementation. This risk is heightened as the complexity of the initiative unfolds, the need for new technology and software develops, clinician resistance to change mounts, and the immaturity of the vendor products becomes obvious.
- CPOE becomes **an IT initiative** as opposed to an organization or clinical initiative. This initiative must be supported from the top down, including both Hospital Administration and Medical Staff Leaders.

- CPOE is thought to be the ***cure for medication errors***. This thought is without understanding that physicians need additional complete clinical information regarding the patient medical history that is not readily available via the electronic network, and without understanding that other IT objectives, such as Positive Patient Identification, must be implemented and coordinated with CPOE to drive out medical errors.

Most IT initiatives in healthcare focus on technology and do not focus on business processes. This is a major mistake resulting in ineffective communication systems and incomplete medical history databases. Patient medical results are maintained in numerous best-of-breed systems that are not interfaced to the primary medical history database. Up until now, this did not seem to be a problem primarily for two major reasons:

- Some patient information is printed to paper and retained in a paper medical record chart. The advantage of this is that the physician has available medical information regarding a patient in one place. The downside of this approach is that the paper record is usually incomplete, unavailable, expensive to maintain, and handwritten notes are difficult to read. Once the paper chart is microfilmed or microfiched, readability and availability become even more difficult.
- Other patient information is stored in various support systems, such as blood gas, lab, radiology results, EEG, EKG, fetal monitoring strips, etc. Most of this valuable information is not readily available in a timely fashion to the physician in the paper record; therefore, an incomplete patient history is reviewed. This impacts patient care and patient safety.

The dark side of CPOE surfaces quickly when implementation takes place. Resistance by the medical staff then begins emerging for several reasons:

- When asked, physicians quickly state that CPOE will require more time on their part and will definitely disrupt their process in making patient rounds -- taking longer and taking valuable time away from patient care.
- Physician utilization will be slow to start, with some major resistance. A total lack of interest and support may be evident from many older physicians, who typically have little facility with information technology.
- Inpatient care processes involving nurses, pharmacists, ancillary staff, physicians, and support staff are affected, making it necessary to redesign or re-engineer these processes.
- Access to a comprehensive range of patient data must be retrievable from the computer record to avoid the inefficient struggle to locate some information in the computer while other data must be tracked down on paper. This effort typically involves the creation of additional applications, reports, and interfaces, at additional expense to the hospital.
- Defined downtime processes to allow access to critical patient information must be in place before moving to CPOE. If these processes are not in

place, physicians will resist using the system and force the hospital to retain paper charts. The implementation of a sufficiently redundant system to support CPOE is expensive and time consuming. Major delays could dampen the move to CPOE.

- Rapid computer response time and user-friendly interfaces must be in place or physicians will avoid the system.
- CPOE implementation is expensive and the technology is evolving. As a result, the hospital expends a great deal of funds for the initiative, often to learn only later that additional new and necessary processes must be added to support physician order entry. This leads to unanticipated costs and to differences between the medical staff and hospital administration.

If CPOE is broken down to its most elementary level, it is a computer application that allows physicians to input patient orders electronically. Hand-written orders are eliminated, but verbal orders must still have a place in the process. The key process issue here is whether physicians will shy away from the electronic input of orders and steer more toward the use of verbal orders, transferring the onus onto other staff to input the information. If this happens, all is lost with the benefits of physicians inputting their own orders: if physicians don't enter the orders themselves, they will not be able to respond to rules, alerts, and other information imbedded into the ordering process.

One of the most important benefits of CPOE is the anticipated **reduction in medication errors** or adverse drug events (ADEs.) ADEs are difficult to quantify because they are difficult to report. In addition to the cost in time involved for staff to report ADEs, many feel that they will become the object of scrutiny and blame. Many hospitals have voluntary reporting of these events in which clinicians witness an issue or are personally involved. It is reasonable to state that the incidence of ADEs is probably far more substantial than reported statistics indicate. Implicit with CPOE is the assumption that true incidence of ADEs will dramatically decline, but may be very difficult to measure.

The keys to CPOE success are the proper architecture and implementation of this unique process. The system must encourage physician usage, by leading them with positive enhancements to patient care, versus imposing on them a foreign system through new regulations and bylaws that will only lead to increasing resistance. A crucial element is ensuring appropriate buy-in and involvement by everyone affected. **CPOE must be the climax to a chain of system events versus the primary exposure.**

What are the building blocks? It is safe to say that no software vendor has a complete solution or an acceptable process for moving organizations to CPOE. Evidently, software vendors are using a "first-to-market" approach versus a structured approach to an acceptable order entry solution. When reviewing a list of CPOE implemented sites from one vendor, the clients were impressive, but the deployment of CPOE was to residents, medical students, and physician

assistants. None of the referenced sites could boast that attending physicians were using CPOE routinely. Serious time and dollars were being wasted.

In thinking through the process of best practice implementation processes, the following is what could be considered the foundation and building blocks for any hospital considering implementing CPOE:

- Without any hesitation, an up front systems analysis detailing workflow must be accomplished **first**. This analysis defines current practices but does not define best practice using an electronic approach.
- Workflow must be considered at all points in the clinical process. A detailed data flow diagram should be designed to indicate patient flow and required information for treating the patient. **Foremost, the patient must be at the center of the process. Second, optimizing the efficiency of the providers is critical.**
- Using the data flow diagram, apply the current applications to **determine what gaps exist** in the current environment. This step will more than likely surprise you. Paper workflow is interesting, but leaves many clinicians waiting for information and putting patient care at risk.
- Examine weaknesses in the current environment; ask how it should work for improving patient information flow. Compare this to the data flow diagram and re-do the diagram **detailing the improvements** as users visualize them. Understand that this is preliminary and that true re-engineering will have to be revisited once you choose the appropriate vendor.

At this point, many organizations may have already selected a vendor based on that vendor's stated "success" for implementing CPOE. This is a major mistake. It is probably safe to say that no vendor will take the time for a detail systems analysis of the hospital's workflow. If the vendor has not detailed the four steps with you, as outlined above, do not proceed with purchasing a product until these steps are fully completed and understood, and documented by both parties.

If CPOE was not such a buzzword, **vendors would be forced to provide a solution versus a modular approach to clinical practices**. Throw the CPOE process out and think in terms of a true integrated clinical information solution. If the applications are truly integrated, a component of the workflow will be physician order entry.

- Hospitals must insist on vendors proving that they have an integrated clinical information solution. The key word is "**solution**." This will take some vendors by surprise because they cannot demonstrate integrated workflow.
- Talking to a vendor's client is not necessarily beneficial. Obviously, more is learned of what not to do versus a beneficial approach to a successful solution. While much may be learned, when you have been in one hospital, you have been in one hospital. Practices are highly varied among hospitals,

so that there are no universal standards. What may be great from a vendor's perspective in one hospital will be a total failure in another.

- To help simplify this, as part of the data flow diagram, indicate key workflow paths that can be utilized as process improvement. If your hospital has a management engineer on staff, seize the opportunity to have that individual involved in examining workflow processes beginning with the patient's point of entry into the system and following through to discharge. Do not let the management engineer do this alone. Ensure that appropriate clinical individuals are included in the review, but be sure that everyone gets outside the box.
- Before you look at changing workflow processes, build a second data flow diagram depicting how workflow could be improved if electronic systems were in place to support the needed functionality. Again, think outside the box. Do not use this as a time to re-design your current system; it already exists and does not meet your future needs. Think future, think workflow, think process, and think re-engineering. Most of all think patient care. Remember, if you were satisfied with your current approach, you would not be undertaking this project.

Most hospitals spend countless dollars for redesign to force their current processes into the electronic environment rather than reengineering new processes to take advantage of the new technology. This is a major mistake. No hospital can take advantage of computerized applications if the objective is to continue to do things the way they have always been done. **Think outside the box.**

Now that you have a current workflow, a desired workflow, and reviewed processes that must be re-engineered, you are ready to align the workflow with the vendor applications. This will be scary. No vendor will be able to accomplish what you have designed, but they will be the first ones to tell you that their applications are the complete solution you need. They are thinking sales; you need to think patient care. First and foremost, do not listen to any vendor that insists you implement CPOE first. This will be the biggest mistake you can make.

How to begin: As an organization, review your data flow diagrams and determine the weakest points in your current processes. However, just note these points at this time. Now think in terms of how physicians work, clinicians work, and how a patient needs to be processed through the hospital regardless of the type of health issue. What do you need to build the base?

- Based on effective RFP responses to your clinical workflow solution requirements, choose the vendor that has a strong level of application integration. You will find this to be a short list. *(If done appropriately up front, all the above steps would be done as part of a systems analysis before any vendor RFP is ever sent out for response.)*

- Focus on the base products. For example, after the vendor has been selected, ensure that the hardware is reasonable and will support applications and user requirements for a minimum of three years. Remember--great response time is critical. Vendors will attempt to minimize the costs of hardware components to show lower up-front expenses. By doing this, you will end up with less processing power than you need and will have to justify additional funds outside the scope of the project. Ensure that your IT systems engineers are included in the configuration of the required hardware.
- As an absolute key condition, you must insist the vendor have an **integrated** medical record application that encompasses both patient management and patient accounting applications that work together. The vendor must support document imaging, and this product must be tightly integrated with the medical record application. Primary to a selection of the vendor is integrated workflow for medical records, and a user-friendly in-box application to facilitate physicians in the completion of their charts. Remember, the Medical Records Department is an assembly line process. If the vendor cannot address this, do not select them. Also, verify with the vendor that medical records personnel have access to view physician in-boxes.
- Focus on the back-end patient accounting application to ensure that it is integrated with the medical record application for coding and billing compliance.

Step One:

Implement Document Imaging - Hospitals are famous for many different types of forms making up the combined medical record. These forms must be converted to all white paper and bar coded for effective scanning.

Step Two:

Implement the medical record application to include all assembly line steps: prepping, scanning, quality control, validation, release of patient data to the electronic medical record, coding, analysis, notification to the medical staff, communications, report generation, and release of information with consideration of privacy standards. Ensure that the application covers physician requirements for chart completion:

- Co-signatures; requirements for non-physician staff, PAs, residents, social workers, etc.
- Forwarding of documents to facilitate proper document assignment.
- Compliance with JCAHO, CMS, HIPAA, medical staff bylaws, and other regulatory requirements.

The application must be usable from any network access device in the hospital and available to physicians in their offices and at home. Implementation of a transcription interface should also be incorporated with the Medical Records application to take advantage of the opportunity to acquire transcribed information on-line rapidly as well, diminishing the volume of scanned documents by taking advantage of direct data feed through the interface into the computer system.

Step Three:

Implement Patient Accounting and Patient Registration modules. If this is an integrated part of the vendor's solution, information will flow appropriately to ensure that billing and accounts receivables are maximized. Remember that this is definitely a revenue issue in addition to patient care.

Why do these steps first? Medical Records is the core of the entire clinical solution. By bringing up Medical Records and Document Imaging first, you are able to convert the post discharge patient chart entirely from paper to an electronic format. This makes the post discharge chart instantly available at any location to care providers, case managers, coders, and others. This will prove to be an extraordinary asset to the physicians in the assessment of patients that return to the system, as well as a convenience for chart completion. By becoming familiar with handling the electronic record in these settings, the medical staff is drawn to the use of the computer as an asset, rather than as a forced impediment to the process of patient care.

This effect has the further advantage of naturally improving physicians' skills with keyboarding, "mousing", and navigation of the electronic record. The patient chart is the first document required when a patient arrives at the hospital and the last document to be completed for compliance, billing, and patient information for follow up care by the physician. Every clinical application that will be implemented has information flow (spokes) to the medical record hub, the same as in the paper world. Overlook having a strong hub and you will weaken the wheel.

Concurrent with the implementation of Medical Records should be that of laboratory and radiology. Including them early in the process with medical records ensures rapid access for providers to real time clinical data and also decreases the volume of scanned material that is loaded onto the Medical Records department. If you should elect not to purchase new laboratory and radiology applications, it is crucial that you COLD feed the patient information from the legacy systems to the imaging repository.

- **Laboratory** – Lab results need to be timely, and include chemistry, blood bank, pathology, and microbiology. Other entities included in the lab application must also be implemented, especially the outreach component. Medical necessity must be a key component of the lab application.
- **Radiology** – Image results must be included as part of the design of this application. If no PACS system is implemented, access to radiological images and the interpretation of images must be available quickly. Do not overlook how the radiology reports and how transcription must be accomplished.

After these applications are successfully up and running smoothly, you are in position to move to the patient bedside with the clinical applications. These

include the Emergency Department application, Surgery, Centralized Scheduling, Nursing Documentation, the Intensive Care Flowsheet, as well as applications associated with other clinical departments, such as Respiratory Therapy, Nutrition Support, Physical Therapy, Case Management, etc. This transition will involve considerable change in the work environment for care providers and will entail detailed attention to workflow assessment, as discussed earlier, as well as careful formulation of a transformation plan.

At this point, it is recommended that a transformation (transition) committee be formed. This committee should be composed of direct patient care providers who use the current processes daily. The objective of this committee is to review current state processes, the new application approaches, and help the organization transform from existing process to a re-engineered approach using electronic media.

- **Emergency Department** -The first direct patient care department that should be addressed is Emergency Department (ED). The ED is frequently the first place that patients arrive at the hospital and provides a varying degree of both inpatient and outpatient services. In most hospitals, approximately twenty percent of ED patients are admitted as inpatients. This provides two very distinct opportunities for system implementation:
 1. Since the ED is somewhat a closed loop system, much can be gained from reviewing workflow, testing physicians using the electronic medical record, providing an insight to appropriate patient care processes, and ensuring that electronic documentation, such as the triage form, works for getting the patients through the department.
 2. For patients admitted to inpatient status, having the forms flow from the ED to inpatient units electronically will quickly provide insight of the acceptance of the forms and the utility of the information submitted. Key elements include medication information, allergies, and history and physical documentation.

When ED is successfully working in an electronic environment, the next steps have some versatility but must be accomplished with key involvement of all clinicians.

- **Surgery** – Having a robust surgery application is critical. There is nothing in the hospital that does not touch this department. At this point, attention must be given to inventory and interfaces with the materials management application and to any inventory robots in the surgery area. Interoperative, intraoperative, and perioperative documentation must be addressed. Room scheduling and room cleaning times analysis is essential. Physician preferences must be addressed with the understanding that this is a moving target.

- **Centralized Scheduling** - At this point, centralized scheduling should be addressed. This component could be addressed sooner, but much effort is duplicated with interfaces to disparate applications versus the new integrated solution. Once the issues have been resolved in smoothing out the wrinkles in Medicals Records, Emergency Room, Laboratory, Pharmacy, Radiology, and Surgery, then it is more feasible to face the challenge of getting everyone to move to a centralized approach to patient scheduling.

Thinking this through for a moment, the hospital at this point has an electronic medical record, figuratively speaking, since there is still a great amount of paper being processed and scanned. This provides adequate access for ancillary departments to convert to a centralized scheduling approach because conflicts can be determined across various departments. This will improve patient services since there is a single point of contact for scheduling tests, and ensures that a patient does not have the same test performed numerous times.

- **Nursing Documentation**- Nursing documentation or bedside documentation is never an easy undertaking. Just the number of different forms and nursing protocols makes the task daunting. Obtaining buy-in from key nursing directors and the nurse executive is essential to the success of bedside documentation. Physician input is critical, since physicians will depend on viewing critical nurse documentation online, such as vital signs, intake and output, the critical care flowsheet, and other point of care data.

Now that all of the basic clinical systems are automated and much of the clinical patient data is available to and being viewed by the providers, we may turn our attention to the physicians and look toward the implementation of CPOE.

First, the physicians must use and become familiar with the computerized record. This will initially be a challenge since many physicians will remain comfortable with paper and resist change, especially if the change is forced, and especially in the community hospital setting where most physicians are not employed by the hospital. The physicians will need leaders and champions to emerge from the paper world. In many cases implementations will need to be piloted in smaller settings, initially to work out bugs and then to phase in the transformation. The hospital should begin by identifying a physician to assume the role of Chief Medical Information Officer (CMIO). This should be a paid part-time or full-time position working in close collaboration with the hospital Chief Information Officer (CIO) to guide the project from its inception. The CMIO should appoint a physician committee to oversee and render recommendations relevant to those issues that will directly or indirectly affect the workflow of the physicians and allied health personnel.

The physicians will become advocates for the system if, early on, they are provided major enhancements to improve their workflow and the quality of care that they provide. As mentioned earlier, the provision of the post discharge

record electronically is much more rapid and reliable than the retrieval of the paper record, or worse, microfiche. This, in addition to the convenience of chart completion any time from any location, allows significant advantages to the providers, at the same time drawing them to and engaging them with active use of the electronic record (EMR). Their advocacy may be further enhanced by providing:

- **Access devices:** sufficient, conveniently located and with efficient single sign-on
- **User friendly, intuitive software** at the EMR interface
- **High performance** (rapid screen to screen times) and consistent response time
- **High availability uptime** with rapid, well deployed, and **well prepared downtime procedures**
- **All clinical results** available online. Many results will be generated that are not part of the lab or radiology interface data. To the extent that these are not resulted into the EMR and are available only on paper until scanning post-discharge, physicians will have to keep up with paper documents on rounds in addition to the computer. This leads to inefficient workflow and makes many physicians, still tied to paper, more resistant to the transition to the EMR. **The key is that the hospital must improve the quality of care through more effective access to information.** If clinical patient information is scattered throughout the organization in various medias and computer systems, clinicians will struggle to have time to gather information across the care continuum. It is essential that patient information be integrated from disparate systems. Patient safety is at risk when information is not available
- **Picturing Archiving and Communications System (PACS)** for access to radiology images and digitized medical photography. Physicians spend a great deal of time tracking down and viewing X-ray film. The provision of these images online represents an extraordinary convenience and timesavings, as well as providing unique picture formatting features to enhance images. There is a major ROI associated with PACS. Physicians will be further drawn to the computer for the convenience that PACS affords.

Implementing these initiatives must be accompanied by regular communication with the medical staff in order to prepare them for each and every stage of the progress, including constant reminders referencing the long-range vision and goals. Communication with physicians is not simple, and frequently requires many routes and tools.

- Medical staff meetings
- Medical staff newsletter articles
- Letters
- Posters, strategically located in physician lounges, physician parking entrances, medical records
- Lectures to private practices, departments, and other groups

- Individual communication
- Email
- Intranet and/or Internet web sites
- Instant Messages via the computer
- Physician Telephone Helpline. This is especially valuable around go live initiatives.

At some point, it will be helpful to train the medical staff to find information updates by a specific mechanism, such as an Intranet site. This being said, there is no substitute for one on one interaction.

Now that these efforts are in place, including the elimination of the paper chart post-discharge, the majority of physicians should be using the EMR on a routine basis. The next step is to **pull the paper for results only** from the inpatient chart. At this point, the hospital will begin to realize a substantial ROI by not having to maintain a large volume of paper results on the chart and the remaining vestige of paper-using physicians will be forced to the EMR.

The final, but critical element to put in place prior to implementing CPOE is the house-wide development of physician **orders sets**. Many hospitals have already implemented a variety of orders sets. Often these may be of varying formats, have considerable redundancy, have many gaps in completeness, and may not represent optimal, evidence-based, state-of-the art care. An initiative that is broad-based throughout the organization should be undertaken to revise and update all orders sets. This should be a multidisciplinary process that involves all stakeholders and physicians. In particular, the order sets should be developed primarily by those who will be using them or are affected by their use on a regular basis. Small workgroups should be organized to develop them. Guiding principles should maintain that the order sets are:

- Evidenced-based, with research support to review relevant literature and in-house data.
- Consensus-based so individuals who use the orders sets have contributed to the development and have buy-in and acceptance.
- Consolidation of redundant order sets is essential. There are not multiple “best” ways to manage a single problem. Again, consensus should rule. Multiple redundant order sets are also difficult to maintain.
- Complete. The orders sets should be surveyed to avoid any significant gaps in care.
- Guided by a steering committee. There should be a central committee to review all orders sets after they are developed by specialty groups, so they will follow a common format, common formulary and safety requirements, and facilitate ease of translation into the computer order environment.
- Backed-up and secure for downtime. Paper translations of orders sets should be maintained and distributed on clinically relevant units in the event of downtime.

- Maintained on an ongoing basis. A process for ongoing maintenance and updating of orders sets is required.

Once these elements are in place, the stage is set to implement CPOE. CPOE should be a piloted project. The NICU is a good place to begin because it is a relatively contained operation without many diverse providers entering the patient care environment. The most important factor in choosing a pilot unit is to have a relatively limited number of practitioners with whom to deal. They should be accepting of the effort and not readily rebel when obstacles are encountered. The unit should have a willingness to work with the IT team with problem resolution. The practitioners will require considerable support throughout this process.

After successful implementation in a confined area, the next step is to move to successive units where a majority of the physicians are willing champions of the transition. In general, these should be physicians who have a substantial activity in the management of inpatients. As successive units are brought on-line with CPOE, there will be a time when some physicians are still using paper orders, while the CPOE champions are using electronic orders. After some period of successful use of CPOE by the physicians, the medical executive committee will need to set a date beyond which the hospital will no longer accept handwritten orders from the broader medical staff. At this point, there will be some physicians who will likely exhibit obstructionist behavior and will have to be dealt with according to necessary adjustments in the medical staff bylaws. Resistant behavior can best be dealt with by excellent physician support, communication, and through strong will and leadership on the part of the administration and physician champions.

As a last note, the issue of online physician documentation (progress notes, H&P, procedure notes, etc.) has not been addressed. It is commonly understood that many physicians do not type well. Furthermore, templated notes lack richness of description to usefully describe many of the nuances of patient care, but do have some utility in particular areas of documentation, such as elements in the physical exam and review of systems. An alternative approach is the use of voice recognition. Voice recognition technology is making significant strides and may soon become available as a satisfactory tool to support physician documentation. Optimally, the progress note should be built from the integration of:

- Text material, whether through voice recognition or typed
- Information carried forward from previous notes
- Formatted information cut and pasted from the problem list, the medication profile, relevant lab, and other results reports
- Templated information created with the development of the note.

In addition, physician progress notes and other notes such as History and Physical notes, Consult notes, etc, should also support CMS mandated bullet documentation and ICD-9 documentation for coding purposes and charge capture.

The combination of these elements is not yet commercially available in a complete and integrated format. The implementation of physician documentation may have to wait for further technological development before general acceptance can be reasonably expected. That being said, physician documentation per se should not be a prerequisite for the successful implementation of CPOE. However acceptance of the EMR by physicians is highly recommended as a prerequisite to successfully move forward.

Conclusion

CPOE is probably here to stay and will be supported strongly in the future for improved patient care and safety and for the improved financial health of the hospital. The organization must choose how this process will be implemented. The success of the implementation depends upon the interactions among the hospital administration, the medical staff, and the clinical support services. It is imperative to have physician champions if the implementation is to be successful. This is not an initiative that can be dictated or forced. It must be received openly and willfully. For an organization to invest the funds required to make this happen only to be shut down by the medical staff is foolish. The keys are to choose your vendor wisely, structure your implementation to avoid pitfalls, involve the medical staff, the nursing staff, the clinicians, administration, and the technical staff, and ensure that you have support from both physician and hospital senior leadership. The road is rocky, but the results will definitely benefit the patient, the physician, the hospital, and the community. Move ahead, but move with caution and take into consideration the steps outlined above.

Bottom Line, don't buy CPOE because it is a good product; buy CPOE because it is a great process.

James Keel, III, MD is Information Services Medical Director at Mission Hospitals and a board-certified critical care specialist with Asheville Pulmonary and critical Care Associates, PA. He received his BS in Chemistry from Duke University and MD from Duke Medical School, where he also did his residency and obtained his critical care fellowship in 1978. He previously served as Director of Critical care for Cabarrus Memorial Hospital and Memorial Mission Hospital. Dr. Keel can be reached by email at james.keel@msj.org or by telephone 828-213-1137.

Arlo Jennings, Ph.D. has served as Chief Information Officer since August 1986. He received his Bachelor of Science in Management and his Masters and Ph.D. in Management Information Systems. Prior to joining the health system,

Dr. Jennings spent 19 years in the manufacturing industries in Enka and Statesville, NC. Dr. Jennings is responsible for computer services, information security, clinical informatics, health information management, and telecommunications, including the switchboard. Dr. Jennings has also served on many Boards across the State of NC and served as an adjunct professor of Business and Computer Science at Mars Hill College for eight years. Dr. Jennings' email address is arlo.jennings@msj.org or at 828-213-1137.

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