Performance Strategies

Using CPOE to Reduce Variability of Care and Improve Outcomes Vol. 2, Issue 2, 2008

AnMed Improves Patient Outcomes with CPOE

By Leigh Miller, RN
Director of Clinical Outcomes
AnMed Health, Anderson, S.C.

Goal: The Top Decile of the HQID Project

AnMed Health has participated in the federal pay-for-performance program, the Premier Hospital Quality Incentive Demonstration Project (HQID), since the program's inception in October 2003. We've reached top decile performance for acute myocardial infarction (AMI); hip and knee; and coronary artery bypass graft surgery (CABG); and we've reached the second decile for quality measures for heart failure patients. However, despite our best efforts and process changes, prior to using computerized provider order entry/clinical decision support (CPOE/CDS) we were not achieving state and national benchmarks for community acquired pneumonia (CAP). Our goal is nothing less than top decile performance.

Tapping the Power of CPOE

Medical best practices for CAP include ensuring that patients receive the appropriate antibiotic within a specified period of time after arriving at the hospital. However, the research-based guidelines change frequently — as often as every quarter. We needed to provide caregivers with ready access to the latest guidelines, but we also wanted to engage physicians in the use of technology and instill best practices.

While CPOE speeds orders and virtually eliminates prescribing errors, our leadership recognized that the true power of CPOE would be unleashed by providing advanced evidence-based guidelines at the moment of clinical decision making. Since the hospital was not achieving desired outcomes for CAP patients, we decided to use CPOE to guide clinical practice and reduce variability in care. Although AnMed Health had preprinted outlines for all the core measures, there were problems ensuring physicians had – and used – the most current paper form. As we built the content for our deployment of McKesson's Horizon Expert Orders™ solution, we decided to use iforms to "bake" quality components for CAP and other core measures right into the system.

Delivering the Gold Standard of Care

Within the CPOE system, physicians were prompted with key order outlines for CAP, heart failure, stroke, AMI, surgery, TPA administration and more. As core measures changed, we could update them instantly. Once physicians became more adept with iforms and best practices for CAP patients, they requested iforms for other strains of pneumonia. Physicians were also pleased that orders are legible and are not being misinterpreted. All of these benefits combined assure physicians that they're consistently delivering the gold standard of care to all their patients.

CAP outcome improvements: By using CPOE and order outlines, AnMed Health physicians improved the number of CAP patients receiving antibiotics within designated guidelines by 42%. In comparing results for our hospitalists, who universally embraced the CPOE system, to the broader physician population, we also:

- Reduced the average length of stay for CAP patients from 6.7 to 5.5 days
- Lowered the cost of care by 20%
- Reduced the mortality index by 56.5%

The improvement we experienced in our overall CAP score also has the potential to increase our Medicare payment for that diagnosis.

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AnMed Improves Patient Outcomes with CPOE *(Cont.)*

Order callback reduction: Physicians have cited a dramatic reduction in callbacks for order clarification related to allergies and dosing. They've also noted that CPOE orders are acted upon immediately vs. the average 43 minutes it typically took to process paper-based orders.

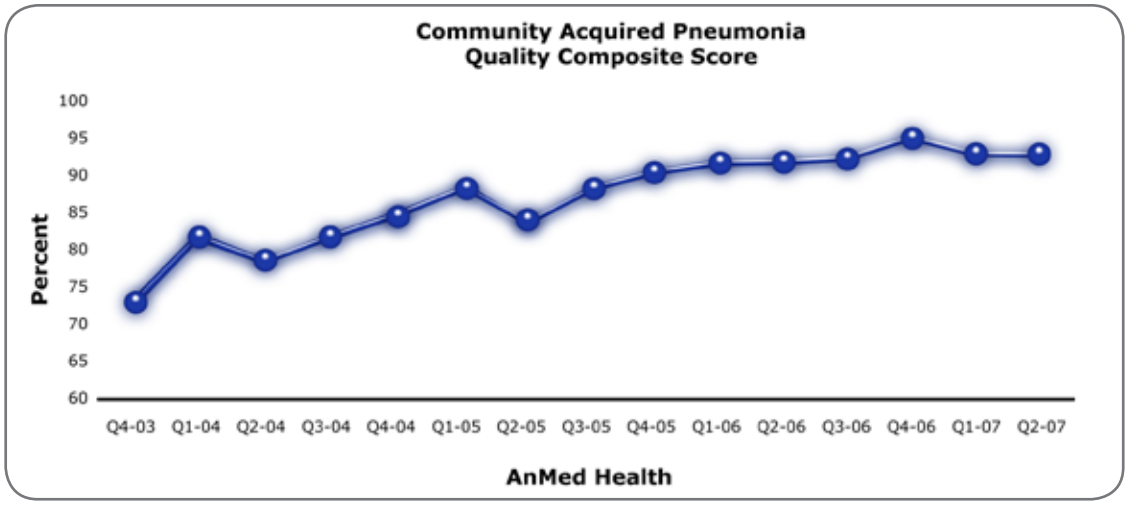
Lessons Learned

Tracking progress: While we continued to track the use of paper orders, we realized we weren't tracking the orders in CPOE. So we added an order that was "hidden" from the physician's normal workflow, but which automatically notified the case manager that the iform was being used and alerted her to patients who needed nursing follow-up care. It was so effective, that we later added a similar order to remind the nurse to place the patient on a respiratory plan of care and ensure all needed treatments were administered.

Rewards work: We also discovered that rewards work, and they don't have to be expensive. At our last steering committee meeting, I gave movie tickets to any physician entering at least 40% of all patient orders through the computer. Out of 22 doctors, two didn't receive tickets — and one of them had been trained on the system since last November. Since the meeting, he has burned up the computer! A little friendly competition never hurts.

CPOE has enabled us to stay up-to-date with quarterly indicator changes, drive physicians to evidence-based practice and achieve higher levels of excellence in clinical outcomes. We haven't reached all our goals yet, but we're much closer with the help of technology.

Leigh Miller, RN, MSN, has been a nurse for more than 30 years and currently serves as Director of Clinical Outcomes at AnMed Health, Anderson, S.C. In addition to the hospital's CPOE implementation, she is responsible for discharge planning, case management, clinical quality, quality reporting to accrediting agencies and patient advocates, and service recovery. She has experience in critical care, staff development, and was the founder and first manager of Lifechoice, AnMed Health's cardiac, pulmonary, oncology rehabilitation and wellness programs.



Since adopting CPOE, AnMEd Health has made great strides in improving its core measures scores for improving outcomes for patients with community acquired pneumonia.

Learn More

Better Outcomes, Improved Safety Reported by Community Hospitals

Leapfrog Group Computerized CPOE and EHR Evaluation Tools

McKesson Signs Agreement with Proventys for Personalized Medicine Strategy

AMIA: A Roadmap for National Action on Clinical Decision Support

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CPOE at Concord Improves Compliance and Outcomes

By Joel C. Berman, M.D.
Chief Medical Information Officer
Concord Hospital, Concord, N.H.

CONCORD HOSPITAL

Leading Transformation

Concord Hospital has long used information technology to enhance patient care and safety. In fact, we were one of the first U.S. hospitals to use computers at the patient's bedside in the early 1990s. As champions for clinical informatics at Concord Hospital, my team and I are charged with leading transformation and bridging the gap between IT and clinical practice.

Two years ago, we began the move away from paper-based orders to deploy Horizon Expert Orders™, McKesson's computerized provider order entry/clinical decision support system (CPOE/CDS). We knew we faced one of our toughest challenges to date. But at Concord, we believe that in the 21st century, paper-based orders are no longer compatible with good clinical care.

Studies suggest that the single biggest driver for CPOE adoption is physician engagement. To gain adoption, we knew we would need to show the immediate value of CPOE to physicians. I don't know about your hospital, but my physician colleagues get more jazzed about enhancing patient care than they do about operational or financial efficiencies. So our strategic vision is all about quality, safety, and improving the patient experience.

Strategies for Adoption

Stump the Staff: To generate a sense of urgency for CPOE adoption, we created a game called "Stump the Staff." Handwritten medication orders were displayed on a screen, and staff was asked to decipher the text. The game drew a lot of laughs as people attempted multiple wrong guesses about what the prescribing doctor intended. More importantly, it clearly illustrated the daily safety hazards nurses, pharmacists and patients faced in our paper-based environment.

Develop Order Sets to Promote Compliance and Reduce Variability of Care: To make an even stronger clinical case for CPOE, we set out to increase compliance in the use of prophylaxis to prevent venous thromboembolism (VTE). VTE is widely considered to be the most common preventable cause of hospital death in the U.S. Yet nationwide, only a little more than half of medical patients who are at risk of VTE receive appropriate prophylaxis. Concord already had compliance rates higher than national averages, but we knew we could do better.

Our CPOE team built "hot links" in the system that linked to current prophylaxis recommendations and to Concord's own evidence-based VTE guidelines. Speed is everything to physicians, so we avoided hard stops that would slow them down. Instead, we put the order set everywhere — it is embedded in every admission outline and shows up in each medical and surgical unit's preference list.

Doctors tend to concentrate on the patient's immediate hospital illness, so preventing pulmonary embolism is not always on their radar screens. The VTE order set brings best practice to providers at the point of care and reduces variability, but also allows them to decide on the best care approach for each patient.

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CPOE at Concord Improves Compliance and Outcomes *(Cont.)*

Achieving Higher Standards of Care

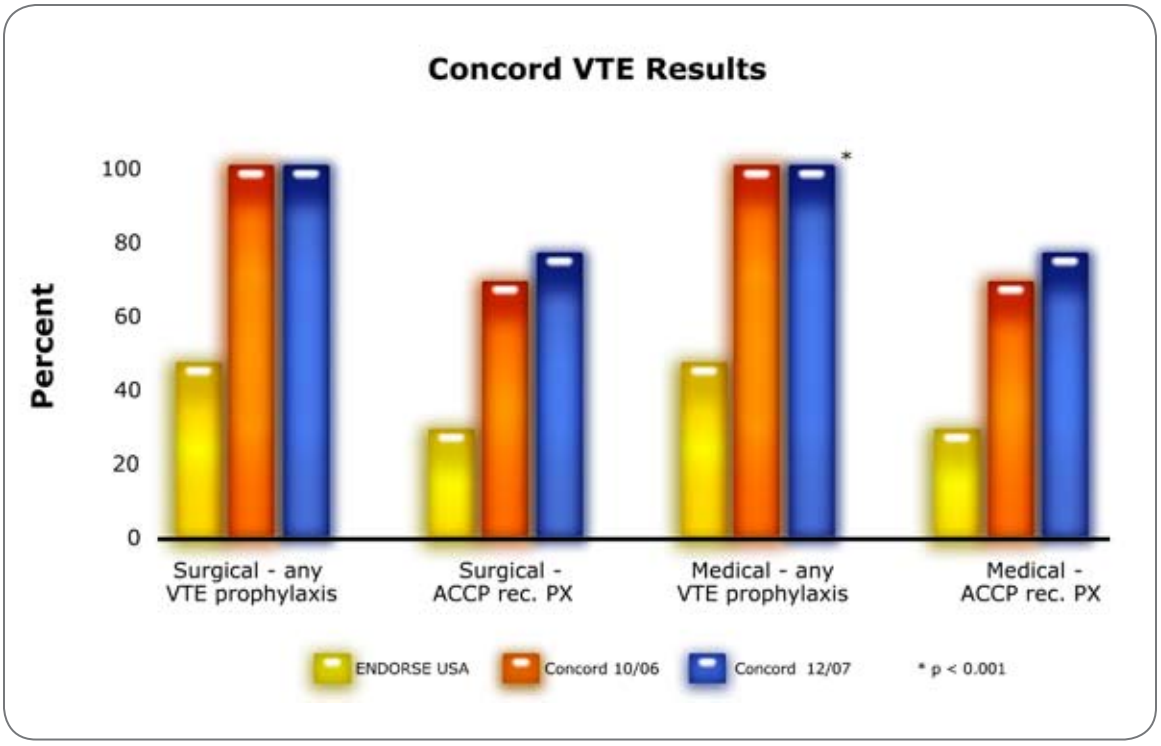
100% Compliance for VTE Prophylaxis: Within the first six months of using CPOE, we achieved 100% compliance for prophylaxis for inpatients at risk for VTE by presenting physicians with evidence-based reminders. CPOE provided an added push to get us over the top. Our success led us to create evidence-based order sets for numerous other conditions, including ischemic stroke, diabetes, delirium and acute coronary syndrome.

Documentation of Reasons for Radiology Exams: We also used CPOE to improve documentation of reasons for radiology exams. Missing information compromises quality of interpretation by the radiologist and negatively impacts revenue stream. With the addition of a required "reason for test" field for all imaging test orders (one of our few "hard stops"), we went from 47% to 100% compliance. In addition, imaging orders entered in the CPOE system were deemed appropriate for reimbursement 78% of the time — a 140% improvement that has favorably impacted revenue.

Creating Something Better

As you consider your own CPOE deployment, it's important to remember that evidence-based care is right for most patients most of the time, but not every patient all of the time. You must preserve the ability of your physicians to make discretionary decisions. Optimum patient care, unachievable in a paper order-entry environment, is now within the reach of those organizations that utilize CPOE and other advanced IT solutions. If you face resistance to CPOE, simply ask: Do you want the health of your child, spouse or parent to depend on paper-based orders when there's now something far superior?

Joel Berman has been a family physician for 26 years and is Concord Hospital's first Chief Medical Information Officer. His team has created EMR tools that facilitate the management of chronic illnesses and address complex problems such as anticoagulation, smoking cessation, and opioid management. He is also the hospital's lead physician for CPOE implementation.



Concord Hospital achieved 100% VTE prophylaxis compliance through physician use of CPOE/CDS. This graph shows Concord's results as of Dec. 2007 as compared to its results 14 months prior and compared to national data gathered through ENDORSE (Epidemiologic International Day for the Evaluation of Patients at Risk for Venous Thromboembolism in the Acute Hospital Care Setting), an international cross-sectional survey of 68,000 inpatients in 358 randomly chosen hospitals around the globe, sponsored by the University of Massachusetts Medical School.

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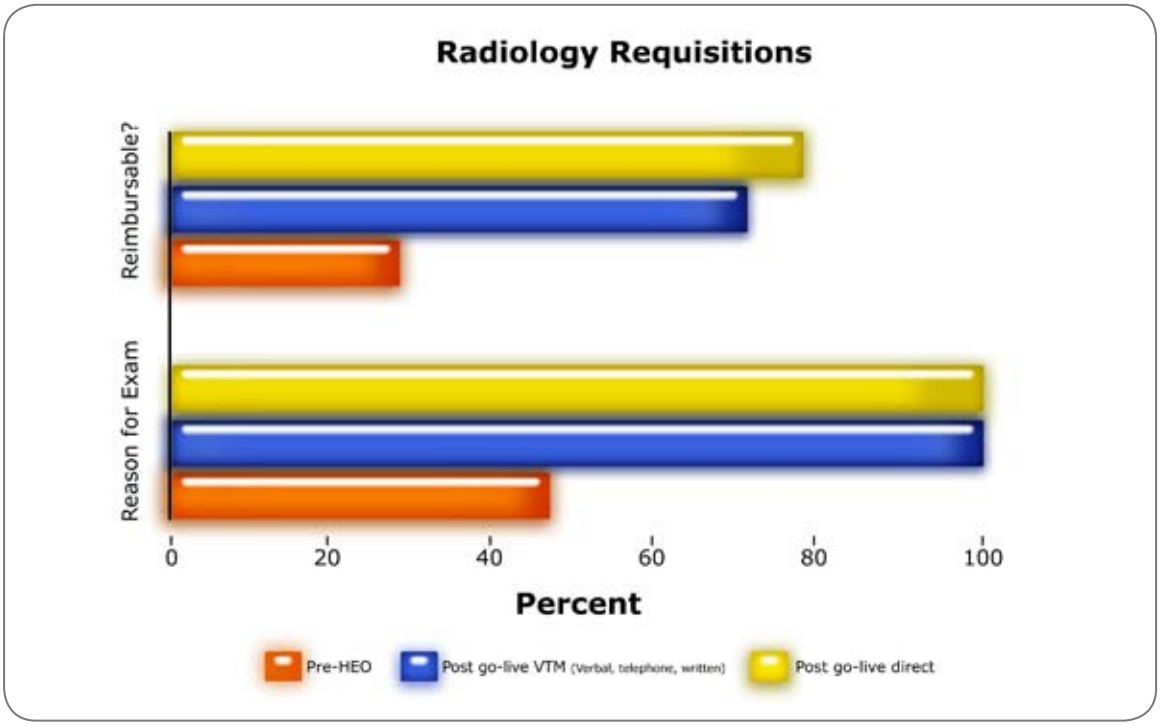
CPOE at Concord Improves Compliance and Outcomes *(Cont.)*



Concord Hospital improved documentation of reasons for radiology exams, going from 47% to 100% compliance. In addition, imaging orders entered in the CPOE system were deemed appropriate for reimbursement 78% of the time, a 140% improvement that will favorably impact revenue.

Learn More

e-Health CPOE Initiative Project Updates

CPOE Readiness Roadmap Guide

Development of Clinical and Application CPOE Standards

Medical Errors and Patient Safety

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CPOE Accelerates Operational, Financial and Clinical Gains

By Stuart Morgan, MD
Hospitalist and CPOE Medical Director
Providence Health & Services, Portland, Oregon

PROVIDENCE Health & Services

The CPOE Journey

At **Providence Health & Services'** not-for-profit network of seven Oregon-region hospitals, tools such as bar-code medication administration have created an environment of reliability and excellence. Our clinical and executive leadership recognized that computerized provider order entry (CPOE) is another tool to engage our physicians on the journey of improving the quality, safety and efficiency of our care.

In considering the switch to CPOE, we realized that the cultural change would be our biggest barrier, far outweighing the technology change. We knew we had to take it slow, one unit at a time, but we also had to quickly show the value of CPOE if we wanted physicians to adopt it.

Engaging Physicians

In October 2005, we began our CPOE implementation with a pilot at Providence Portland Medical Center. We started small with three physiatrists in the inpatient rehab center.

In preparation for the pilot, the physicians were able to test drive the system and provide feedback on the usability of orders, order sets and alerts. This helped communicate Providence's commitment to collaborate with the physician community and gained physician interest and acceptance for the upcoming implementation. This phase helped us understand the clinical content and decision support requirements prior to a broader rollout.

Over the next year, the system was rolled out across inpatient units for use by physicians, physician extenders and medical students. New users are recruited using "2 minutes to quality" to reinforce that the additional time it takes to place orders using CPOE is small compared to what's at stake.

Satisfying Physicians

To date, we have 134 physicians, seven nurse practitioners and a physician assistant using McKesson's Horizon Expert Orders CPOE/clinical decision support system, including 55 of Providence Health's most active physicians, with order volume averaging 50,000 per month.

Our physicians report these key CPOE benefits:

- Up-to-date evidence-based medicine is at physicians' fingertips whenever they need it
- They no longer have to locate the patient's chart
- Legible orders help eliminate errors
- Orders are executed more quickly, often before the physician leaves the nursing station

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CPOE Accelerates Operational, Financial and Clinical Gains

Improving Patient Outcomes
We are seeing improvements in clinical outcomes and a reduction in operational resource requirements.

Medication Error Reduction: Our CPOE system intercepts an average of eight to nine possible medication errors per day. While these potential errors would have been caught downstream by pharmacists, nurses or other ancillary department clinicians, the fact that they are mitigated before being submitted is estimated to save the hospital an estimated $283,000 in avoided costs.

Medication Delivery Time Reduction: The turnaround time between routine medication order placement and pharmacy verification was reduced by 50% from 73 minutes to 37 minutes.

Lab Result Time Reduction: CPOE enabled us to reduce the turnaround time for STAT troponin labs by 45%. Order placement-to-result availability averages 37 minutes down from 56 minutes, which is especially important in new myocardial infarctions when "time is muscle."

Joint Commission/CMS Compliance: 100% of orders submitted through CPOE met the regulatory requirements that orders be timed and dated. This reflects a 66% increase over the 34% rate for paper-based orders.

Callback Reduction: CPOE's decision support helps us eliminate close to 600 pharmacy callbacks each month. With callbacks lasting an average of three minutes each, physicians and pharmacists now spend about 30 hours less per month on the phone clarifying orders.

Continuing the Journey
At Providence, we believe CPOE will become integral to your day-to-day operations. This summer, we'll bring our second hospital live, followed by another in May 2009. We have also upgraded capabilities in Providence Portland Medical Center's new patient care and research tower, including a state-of-the-art OR and PACU (Post-Anesthesia Care Unit) that enables enhanced surgical adoption and implementation of CPOE.

Dr. Stuart Morgan has been a hospitalist at Providence Portland Medical Center (PPMC) since 1999 and acted as Hospitalist Medical Director from 2001-2006. He has acted as the ProvExpert Medical Director since 2005. Dr. Morgan chairs the PPMC Order Set Council and is a member of the Regional Standardized Order Set Committee

Learn More

Physicians Get Help in Safe Prescribing

HIMSS: Designing Inherent Safety into Medication Order Entry Systems

The Physician-Computer Conundrum: Get Over It!

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KLAS: How Do You Stack Up on CPOE?

By Kent Gale
President, KLAS Enterprises

CPOE Gaining Traction
To implement or not to implement CPOE? That is the question for health organizations. Many have been observing from the sidelines, wondering whether to make the leap. On one hand, they realize that computerized provider order entry and clinical decision support (CPOE/CDS) have many patient safety benefits. It reduces the risk of medication errors that occur from cryptic handwriting and re-entry of orders in the pharmacy, and improves outcomes through decision support guidelines and pre-built order sets. On the other hand, they worry about gaining physician adoption and the cost of the solution.

Our research at KLAS Enterprises, LLC shows that CPOE is gaining more traction than ever before. Whether you are one of the pioneer organizations already live on CPOE or an aspiring provider, now is the time to see how you stack up amongst your peers.

Deployment and Adoption Increasing
For a market in its infancy, there is good growth. For the second consecutive year, we've seen 20% growth in the sheer number of organizations deploying CPOE. Nearly 10% of U.S. hospitals are now in some stage of CPOE deployment, up from 6.8% last year. And there is more aggressive CPOE use. Today, 6% of those hospitals are using the system for more than 50% of patient orders, compared to 4% in 2007.

There has been notable growth in the number of physicians doing inpatient CPOE: 171,000 nationwide, compared to 141,000 last year. Of those inpatient sites achieving 100% physician adoption, 115 are teaching hospitals and 29 are non-teaching. Keep in mind that teaching hospitals are defined as hospitals that have a relationship with a university. This means that many community hospitals could fall under the heading of teaching hospitals if they have a relationship with a university — which many do.

One of the biggest surprises in our 2003 study was that nearly half (48%) of all medication orders entered with CPOE were being reentered in the pharmacy. Today that number has been reduced by more than half (21%), indicating that pharmacy solutions have become more integrated.

What is the Measure of a CPOE Site?
How do you measure your progress on deploying CPOE? As you read industry reports and claims, it's important to dig deeper to identify if you are truly comparing your organization to your peers. You need to review how each defines a fully live CPOE site. In the past, KLAS included ambulatory-only and ED-only organizations in the ambulatory CPOE count if the organization's intent was to eventually provide CPOE in the inpatient area as well. Now we consider a site to be a fully live CPOE site if there is at least one inpatient facility — only then will we include any ED/ambulatory CPOE at the same organization in the ambulatory count.

Also, to be counted as having achieved deep adoption, an organization must be entering 50% of all orders electronically. Healthcare experts around the world agree that we will probably never see the day when every single patient order is entered electronically since life-threatening conditions and emergencies typically don't allow time for computer use. So when we say a site is fully live on CPOE, you can expect that >85% of all doctors are doing CPOE, and at least 50% of all orders or 100% of all non-urgent orders are submitted electronically.

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KLAS: How Do You Stack Up on CPOE? *(Cont.)*

Learning from Others

Our research reveals several trends among successful CPOE deployments. Organizations that experienced success had the following suggestions for others.

Mandate CPOE. Mandating physician CPOE usage – for both employed and not-employed physicians – improves adoption almost two to one. It improves outcomes because it reduces variability of care. It's a tricky subject, but the progress made is indisputable.

Prepare for Physician Satisfaction. Organizations rarely cited increased physician satisfaction as an objective. However, organizations that focus on facilitating the CPOE experience for physicians through better training, real-time support, and effective order sets may be pleasantly surprised.

Set Appropriate Adoption Milestones. The length of time it took hospitals to achieve the milestone of 50% of orders entered electronically varied greatly — from less than six months to more than two years.

Plan for Wireless CPOE. 94% of sites reported either a combination of hardwired/wireless CPOE (67%) or wireless-only CPOE (27%). Computers on wheels (COWS), laptops, tablets and PDAs make up 67% of the devices in use.

There are more hospitals, organizations and physicians realizing the patient safety and quality benefits from CPOE than ever before. Yet, our nation still has a long way to go. How do you stack up? And what are you waiting for?

Kent Gale is founder, managing partner and executive director of KLAS Enterprises, LLC, in Orem, Utah. Gale formed KLAS Enterprises in 1996 to improve the delivery of healthcare information technology (HIT) software and services by measuring the performance of healthcare software suppliers. He teams up with IT executives and healthcare professionals to gather HIT vendor performance data from provider organizations and offers reports and consulting services based upon the research data. Prior to founding KLAS, Gale held various leadership positions within vendor and provider healthcare IT organizations in the United States and abroad. Gale was most recently honored with the 2006 Lifetime Achievement award from CHIME.

Decatur Memorial's Tips for a Successful CPOE Implementation

How can you ensure a successful implementation of computerized provider order entry/clinical decision support (CPOE/CDS) at your hospital? **Decatur Memorial Hospital (DMH)**, a 356-bed community hospital in Decatur, Ill., implemented McKesson's Horizon Expert Orders™ solution within nine months, achieved 100% physician adoption — and learned some great lessons along the way. These tips were identified by the hospital's CPOE project manager and clinical analyst, **Jenny Brandenburg, RN, BSN**, also director of the hospital's pediatric unit.

Get Started Early: Decatur built awareness early by sharing medical literature on how CPOE improves patient safety. These efforts ultimately laid the groundwork for acceptance.

Metrics Matter: Collect before and after data to prove patient care successes. Since implementing CPOE, Decatur has achieved a 94.89% decrease in incomplete medication orders and a 100% decrease in incomplete radiology orders.

Engage Leadership: The success of the project relies on support from the executive team. Medical leaders must also be project champions. Decatur recruited the president of the medical staff and gained formal endorsement from the Medical Executive Committee.

Select the Right Team: For the implementation team, Decatur included clinical executives, nursing and pharmacy staff, which lent credibility and created confidence that the clinical point of view would be well served.

Enlist Physician Champions: The best testimonials come from physician peers. Comfortable with computer technology, the physician champions were also invaluable in developing content.

Make the Team Accessible: To avoid frustration, make sure physicians can easily identify and quickly access super-users and champions when they need support. At Decatur, the team – including the CMO and the CNO – wore buttons and/or shirts with the project logo to visibly demonstrate who was available to help. Team members were conveniently located in a high-traffic clinical area and could also be instantly reached by physicians through a hotline number.

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Decatur Memorial's Tips for a Successful CPOE Implementation (cont.)

Identify and Address Your Barriers: Barriers usually fall into four categories: organizational issues, clinical/professional issues, technical issues and process changes.

Develop a Marketing Plan: Create excitement for the rollout of CPOE by having a theme, a logo, a newsletter, or even a mascot. Decatur created a green paper-eating monster as a readily recognizable icon for the move from paper to electronic ordering.

Keep Communicating: Keep everyone up to date on progress. At Decatur, the team circulated weekly newsletters, and the clinical project manager attended physician and department meetings.

Engage Nurses: It is vital that nurses understand how CPOE will impact their workflow. Plus, physicians always turn to them when they need help.

Set and Stick to a Goal: Set a realistic yet aggressive goal for going live. It is difficult for clinicians to operate in a hybrid world that mixes electronic and paper orders.

Create and Reinforce a Rollout Schedule: Have nurses and unit secretaries go live on the system first. After any obstacles are overcome, bring physicians live on the system. Decatur brought groups of physicians live in phases.

Choose Super Users Wisely: Select super users that can relate to physicians, can handle stress and are comfortable with change. Decatur found nurses best suited for the role since they work with physicians regularly.

Offer Training Choices: Learning styles vary, so it makes sense to offer different training methods, such as group, one-on-one, CD training, and mini-training manuals. One of Decatur's most popular approaches included rounding with physicians and assisting them with order entry.

Peer Pressure Works: Physicians are naturally competitive, so use this to improve adoption. Decatur posted CPOE utilization statistics publicly and held competitions with small gift certificates for prizes — both generating spikes in system usage.

Events

See McKesson Solutions at:

AMDIS 2008

Physician-Computer Connection Symposium
July 15-18 • Ojai, Calif.

Access recorded Webinars on CPOE Successes at Community Hospitals
To access the Webinars, you need to have a login to McKesson's For Customers Web site. You can register using your McKesson customer number and the matching ZIP code.

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Using CPOE to Reduce Variability of Care and Improve Outcomes Vol. 2, Issue 2, 2008

Beating "the Odds" of ADEs: Using CPOE to Reduce Variability of Care

By Andrei Gonzales, MD
Product Manager, Physician Solutions
McKesson Provider Technologies

When was the last time you taxied down the runway without at least considering the possibility of an accident at some point in your flight? How often do you think patients in one of our hospitals worry that their physician, pharmacist and nurse will, as a team, make a collective error that results in a preventable adverse drug event? Even with the increasing news reports of preventable hospital errors, most patients trust that their healthcare providers will at least not harm them, and that interventions will improve their health.

The Odds and Perception of Risk

A 2006 annual review of U.S. aircraft accident data found that the overall accident rate was 0.132 per 100,000 hours flown. A recent study by the Massachusetts Hospital CPOE Initiative, called "Saving Lives, Saving Money: The Imperative for CPOE in Massachusetts Hospitals," found that the baseline rate of preventable adverse drug events (ADE) in their study group was 10.4%. The difference in these accident rates is striking — we have a one-in-several-hundred-thousand chance of experiencing an airline accident compared to a one-in-ten chance of experiencing an ADE. Think of the alarm there would be if one-in-ten flights ended in a crash!

While there are many differences between these industries, one of the cultural differences is the perception of risk and the resulting focus or lack thereof on continuous quality improvement. Healthcare has long trusted and relied on the heroic efforts of well-trained and dedicated professionals taking meticulous care in the healing of their patients. As we have seen from the 1999 Institute of Medicine report and many others since then, these efforts are not sufficient to ensure safe care.

Quality Movements in Industry

Quality movements like Six Sigma and Lean Manufacturing focus on establishing a quality process and reducing process variation to create measurable improvements in outcomes. Hospitals have started looking to these methodologies to gain insights in how to improve patient care outcomes by reducing variability in care processes.

Healthcare has a high degree of variability that is difficult if not impossible to eliminate. The job of quality professionals is to carefully analyze processes to find places where variability can be reduced, value added and quality improved. Tools, like information technology, play an important role in process and offer an efficient way to help decrease process variation.

I recently participated in a Lean workflow analysis at a community hospital. The Lean consultants were shocked at the number of process variations possible just to order, dispense and administer a medication. However, the future state workflow created by the group was faster, involved less time for the physician and had a measurable increase in quality based on the legibility and completeness of the orders submitted through a computerized provider order entry/clinical decision support (CPOE/CDS) system.

As hospitals focus more on quality and process, they are looking to information technology as a part of the solution. The Massachusetts study analyzed the preventable ADEs and found that 81% could have been prevented by implementing CPOE.

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Beating "the Odds" of ADEs *(Cont.)*

CPOE – a Path to Quality Improvement
The Massachusetts study recommends that all state hospitals adopt CPOE with clinical decision support by 2011 to help prevent errors. The study also discusses the need to drive adoption to realize the full benefits of CPOE, since it is a key factor in reducing process variation and driving high quality care.

There are many paths to improved process and outcomes. CPOE presents an efficient tool to decrease variations in practice, increase consistency, legibility and completeness of orders, and ensure that an entire hospital is following a standard process for ordering and fulfilling key interventions. CPOE can reduce "the odds" a patient and hospital faces of experiencing an ADE. Learn more about this study in the article below.

Andrei Gonzales, MD, is product manager for Physician Solutions at McKesson Provider Technologies. In this role, Dr. Gonzales is responsible for physician-oriented acute care solutions offered by MPT. Dr. Gonzales joined McKesson after holding similar positions at several healthcare technology companies. His background in operations comes from serving as Director of Operations for the Western Institutional Review Board, an IRB overseeing 16,000 domestic and international research studies.

New Study: "Saving Lives, Saving Money: The Imperative for CPOE in Massachusetts Hospitals"

Each organization evaluates cost vs. return when deciding to implement information technology. The Massachusetts Hospital CPOE Initiative, a collaboration between the Massachusetts Technology Collaborative and the New England Health Initiative, released a study in February 2008 that evaluated the cost of CPOE technology vs. its effectiveness in reducing costs and improving patient care.

The study cites a 2001 report published by the Agency for Healthcare Research and Quality (AHRQ) where it was estimated that nationwide, adverse drug events (ADEs) result in more than 770,000 hospital injuries and deaths each year and cost up to $5.6 million per hospital. The AHRQ report estimates that anywhere from 28-95% of these ADEs could be prevented through "computerized monitoring systems."

The Massachusetts Hospital CPOE Initiative was formed because there were no studies that focused on the community hospital setting that could show where and to what extent use of CPOE systems would result in quality improvements and savings. The Initiative's goal was to evaluate the cost vs. effectiveness of this innovative technology and identify the cost and quality benefits hospitals could reasonably expect.

The Clinical Baseline and Financial Impact Study conducted an in-depth analysis of six Massachusetts community hospitals. The baseline was set by reviewing 4,200 charts to determine the baseline level of preventable ADEs and the unnecessary use of expensive drug and laboratory tests, which could be improved by implementing CPOE. The study characterizes the results as "stunning."

The Baseline: Rate of 10.4% of preventable ADEs — meaning one in ten patients suffered a preventable ADE.

Cost of CPOE System: The study estimates the average initial cost at $2.1 million, with $435,000 in annual operating costs.

Savings with CPOE and Robust Clinical Decision Support: The study found the level of ADEs could be substantially reduced, providing a return on investment in about 26 months.

- **Cost reductions:** Annual savings in unnecessary drug and laboratory test use could be $2.7 million.
- **Benefit to Payors:** $900,000 for each hospital.

Based on the findings for the six hospitals in the study, the report estimates that if all Massachusetts hospitals adopted CPOE, the annual savings for the hospitals and payors could be approximately $170 million, and 55,000 adverse drug events could be prevented every year. Read the entire report for details on the findings.

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