

Hospital of Saint Raphael Maximizes Use of QuadraMed Computerized Patient Record (QCPR) to Enhance Quality and Safety

The Hospital of Saint Raphael (HSR) is renowned for excellence in patient care, medical education, and innovative use of technology. A 511-bed community teaching hospital affiliated with Yale University School of Medicine, Saint Raphael is a leader in cardiac, cancer, orthopedic, thoracic, vascular, spine surgery and geriatric services.

In the early 90s, Saint Raphael successfully deployed QuadraMed Computerized Patient Record, an example of its dedication to the use of innovative technology. At that time, the hospital implemented QCPR to manage registration, nursing documentation, laboratory, radiology, electronic medical records, and pharmacy.

Subsequently, Saint Raphael became an early adopter of Computerized Physician Order Entry (CPOE) in 2002, when it installed the system's CPOE software to reduce medical errors. Saint Raphael, according to The Leapfrog Group, is one of only 10 percent of the nation's hospitals that have implemented CPOE to date.

Optimizing the adaptability of QCPR can enable users to drive ongoing improvements in patient care and safety. As QCPR evolves, hospitals gain access to more data and tools enabling them to continuously

enhance operations enterprise-wide and produce an effective EMR.

To further leverage its advanced technology infrastructure, Saint Raphael is building a Health Information Exchange that will give New Haven physicians and hospitals access to key data about individual patients on a community-wide level.

This information will include allergies, a problem list, laboratory results and medication histories. Once

HOSPITAL AT A GLANCE

Beds:	511
Number of physicians	948
Number of nurses	1,269
Annual inpatient visits	26,579
Annual outpatient visits	182,351

the HIE is in place, every authorized clinician will have the ability to access patient data documented in participating systems across the continuum of care. The HIE will provide this clinical decision support data in real time, which offers an opportunity to improve the quality of patient care, while ultimately lowering healthcare costs.

The Successful QuadraMed CPOE Implementation

In order to secure buy-in and a high rate of CPOE utilization by physicians, a comprehensive roll-out plan was developed. This program focused on training Saint Raphael's residents and physician assistants, along with the top 100 admitting physicians, which accounted for 80 percent of all hospital orders.

The most common argument against CPOE was that entering orders into an electronic system is a time-consuming process. However, when compared to the time required to clarify or translate hand-written orders with the time required to enter them electronically, CPOE proved clearly superior.

Initially, the physicians demonstrate their knowledge of CPOE and ability to use the system during a certification process. Subsequently, they are recertified every two years to validate their proficiency and learn about the system's latest enhancements.

As the system was deployed, Saint Raphael adopted a policy wherein a nurse can enter an order on behalf of a physician in only three cases – when the physician is already scrubbed for the OR, when the physician is engaged in an emergent diagnostic procedure, or when the physician is unable to access the CPOE and must phone-in the order. In each case, the nurse must make a notation as to the situation at the time the order is placed.

CPOE has had a positive impact on HSR nurses by increasing their ability to execute physicians' orders. "It was not uncommon in the past for a physician to write a prescription on the wrong medication sheet, and it was difficult for nurses to read the handwriting of many doctors," said Judy Catalano, R.N., director of staff development and clinical support. "By eliminating those problems, CPOE has made it possible for both nurses and doctors to focus on subtler concerns, such as dangerous drug interactions and cumulative dosing. The objective nature of the system also provides support to nurses when they are in the uncomfortable position of having to challenge a physician's order."

"CPOE enables hospitals to look at trends, giving them the ability to go in and research root causes of problems and create measures to prevent them in the future."

Ed Maloney, Interim CIO

QUADRAMED QCPR

- Accelerates patient safety and quality of care with use of clinical decision support tools and other CPOE functionality
- Serves as a portal interfacing to other medical and clinical systems
- Increases efficiency by standardizing procedures
- Promotes compliance with Joint Commission accreditation standards

“CPOE enables hospitals to look at trends, giving them the ability to go in and research root causes of problems and create measures to prevent them in the future,” said HSR interim CIO Ed Maloney. “For instance, we’ve inserted logic in our CPOE application for some very specific drug types that is activated when one of these drugs is ordered. The software generates a message that’s sent to the pharmacist via a paging system. This message is an alert to double check and thoroughly review the order. QuadraMed gives us the ability to do that.”

Expanding the Use of QCPR

Saint Raphael is expanding CPOE from inpatients to include the outpatient environment, and will be implementing medication bar coding at the bedside to support the “Six Rights” of medication administration—right patient, right drug, right dose, right time, right route, and right documentation.

According to Ed Maloney, “When we install the electronic medication administration record with bar coding in every patient’s room we’ll close the loop between medication ordering and administration. To realize this goal, Saint Raphael will begin by bar coding oral medications, and then integrate Patient-Controlled Analgesia and IV medication dispensing pumps using QCPR.”

“We have invested in a bar coding system for oral solids, liquids and unit dose injections,” said Director of Pharmacy Jan Kozakiewicz, M.S., Pharm.D. “We’re also working with QuadraMed to develop a bar code solution for intravenous medications, because they pose some of the greatest safety risks to patients, particularly those used for pain management.”

In the Respiratory Care Department, Saint Raphael has developed the QCPR module to replace an existing system that had minimal integration with QuadraMed. “This change has definitely enhanced patient safety,” said Laura Pietrosimone, manager, clinical applications. “There is now complete respiratory documentation of therapies and procedures in QuadraMed. An in-depth review of the manner in which respiratory drugs were ordered by the physicians, reviewed by pharmacists, and administered by the therapists and nursing were major priorities for this implementation. Presently, the documentation of medications given by the therapists exists on the same computerized medication administration record used by nursing. In addition to enhancing patient safety, using QCPR for all documentation also lowers costs by eliminating the standalone system’s vendor and server.

“Recently, we tested the QCPR prescription module by conducting a trial in one of our orthopedic wards,” Pietrosimone continued. “The application is designed to generate all of a patient’s prescriptions at the time of discharge. This helps to ensure each patient understands the medications he or she will be taking at home, and that the list is complete, correct and readable to help avoid any confusion or errors at the local pharmacy. The trial went very well, and we intend to deploy this module hospital-wide by the end of 2009.

“Another facet of our total focus on patient safety involved working with an outside consultant. In this instance, we collaborated successfully to electronically integrate the values from our blood glucose meters directly into QCPR. The turnaround time to make these results available to our physicians has greatly improved, and the risk of manual transcription errors has been eliminated.”

Saint Raphael Milestones

Since implementing QCPR, the Hospital of Saint Raphael has significantly improved care delivery, medication safety and efficiencies:

- Reduced the time for ordering to dispensing to less than 30 minutes – a 75% reduction
- Saved \$200,000 by boosting the IV-to-oral medication conversion rate from 20% to 50%
- Increased pharmacokinetic dosing conversion from 6% to 20% in the first year – incremental increases continue
- Increased control of protocol and/or high-cost medications by requiring providers to document use of those drugs when ordered. This allows pharmacists to quickly expedite the orders without numerous telephone calls and chart audits
- Ensured each pharmacist processes no more than 40 orders per hour, meeting a patient safety benchmark set by Cardinal Health for the hospital pharmacies it manages nationwide
- Documented ED order volume on weekends is the same as weekdays after implementing CPOE

Additionally, Quadramed’s QCPR solution will enable Saint Raphael to potentially enhance patient satisfaction by reducing the distribution time of pain medications.

These data enabled Saint Raphael to justify hiring an additional 0.5 FTE pharmacist to keep the number of pharmacist orders processed to no more than 40 per hour. Such calculations are very difficult to accurately complete using a manual process.

“One of the value opportunities with CPOE is the ability to capture volume statistics, which is the hallmark of evidence-based management.”

Jan Kozakiewicz
M.S., Pharm.D, Director of Pharmacy

QCPR Fosters Best Practices

Saint Raphael considers the QCPR interface capabilities as a key benefit among its many QCPR successes. QCPR interfaces to multiple medical devices and clinical systems. “From the start, our strategy has been to use QCPR as our information portal. It’s the single tool that physicians learn how to maneuver and use to gain entry to other clinical systems and devices through an HTML link that QuadraMed developed at no additional cost,” said Maloney.

Unlike other acute care EMR products evaluated by Saint Raphael, QuadraMed CPR enables physicians to seamlessly access other systems without ever leaving the application, meaning they do not log off QCPR to enter a different user ID and password to retrieve data from another application. Physicians can remotely access all clinical images through QCPR by simply clicking on the desired image. Images may include cardiac ultrasound, cardiac catheterization, coronary angiogram, EKG strips, cardiograms and stress tests, among others.

The data captured by QCPR is analyzed by the hospital to identify and implement best practices. Maloney noted, “You can’t implement a best practice by doing something five different ways. You get there by understanding the best way to provide care and ensuring a specific guideline is followed to produce the proper outcome. It’s simply not possible to drive standardization using a paper-based system.”

QCPR also makes it easier for Saint Raphael to comply with reporting requirements from external organizations such as the National Hospital Quality Measures from the Joint Commission and Centers for Medicare & Medicaid Services.

The system does more than collect Core Measures documentation requirements, it promotes improved work flow. For example, when a patient with congestive heart failure is ready for discharge, QCPR triggers an alert for the disease management nurse to ensure all documentation for Core Measures has been completed before the patient is discharged.

Ed Maloney concluded, “The system is the key to driving standardized work flow and documentation. It helps us to increase patient safety and quality of care by providing more information to make better clinical decisions.”

QuadraMed Moves QCPR Forward

Since its acquisition of CPR in September 2007, QuadraMed has been focused on making QCPR the care management solution hospital executives and clinicians can depend on to meet today’s challenges and their plans for the future.

An outstanding example is QuadraMed’s migration of QCPR to InterSystems Caché high-performance object database. Caché is the technology platform that runs SQL up to five times faster than relational databases for scheduled job processing and system management tasks. It ensures QCPR will be highly scalable, reliable, and interoperable enterprise-wide.

QuadraMed currently offers QCPR Caché/SQL 5.0.5 for new clients, and a migration to Caché for existing clients.

Additionally, QuadraMed has and will continue to develop an ongoing series of product upgrades and enhancements offering even greater QCPR functionality. The company has dedicated significant resources to provide for QCPR certification and services to help its clients leverage their systems to qualify for stimulus funds under the healthcare technology provisions of ARRA.

For more
information
about QuadraMed and
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