

HOSPITAL CHARACTERISTICS

NORWALK HOSPITAL

- ▶ Norwalk, CT
- ▶ 328 beds
- ▶ www.norwalkhospital.org

Norwalk Hospital is a community teaching hospital providing a full range of services to residents of Fairfield County, Conn. Founded more than 100 years ago, Norwalk Hospital is the primary teaching affiliate of the Yale University School of Medicine. In 2009, it was named Most Improved on the “100 Most Wired Hospitals and Health Systems” by Hospitals & Health Networks magazine.

S . T . E . E . E . P .



SAFE

Norwalk’s closed loop medication system helps ensure the five patient rights: right patient, right drug, right dose, right route, right time.



TIMELY

Clinicians can access best practices at the point of care.



PATIENT-CENTERED

Evidence-based alerts, prompts and order sets helps physicians deliver the best care.

CLOSING THE MEDICATION LOOP

The Problem

Norwalk Hospital was an early developer and user of health information technology. In recent years, its patchwork of unrelated, home-grown systems was becoming outdated. It was faced with a decision to modify its systems or replace them with a commercial product

that would allow it to integrate all clinical IT systems while adding new capabilities. About the same time, studies began to appear that indicated computerized physician order entry and medication bar-coding could significantly improve patient safety.

The Solution

Encouraged by a group of its physicians that was interested in harnessing IT to improve care and safety, Norwalk began building the foundation for a more robust and integrated IT system using Cerner technology. Unlike other hospitals that have taken a fast-track approach to rolling out electronic health records and other clinical IT, Norwalk took its time piecing together and rolling out a closed-loop system that includes CPOE, medication barcoding with pharmacy robot and an EHR.

What Norwalk did not do was an overhaul of the entire medication administration process. Instead, they examined the current process and added IT solutions to already established process in order to improve patient care. “We really do well moving incrementally,” says Lewis Berman, MD, chief medical informatics officer and director of critical care medicine. “We knew we could have a positive impact without changing a single process.”

Results

» Reported medication errors have dropped from 13.1 per 1,000 patient days in early

2006 to 2.2 per 1,000 patient days in early 2009

- » Compliance on core measure for congestive heart failure discharge is 97 percent if the patient has a CPOE CHF identifier and staff uses the discharge database versus national average of 74 percent and 63 percent if Norwalk staff uses its standard "manual" practice
- » 99.9 percent of orders are placed electronically

Background

Despite the 1999 Institute of Medicine report that traced about half of 100,000 preventable hospital deaths each year to medication errors, few hospitals moved to adopt e-prescribing for years. That dial is beginning to move, according to healthcare researcher KLAS, which found in a 2009 study that 12.5 percent of hospitals use CPOE, a 28 percent increase from 2008.

Norwalk was an early exception. Even before introducing CPOE in 2003 and completing rollout in 2006, Norwalk’s unit secretaries did electronic order entry and medication charting. It also has been a pioneer in the use of medication barcoding. After phasing in CPOE floor by floor, Norwalk made a major investment in a medication barcoding. It deployed a pharmacy robot that repackages and labels all medications, including intravenous solutions, and barcoding equipment on all hospital floors.

TEAM MEMBERS

Lewis Berman, MD

Chief Medical Information Officer and
Director of Critical Care Medicine

Karl Lewis

Business Director, Long-Term Care
Pharmacy

Jamie Mooney

Chief Information Officer

Stephen O'Mahony, MD

Associate Chairman of the Department
of Medicine

John Ross

Director of Application Services

Keith Shuster

Medical Safety Officer

Tricia Van Buskirk

Senior Clinical Systems Specialist

**Principles of
Performance
Excellence**

Patient Focus

Medication bar-coding and CPOE has raised the bar on performance while giving clinicians the opportunity to be more deliberate about their patient interactions. With the advent of the pharmacy robot, all medications began carrying standardized black labels with white barcodes. In the past, "people had been filling orders by color instead of reading the labels," recalls Karl Lewis, business director of long-term care pharmacy.

To ensure the correct attention to patients, Norwalk also put in a great deal of time building custom order sets to address the needs of each department. "You can't get this stuff off the shelf," Shuster notes.

Based on this hard work, the IT systems equip clinicians with greater resources for treating patients. They can access everything from complete medical histories to evidence-based order sets and alerts that deliver the latest thinking and practices at the touch of a few keystrokes. "Computers help right at the point of care," says Stephen O'Mahony, MD, associate chair of the department of medicine.

**Management of Organizational
Variability**

Despite its reliance at the time on mostly affiliated physicians, who had a number of area hospitals to which they could refer patients, Norwalk Chief Executive Geoffrey Cole mandated the use of CPOE. The hospital required affiliated and employed doctors to take a three-hour, hands-on training course before they could electronically write orders. "We had some doctors

who didn't know how to use a mouse," recalls Berman. "With a few exceptions, though, the doctors were very receptive."

To facilitate adoption of the technology, Norwalk used a multi-step rollout process. For instance, it used barcoded wristbands on patients before introducing medications scanning. The hospital also worked with the frontline staff to ensure ease of use. After the night nurses found the wristbands tough to read at times without waking a patient, Norwalk added five barcodes so no matter how a patient was sleeping, nurses could access a barcode without disturbing the patient, explains Keith Shuster, medical safety officer.

Reducing Process Variability

Norwalk follows a standard routine for processing an electronic medication order and ensuring the medication administration process is a closed-loop system. Physicians enter orders, with the pharmacist receiving and reviewing the order, then contacting the doctor with any questions. Once the pharmacist verifies the order, it appears on the nurse's medication records. At the designated time, the nurse signs into a mobile workstation to authenticate his or her identity then scans the patient's wristband and the medication before administering the drug. Afterwards, the nurse electronically records the information in the patient's record.

Although Norwalk's IT deployments did not officially include process redesign, many processes were standardized by default. "We found a lot of process improvement had to occur when we went to CPOE," says Dr. Berman. For example, "a doctor used to write 'Start this drug now and administer it daily.' When it came time

to translate that into the computer world, we needed to put in a specific time,” Shuster says.

Now that the staff is comfortable with the IT systems, the hospital has shifted its attention to increasing efficiency and productivity while eliminating work-arounds. “The things we knew weren’t functioning as well as they could, we are going back and addressing those areas now with a focus on process,” says Dr. Berman.

Continual Improvement

Norwalk continues to add to its clinical IT systems. Later this year, it will start rolling out software for nursing documentation, one of the last functions not yet automated. When it is fully implemented, the hospital expects to be completely paperless by 2012, notes Mooney.

Norwalk also has built systems and activities to continually refine the IT systems. A group of volunteer physicians, nurses, pharmacists and representatives from the

IT and quality departments meets weekly as the clinical informatics committee. The committee, which has been in place for eight years, proposes new order sets, alerts and other adjustments.