



On Track to Improved Workflow

An overburdened ED undergoes a complete redesign and EDIS implementation that improves workflow and reduces patient length-of-stay.

By Mike McBride, Associate Editor

As populations grow, wait times to access medical care increase proportionally. One area of healthcare particularly burdened—emergency departments (EDs) and trauma centers—are finding their initial systems and designs inadequate. As the number of Americans without health plans also grows, so does the flood of patients admitted to hospitals through an ED. Clinicians and staff find themselves working round-the-clock, and yet patients wait longer and longer to receive treatment.

To keep pace with growth, one healthcare organization completely redesigned its ED workflow to take advantage of today's advanced IT patient monitoring, tracking, documentation and reporting systems. A multidisciplinary team that included ED physicians met weekly over several months to accomplish the task. What was once considered "controlled chaos," is today an efficient and quieter ED.

A Sizable Problem

CentraState Healthcare System, in Freehold, N.J., is a not-for-profit healthcare organization with a 400-physician, 271-bed acute care medical center that provides a wide range of services including cardiology, computed tomography and magnetic resonance imaging, inpatient psychiatric, obstetrics, radiation oncology and endovascular surgery, among others.

CentraState Medical Center, a level-2 trauma center, was a small community hospital located amidst a growing urban sprawl. Each year, developers converted more and more open farmland into condos and neighborhoods to house the area's burgeoning population. Patient visits to the hospital's ED have increased by 2000 to 3000 each year since 1998. By 2004, the organization's Press Ganey scores, used to rate patient satisfaction, had dropped below CentraState's standards.

The ED initially consisted of just two healthcare areas: Acute Care and First Care, a fast-track care area. Each section of the department contained several nonprivate beds surrounding a central nursing station. Traditionally, this had been enough. However, as the years passed, the number of yearly patient visits soared, eventually reaching more than 56,000. Also, the ED's central registration method contributed to a longer patient arrival-to-discharge

time, resulting in an unacceptable number of "hallway" patients awaiting treatment. According to Nancy Christie, CentraState's ED information specialist, that ED was "loud, noisy and overcrowded."

Thus, in mid-2004, the hospital embarked on an ambitious plan to completely redesign the ED's workflow. The \$10 million expansion project effectively doubled the ED's size, increasing capacity to 48 rooms, 44 of which would be private, in multiple, separate and distinct care areas: Acute Care, Intermediate Care and First Care. The new design also included five pediatric rooms, three psychiatric rooms, a dual-triage capability, an ED CT scanner, and a pneumatic tube system linked to the lab and pharmacy.

The plan also called for a decentralized registration area and a new emergency department information system (EDIS) that would include clinician documentation, physician order entry, charge capture, messaging and audit capability, as well as interface with the hospital's existing systems.

Patient Tracking and Monitoring

As the expansion project got underway, CentraState sought the new EDIS to help eliminate barriers and bottlenecks in triage and treatment. Staff had experienced difficulties conveying patient information, as well as tracking patients' progress through the ED evaluation process. The new EDIS would have to address these communications challenges and provide flexible clinical documentation, while falling within budget.

During CentraState's due-diligence process, the organization's clinical systems manager met with Wellsoft at HIMSS, and subsequently invited the vendor to demonstrate the product onsite. CentraState's executive committee then visited a Wellsoft client to see the EDIS in action, followed

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by hands-on sessions for the clinicians and nurses, as well as the IT staff who would support the new system.

Wellsoft won the contract, after which company representatives visited CentraState to join the workflow team and evaluate the ED's processes and procedures, in order to develop specific recommendations for improving patient flow. One such recommendation involved registration. The

Press Ganey data indicated patients were not satisfied with the initial processing.

"We had no way of knowing patients' names, their chief complaints, or why they were here unless the triage nurse read the log book," explains Christie. The workflow team recommended CentraState create a new position called the "Meeter/Greeter." Stationed just inside the ED doors, the Meeter/Greeter guides patients through a shortened "quick registration" process and provides a "live" personal introduction into an often traumatic experience.

Improved Patient Registration

Once the patient's name is "quick-reg'd," it displays on Wellsoft's track. To speed diagnosis and treatment, the Meeter/Greeter inputs only essential patient data into the EDIS. The triage or charge nurses can see immediately that a patient by that name arrived in the waiting area at a specific time and identify the patient's chief complaint. "Now, at any point during triage—at any workstation—the entire department can see an organized reading of all key patient information at a glance on a single display," says Christie.

CentraState's workflow redesign team also decentralized registration. Under the original system patients entered the ED, signed a written logbook and waited for a triage nurse to come out, review the list and call their names. Registrars worked from one centralized location, so they constantly traveled back and forth between First Care and Acute Care to complete registrations openly, in a public manner.

This cumbersome process often blocked clinicians from ordering procedures or treatment until the patients were fully registered, resulting in a backlog of patients, increased length-of-stay and patient dissatisfaction. Registrars now are stationed in each care area with a laptop, to complete full registration at the patients' bedsides—in private.

Once patients are in the treatment area, clinicians document electronically into the EDIS, creating a complete electronic chart. The electronic documentation provides all disciplines involved in patient care with the ability to access and view patient evaluations and treatment. The discharge instructions generate electronic prescriptions, care plans and informative fact sheets tailored to patients' diagnoses and medications. Upon discharge, a complete medical record is electronically stored and transmitted to the hospital's EMR system.

What was once an unwieldy manual process has now been replaced with fast and efficient access to all facets of the medical record.

Installation and Implementation

Wellsoft designed a client/server EDIS for CentraState that includes Windows Server 2000 to house the Oracle database, and Citrix Metaframe to support thin client hardware, and wireless laptops, tabletPCs and other handheld devices. The EDIS software is installed on standard

networked PCs and supports swipe cards, proximity cards and password logins. Its multilevel security protocol enables network administrators to assign access/privileges according to each EDIS user's role within the ED.

The EDIS receives HL7 data from CentraState's HIS, LIS and RIS interfaces. Orders placed within the ED transmit electronically as standard HL7 messages across a WAN to ancillary departments (such as the lab and Radiology) within the hospital, or across CentraState's entire health-care system, all in real time. ED staff members receive alerts and notifications on the system's tracking display, and can access test results and image studies through the EDIS. All orders and returns are time-stamped.

The Wellsoft EDIS provides CentraState with patient tracking, registration and admission tracking, as well as, automatic lab results and disposition summaries. In addition, it provides clinician documentation, auto-faxing, patient logs, call logs and report generation. When fully implemented, it also will provide order tracking and order entry.

"It's the most powerful tool we can give our nurses to help care for patients and move them to the next step," says Christie. "Whether it's to go for a test, move to an in-patient bed or wait on a consult, we can manage every increment. We can run reports to track our workflows and improve the bottlenecks."

CentraState employed train-the-trainer techniques to roll out the EDIS in phases. In Phase One, the ED went live with patient tracking and physician documentation, with inbound results from the lab and Radiology. In Phase Two, nursing documentation went live. Order entry and internal messaging will go live in the final phase, scheduled for the first quarter of 2007. Super users train new staff on the EDIS during employee orientation.

Direct Results and Benefits Gained

The goal of CentraState's expansion project was to improve the ED's operation and processes by completely redesigning patient flow. They succeeded. CentraState won the Magnet award from the American Nurses Association for high quality nursing care in late 2005. The healthcare system's Press Ganey scores rose to the 97th percentile in a three-state region during the second quarter of 2006—a 73 percent improvement from the previous year—based on patient satisfaction survey results. The team also developed an ED scorecard that includes goals for each process and treatment area to measure performance and improve outcomes from the instant a patient enters the ED.

CentraState's redesigned ED is spacious, private and efficient. Patient length-of-stay and left-without-treatment times have decreased, and staff can easily communicate with each other and locate patients. The Wellsoft EDIS also enables staff to track and chart patient movements, which staff believes helped them to decrease by half the inordinately long patient arrival-to-discharge times. **HMT**