

## CASE STUDY: WELLSOFT

# The Nebraska Medical Center: Process Improvements, Efficiencies and Better Patient Outcomes

**M**odern medicine demands quick access to information and measurable results. Nowhere is this more obvious than in the emergency department where patients crowd in at unpredictable times with wide ranges in acuity. Tracking these patients through their stay, quickly and accurately charting treatments and providing timely information to follow-up providers is of utmost importance. For the majority of emergency departments, these are still manual processes that are clearly antiquated. It's evident that for effective patient tracking and communication, an automated system is needed. An

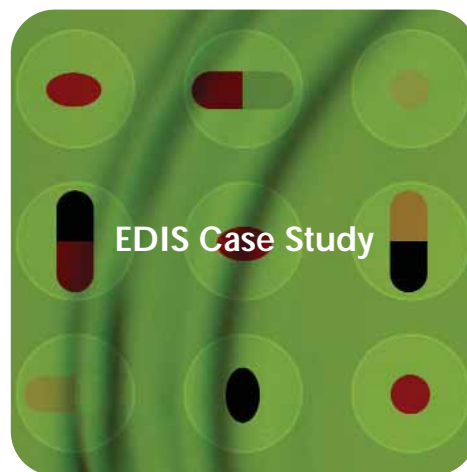
Emergency Department Information System (EDIS) is an attractive solution for a busy emergency department that demands improved efficiencies.

The Nebraska Medical Center and its educational partner, the University of Nebraska Medical Center, is a respected leader in many clinical specialties and has been recognized for service excellence under the J.D. Power and Associates Distinguished Hospital Program. The hospital is home to one of only two level 1 trauma centers in Nebraska and western Iowa. It also boasts a second emergency department (ED) located in western Omaha to provide emergency services to patients in this growing area of the city.

A merger between the University of Nebraska Medical Center and Clarkson Hospital, now known as The Nebraska Medical Center, presented the challenge of managing two small EDs located directly across the street from one another. Each busy ED had outgrown its respective space. Plans to combine the two EDs in a single new, state-of-the-art department began shortly after the merger.

### Challenges

In a busy emergency department, the ability to effectively track patients is crucial - and problematic. Most EDs use a



single, centrally located dry-erase board, which is hard to see and doesn't supply dynamic information to clinicians. Data is rarely up to date when it is needed most and patient privacy is an issue. The Nebraska Medical Center knew these problems would be magnified in a large ED and that the combined department would need a dynamic, real-time system. All patients, including those in the waiting room, needed to be visible at a glance, to all clinicians simultaneously, regardless of their location.

A second area of concern for The Nebraska Medical Center was the patient chart, which, as in most EDs, was handwritten. Paper charts are frequently difficult to locate and to read. Another major drawback is the difficulty of getting timely emergency encounter information back to primary care providers and follow-up physicians. With the added needs of an academic institution, the department needed to support the education of residents and students, the academic needs of faculty and the follow-up needs of private providers.

Finally, the medical center needed a way to automate data collection and reporting. Virtually all department statistics were captured by hand, significantly limiting the quantity, quality and timeliness of data. The department wanted to be proactive in using information to improve processes, and thus patient care. But the time-consuming nature of the task meant this useful data was limited. The Nebraska Medical Center clearly needed an electronic system to collect and report on Emergency Department data.

### Solution

To address these issues and in preparation for the opening of the new ED, The Nebraska Medical Center made the decision to purchase an EDIS.

The medical center felt it was essential for the ED staff to be familiar with the new software prior to the move. The selected

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EDIS would also need to meet the unique challenge of simultaneous go-lives in three different emergency departments - each with its own nuances. Additionally, the system would have to be designed so that data from the two existing departments could be combined immediately upon the new department opening.

A further challenge, common to most hospital projects, was minimizing the need for IT resources. The EDIS would be interfaced with the hospital information system (HIS), the lab information system and the radiology information system using standard HL7 interfaces. IT would also need to provide the recommended hardware to ensure clinicians in multiple locations quick access to the system. Hospital IT resources would have to be carefully managed.

After a thorough evaluation process including a written request for proposal, product demonstrations, technical conferences and reference checks, the Wellsoft Corporation EDIS product was selected. The company's 18 years of experience in emergency medicine software and the flexible, scalable nature of the product were key factors in the decision.

#### Implementation

The most practical method of implementation, especially given the three simultaneous go-lives, was a phased approach. Phase I included implementing patient and orders tracking, triage documentation, data collection and reporting and discharge instructions and prescriptions, while still occupying the smaller distinct departments. Wellsoft custom-configured the software to meet the varying needs of the departments, installed the application, trained staff and provided 24-hour go-live coverage in all three EDs.

The Phase I go-live was a resounding success. ED staff, many of whom float between the three departments, used the

larger department, it was clear that the old dry-erase boards and verbal communication would no longer work.

With the success of the Phase I implementation, it was time to introduce the next phase - electronic nursing documentation. Like the dry-erase board experience, it was clear that exclusive access to paper charts would no longer suffice. And as part of an academic partnership, the ED had residents from other services frequently viewing or adding information to the chart. This further increased the possibility of missing pieces and low accessibility to the chart.

Phase II was viewed with some apprehension by staff members fearful of relinquishing their paper notes. Triage documentation had been introduced during Phase I to lessen the impact on staff after the move. This decision made the Phase II go-live simpler than expected, and support staff found themselves surprised to be returning to their offices, unneeded in the department. What initially seemed so daunting to the staff was very well received and quickly became second nature.

The final aspect of Phase II was to address the need for providing timely information to primary care providers and follow-up physicians. The EDIS now sends all of the information from the patient's emergency visit to the HIS. This occurs automatically at the end of the patient's visit, providing instant access to the patient's ED chart throughout the health system.

#### Benefits

The Nebraska Medical Center now has extensive statistics on the health of the ED, using the reporting feature in the EDIS. Productivity can effortlessly be measured at individual intervals of a patient's visit. This allows for specific feedback and proactive identification of bottlenecks. The residency program has greatly benefited from the comprehensive data available. Resident coordinators now receive information on case mixes

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same software and same processes, regardless of where they were working that day. They were strongly encouraged to use the computer as a means of communication, even when co-workers were clearly visible nearby. With the importance of computerized tracking reinforced, the move to the new ED was less demanding.

Approximately one month after the initial go-lives, the two downtown departments were combined without closing their doors to patients. The move went smoothly and, thanks to the EDIS, the staff now had a means of communicating with people they could not see in the new 33-bed department. In the

and length of stays not previously available. The depth of statistics encourages improved performance and attention to detail. In addition, reports can easily be created for specific situations such as to review cases for educational Morbidity & Mortality conferences.

Historically, The Nebraska Medical Center proudly boasted of a left without being seen (LWBS) rate of 2 to 3 percent - which put the ED among the top performers for departments of similar size. After Phase I, LWBS decreased again by 1 to 2 percent. Viewing the real-time status of all patients within the ED, whether en route or in the waiting room, triage or treat-



ment area, helped organize work flow to move patients more efficiently. Improved efficiency created open beds for new patients. The reduced risk in having fewer patients leave without treatment is a huge benefit from implementing the EDIS.

Door-to-doctor time is another key performance measure in the ED, since patients expect to see a physician in a timely manner. But getting physicians to manually note the time they entered a patient's room was a problem. Using an EDIS simplified the process. Providers now document the time entering

locating the chart. Physicians are also more satisfied as they can now view the nursing notes from any computer in the department. The results are more time spent at the bedside and happier patients.

One unexpected benefit came from the customized documentation templates provided by the Wellsoft EDIS. Regulatory items are addressed by building them into templates, thereby raising compliance. Medication administration for instance, requires that four components be docu-

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the patient's room with 84 percent compliance. Using this data to provide feedback to physicians is a tremendous motivator and as a result, time-to-physician has improved by 20 percent.

Another area of increased efficiency is the time spent inquiring on patient status and the status of their orders. Since the Wellsoft system automatically tracks each step of the patient visit, including their orders, time spent inquiring on their status has dropped dramatically. Interfaces with ancillary systems provide results in real time, visible on one screen. Everyone in the department knows exactly what the patient is waiting for. Full-time employee hours are no longer required to track orders and results, which means there is more time available to focus on patient care.

The time spent on the telephone with pharmacies has also seen a significant decrease. The current HIS has prescription-writing capabilities, but utilization by physicians was very low. By using the EDIS to eliminate handwritten prescriptions, charge nurses estimate that calls have declined by 25 percent.

In addition, 100 percent compliance is achieved by physicians, who also take advantage of other tools, such as drug-allergy and drug-drug interaction checking on every prescription written. This raises the level of care provided to every patient that comes through the door.

Electronic documentation also provides many benefits, such as readable information that can be transmitted to other providers quickly and easily, for greater continuity of care. Legible documentation prevents mistakes due to "translation." Other benefits include 1) nurses who no longer have to wait for others to complete documenting and 2) not wasting time

menting. Chart audits determined that one of the four elements was frequently missing. The ED was able to remove this item from chart audits, confident that all components were consistently present. In addition, templates were developed to guide all levels of providers in the collection of patient history. Careful construction of templates helped students achieve accuracy and completeness.

Finally, the EDIS provides a tremendous advantage for patients that are admitted. Previously, these patients would go to the floor accompanied by photocopies of their charts. Poor photocopying made the charts difficult to read and sometimes incomplete, as paper disappeared during transit. Now, admitting physicians are able to view the documentation online before the patient even arrives.

### Conclusion

Satisfaction with the EDIS and the data available is acknowledged throughout The Nebraska Medical Center. The Wellsoft EDIS is highly stable and requires few IT resources on an ongoing basis. The system is maintained by a single ED resource, which keeps department expenditures low. Members of the hospital's Six Sigma Performance Improvement Team have inquired about the system's applicability in other departments in need of work flow redesign and patient tracking. While this is outside the project's scope, the inquiries are evidence that process improvement can be achieved when the right tools are in place. The final results of this project show that using improved tracking features, data collection and better documentation, lead to improved efficiencies and better patient outcomes. ■

## Using Information Technology to Increase Emergency Department Efficiency



"Half a million times each year - an average of once every minute - an ambulance carrying an emergency patient is diverted from an Emergency Department (ED) that is full and sent to one that is farther away." (From the Future of Emergency Care in the U.S. Health System by the Institute of Medicine of the National Academy of Sciences.)

Overcrowded and underfunded, many EDs are reaching the breaking point. While the number of patient visits to the ED is increasing, the total number of hospitals providing emergency care is declining. Increasingly responsible for primary care, particularly for the uninsured, emergency departments bear a disproportionate share of costs while financial losses mount. And although EDs are on the front lines of disaster preparedness, they have not seen a significant increase in funding.

The Institute of Medicine recommends increasing the use of information technology as one component in improving efficiency, patient safety and overall quality of ED care. Wellssoft Corporation is a pioneer in providing software for emergency medicine, with 18 years of experience. The top-ranked product in its field eight times, the Wellssoft v10 Emergency Department Information System (EDIS) leads the market.

### Experience

A blend of clinical and technical expertise, the Wellssoft team is committed to exceeding their clients' needs. With EDIS implementations ranging from a 6-hospital, enterprisewide installation to a single community hospital, Wellssoft meets the needs of each emergency department. Recognized for providing the most complete functionality and most configurable product in the marketplace, the Wellssoft solution is more than just software. Every step of the way, from redesigning work flow and improving processes, through implementation, training and support, Wellssoft provides expert, personal assistance.

### Streamlined Process

Extensive work flow analysis by Wellssoft project managers is a defining feature of Wellssoft v10 implementations. Wellssoft per-

forms a thorough on-site review of the emergency department process, identifying normal clinical flow and exceptions, anticipating potential bottlenecks. The Wellssoft system is then custom-configured to tightly weave the software into the work flow of the department. Wellssoft work flow engineering streamlines processes, reducing length of stay, left without being seen and wait times.

### Flexibility

Flexibility is a key attribute of the Wellssoft system. Wellssoft v10 accommodates multiple platforms, is highly configurable to meet individual hospital work flow requirements, interfaces with any system that supports the Health Level 7 standard and requires no proprietary hardware. The system supports any standard input devices, including touch screen and wireless devices. Clients choose only the functionality they need, and the EDIS can be expanded at any time. This flexibility enables Wellssoft to configure the system easily to support the goals of any hospital system.

### Return on Investment

Using the Wellssoft system results in increased efficiency in patient throughput in the emergency department. Wellssoft v10 patient tracking, nurse and physician documentation, orders and results, reporting and charge capture provide the tools for greater efficiency. "Working smarter" reduces waiting time, length of stay and elopements, maximizing capacity. Documentation templates result in improved charge capture and reduced paper costs. Real-time chart availability eliminates lost charts, improves communication and reduces errors. Patient after-care instructions and electronic prescriptions decrease liability. Auto-faxing and reporting decrease manual labor costs. Meaningful data for addressing bottlenecks, increasing accountability and meeting CMS, JCAHO and Emergency Medical Treatment and Active Labor Act reporting requirements is automatically collected. In today's financial climate, IT expenditures must deliver overall value and real cost savings - the Wellssoft system achieves both. ■

Wellssoft Corporation is the leading developer of software systems for emergency medicine, pioneering client-driven solutions for 18 years.

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