



**THE  
KENNEDY  
GROUP**

*Providing Strategic Solutions for  
Healthcare Information Technology*

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**The Challenge**

Three years ago, Gregory S. Walton, vice president and CIO of Carilion Health System, was made aware that Carilion was facing challenges within its Emergency Departments.

**Patients were leaving without being seen.** Carilion EDs were experiencing a LWBS (left without being seen) rate of 2,600 patients per year. At roughly \$400 in lost revenue per patient visit; this translates to over \$1 million in lost revenue. Greg Walton said recent studies indicate as many as 10 percent of all LWBS patients are ultimately admitted. At an average cost of \$10,000 per admission, the LWBS rate was potentially adding up to a significant financial loss.

**Turnaround times were lengthy, often exceeding eight hours.** In addition to causing a high level of patient dissatisfaction, the lengthy turnaround times were adding to problems with bed capacity. According to Walton, decreasing the TAT by one hour (at Carilion Roanoke Memorial Hospital's ED) is equivalent to adding 3.42 beds.

**Patients were getting lost.** Everything was being tracked on paper or dry erase boards and there was little accountability.

Alan Vierling, RN, ED Director, decided to seek a solution – specifically, he wanted to implement an automated patient tracking system. He was given the opportunity to plead his case in front of the IT Project Review Committee. After his presentation, the director received approval, along with a \$150,000 budget to investigate solutions. The project was off and running.

**Vendor Selection**

The first step was to define what kind of system was needed. Walton knew that system selection could not be done without significant input from the clinicians and other Emergency Department staff – the people who would be actually using the system. The ED staff teamed up with the IT department to define system requirements. A decision was made early on that the system should be more than a patient tracking system; it should be an integrated clinical management system. With this decision made, a six-month process was begun to create a Request for Information (RFI). They also researched potential vendors that would receive the RFI.

Areas of importance included integration issues (interaction with the existing infrastructure, integration with the HIS and ancillary systems) and sophistication (i.e. would the system work equally well for a large, computer savvy facility and a small, manual facility?) When all was done, 150 questions were identified and a methodology developed to score the responses. Here are just some of the benefits they were looking for:

- Improved system reporting to meet HCFA, JCAHO, & EMTALA reporting requirements
- Improved workflow, productivity
- Improved patient satisfaction
- Reduced “left without being seen” patients
- Reduced labor costs
- Improved risk management
- Improved report generation
- Provide a snapshot of patient movement throughout ED
- Improve continuity of patient care
- Improved physician and interdepartmental relations
- Increased capacity without need to add physical beds

- Standardization of care based on chief complaint
- Development of best practice protocols
- Decreased turnaround times
- Decrease in paper supply and cost
- Decrease in storage cost of medical record
- Savings of secretarial time
- Savings on time spent doing Quality Management
- Data tracking for physician consults, and referrals
- Data tracking for transfers, based on specialty and geography
- Bottleneck identification and early intervention
- Decreased dictation/transcription time and cost
- Improved access to medical records
- Decreased noise levels in ED environment
- Improved relations with community pharmacies
- Decreased medication errors
- Improved communication to Hispanic population
- Enhancement of registration process
- Improved compliance with JCAHO pain initiatives

Fourteen vendors were looked at initially. Six were chosen to receive the RFI. After the RFIs were evaluated, there were four vendors left. In the next step, the remaining vendors were invited to give an on-site demonstration. The audience consisted of key staff members from the IT department and clinical department heads from each of the facilities. Five scenarios were presented to each of the vendors to test the systems' capabilities. This process identified two clear-cut leaders.

The final step of the vendor selection was site visits to see the different products in action. What made the difference here? The systems spoke for themselves. Questions were posed to clinicians and other users of the system: Did the systems live up to their claims? In the final analysis, Wellsoft met the criteria.

### **Implementation**

Implementation began with the creation of a comprehensive project plan and the scheduling of weekly project meetings, attended by Wellsoft, ED and IT staff. Wellsoft's consulting was invaluable, bringing not only expertise on the software, but an in-depth knowledge of project management and implementation, as well as the workings of an Emergency Department. The project plan included breaking the project down into three phases of software implementation, as well as a phased approach for bringing each of the five Emergency Departments online.

Phase I consisted of tracking capabilities, integration with the HIS (SMS) and integration with Carilion's Enterprise Master Person Index (EMPI). Software was not the only consideration in Phase I. Walkthroughs were performed at each facility to assess what hardware would best meet the needs (Carts vs. Mounting Devices, CRTs vs. Notebooks). Once again, Wellsoft's extensive knowledge about Emergency Departments proved invaluable.

Each facility was examined to determine the order in which they would go live. Considerations included staff size, staff sophistication (i.e. computer savvy), and computer availability. The first facility, Carilion New River Valley Medical Center, went live on December 8, 2000, just four months after signing the contract. The remaining four EDs were brought online over the next five months.

Phase II, currently in progress, consists of online charting for nurses and physicians. Phase III will integrate the system with ancillary systems, including laboratory and radiology systems.

### **Success!**

What made the project a success? Comprehensive project planning and management, dedicated staffing, from ED and IT departments, and a vendor who knows the client's business. And the project *is* a success.....

The LWBS rate for all the Carilion EDs has been reduce by half, equating to over \$500K positive impact on gross revenue in one year.

Turnaround times have dropped as much as one hour in the past six months, yielding the equivalent of 3.42 additional beds per emergency department. The improvement has had unexpected positive consequences. As the effective bed occupancy rates in the ED have decreased, the staff, in particular

the physicians, have felt less tired and less pressured. By moving patients through the ED more efficiently, there are fewer issues to resolve.

Integration of the five Emergency Departments into one data repository has aided in the detection of patients visiting multiple hospitals. Too often, these patients are at high risk for abuse (spouse abuse, child abuse, elder abuse) or are seeking to gain increased access to drugs. The high-risk patients are now easily identified and treated.

The system has improved workflow resulting in a reduction in “door to doctor” time by an average of 20 minutes. Triage is no longer done in a booth, triage and nursing assessment now occur at the bedside, thereby eliminating the time spent in the lobby, waiting for a room. Registration is done at the bedside as well, contributing to the overall reduction in turnaround time.

What would the Carilion project team have done differently? Perhaps they would have increased their time and resource allocation. In spite of the hard work and commitment of the IT and ED staffs, not enough time was allocated. Specifically, too few IT hours were allocated and not enough time was planned for educating the clinical staff.

### **Impact**

June 6, 1944 forever changed the course of history. D-Day - the largest air, land, and sea invasion ever undertaken and the decisive battle that foreshadowed the end of Hitler's dream of Nazi domination.

On June 6, 2001, a different kind of history was made. Near Bedford, Virginia, the city with the largest per capita losses on D-Day, Americans recently remembered the sacrifices with the opening of the United States D-Day Memorial. About 25,000 people attended the ceremonies and celebration. The day was hot and humid; the average age was about 75 years old, and 132 people subsequently suffered from the hot weather.

Using the newly activated Wellsoft Integrated Clinical Management System, Carilion Emergency Department Service Line Director, Dr. Evelyn Manetta, was able to track the flow and management of patients in the local Carilion hospitals, as well as the Level 1 Tertiary Medical Center. The D-Day event generated over 20 admissions to Carilion hospitals, including several people who suffered heart attacks and strokes along with countless minor issues. The Wellsoft Integrated Clinical Management System enabled the Carilion staff to effectively manage the care and treatment of all these patients.

The D-Day example demonstrates one of the primary benefits Carilion sought from an EDIS solution, the ability to have a single integrated enterprise Emergency Department Information System. Now installed in five Carilion hospitals, the system has already proven itself valuable as a clinical tool even before all phases have been completed.

In 1998, a frustrated ED director walked into his boss's office seeking a solution. Three years later, after a lot of hard work and dedication, Carilion Health System has implemented the Wellsoft Integrated Clinical Management System that has made it more efficient and better able to handle the challenges of the Emergency Department.