

Prescription for Transformation

Enhancing Patient Care through Mobile Communications Technology

About 2,500 employees, 400 physicians and 500 volunteers bustle through Toronto East General Hospital's million-square-foot campus, attending annually to 20,000 acute-care inpatients, 60,000 emergency visits and 225,000 outpatients. It's a sprawling, busy, urban healthcare facility. Unfortunately, like many hospitals, TEGH has been struggling with an epidemic of aggressive behaviour and violence against healthcare workers.

On Feb. 26, 2009, Rob Devitt, TEGH's president and CEO, presented an important component of the solution his hospital has implemented to curb this problem. He spoke at the Toronto headquarters of Rogers Communications to an audience of healthcare professionals participating, in person and via a live webcast, in an educational event called Prescription for Transformation, hosted by *Canadian Healthcare Manager*.

Devitt's message was clear: using the cluster of technologies that support the Vocera communicator can improve workplace safety, patient care and staff productivity.

"If we were playing Scrabble, Vocera for us has been a terrific triple-word play," Devitt said. "There aren't many things we do in this business where we get three benefits for one intervention, but this one has certainly done it for us."

Devitt explained that, for an investment of just under \$2 million, his hospital installed a robust, medical-grade wireless infrastructure, acquired 2,000 Vocera communicators for staff in every hospital department, and integrated existing hospital communications systems so they could deliver relevant messages to specific Vocera devices.

The highest-priority function was an alarm system that

would allow staff members to initiate a "code white" if they were concerned for their safety. Under the old system, a healthcare worker who needed help would have to get to a phone in a patient room or nurse station. That call would

be routed through an off-site call centre to security. In a volatile situation, seconds count — and each step in that process took time.

"The beauty of Vocera, and why we jumped on it, is two little pushes of the button and it activates an automatic code white," Devitt explained. "It immediately opens up the device on the employee who has double-clicked it as a two-way radio, and that radio is then patched into the devices worn by every security officer in the building so they hear exactly what's going on."

Not only can security officers communicate directly and immediately with the staff member — and let the perpetrator know that help is on the way — but they can also pinpoint the precise location of the Vocera communicator and send the closest security personnel to the scene. Security response times at TEGH have been reduced by 61% since the system was implemented, Devitt said.

The second part of the triple-word play is an improvement in the quality of patient care. With the new system, staff are able to use the hands-free, voice-activated Vocera devices to reach any person or department in the hospital directly. There are no more "broken telephone" distortions.

"Communications breakdown, as we all know, is a primary cause of error in health-care so, from a patient safety perspective, having a device that gives you immediate access to the person you want to communicate with ensures a) the message is clear and b) the message actually gets through," Devitt said. "We're



Rob Devitt, CEO,
Toronto East General Hospital



View the webcast The webcast of this event can be seen by visiting www.chmonline.ca and clicking on the Prescription for Transformation button

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Four technologies in one

The 1.9-ounce Vocera communicator, which clips onto scrubs or a shirt, is the most visible component of a sophisticated system that incorporates technologies from several different companies. Justin Ndreu of IBM outlined each one in a presentation to the Prescription for Transformation audience.

First, there's the foundation of a secure wireless infrastructure — in this case designed by Cisco — with the coverage and capacity to support desired applications.

"You can put wireless just about anywhere," said Brantz Myers, director of healthcare at Cisco, explaining that indoor and outdoor mesh topology can even be designed to be "self-healing" if one node stops functioning. Myers added that when a new hospital is being built, it's cost-effective to treat the wireless network like any other utility and plan for it well before shovels dig into the ground.

Second, there's the Vocera device itself, which enables real-time wireless communication among hospital staff. Pierre Normandeau, Vocera Canada's general manager, pointed out that the system provides forwarding options — to cell phones, for example — when a Vocera wearer doesn't respond to a call. Meanwhile, commands such as "learn a name" and "learn a command" help to get around any speech recognition issues.

Third, ConnexALL from GlobeStar captures alerts from existing systems — everything from patient call bells to building security and fire alarm systems — and delivers them instantly to the appropriate people through the Vocera communicators.

"We're pulling information onto one platform where, before, these systems would tend to exist in silos and be compartmentalized," said Christopher Tavares, operations manager at GlobeStar Systems. "Now you have this very disconnected environment being organized by a single conductor."

Fourth, there are real-time location services, powered by radio-frequency identification (RFID) tags and chokepoint readers at key portals, which can be used to track equipment and patients.

"Nurses spend between 20% and 40% of their time looking for things — wheelchairs, infusion pumps, crash carts, trays. You name it, they spend a ton of time looking for it," Myers noted. Tagging items, he said, allows for easy tracking that can even be tied into maintenance schedules. Tagging patients allows for seamless, life-critical monitoring all the way from the surgical suite to the patient's room.

Ndreu emphasized that each facility's implementation is customized, based on in-depth conversations with clinical staff about how their workflow could be enhanced by mobile communications technology.

"We perhaps spend the first 10% of the project doing the technical stuff, getting things working," he said. "The time we really spend is with the individual units. That's where the majority of the time gets spent, because that's where the power of the system comes from." •

expecting to see a significant reduction in adverse events."

Finally, there's the productivity angle. Instead of paging a physician or leaving a message for someone in another department, and then either losing time waiting by the nurse station for a call back or heading off to perform other duties and potentially missing the call, nurses can communicate instantly with the people who have the information they need.

Justin Ndreu, wireless and RFID solutions consultant with IBM, cited a nursing productivity study conducted by St. Agnes Hospital that found a system similar to TEGH's was saving 3,400 hours of lost productivity time per nursing unit per year. That translated into savings of 1.7 full-time equivalents per unit per year.

One further benefit — which Devitt jokingly called his quadruple-word play — is that when the hospital launches its new electronic health record initiative, it will be linked to a wireless system that would not have existed if TEGH hadn't pursued a wireless mobile communications technology solution for workplace safety.

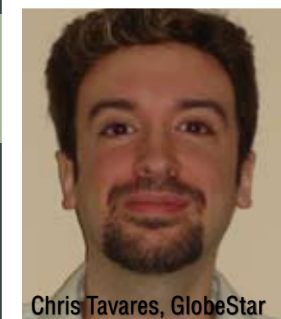
Perhaps most important of all, Devitt said the response from staff has been "very, very positive." In fact, he went so far as to add, "I expect that if we were to have downtime with Vocera, there would be quite a revolution!" •



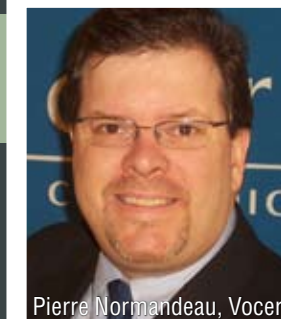
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