Case Study

Achieve Award-Winning Wireless Communication

The comprehensive wireless communication solution at Maple Grove Hospital enables life-saving efficiency that scores big with both patients and providers.

By Vicki Amendola, Editor, Healthcare Technology Online

Many healthcare facilities are embracing wireless technologies and strategies to satisfy patient care initiatives. Often, these facilities, whether large or small, face challenges such as staff resistance and system design, and even existing building infrastructure. Maple Grove Hospital had the unique opportunity to avoid these challenges by designing the hospital's wireless communication model well before the first beam was placed or the first clinical staff member was hired. The facility, based in Maple Grove, MN, is a 90-bed community hospital that opened on December 30, 2009 and was driven by a team of architects, administrators, clinicians, efficiency experts, and IT specialists who were dedicated to offering a differentiated care delivery model supported by highly integrated communications technology.

Planning and design for the facility started more than 5 years earlier with the integrated team focusing on the design and development of the facility, culture, process/workflow, and technology. The team recognized not just the need for effective and efficient communication, but the impact a comprehensive communication model could have on patient care. "At the end of the day, technology is what facilitates this, but it's not driven by technology," says Craig Wolgemuth, senior project manager at Maple Grove Hospital. "It's driven by the relationship between the care team and the patient, so the technology is the critical enabler to this, but not the driver."

According to Wolgemuth, effective communication was seen as the key factor that could differentiate Maple Grove Hospital from other facilities. "We led our design efforts with a care delivery model that required quick, accurate, and targeted communication," says Wolgemuth. "We then identified and applied technology to support the processes defined by the operations and clinical team." The communication system design, hardware and software selection, and installation occurred over the course of about a year, running concurrently with the planning and construction phase of the new facility. Ultimately, the integrated communication system at Maple Grove Hospital includes Vocera wireless communication devices, the Rauland Borg nurse call system, and Philips Patient Monitoring. Tying all of these pieces together is the Amcom Messenger integration engine that monitors incoming messages and data and then intelligently routes that information to the intended recipients for immediate response.

RIGHT MESSAGE, RIGHT PERSON, RIGHT TIME

The ground-up communication plan at Maple Grove Hospital was designed to eliminate delays in patient care by providing an instant, targeted, and direct connection between patients, providers, and hospital staff. "It wasn't about communicating faster; it was

about getting the right message to the right person at the right time," says Wolgemuth. To support this, the entire wireless communication system at the new facility leverages technology tools in a rules-based solution that is able to create a seamless association based on specific patient, provider, and messaging need.

Vocera hardware is the most prominent piece of the wireless communication strategy. The personal devices are used by virtually all staff members to facilitate conversations, and convey audible alerts and text and voice messages. However, unlike the traditional beeper, what makes Vocera devices unique is the ability to identify the device user not just by name, but by role. It's a pretty important distinction when you consider that you no longer need to know a specific staff member's name or who might be on duty for the shift. For example, as a provider you can push the button on your Vocera device and say 'call the charge nurse in the emergency department.' You may not know who is on duty as the ED charge nurse, but that's okay. All you need to know is that you need to transfer a patient from the ED to your unit, and that is a charge nurse function. So, rather than calling the desk and asking who is on charge and what is their number, the identification structure in the Vocera system is able to identify the proper individual immediately and make a direct connection.

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Communication also extends beyond the facility's walls. For instance, physicians driving in from a clinic to discharge a patient can dial in through Vocera's voice access system, much like using voicemail, to talk to the patient's nurse and give instruction to ensure that the patient is ready for them when they arrive in a half an hour. The physicians don't need to know who the nurse is; they can simply dial in and say 'room 3206 RN,' and from their car, office, home, or anywhere, they are instantly connected to the device hanging around the neck of the nurse assigned to that patient.

In addition to calling one person, group distribution is also possible with the Vocera devices. For example, saying 'broadcast to emergency care center' can immediately open up a voice channel between every member of the staff who's on site in the emergency center at that time so you can relay details about a significant motor vehicle accident with a number of patients coming in with a five minute ETA, all without spreading the news over a loudspeaker to the entire ER department.

PATIENT-DRIVEN PROVIDER RESPONSE

As critical as efficient provider-to-provider communication is, it doesn't compare to the impact that clear and available communication between the patient and the care provider can have on both patient care and patient satisfaction. And, nowhere is the patient/provider communication link more vulnerable than through the relationship formed with the nurse.

Nurse call systems have been a part of the hospital communication structure for decades, but Maple Grove provides a great example of just how far these systems can go. Nurse call devices are meant to be convenient, but oftentimes are not. You press the button, and a phone at the nursing desk goes off. If you were lucky, the unit secretary would pick up the phone and say, "What do you need? Let me find your nurse to get that for you." Then, the unit secretary would go off to find the nurse and then relay the request. If all went well, the nurse would eventually get to that patient's room, sometimes within minutes, sometimes only after a second or third call. Traditional nurse call is anything but instantaneous. You can probably recall times when you've seen people leave a patient's room to track down a nurse themselves, feeling forgotten due to the delay in response.

The Rauland Borg nurse call system is fully integrated with the Amcom middleware and Vocera devices in Maple Grove Hospital's system to eliminate the frustrations of delayed and miscommunicated response. When the patient presses one of the nurse call buttons, the nurse instantly gets an audible alert and a text message from the patient's room. There is no waiting for someone to answer the call at the nurse's station and relay the message. What Wolgemuth says is even more valuable, however, is the ability for a nurse to immediately communicate back to that patient. "A nurse isn't always really close to a patient's room when the call button is pressed, but we still wanted that nurse to be able to provide quick feedback to the patient," says Wolgemuth. "One of the beauties of efficiency here is within a second or so after a patient presses that button, a nurse communicates with that patient."

This instant, two-way communication is a reality at Maple Grove Hospital. Nurses only need to push a couple of buttons on their Vocera device to be connected to the patient's room via an intercom-like speaker in the patient's pillow. For example, a patient may press the 'pain' button. The nurse would be notified immediately with an audible alert accompanied by a text message that would say something like 'room 218 is in pain.' The immediate response

would go something like this: "This is Jen. I'm your nurse. I understand you pressed the pain button. Can you tell me what's happening?" The patient can provide further details and the nurse, who may be across the unit, now knows specifically what's going on with that patient, can respond appropriately, and can set expectations as to when and how the pain call will be addressed. "At the end of the day, it's about the fact that a nurse creates a relationship with the patient," says Wolgemuth. "The system gives us the ability to be much more tightly connected to the patient when we're not physically in the room."

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The system even supports critical patient to caregiver communication that is virtually invisible to the patient. The Philips patient monitoring devices are also integrated with the Amcom system. Automated messages are sent by the Phillips patient monitoring system through Amcom to the Vocera personal devices for everything from a patient on telemetry who has a low battery warning, which could go to a patient nurse or floor tech, to critical events such as when a patient's heart stops beating and everyone on the unit is immediately notified.

INTELLIGENCE IN MOBILE COMMUNICATION

According to Wolgemuth, the biggest intricacy of putting this tightly integrated communication system together was the definition and coding of all the rules for communication, none of which could be defined until the workflow processes and provider roles were defined. For example, the ED (emergency department) staff likely includes an ED charge nurse, an ED nurse, an ED tech, and an ED physician. "Just think about all of the interactions between a couple hundred roles in your hospital," says Wolgemuth. "I think we have more than 800 roles programmed into our system." But, bringing effectiveness and efficiency to the communication system required more than just defining all the different roles that care providers in the facility play and passing out mobile devices. According to Wolgemuth, digging deeper into interactions and work processes is the critical link many organizations miss. You need a thorough understanding of what the job roles are, what the hierarchy of responsibility is, and what the escalation routes are, and even what kind of mobile communication device would be best suited to each role.

"Once all the roles were defined, we had to tie all of our input systems — those generating messages, such as nurse call and patient monitoring — to our end user mobile devices," says Wolgemuth. The Amcom middleware messaging solution uses rules-based logic to automatically make the proper connection between patient and provider based on intended recipients, priority of need, and escalation. "Think of it as the old-school operator," says Wolgemuth.

WIRELESS STRATEGY YIELDS REVENUE, RECOGNITION

Ultimately, what the integrated solution enables Maple Grove Hospital to do is automate communication with a positive impact on patient care and the overall patient experience. Based on the first 20 months of operation, the hospital has seen success in all areas, much of which can be attributed to the integrated communications model. "Without a baseline 'before' picture, quantifiable improvements are impossible to measure," says Wolgemuth. "But, we can certainly compare our patient and staff satisfaction and our safety record to other sites." Currently, Maple Grove Hospital is among the top in the state of Minnesota in core measurement achievement, and patient satisfaction scores rank in the top 5% nationally on a number of key indicators, including "Willingness to Recommend" and "Quietness of Hospital."

And, the success goes beyond awards and accolades. According to Wolgemuth, part of the objective of the hospital was to build a facility that would remain "relevant for the next 50 years." This required implementing an infrastructure that would remain flexible and relevant as workflow, technology and expectations changed over time. "We expect that this system provides a foundation for providing solutions to problems as they arise throughout the organization," says Wolgemuth. The planning and strategy seem to be bearing fruit, as the hospital has been able to absorb growth at 1.5 to 2 times forecasted expectations. Maple Grove Hospital has also managed to establish profitability in the first 12 months of its existence, a full 24 months ahead of plan. ❑