

## Nursing Innovations

### Mobile technologies and artificial intelligence rank high with clinical leaders

prevention program that uses prescriptive analytics, an artificial intelligence (AI) program that alerts nurses when a seriously ill patient may take a turn for the worse, as well as bedside tablets that allow patients to view their charts.

But, more than anything, Reinking's top priority is finding that one "do-everything device" that will allow the organization's 1,270 nurses to become fully mobile.

She says El Camino Health has considered smart badges, which are communication devices worn around the neck. While the badges allow for effortless communication among providers and staff members, they can't store data, including patient records. The ideal device would allow nurses to communicate, document, and look up information, she says: "Having one technology that has all the information they need and can serve as their communication device is more efficient." Finding the right tool to put in nurses' hands, however, has been a process of addressing everything from infection control (mobile phones can be a problem) to the visual needs of older nurses.

"We need to vet the process on what is the best way to be mobile and how to satisfy the needs of a five-generation workforce," says Reinking.

### Transformational technologies

Reinking's quest for a multi-purpose technology is a growing trend among nurse leaders. "It's important that the technologies nurses use allow for more autonomy and creativity in practice by removing menial tasks so they can focus on patient care or maybe a few moments of their own self-care," says Oriana Beaudet, DNP, RN, PHN, vice

president of nursing innovation for the American Nurses Association. With increasing complexity, changing reimbursement structures, new care models, and population health being driven by value-based care, nurses need advanced technologies, she says. "Nurses want interoperability and communication between systems to reduce the waste." Technologies must work in concert to create seamless systems and user experiences. When this happens, it frees up nurses to focus on what matters, which is people, rather than the technology itself, Beaudet says.

At the same time, El Camino Health is a prime example of how healthcare organizations are looking to AI, predictive analytics, and wireless technologies to empower nurses to deliver high quality care and a more personalized patient experience.

In addition to finding a mobile device that will take nurses out of workstations, El Camino Health is looking at how AI and predictive analytics in nursing can support an organizational goal of creating error-proof systems. "We are excited about being able to predict lots of things in the future about patient conditions," says Reinking. El Camino Health recently started piloting a program using machine learning and the deterioration index, a scoring system that warns when a patient is declining. "We are exploring the AI/cognitive computing feature in Epic, which we might implement at El Camino," she says.

The Epic program takes all patient data like vitals and lab results and uses machine learning to identify patients whose conditions are steadily changing. “It then sends an alert to nurses to proactively address patients before they get into a serious situation,” she says.

In other areas related to patient safety and quality outcomes, Reinking says that in addition to using predictive analytics to reduce falls, the organization is exploring a tool that reduces the risk of pressure injuries before a patient’s skin is even broken. The technology identifies early on if a patient’s circulation has been compromised and will show whether an area is at risk for breaking down.

In addition, El Camino Health has invested in new technologies to improve patient engagement. It is currently rolling out a patient engagement platform systemwide that integrates with the EMR. It also offers Epic’s MyChart bedside digital charts on six units. “We have prioritized patient engagement as high, and both [measures] meet our strategic plan of ensuring patients have personalized care and access to their information,” says Reinking.

As Beaudet surveys the national landscape, she says AI, automation, and wireless technologies are being rolled out in multiple areas to assist nurses. “We are seeing automation in lab and pharmacy spaces, and in the robotic space, robots are being used to deliver supplies, linens, and meals,” she says. “These technologies are utilized for short, task-oriented tactical efficiencies that reduce waste, allowing healthcare professionals to focus on the human experience.”

She adds that GPS wireless technologies are being used as a resource to reduce violence in healthcare environments. Some wireless technologies are linked to call light systems and tracking software embedded in wearable technology, which can link to an organization’s security systems. “Staff wear technology every day that does double duty. Not only does it help us to understand staff locations, but badges can be used as an invisible call for help if nurses and staff are in a situation where they feel unsafe,” says Beaudet.

## Is VR the future of nurse learning?

Healthcare organizations also are looking to cutting-edge technologies to support new nurses as they enter the workforce. Nearly a decade ago, Northwestern Medicine Central DuPage Hospital and Northwestern Medicine Delnor Hospital, both in Illinois, established simulation training labs for nurses, physicians, and other healthcare professionals. “This was rare in healthcare for 2011 and even today,” says Michelle Olech Smith, Northwestern’s program director of simulation labs. Most simulation programs reside in medical and nursing schools, she adds. The simulation program is open to all healthcare professionals and trains 5,000–7,000 users a year. In late 2019, the organization took another leap forward and added a virtual reality (VR) training program. “The fact that we continue to evolve with emerging technologies like VR is something that is not common in community-based hospitals,” says Olech Smith.

VR is an innovative simulation modality where learners participate in an immersive sensory experience that simulates a real environment. Learners wear a headset to see and hear their virtual scenario and use hand-held controllers to perform assessments and interact with the patient. “VR

represents one of the highest forms of learning. You can immerse the individual in the task and be performing the task at the same time,” says Olech Smith. VR can replicate a variety of settings, from the emergency department to even an outside setting like a parking lot or sporting event.

The goal is to offer healthcare professionals an opportunity to learn and practice new skills or enhance existing skills in real-life scenarios without the risk to patients.

According to Olech Smith, a key attribute of VR is that hospitals can immerse learners in a virtual environment to do things other educational methods don’t allow. For example, VR focuses on nontechnical skills such as communication, clinical judgment, and critical thinking. It offers multiple benefits that students don’t receive in the classroom.

Northwestern’s first VR activity was a program aimed at enhancing clinical judgment and critical thinking in new graduate nurse residents since these areas take time and experience to develop, she says. “Nurse residents coming out of school have some exposure to nursing, but they need more integration and transition-to-practice support.”

VR training can help improve interprofessional relationships among the healthcare team and decrease the medical errors that occur when nontechnical skills are underdeveloped. Also, VR addresses nursing challenges in a safe learning environment, says Olech Smith. “Nurses are more frequently faced with disruptive patient situations. We can now rehearse how we manage disruptive behavior through the virtual world.”

As the VR program at Northwestern Medicine continues to take flight, it is targeting specific training projects, says Olech Smith. Next up, the team will use VR to rehearse for low-frequency but high-risk situations that happen in the operating room. ■

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—Cheryl Reinking, CNO, El Camino Health