AT THE FOREFRONT OF TECH
iPad “On a Stick” is the Future of Telemedicine and Telehealth

By Jim Rogalski

To the casual observer, the device looks simply like an iPad on a motorized stick. But to Duke University School of Nursing educators, the robot fashioned by the company Double Robotics is a major next-generation step in the evolution of telemedicine and telehealth, in which the delivery of certain health services and information is conducted over an Internet feed.

The Duke robot, nicknamed JaMMeR, consists of an iPad mounted on a tall mobile pedestal whose movement around a room can be controlled from miles or even continents away by a health care provider. The iPad is the face of the robot, live streaming a two-way video feed of the provider as he or she has a conversation with a patient. The provider can raise and lower JaMMeR and turn and move it in any direction to get a full sense of a patient’s environment.

For rural communities where access to health services and specialized expertise is limited, this kind of Star Wars-like technology offers great potential.

“Telehealth is very real in the 21st Century,” said Jacqueline Vaughn, BSN, RN, CHSE, a clinical lab instructor in the School of Nursing’s Center for Nursing Discovery, one of the most sophisticated nursing education simulation centers in the country. “Medicare is now reimbursing for telehealth visits for home monitoring. Since this is being done in the real world, we need to teach our students how to use it. ”
(See sidebar on page 12 for full description of telemedicine and telehealth.)

EMBRACING TECHNOLOGY

Embracing the most innovative nursing education technology is a core belief at Duke University School of Nursing. In 2010, the school won the national Campus Technology Innovators Award for embracing technology to explore new ways of teaching and learning. So it’s no surprise the school is adopting the Double Robotics platform and other ahead-of-the-curve technologies.

Another recent acquisition by the school is a new high-fidelity CPR machine that, along with feeling more realistic to the user, offers instant feedback on whether the user is correctly compressing the chest and ventilating.

“I’ve taken traditional CPR classes on a regular mannequin, and this is so much better,” said Accelerated Bachelor of Science in Nursing (ABSN) student Monica Daeges. “The feedback is really focused. On low-fidelity mannequins you don’t get a realistic sense of how deep the compression should be.”

Duke’s all-in commitment to technology is profoundly illustrated by recent changes in the school’s Master of Science in Nursing (MSN) Program, which over the past two years migrated all of its

High-fidelity CPR machine gives instant feedback to learners.

Duke’s Center for Nursing Discovery is one of the most sophisticated simulation centers in the country.
To be sure, the amount and sophistication of forward-looking educational technology is a major factor for many students deciding where to earn nursing degrees and best prepare themselves for the ever-changing world of health care.

“When you come here to the School of Nursing you are blown away by everything they have available,” said ABSN student Nicholas Cordeiro. “So yes, it’s definitely a factor to come to a place where you’re going to have access to all of this cool technology.”

THE POSITIVE ABOUT TELEHEALTH IS THAT YOU HAVE THE ABILITY TO SEE PATIENTS WHO MIGHT NOT BE ABLE TO COME IN PERSON.

James David Cook Jr.
challenging for some traditional health care professionals, but the younger generations coming through will benefit from it. I think it’s a great thing.”

Vaughn said it’s a good tool for home visits. The visiting nurse can stay in close contact with his or her supervising nurse or doctor, who can remain at the clinic or hospital and continue with other duties as the nurse is enroute to the next patient’s home.

JaMMer has greatly enhanced the experience of the school’s off-site MSN students.

“We were faced with how do we keep our nurse practitioner students involved with simulation and with our ABSN students,” Molloy said. “So the robot became a great tool to have a presence for the nurse practitioner (NP) students here on campus.”

With NP students in a different part of the state, country, or world, and ABSN students in the simulation lab at Duke, using JaMMer, they can work through simulation scenarios, practicing their roles and teamwork skills.

“It really does add a presence to the simulation, even though it is an iPad on a stick,” Molloy said. “It actually makes you feel as if the person is in the room.”

NEXT-GEN CPR

The American Heart Association (AHA) has recognized that recertification every two years is not enough to maintain CPR skills. The AHA points to studies indicating that rapid CPR skills degradation happens as soon as six months after training.

So the School of Nursing is partnering with the company Laerdal and the U.S. Air Force to perform a comprehensive research study on skills retention using Laerdal’s new high-fidelity CPR mannequin.

The study is funded by the National League for Nursing and Laerdal.

The high-tech mannequin guides students in how to perform proper chest compression and ventilation.

In each CPR session, students first perform CPR without any feedback from the mannequin. Then, students watch a video of correct CPR technique and practice CPR. A computer voice helps the student achieve proper technique by giving instructions such as, “Increase depth of compression; release between compression to allow chest to recoil; ventilate less forcefully;” or “You are doing well.”

And finally, students are tested on their CPR.
WHAT IS TELEMEDICINE AND TELEHEALTH?

According to the American Telemedicine Association: “Telemedicine, broadly defined, is the delivery of any health care service or transmission of wellness information using telecommunications technology. Closely associated with telemedicine is the term telehealth, which is often used to encompass a broader definition of remote health care that does not always involve clinical services. Videoconferencing, transmission of still images, e-health, including patient portals, remote monitoring of vital signs, and nursing call centers are all considered part of telemedicine and telehealth.”

USE OF HUMAN SIMULATIONS

During a cardiology simulation practice, technique and graded by the machine. While 75 percent is passing, Danett Cantey, MSN, RN, CND, a clinical nurse educator in the Center for Nursing Discovery, said most ABSN students score in the high 90s.

“Often you don’t really know how deep you’re compressing. Based on just a sense, you don’t know if it’s deep enough. This mannequin tells you exactly how many millimeters you’re compressing,” said study leader Marilyn Oermann, PhD, RN, ANEF, FAAN, the director of evaluation and educational research.

“Like anything, when you get real-time feedback, it’s very beneficial,” said Cantey. “It helps to boost confidence.”

Daeges added, “With a mannequin, if you mess up there’s no risk. It’s a safe environment.”

The study includes one group of students who receive an individual prescription for how often they need to practice CPR.

“What we’re going to look at is what does this mean for training people,” Oermann said. “This could be a game-changer.”

ELECTRONIC RECORDS TRAINING

Beginning this Spring, the School of Nursing will be one of a few nursing schools in the country to offer a specific training course on electronic medical records (EHR).

Its roll-out will allow ABSN and nurse anesthesia students who are on campus to work on 17 recently-acquired bedside computers loaded with the EPIC software used by the Duke University Health System.

“The students already receive training in preparation for their clinical experience, but our goal here is to include EHR into patient simulations so the students get a real-life experience in documenting,” said Michele Kuszajewski, DNP, RN, CHSE, assistant director of the Center for Nursing Discovery.

The training is essential since paper charting is all but obsolete at Duke and at most large hospitals in the U.S. Eventually, EHRs will become the norm everywhere.

“It’s silly to practice reading a paper chart and not know how to navigate through the electronic record of a patient,” Kuszajewski said.

One thing she will stress to students is not to forget about making eye contact and focusing on the patient.

“Like anything, when you get real-time feedback, it’s very beneficial. It helps to boost confidence.”

Danett Cantey