Simulation exercises become an essential component of clinical education

Artificial Intelligence

Professionalism is important to Linda L. Haycraft, (’83, ’98) M.S.N.(R), R.N., C.P.N.P. When students enter a patient’s room she expects them to be in uniform, identification badge clearly visible and tattoo covered. They also must be respectful and informed. It doesn’t matter that the patient is made of plastic and rubber.

“You might say ‘It’s just a manikin.’

“What difference does it make if I’m wearing flip-flops?” said Haycraft, assistant professor and coordinator of clinical simulation learning at the School of Nursing. “But it makes a difference. Working in the simulation lab counts as clinical experience. So yes, it’s a manikin, but it’s a manikin that simulates human behavior, and I insist students treat them the same way they’d treat a real patient.”

COME FLY WITH ME

Haycraft is passionate about her work. She believes simulation education has proven its worth in many other occupations and is becoming essential to nursing education.

“If you boarded an airplane and the pilot said, ‘Hi, I’m Linda Haycraft, and I’ll be your pilot today. I’ve read all the books and heard all the lectures but I’ve never really flown a plane before. I hope you’re OK with that,’ how many would get off that plane?” she said. “We do the same thing with our patients. Hi, I’ve read the books and heard all the lectures, but I’ve never really worked on a patient with heart disease. Let me give you this medication.” We can do better than that.”

Haycraft says nursing must improve simulation experiences because the number of nursing students in need of clinical education exceeds the number of on-site locations available for that education.

During the past few years, nursing school enrollment has exploded throughout the country, yet the number of hospitals where nursing students can be educated is relatively stagnant. Haycraft noted that the 120 SLU nursing students going through their pediatric rotation, for example, are competing with students from more than a half dozen other nursing schools in the area for positions at the only two pediatric hospitals in the city — SSM Cardinal Glennon Children’s Medical Center and St. Louis Children’s hospital.

The School of Nursing expanded the lab on the first floor from one small room with two computers, an exam table and two manikins to what it is today — two hospital units, four exam rooms, 56 hospital beds and two control rooms where instructors behind one-way glass operate nine, moderate-to-high-fidelity manikins that simulate symptoms, diseases and conditions found in a real-care setting.

Tori Murray, (’79, ’97) Ph.D., A.P.H.N.-B.C., R.N., F.A.A.N., dean of the School of Nursing, said the expansion was an investment in SLU’s students.

“Simulation allows our students to engage in real-life clinical experiences in low-risk environments,” she said. “Our innovative approach enhances clinical competencies before students begin caring for patients in complex, high acuity pa- tient care environments. By expanding the lab we’ve strengthened the educational process.”

Once the expansion was complete, Haycraft’s next step was to integrate simulation education into all four years of the undergraduate curriculum. In the past, only juniors and seniors ran through simulations. Now, freshmen observe a simulation during their Introduction to Nursing course to get comfortable with the setting. Using pre- and post-operative manikins, sophomores learn to administer medications, insert catheters, and address the pain management and spiritual needs of patients.

EYE FOR DETAIL

Haycraft pays painstaking attention to detail during simulations. Before the exercise, students receive a packet of informa- tion containing the patient’s history, suggested readings and a comprehensive list of learning objectives.

Once the students — no more than three per simulation — are at the patient’s bedside, Haycraft doesn’t expect perfection, but she expects professionalism. They have to speak to the manikin as though it were a real patient. The school installed voice modulators so faculty members behind the one-way glass who speak for the manikins actually sound like the patients, whether the patient is a 56-year-old man with coronary artery disease, a 5-year-old boy with asthma or an 18-year-old woman with heart failure and atrial fibrillation.

Although the basic scenarios are set, Cynthia S. Rubbleke, (’79, ’95) M.S.N. R.N., a part-time instructor in the simulation lab for the past four years, said faculty sometimes alter simulations on the fly.

“When something goes wrong or things don’t go as the stu- dents expect, we can make the manikin respond differently, and this can create a whole other learning experience for the student,” she said. “It’s just like the real world when things don’t follow the plan. The ability to change course can expose students to situations they might not experience in clinicals.”

Behind each of the regulation hospital beds in the simulation lab is a head wall unit identical to those designed by the company that makes units for hospitals. Only the oxygen is impermeable. Everything else works exactly as it would in a patient’s room.
If there were a disaster in St. Louis, all we’d need is portable oxygen to turn this lab into a hospital overflow unit. — Haycraft

In response to student requests for more time in the simulation lab, Haycraft is planning to expand sessions to half-days rather than two-hour blocks. She’d like to add more personnel and another high-fidelity manikin. She’d also like to add interprofessional training to the curriculum, allowing nursing students to run through simulations with students from the University’s school of medicine and college of health sciences.

“This lab helps sell the school,” Haycraft said. “When we survey prospective students who come through on tours, they point to the simulation lab as the hook that reeled them in as the most common name among SLU freshmen this year, which is why instructors chose the moniker for the simulation lab’s new birthing manikin. Emily is married but her husband, Scott, is serving in Afghanistan, so he is not present for the birth of their first child. Nurses usually don’t deliver babies, however, Haycraft has created a simulation in which a nurse does. The Missouri Board of Nursing members toured the lab two years ago as part of an accreditation visit. Members said they had visited larger simulation labs and labs with more manikins, but they had not seen a program as comprehensive and well run as the one at the SLU School of Nursing. "

High Praise

Things turned out better for Stephen Mackey, J.P. Moore and Kuna Chaekal. It’s Thursday morning, and the three seniors just completed their simulation exercise on “Johnny Minor,” a 53-year-old retired coal miner with a heavy nicotine habit and COPD. They missed a couple of steps in the treatment process, but overall they (and their patient) did well.

“I like simulation because it gives us a chance to get used to hospital equipment and supplies before we have to deal with it in the real world,” Moore said. “It takes away some of the shock.”

“It’s as close to real life as you can get without putting a patient in any danger,” Mackey said. “Simulation is thinking outside the book.”

Kuna said it makes her nervous knowing instructors are behind the glass in the control room.

“But once the simulation begins you get absorbed and start asking yourself the right questions about how to care for the patient,” she said. “It’s a really valuable exercise.”

A Good Manikin Is Hard to Find

Well, maybe not hard to find but hard to finance. SimMan 3G®, the most high-fidelity manikin simulator in the laboratory, costs about as much as a fully loaded Lexus hybrid. SimMan 3G® can blink, sweat, cry, urinate and hemorrhage. His pupils automatically dilate and conform in response to light. His chest rises and falls, he produces lung, heart and bowel sounds, and his blood pressure and heart rate can be programmed to reflect distress. Students can delibritate or catheterize SimMan 3G®, set up an IV or administer medicines. His right arm is so sophisticated that it can automatically recognize and respond to drugs and dosages. If SimMan 3G® goes into sudden cardiac arrest, and the student injects, say, amoxicillin rather than adrenaline, SimMan 3G® could die. If the experiences supra-ventricular tachycardia (SVT) and the student gives the correct medication, adenosine, but gives it too slowly, SimMan 3G® will remain in SVT.

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SimMan 3G® gives voice to the manikin as he responds physiologically to the recognition system and re-"