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Temple College breathing life into health sciences

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Temple College is home to some of the best surgical simulators in the nation. The school's simulation mannequins breathe, bleed, and even speak and react realistically to students.

Perhaps most importantly, the simulators won't die from a mistake.

The six hardwired simulators in the Health Sciences Center cost most than \$100,000 each, but the training experience is a close second to the real thing.

Through a unique collaboration with Scott and White Memorial Hospital and Texas A&M University System College of Medicine, and Laerdal Medical Corp., a world leader in patient simulators bases in Gatesville, the center has become a joint-use facility impacting the education of students in a variety of health care disciplines that has garnered national and even worldwide attention.

The center was recognized as one of the 10 finalists in the prestigious Bellwether Awards, national awards given annually to the top community college programs in student instruction, governance and finance and workforce development.

Representatives from schools such as the University of Pittsburgh and Johns Hopkins University have toured the facility, as well as visitors from as far away as Japan and Saudi Arabia.

In addition, the TC facility is a testing site for Laerdal equipment.

Recently, a group of physicians assistants in training at Fort Hood took over the simulation area to practice training patients with realistic battle damage like shrapnel, bullet and explosion wounds. These types of injuries are not common in local hospitals, so without the simulators the medics would have to wait until they are out in the field to get a firsthand look at what a roadside bomb can do to a soldier.

The simulators are wired to a bank of computers down the hall, where instructors watch students perform virtual surgery. Instructors can speak through the dummy via microphones as a way to simulate a patient's cries of pain or relief. The vital signs change depending on whether a student has performed the correct procedure, and new problems can be added during the surgery just to keep students on their toes. The students monitor the various noises and vital signs made by the dummy, including its breathing, stomach noises and heartbeat, and change treatment accordingly. The idea is that, just like in real life, things will go wrong, and it's up to the students to keep up.

One group that often uses the simulation center in its training is TC's Surgical Technology Department. Surgical technologists are often taken for granted when people think of the operating room. They are the ones in charge of all the equipment preparation so that the doctors can focus on saving lives. When a doctor says "scalpel" "forceps," or "paddles," someone has to be there to hand over the requested tools promptly or risk the health of the patient. The technologists make sure that all the necessary tools are within easy reach before the operation and perform another very important task, they keep track of exactly what type of tools are used on the patient and how many, to make sure the doctors don't close any incisions with a clamp or scalpel still inside.

Students enrolled in the one-year program that starts in the spring will be in the operating by August, which makes effective training a high priority. Student Ashley Arisco said that while the simulators did not completely prepare them for live surgery, they went in with a lot more confidence.

"One of the big differences is there's actual blood loss," Ms. Arisco said. "You learn more about the anticipation process at the actual clinical sight than we do in the simulator. If you're scrubbing in on a total hip replacement, you have to have everything ready right there. The surgeons all have their difference personalities, and they want things in an orderly fashion. It's the pressure of trying to know what they want and anticipate."

Students start off before the surgery making sure the operating room has enough gowns and gloves for all the surgeons, then they arrange the tools the surgeons will need on trays. The more complicated the operation, the more trays they need. For something like a total hip replacement they need up to five trays, while a tonsillectomy can be done with just one. They then prepare a sterile field by draping cloth around the area where the doctors will be working to minimize germs getting into the incision.

Student Regina Drake said that when they first entered clinicals they were rather nervous, but now that they have a little experience every operation is exciting.

"I've found it challenging when you first start in the hospital there and it is a little overwhelming, but once you get in the routine and setting up and adapting, it becomes second hand nature what you need to do and when you need to do it," Drake said.

"It's fun," Ms. Arisco said. "You don't ever do the same thing twice, you may do the same procedure but anatomy is always different, and you're always going to run into something that you aren't totally prepared for. You never know what you'll see."

In the building next door is the other half of what TC officials are calling the Health Science Complex. The simulation center in the recently refurbished Dell Martin Nursing Education Center has a variety of simulators that help future nurses train for the myriad of jobs they will need to perform in the working world. The main simulator is the "Sim Man," a computer-integrated mannequin, which can be programmed to mimic the vital signs of actual patients. By using a computer behind tinted glass, the instructor can watch as the students perform their duties, having the sim man give programmed responses to questions it is asked, and adding complications. A simple post-operation checkup could turn into cardiac arrest with the push of a button.

In another room is the needle simulator, which consists of a small box attached to a computer with a motion capture needle used to practice inserting a needle into a vein. The students must choose the materials needed from the computer interface like gauze, a needle with the correct gauge, antiseptic wipes and a rubber band to tie around the patient's arm. The student must position the needle at the right angle so that it doesn't bend or go past the vein and hit the bone, and then insert it.

The sim center also has a birthing dummy, which can accurately simulate a live birth. There are several dummies used for practicing for dealing with patients in the recovery ward, and there's even a fully furnished bedroom to help students get a feel for working with home care patients.

Christopher Brown earned his LVN degree as an Army medic, and now he has entered the RN program at Temple College.

"I like the science behind the medicine. I like working with people and being a nurse as opposed to being a doctor. It frees me up to do other stuff like having a family or hobbies," Brown said.

He said that the dummies have been beneficial as a training tool.

"The simulators give you practice," Brown said. "It gives you a better feel for the motions you have to go through. You can make your mistakes here and get all the bugs worked out."

The IV simulator was especially challenging for him, but said it was better than the old way of learning by having the nursing students practice on each other. The simulator save a lot of sore arms and supplies.

He said that while the simulators allow students to learn the motions for procedures, doing them in clinicals is a whole different animal.

"Inserting a nasal tube is pretty simple on the sims because it's just straight through," Brown said. "When you deal with a real person you never know what you're going to get."

Temple College offers a one-year LVN program and a two-year RN program.