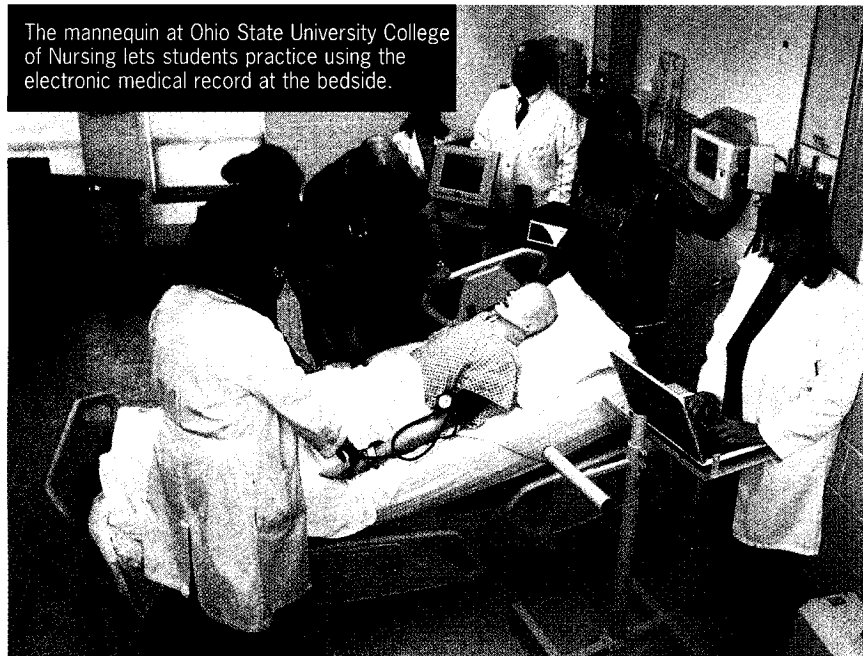


# InBOX

The mannequin at Ohio State University College of Nursing lets students practice using the electronic medical record at the bedside.

**TECHNOLOGY**

## Simulation Mode

*New patient-tracking technique could be a boon for medium-sized hospitals*

**T**oo many patients are waiting too long for emergency department care or are lying on stretchers in hallways waiting for a hospital bed to open up.

In response, hospital leaders are using the science of patient flow to analyze where the bottlenecks are. Some, mostly larger academic medical centers, employ sophisticated tools such as computer simulation modeling. This technique, designed by industrial engineers, allows "simulationists" to map out the hospital's patient flow from emergency department to imaging, operating rooms, various patient units and discharge. Then they can use the power of the computer to spin out various scenarios to improve timing—add a nurse here, alter a shift there.

Now an Israeli industrial engineer with an interest in health care is hoping to bring the benefits of computer simulation to hospitals that can't afford to hire a fleet of industrial engineers. The model, being tested in six hospitals in Israel, would be offered in the public domain and could, David Sinreich says, be carried out by a member of the hospital's IT staff with a little training rather than using an outside consultant.

"What we attempted to do is lower the complexity of the simulation so it can be run by hospital personnel," Sinreich says. "I expect both doctors and hospital administration will trust the people who work there more than someone who comes in for a day or two and comes back with a simulation."

An account of Sinreich's model, which

sive care nursing, with pediatrics, women's health and community nursing to be added in the future.

Because the CIS was originally designed for hospital use, Curran's team had to adapt it for stage learning. Students must develop critical thinking skills without relying on technology to tell them how care should proceed, when reassessments should be done and how to record data. And students will get to know their virtual patients over time. Mannequins introduced to sophomores will return in the students' junior and senior years with a disease in advanced stages or with a different disease, so fledgling nurses can draw on their knowledge of patients' histories.

In academic settings, adding elements to a clinical information system is an ongoing challenge, says Helen R. Connors, associate dean and director of the University of Kansas Center for Healthcare Informatics in Kansas City, Kan. The nursing school is

an alpha and beta test site for Kansas City, Mo.-based Cerner Corp. and has offered a CIS-wired curriculum since 2001. Each year, the system is adapted to accommodate additional classes, as well as the university's School of Medicine, so that nursing and medical students can learn to communicate through electronic records.

More simulators will be added in the near future, Connors says, and this fall 80 students from the University of Missouri, Kansas City, Mo., will be plugged into the University of Kansas CIS to see whether economies of scale result and whether in the future, schools might be able to share the expense of the technology.

With health care becoming ever more digital, hospitals are eager for nursing graduates comfortable with technology. Curran says that CIS perfectly fits young people who grew up with computers. "The students are pretty excited," Curran says. "They're like, 'Yeah, let's have it!'" — JACK BESS ●

# InBOX

relies on separating ED patients into eight different types based on their treatment,

was published in the March 2005 *Industrial Engineer*. He expects to write up results of

the model's use in three more Israeli hospitals later this year and hopes it will make the leap to the United States.

The trick to a successful simulation model is to make it complex enough to be meaningful, yet generic enough to fit many different hospital situations. Sinreich's concept is based on patient patterns that are common to most large urban hospitals.

His success could require new thinking on the part of hospital leaders in medium-sized hospitals, who have traditionally brought in consultants when they needed a simulation, says Junell Scheeres, a Florida-based performance specialist for hospital consortium VHA of Irving, Texas. She doesn't see simulation as realistic for small hospitals because they wouldn't carry it out often enough to keep a staff member proficient.

For many hospitals, simulation is "a very high-end solution, typically used to help design new construction of some other expensive change," Scheeres says.

Eugene Litvak, a Boston University professor who specializes in patient flow and variability, believes that the barrier to wider use of simulation isn't the complexity of the models; rather it's the quality of the information that is fed into the models. Until hospitals get better at capturing good data—perhaps with the use of radio frequency identification that can automatically track patients from one procedure to the next—simulation won't be that helpful.

Still, Scheeres and Litvak figure that the increase in "systems thinking" in hospitals will boost interest in computer modeling. "We will see more enthusiasts in hospitals in the future," Litvak predicts. "It's just a matter of time." —JAN GREENE ●

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