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PULSE

Virtual delivery

Simulator trains unit for childbirth emergencies

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"OK, push at the next contraction, OK? And push . . . very good," said a resident physician to his patient Noelle, a 39-year-old mother about to deliver her fourth child.

The baby's head peeks out, but the shoulders get stuck. The baby's heart rate drops steadily. More nurses and another resident rush in to help.

"Push hard, deep breath, Noelle! Push, push, push, push!"

After the baby slips out, the team quickly brings the infant's heart rate back to normal.

"You have a baby girl," said one nurse to the mother, who wore a green gown, tan socks and a blank stare. "Congratulations!"

The happy "mother" is actually a life-sized computerized patient simulator used as a training tool by the obstetrics staff at Columbia St. Mary's Hospital Milwaukee. The pregnant mannequin allows the medical center's labor and delivery unit to practice emergency delivery situations without the real emergency.

"Essentially, the idea behind her is we can simulate emergencies that happen very infrequently in real life so that we can practice with a doll that we can't hurt," said Ann Neal, the clinical educator for the labor and delivery unit. "Then we can practice to see how our systems are working, to check on our communications skills, to see how we work as a team."

Noelle can simulate a range of emergencies, from emergency Caesarean section to cardiac and respiratory problems. A computer displaying Noelle's blood pressure, temperature and other vital signs clues nurses and doctors in to her distress. Her vital signs

Please see NOELLE, 2G

Nurses Krystal Burris and Jill Johnston (above) assist resident doctor Jason Foil during a training delivery.

Nurse Ann Neal tends to the patient simulator, nicknamed Noelle by the medical staff at Columbia St. Mary's Hospital.

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NOELLE

Delivery unit uses simulator

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Jill Johnston hands the newborn mannequin to Ann Neal after a training session.

change in response to the care and treatment she is given.

And because significant problems with the mother often translate into problems with the baby, obstetric staff can also monitor the baby's status via its own computer. In one scenario, the baby will turn blue from lack of oxygen.

Paul Burstein, attending physician and director of medical education at Columbia St. Mary's, said the hands-on training and teamwork help the staff reduce risk. The hospital delivers more than 3,000 babies annually.

"Obstetrics is a very high-risk area. There's a lot at stake. With every delivery, we have the life of the mother and the life of the baby, sometimes more than one baby," he said. "And so I think it's a good way of promoting continuing education and training in a situation where these skills may be called upon at any time."

Manufactured by Gaumard Scientific, each Noelle simulator costs about $25,000. Ascension Health, Columbia St. Mary's parent company, bought 13 of the training tools to share among its affiliated hospitals.

The Milwaukee hospital shares its simulator with St. Anthony Hospital in Chicago.

Simulators common

Lou Halamek, an attending neonatologist at the Lucile Packard Children's Hospital at Stanford University, said the medical field is behind industries like the military or NASA in using training simulators. Although it remains a novelty today, its use is increasingly becoming more common, he said.

"Most physicians, most health care professionals, most hospitals and clinics are adopting the stance that it is far better to practice on simulated patients and conduct drills for crisis situations before they arise so that teams are then ready when they happen in real life," Halamek said. "While it is not standard operating procedure just yet, I believe in five to 10 years that it could become standard operating procedure."

Before simulations, most people learned through books or by taking care of a real patient.

They would first start by working under an experienced colleague before assuming more responsibilities.

Since the kinds of situations that health professionals encounter depend on the patients who walk through hospital doors, simulations provide a comprehensive experience by exposing doctors and nurses to several scenarios in a short time.

Halamek founded the Center for Advanced Pediatric and Perinatal Education, one of the first simulation-based training centers for obstetric health care professionals.

"This practice on simulated patients is going to, we believe, allow us to reduce error and improve patient outcomes. It's the only reason for using patient simulators," he said.

Tough deliveries

Although most of the obstetrics staff at Columbia St. Mary's Hospital know a Noelle simulation is coming, they often don't know the details. All they can determine, Neal said, is that an emergency will happen when she's around.

Since January, the team has helped Noelle through several tough deliveries. Noelle has survived a seizure at one birth and a hemorrhage during another. Shoulder dystocia, where the baby's shoulders become stuck, seems to be a favorite emergency delivery scenario.

Jason Foil, a first-year resident who helped deliver Noelle's baby in a recent training session, said it was the first time he saw a shoulder dystocia other than in books.

Training tool

He called Noelle an "excellent training tool" where both he and the team can get the experience they need in a non-stressful situation.

"So that way, when we are put in these situations during a real pregnancy, we are able to function well. Everybody knows their roles, and we know what we need to do to deliver the best care we can," said Foil, who started work at St. Mary's earlier this month.

Nurse Krystal Burris said although a live patient emergency is more intense, it's nice to go through the motions of an emergency and then critique your performance.

"Actually going through it is much more valuable than watching a video or reading a book or talking about it," she said. Each Noelle session is recorded and then watched by the responding staff at the end of the scenario.

Burstein said it's important to realize that learning in medicine is a lifelong experience.

"And when we talk about education, it's not because we don't know what we're doing," Burstein said. "It's because we're trying to maintain and improve skills."

One of the things I enjoy most about being a reporter is that I always get to write about something new and different each day. Sometimes, I write about subjects I've never heard of or initially think I have no interest in. Yet over the course of learning about a subject during my research, I often find that I enjoy the process of gathering that information and really having access to the people whom are considered the best in their respective fields. It's why I really enjoyed writing and reporting this story, "Virtual Delivery: Simulator trains unit for childbirth emergencies." Prior to writing this article, I didn't know that some hospitals could use mannequin simulators to help train their doctors. I had to learn most of my information from scratch, and yet but the time I had written my story, I had talked to several nurses, the director of medical education at the Milwaukee hospital, and an expert on patient simulators from Stanford University. It was fun learning about the different emergency birthing scenarios that the mannequin could replicate as well as actually sitting on a training session to observe the obstetrics staff at work. That's another thing I love about being a reporter; you often get invited to see things not many people outside that field have access to and all you have to do in return is write about it! Although this article wasn't the most hard-hitting story I could have written, it was the kind of quirky subject I enjoy writing from time to time and a story I hope people like reading about occasionally.