Neonatal Simulation: Practice Makes Perfect

Simulation-based training facilitates the use of higher order thinking skills.

The simulations Children's Mercy Kansas City have developed in the NICU, Fetal Health Center and with ECMO challenge medical teams to develop cognitive, technical and behavioral skills through the use of mannequins, working medical equipment and colleagues.

During scenarios, trainees must make use of their knowledge base, analyze and synthesize factors contributing to the crises and evaluate the effects of their actions.

Danielle Reed, MD is here to discuss neonatal simulation and how practice makes perfect.

Featured Speaker:

Danielle Reed, MD, FAAP

Danielle Reed, MD, FAAP, is a Neonatologist at Children's Mercy Kansas City and an Assistant Professor of Pediatrics at the University of Missouri-Kansas City School of Medicine. She completed her medical training at University of Missouri – Columbia prior to her residency in pediatrics at Nationwide Children's Hospital. She completed a clinical research fellowship in neonatal/perinatal medicine at Children's Mercy. In addition to simulation, she has a special interest in neonatal resuscitation, breastfeeding and lactation.

Learn more about Danielle Reed, MD (http://www.childrensmercy.org/templated.aspx?id=3080&doc=14469)

Transcription:

Dr. Michael Smith (Host): Welcome to *Transformational Pediatrics*. I'm Dr. Michael Smith and our topic is "Neonatal Simulation: Practice Makes Perfect." My guest is Dr. Danielle Reed. Dr. Reed is a neonatologist at Children's Mercy – Kansas City and an Assistant Professor of Pediatrics at the University of Missouri-Kansas City School of Medicine. Dr. Reed, welcome to the show.

Dr. Danielle Reed (Guest): Thank you, Michael. It's nice to be here.

Dr. Smith: What exactly is neonatal simulation? And what's the goal of this type of training program?

Dr. Reed: Well, in the simulation itself, we use different mannequin models, some that are high fidelity meaning you can listen to their heart rates; they move; they turn blue if their oxygen levels are low. Then, we use others that are called low-fidelity and they are basically babies, if you will, but you can put breathing tubes in and do chest compressions and those sorts of things. We use these different mannequins to help our staff in all different areas of the hospital be prepared for an emergency situation. Medical care is getting better and better these days so luckily babies are coding less and less frequently. We want to make sure that everybody stays on the top of their game so that when a crisis occurs, everyone is prepared and knows exactly what to do.

Dr. Smith: So, who exactly is this type of training for? Is it geared more toward the students? To the residents? Or to just anybody who might be working in the NICU?

Dr. Reed: Just about everybody. I physically am involved in all of the neonatal program, so I help the medical students in their skill labs doing just kind of routine "what do you do when a baby is born" helping them take those first breaths. We do simulation with the residents in the NICU and in other places throughout the hospital with mock codes where they get to practice not only their procedural skills but also their teamwork and team leadership skills. Specifically, in the NICU which is kind of where my heart lies, we do a lot of different things in different areas. We have mock codes in the unit itself so that all of the different staff nurses, respiratory therapists, residents, attendees, everybody comes together and can practice their skills on resuscitating a baby that is coding in the NICU. We also have a program that helps our delivery teams be ready in the health center. Our hospital has just recently, in the last couple of years, started delivering babies at our hospital—very high risk babies—so it's really important that our team is well-prepared and knows all of the different steps that might be taken or might be needed in a baby that has, say, a gastroschisis where the abdominal contents are outside the body or is going to be born with a congenital diaphragmatic hernia where the bowel is up into the chest and so they're going to need special procedures right away. Then, the third area that we've really focused on is our ECHMO program. That's basically a heart/lung bypass machine and, again, our care in a lot of areas is getting better and better so we're seeing our ECHMO use decline which is a good thing for babies so it means they're maybe a little less sick. We need to be up on all of our skills and know how to use all those machines.

Dr. Smith: You still have to be trained to do it, right?

Dr. Reed: Absolutely.

Dr. Smith: Yes. Yes. So, that's a good thing that the care is getting better; that we don't have to utilize these advance technologies as much but, obviously, we still have to be up on it. I guess, when you say mannequin, these are pretty advanced mannequins. They allow you to do a lot of these types of procedures, even do the ECHMO machines. I mean, this is pretty advanced stuff, correct?

Dr. Reed: Absolutely.

Dr. Smith: Yes. So, what do you think? How is this working? I mean, do you think this type of training is producing the results that you would like to see for the staff?

Dr. Reed: I think so. We've collected a lot of subjective data asking them how they feel from a self-efficacy standpoint before and after simulation; before our program got going and after it got going. So, we have lots of subjective, "Oh, I feel more confident in my skills. I feel better able to lead this. I feel better knowing who to call." We're just starting to get into some objective information collecting so that we can have those numbers to put out and share.

Dr. Smith: Right. Dr. Reed, are you sharing this type of training technology with some of the smaller hospitals and medical centers around Kansas City? This seems like a great opportunity, or a great method, for also training those hospitals as well.

Dr. Reed: We are, actually. In the last couple of years, we have taken our show on the road and gone to 3 different hospitals in the city to help their delivery room team better be prepared for an emergency situation as well.

Dr. Smith: So, where do you think this type of training is going to go? I mean, obviously, to me it seems this has application in so many ways: for the medical student; for the resident. What do you think the future of simulation training is?

Dr. Reed: Oh, I feel like we're really on the cutting edge and really going to see simulation blowing up in the future. It's a great way for, as you said, the trainees to kind of get their feet wet and to hone in their skills and their procedures and all of those things without necessarily having to take risks with patients. Then, it's a way for more seasoned attendees, more seasoned practitioners and nurses to stay up to date on all of their information. Again, keeping our skills tip top shape so that when we are called in a crisis, "Oh, yeah. I just put in that chest tube last week on a simulator. I just did ECHMO simulation two weeks ago. I'm prepared and I'm ready to do this cannulation." I think it's a great way for people to stay up to date on their skills.

Dr. Smith: Right.

Dr. Reed: I think that the mannequins are only going to get more involved and more impressive and able to do more and more procedures and skills and things as time goes on.

Dr. Smith: Right. Of course, the simulations are never meant to replace learning on your feet taking care of patients. I mean, that's the traditional way of doing it. You're just adding a layer that allows people to really hone in those skills. It sounds like a fascinating way to train and something definitely different from the way we did probably, Dr. Reed. So, I want to thank you for how you're pioneering this and I look forward to seeing simulation training grow in popularity. So, thanks for everything that you're doing and thank you for coming on this show. You're listening to *Transformational Pediatrics* with Children's Mercy – Kansas City. For more information, you can go to ChildrensMercy.org. That's ChildrensMercy.org. I'm Dr. Michael Smith. Have a great day.