

# ADVANCES IN GYNECOLOGY



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## Keeping it Real: Improving Clinical, Technical, and Team Skills with Obstetric Simulation Training

Obstetric emergencies can be unexpected and every minute is critical when the lives of a mother and baby are in jeopardy. Given the significant time pressure, as well as the range of clinical skills and experience that must come together swiftly in a team effort, NewYork-Presbyterian has launched an advanced clinical simulation program to provide authentic training experiences in obstetric emergencies.

“Simulation in medicine can provide training in technical skills and teamwork and incorporate bundles and protocols for the care we deliver,” says **Dena Goffman, MD**, Chief of Obstetrics at NewYork-Presbyterian/Columbia University Medical Center and Associate Chief Quality Officer, Department of Obstetrics and Gynecology, NewYork-Presbyterian Morgan Stanley Children’s Hospital and Sloane Hospital for Women. “Simulation-based training improves team readiness and expertise by exposing



Dr. Dena Goffman

doctors, nurses, and other members of the maternity team to obstetric emergencies that they may not often encounter in their practice. Simulation is also

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## Following the Genes in Cancer Prevention

During her residency training in obstetrics and gynecology at NewYork-Presbyterian/Weill Cornell Medical Center, **Melissa K. Frey, MD**, became intrigued by the role of genetics in cancer. “I started reading about mutations in BRCA1/2 and the risk for ovarian and breast cancer, and Lynch syndrome, which puts women at risk for both ovarian and uterine cancer,” says Dr. Frey, a gynecologic oncologist at Weill Cornell. “I realized how much had changed with regards to cancer genetics over the course of just a few years since I had graduated medical school.” The beginning of that awareness became the genesis of her research as a resident and continues today as a practicing physician.

Dr. Frey’s first investigation involved a survey of medical students to gauge their understanding of Lynch syndrome, an inherited disorder that increases the risk of colorectal cancers, as well as

many other types of cancer, including ovarian and endometrial cancer. “Over time more students were learning about it but with an over-emphasis on colon cancer and an under-emphasis of the uterine/ovarian cancer connection,” she says.

Dr. Frey next surveyed obstetricians, gynecologists, and general surgeons and found they had knowledge about Lynch syndrome, but many did not feel comfortable counseling their patients about endometrial cancer screening. “That’s what led me to look at genetics in general,” she says. “It wasn’t just a problem with Lynch syndrome, it was a problem with genetics. The information and the data were coming out faster than could be disseminated to the practitioners.”

In her current research, Dr. Frey is seeking ways to facilitate genetic testing among providers with

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## Improving Clinical, Technical, and Team Skills with Obstetric Simulation Training (continued from page 1)

a way to identify systems issues and then work to correct them. All of this can be accomplished without having a patient impacted.”

Dr. Goffman, who created and oversees the simulation curriculum, completed her residency training in obstetrics and gynecology at NewYork-Presbyterian/Columbia. During her fellowship in maternal fetal medicine and obstetrical critical care at Albert Einstein College of Medicine, she became interested in obstetric complications and the care of critically ill pregnant women, as well as the importance of education and quality improvement. “The simulation center puts providers and teams in a setting where they are managing an obstetric emergency,” she says. “They can learn from an immersive simulation experience what went well and what didn’t go well and then apply these lessons in real clinical circumstances.”

**“Simulation-based training can be used to analyze team performance and identify strengths and weaknesses. An immediate debriefing helps to improve knowledge and skills, as well as communication and other teamwork behaviors.”**

— Dr. Dena Goffman

### Simulation Training: Rigorous Standards, Authentic Setting

The advanced simulation training center, which is housed in the Roy and Diana Vagelos Education Center, Columbia University’s new, state-of-the-art, 14-story medical and graduate education building, is equipped with space for mock examination rooms, clinics, and operating rooms. The PROMPT Flex Birthing Simulator incorporates a number of features that enhance training, including an anatomically correct bony pelvis in the mother, silicone pelvic floor musculature, and a stretchable perineum. The baby is of newborn size and weight and is fully articulated. Other birthing simulators can replicate a full range of preprogrammed obstetrical events, including breech birth and cesarean deliveries, forceps and vacuum delivery, hemorrhage, and true-to-life shoulder dystocia.

Shoulder dystocia is an unpredictable and largely unpreventable obstetric complication during which the fetal shoulders do not deliver after the head has emerged from the vaginal canal and one or both shoulders becomes impacted against the bones of the mother’s pelvis. “There are technical skills that a provider needs to have to safely accomplish delivery with shoulder dystocia,” says Dr. Goffman. “Through our simulator, we teach how to do these maneuvers safely and correctly in a stepwise fashion. If there is too much traction applied to the head while the shoulder is stuck in the bony pelvis, the baby can suffer a brachial plexus injury that can lead to long-term consequences. The simulator has a force monitoring system with an electronic strain gauge to measure the amount of force being applied. We teach maneuvers to minimize force and to try to mitigate those risks of injury.”

Nurses play a critical role in helping the provider safely deliver the baby. “Nurses receive the same hands-on training for the portions of care that they provide,” says Dr. Goffman. “Certain parts of the shoulder dystocia algorithm include how you hold the mother’s legs and how to apply suprapubic pressure. Those are things the provider can’t do because their hands are tied up doing the maneuvers to accomplish delivery.”

According to Dr. Goffman, while technical skills are essential, probably more important is teaching teams to function in an emergency. “One of the exciting aspects about an offsite center like this is that we bring people away from their clinical area, eliminate distractions and

multitasking, and have them focus on team learning,” she explains. “Residents, fellows, attendings, and nurses come together in one place to run through a simulated shoulder dystocia delivery. Then we debrief the simulated delivery afterwards. We talk about what went well and what we can learn from it. Often we go back and run it a second time to solidify the improvements we wanted to make from the first delivery.”

Dr. Goffman believes that debriefing as a concept does not get as much attention as it should. “We’re working on incorporating debriefing into clinical practice after real events,” she says. “One of the benefits of doing this in the simulation center is having people get comfortable with how the process works. You can then build a cadre of people that recognizes the value of debriefing for systems learning and quality improvement work. It’s that sitting down and talking to each other afterwards where the benefit happens.”

Simulation training also focuses on postpartum hemorrhage, the leading cause of maternal mortality worldwide. “Postpartum hemorrhage is a very relevant and important topic and typically occurs in 4 to 6 percent of deliveries,” says Dr. Goffman, who has coauthored an American College of Obstetricians and Gynecologists Practice Bulletin on the subject in the October 2017 issue of *Obstetrics and Gynecology*. Dr. Goffman is also a member of the Steering Committee of the Safe Motherhood Initiative for New York State; Mary E. D’Alton, MD, Director of Services, NewYork-Presbyterian Sloane Hospital for Women, serves as Co-Chair of the Safe Motherhood Initiative. The initiative, launched by the American Congress of Obstetricians and Gynecologists, is developing and implementing standard approaches for managing the three leading causes of maternal death – severe hypertension, venous thrombo-embolism, and obstetric hemorrhage.

“How prepared we are to handle postpartum hemorrhage when it happens is critically important,” says Dr. Goffman. “One way to prepare teams is to bring them to a simulation center and run them through the management of a hemorrhage.” In her teaching, Dr. Goffman incorporates the national guidelines and recommendations for how to safely manage this emergency. The full body simulator used includes simulated spontaneous breathing, variable respiratory rates, and blood and other fluids.

The simulation program offers up to four training sessions a month. “Large numbers of staff work in labor and delivery and there could never be just one dedicated team assigned to handle emergencies,” adds Dr. Goffman. “Emergencies happen quickly and need to be dealt with in minutes. Therefore, it is important that we train everyone with the same protocols and practice. Then whoever is on the floor when an emergency occurs can be interchanged to help.”

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#### For More Information

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## Following the Genes in Cancer Prevention (continued from page 1)



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two ongoing prospective studies. “The first project is to figure out how we can collect a better family health history,” she says. “It is very hard for a physician to accurately document who in the family has cancer. Most of the time that is because we are asking patients questions about their personal history in the midst of a barrage of other questions. The patient might not even know if their grandparents had uterine, ovarian, or prostate cancer. Taking an accurate health history can also take a lot of time during a new patient consultation where there are a number of other areas to discuss.”

An alternative, she suggests, is to offer patients access to online tools to create their family health history. “In our study, some patients will complete a family history questionnaire in the physician’s office; others will be given an email link before the visit with access to an online portal where they can document their family health history. This gives patients time to contact family members who might have more information,” says Dr. Frey. “Hopefully, we can capture more patients who are at risk for genetic mutations and refer them for genetic testing or perform the genetic testing ourselves.”

In a related study, if a patient tests positive for a mutation, Dr. Frey wants to make this information available to other family members. “While it is useful to know that a person has a mutation because it can affect treatment and prognosis,” she says, “the most powerful part of finding a genetic mutation may be to give the patient the opportunity to inform family members that they might be at risk. We want to identify family members who haven’t developed cancer, provide them with this information, and give them the chance to get tested. If they are positive, we can offer screening and possibly preventive surgery. The hope is to prevent cancer from starting in the first place or at least identify it at an early stage.”

Patients who have a new diagnosis of a genetic mutation are given the option of having a clinical team help them identify family members and facilitate the testing if they agree. “We will mail the family members a saliva test kit that can be done at home,” says Dr. Frey. “They provide a sample in a tube and then mail it to a genetics lab. The family member can be tested without having to go to a doctor. It also takes the stress and burden off of the patient who often has just received a new diagnosis of a genetic syndrome.

“We’re trying to transition the burden from the patient to the medical team in a prospective fashion.”

The study recently received IRB approval and Dr. Frey hopes that by casting a wide net with testing they will identify individuals with any pathogenic mutations. “It is not specific to gynecologic oncology,” she says.

In other retrospective studies, Dr. Frey and colleagues are reviewing the results of multigene panels. “I recently looked at the experience of patients of Ashkenazi Jewish descent who underwent genetic testing to determine if we test only for the known three Ashkenazi Jewish founder mutations, what percentage of the patients will carry other mutations?” notes Dr. Frey. “In our study, we found 101 mutations in Ashkenazi Jewish patients; 80 of those were BRCA1 and BRCA2, but 21 mutations were in non-BRCA genes. What that means is that there are many other genes that are involved in cancer – even in Ashkenazi Jewish patients whose cancer, we thought, was dominated by these three known mutations. That suggests that the move towards multigene panel testing makes sense. We have to think beyond just doing BRCA1 and BRCA2 testing because the genetic landscape is so much more complex than we previously thought.”

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— Dr. Melissa K. Frey

Dr. Frey believes that the need for genetic assessment is growing faster than medical geneticists or genetic counselors can keep pace. “When genetic counselors are available, that’s when the focus can be on in-depth counseling,” she says. “As physicians, however, we have to be ready to discuss genetic testing with our patients and identify those patients who are appropriate referrals for genetic counseling. It is a part of medicine that we can’t ignore, no matter what the specialty. Patients are going to start asking for this and they should be able to ask because it is a way to prevent disease, to find disease in its early stages, and to better treat known diseases.”

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