

## MASTER CLASS

## Improving Our Safety Profile



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Quality is a buzzword in industry, and safety has become one in medicine in recent years.

Safety is not an issue that is new to medicine. Health care professionals have always embraced the idea of safety as a fundamental part of the practice of good medicine, and everyone would agree that their practice is safe, and they've made every effort to execute safe and effective principles as they care for patients. Safety has, however, taken on added urgency since 1999, when the Institute of Medicine released shocking statistics, estimating that as many as 98,000 people die in any given year as a result of medical errors that occur in hospitals.

The findings were an eye-opener for the nation as a whole and for us as physicians. Despite our having embraced a safety mantra, the numbers of deaths due to medical errors were unexpectedly high.

This led to a wave of purposeful efforts to ensure the highest level of effectiveness and the lowest level of adverse consequences. In obstetrics, patient safety takes on added significance because of the potential long-term consequences of adverse outcomes and the associated litigious environment. Initiatives are especially important for the prevention and reduction of adverse events, thus increasing the safety profile to the highest possible level.

Several initiatives have been introduced in recent years to improve our safety profile. We're in an early phase of a significant evolution toward "systemwide" changes in obstetrics safety programs. There are a large number of safety initiatives being tested, but thus far the outcomes and effectiveness of various approaches are unclear. Inherently, we may always have fewer absolute results than we do in other fields.

Despite the limitations of a large body of data, it is worthwhile to review and share various approaches in labor and delivery safety programs, to monitor success as best as we can, and to see if we can identify some evolving best practices.

In this light, we have invited Dr. Hugh Mighty, associate professor and chair, department of obstetrics and gynecology at the University of Maryland, Baltimore, to be our guest professor.

Dr. Mighty has played a key role in establishing patient safety initiatives in labor and delivery at the University of Maryland Medical Center. He is a proponent of the use of simulation as a key safety program initiative and will describe its importance and detail what his experience and the experience of others have shown about how simulation can be meaningfully and successfully integrated into the practice of obstetrics. ■

DR. REECE, who specializes in maternal-fetal medicine, is vice president for medical affairs at the University of Maryland, Baltimore, as well as the John Z. and Akiko K. Bowers Distinguished Professor and dean of its school of medicine. He is a member of the Ob.Gyn. News editorial advisory board and the medical editor of this column.

## Simulation Training Is Key to Patient Safety

Following publication a decade ago of the Institute of Medicine's landmark report, "To Err Is Human," the medical world turned a critical eye upon itself to identify sources of the tens of thousands of preventable deaths found to occur annually during hospital stays.

These deaths represented only a fraction of the injuries sustained by patients in our health care system as a result of medical error.

One of the surprising findings was that many of these errors were happening in the hands of highly skilled professionals. Studies that used closed-claims analysis found that system failures, and failures in communication and teamwork, are implicated in a significant proportion of medical errors that result in patient harm.

With a new appreciation for the impact of system breakdowns and communication failures—and the importance of teamwork skills in addition to individual skills—the next question in the medical world became how organizations can revamp systems and integrate tools that will reliably minimize adverse events.

Other high-stakes industries—most notably the military and aviation—have offered lessons. Both recognize the importance of teamwork and communication in minimizing the occurrence of errors and mitigating their adverse effects, regardless of the source.

In both commercial and military aviation, flight teams undergo rigorous training that teaches them to prevent, recognize, and mitigate errors including "human factor" errors—those due not to aircraft failure but to human fallibility. Aviation professionals are trained to prevent errors through crew resource management.

In recent years, medicine has created a variety of training programs that apply resource management principles. Our program, for one, is based on the understanding that health care professionals not only must have knowledge and skills, but must work together because teams perform better than individuals, especially in crisis situations.

Certainly this is the case in obstetrics, where unexpected events are common, situations happen rapidly, and conditions deteriorate quickly.

Our program and other efforts elsewhere incorporate an additional hallmark of training programs in the airline industry: the use of

simulation—in our case, to teach the combination of technical, clinical management, and teamwork/communication skills that help maximize patient safety.

Simulation and other types of immersive training allow individuals to learn and practice these skills in an environment where patient safety is not compromised, and in a way that can be standardized and replicated.

#### The Research on Simulation Training

The use of simulation in graduate and undergraduate medical education and in team training has been demonstrated to improve trainee satisfaction. Multiple studies also have shown improvements in measures of provider self-efficacy and confidence.

The impact of any training, including simulation-based training, on clinical team performance, however, can be difficult to measure. This difficulty is partly due to difficulty in finding appropriate measures of team performance. In as much as improvement in clinical outcomes can be viewed as the best

measure of the value of any training, however, our colleagues in England have provided the best evidence in support of simulation-based training.

A team of British investigators instituted multidisciplinary simulation training for all providers of obstetric care in multiple hospitals. After several years of training, these providers have achieved a statistically significant and sustained impact of simulation training on perinatal outcomes, including a decrease in the rates of brachial plexus injuries related to shoulder dystocia (Obstet. Gynecol. 2008;112:14-20), improvements in Apgar scores, and a reduction in hypoxic-ischemic encephalopathy following training on other obstetric emergencies (BJOG 2006;113:177-82).

It will take time before American researchers are able to produce similar proof of the efficacy of simulation training. This is due to a combination of factors, including the fact that we have been slower than our European colleagues to integrate simulation training into obstetric training, and because the number of cases that is needed to demonstrate a significant change in clinical outcomes will require long-term studies across multiple institutions. The funding and collaborations required for this type of study are in their fledgling stages.

It is worth noting, however, that other high-stakes industries have not awaited nor demanded proof of the effectiveness of simulation before embracing it. Dr. David M. Gaba, an anesthesiologist and one of the earliest adopters and biggest proponents of simulation training in medicine, aptly stated once that "no industry in which human lives de-

pend on the skilled performance of responsible operators has waited for unequivocal proof of the benefits of simulation before embracing it. Why should health care be any different?"

A relevant example of this point is that prior to the successful landing of U.S. Airways Flight 1549 on the Hudson by Captain Chesley Sullenberger and his crew following an extraordinarily rare double-engine failure, a water landing had not been successfully carried out. The aviation industry, however, has done simulation training involving double-engine failures despite their rarity and water landings despite the fact that they had not ever been successfully executed.

The internal validity of such training has always been the aviation industry's

impetus to conduct extensive team and simulation training.

The citation on the award given to the crew following this event read: "The reactions of all members

of the crew, the split-second decision making, and the handling of this emergency and evacuation was 'textbook' and an example to us all."

Captain Sullenberger, who himself runs a safety consulting business on the side, has publicly credited the training that he and his crew have received for years for allowing them to successfully land and evacuate the plane without any casualties.

#### Getting Started

The following tips are based on our experience and that of others:

► **Simulation is a technique—not a technology.** Purchasing a simulator does  
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**We tried to reinforce that being focused on a problem is not the same as putting blinders on because the most obvious or pressing problem is not always your only or biggest problem.**

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not mean you have a ready simulation program. The simulators and mannequins are technologies used for simulation. We have heard many stories of people with expensive simulators still sitting unused.

Similarly, owning a particular simulator is not a prerequisite to initiating simulation training.

Before undertaking what can be a significant monetary investment in an expensive simulator, first outline the type of training that will be conducted and then determine what type of simulator and other equipment will be necessary for the type of training that is planned.

There are some relatively affordable low-tech mannequins that can be used in combination with a standardized patient/actor to create a hybrid simulator and very realistic scenarios. For certain scenarios it is possible to use an actor or standardized patient instead of a mannequin.

Some sites have started conducting training using very low-tech solutions and have incorporated both higher-tech simulators and more complex scenarios as both their expertise and their programs have grown.



► **Plan big but start small.** It is critical to identify your target audience(s) and program goals early. It is also important, however, to not try to meet all goals and serve all audiences from the start.

Some sites have very specific training goals that will involve relatively few participants. For example, a site may decide to use simulation to train their nurses and hospitalist ob.gyns. on a couple of basic obstetric emergencies in a “drill” sort of format.

Even a site with a small audience and well-defined objectives will benefit from starting slowly. In this case, for example, it would be best to start by picking one of the “simpler” emergencies such as shoulder dystocia and run that scenario repeatedly until the people responsible for running the simulations feel comfortable and confident in the process of running simulations and debriefing trainees.

Waiting until there is a basic comfort before moving onto more complex scenarios (such as a maternal code) will prevent much frustration among both the trainers and the trainees.

► **A program does not run itself.** Prob-

ably one of the most important steps when beginning a simulation initiative is to identify the individual(s) who will organize and run the simulation program and who will take care of such things as scheduling, securing equipment and supplies, setting up and cleaning up, testing scenarios, and managing video recordings.

Although some sites choose to have providers serve in this role, the individuals who run the program do not have to be the medical experts on the topics that will be trained. It is crucial, however, that these individuals be allotted enough time to run the simulation training.

If these individuals are not already well versed in simulation, it may be worth allowing them some time to become familiar with the subject and possibly allowing them to attend some training on running a simulation program.

► **Simulation takes time.** Conducting simulation training is like running a theater where each training session is a play. Writing and rehearsing a scenario take time, as does mounting the stage and conducting the performance.

Although the time it takes to develop a training session will decrease with experience, it is nonetheless a time-consuming effort and not something that is

easily added to someone’s already full schedule.

► **Decide up front what you want to accomplish.** You have to know what you want to do before you set out to accomplish it. Define a goal before writing a scenario, and then write the scenario to achieve that goal.

“To train teams to have better team communication during obstetric emergencies” is a good goal for a simulation program, but is not a good, clearly defined goal for a scenario, for instance.

“The learner will practice using call-backs or closed-loop communications during obstetric emergencies” is an example of a clearly defined goal appropriate for a scenario.

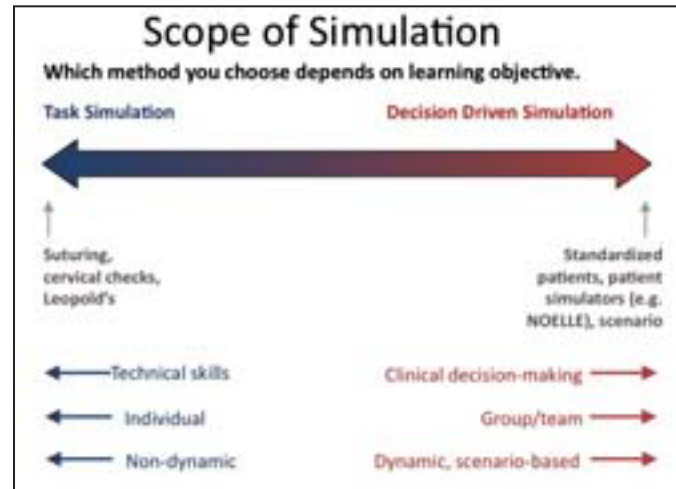
To meet this goal, one would need to create a scenario in which providers need to make multiple requests of multiple people (for example, for labs, blood, and medication) in a short time succession.

A hemorrhage and a code are examples of clinical situations in which there is a need for many closed-loop communications in a short time. The specific medical condition, however, becomes somewhat secondary in this case because the training and the debriefing will focus on closed-loop communication.

It is possible to meet multiple training goals during one training session, but it is important to not overwhelm the trainees (or the trainers). As trainees and trainers become more experienced,

it becomes easier to incorporate more objectives into a single training session, but it is still crucial to focus the training on the objectives and to limit the number of such objectives.

► **Keep it simple.** A long complicated scenario is not necessarily what is need-



ed to achieve training goals. It is worth considering that for certain teaching/training goals, multiple short scenarios may be a better way to get multiple training points across or to reinforce concepts that have already been taught.

Although there are some training goals that may require longer, more complex scenarios, it is worth remembering that when the scenario is longer and more complicated for the learner, it is also longer and more complicated for the trainer.

One should “save” such scenarios for specific training points for which they are needed.

We like to try to create scenarios that run in 10 minutes or less. We also like running a scenario, debriefing the trainees, and then immediately running it again to reinforce the learning points reviewed during the debriefing.

► **Do not reinvent the wheel.** One scenario can often be modified in simple ways to meet different teaching objectives. We added high blood pressure and headache to our simulated patient with precipitous delivery in triage, for instance.

In doing so, we easily added teaching points on the management of severe preeclampsia to our teaching points on managing a precipitous delivery.

Through this process, we also incorporated a teaching point that we try to reinforce through multiple scenarios—the idea that being focused on the task at hand is not the same as putting on blinders because the most obvious or pressing problem is not necessarily your only or biggest problem.

► **No simulation is better than bad simulation.** Do not reinforce bad habits or bad medicine. It is important that teaching points be evidence based, and that during training we reinforce management that is within the standard of care.

Similarly, one should not allow inappropriate behavior to be reinforced during debriefings. It defeats the purpose of simulation training to allow, during debriefings, the very behaviors we are trying to eliminate.

The belligerent, bullying nurse or physician cannot be allowed to dominate or commandeer the debriefing session.

The ability of the trainers to avoid this situation or to manage it in a manner that is going to be productive to the goals of teamwork and communication will

be much greater if they have had an opportunity to train and practice their debriefing skills.

► **Debriefing is key.** A debriefing is the time after a scenario when participants are led in a discussion of what happened during the scenario.

The participants identify ways in which

things went well and why, and ways in which things did not go well and why.

It is sometimes said that simulation is an excuse for a debriefing; this is because much of the teaching that happens during simulation training occurs during the debriefing.

A debriefing may be very straightforward such as when a scenario is designed to meet very technical or process-oriented goals.

For example, if the goal of the scenario is to practice the steps of the neonatal resuscitation program, then the debriefing may be as simple as identifying those moments when any of the team members did not follow the steps.

Debriefings have the potential, however, to become emotionally charged. This is most likely during debriefings that are meant to train providers on team interactions and communication.

We recommend that if a group is going to institute any team training using simulation, they invest in having their trainers participate in some sort of train-the-trainer programs that will teach them and let them practice their debriefing techniques.

► **“What happens in ‘sim’ stays in ‘sim.’**” For learning to occur, it is important to keep simulation training friendly and safe for the participants.

This means that individuals should not be humiliated, mocked, demeaned, or chastised for things they did or failed to do during a simulated scenario.

The whole point of simulation training is that we are all prone to errors, and that simulation is a way to help train providers and teams of providers to avoid these errors through increased technical skill, communication, and team support.

The incorporation of simulation into training in obstetrics and gynecology in the United States is relatively new, but shows great promise as a tool to improve providers’ technical skills, teamwork and communication, and, most importantly, patient safety. ■

DR. MIGHTY said he has no conflicts of interest. E-mail him at [obnews@elsevier.com](mailto:obnews@elsevier.com).