



Patient Safety and Simulation

Expecting the Unexpected

Since the publication of the Institute of Medicine (IOM) report, *To Err is Human*, which highlighted the burden of medical errors in terms of patient harm and medical costs, medical safety and quality have risen as top priorities in healthcare over the last 15 years. Two reasons suggest why safety and quality are as much a focus for pregnancy care as any other field: 1) Childbirth is the most common reason for admission to the hospital in the U.S. and 2) The expectation for families that come to a hospital for birth is for an outcome of joy and celebration. Errors or preventable adverse outcomes in obstetrics have large-scale effects on the general population, but are just as devastating on the individual level. Two patients, mother and infant, can be affected in many cases and the long-term implications of injury to an infant are confounding. Given that errors and adverse events happen as commonly in pregnancy-related hospitalizations as they do for other diagnoses, safety and quality is a primary focus of the activities of the Society for Maternal-Fetal Medicine (SMFM).

Maternal-fetal medicine (MFM) subspecialists play important roles in delivering safe and quality care. First, by representing a core of leaders in obstetrics, MFM subspecialists are often responsible for directing oversight of

quality improvement projects in hospitals, states, and at national and global levels. Second, by specializing in the "un-routine" the MFM subspecialist is the coordinator of the team that provides a safe experience for an at-risk mother and fetus. This risk may be predictable or unpredictable, and in many cases, it happens suddenly; MFM subspecialists have particular skills and experience to plan or mitigate as these events are evolving.

Defining quality and safety

Patient safety is generally defined as the prevention of harm to patients; quality, on the other hand, is the achievement of optimal care for patients. Those definitions work well in the abstract, but it is actually more challenging in practice to measure how well our care is doing to prevent harm and achieve the optimal. Determining the important measures for judging the quality of obstetric care involves testing and validating them, demonstrating their value in assessing improvements and comparing across populations or facilities. In 2008 the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) embarked on a large-scale prospective project, called the Assessment of Perinatal Excellence (APEX) study, to evaluate quality measures in over 25 hospitals and 120,000 patients. This project has aimed to validate the

quality measures that are most valuable and determine how they can be compared across populations and hospitals. This research is already showing how important population factors are and how difficult risk-adjustment to compare institutions is, and is sparking further research into how to choose and evaluate measures of quality.

With the implementation of The Joint Commission "Perinatal Care Core Measures" (table), the year 2014 has brought with it a new era of public reporting of quality measures in obstetrics for hospitals with more than 1,100 births. MFM subspecialists are at the center of quality improvement efforts addressing these measures.

Perinatal Care Core Measures
PC-01: Elective delivery before 39 weeks
PC-02: Cesarean delivery (low-risk patients)
PC-03: Antenatal steroids (for preterm deliveries, 24-32 weeks)
PC-04: Health care-associated bloodstream infections in newborns
PC-05: Exclusive breast milk feeding

PC-01 is a good example of the progress made in quality improvement in obstetrics. Many studies have shown that elective deliveries at 37 and 38 weeks of gestation place infants at higher risk for ICU admission, respiratory complications, and feeding problems. In light of this data, explicit criteria for appropriate medical reasons for delivery before 39 weeks of gestation have been established by SMFM and the American College of Obstetricians and Gynecologists (ACOG) to guide obstetric practice. MFM leaders have published important research articles

demonstrating that systematic quality improvement interventions that include education, formalization of criteria for delivery indications, and administrative checks-and-balances can have an impact on reducing unnecessary deliveries, from rates as high as 20% to below 5%, and improving outcomes in newborns.

Tools for improved maternity care

The twenty years from 1990 to 2010 featured tremendous advances in care of the fetus and neonate; advances in maternal care have lagged. With this in mind, renewed attention on putting the 'M' back in MFM has refocused obstetric care on reducing maternal morbidity and mortality. Members of SMFM form a core group of leaders of The Council on Patient Safety in Women's Health Care, a consortium of organizations forming a collaborative for the promotion of patient safety programs and the dissemination of patient practices and tools. Some of the important projects within this group are creating treatment bundles to address the top two causes of maternal death in the United States, hypertension/preeclampsia and obstetric hemorrhage. Further work involves the development of maternal early warning system, comprising a set of criteria for use as a screening tool to direct pregnant women developing or at risk for a critical illness to higher levels of care.

The airline industry long ago recognized the importance of simulation in developing crew teamwork skills and in preparing crews for rare and unanticipated events. For these same reasons simulation work is gaining ground in obstetrics as method of improving care. Simulation allows for participants to experience stressful

acute events in controlled settings that can even be videotaped, practicing techniques and communication skills, and providing opportunities to troubleshoot. Simulation may take place in specialized simulation centers that provide high-fidelity mannequins complete with realistic monitoring devices or may involve drills within patient-care settings during times of low acuity. The value of simulation work has been demonstrated in research showing that units trained with shoulder dystocia drills have lowered the risk of neonatal birth injury related to this rare but serious problem. Continued research investigates use of simulation in

postpartum hemorrhage and preeclampsia drills, and for the improvement of birth team coordination and collaboration.

Research Targets for Perinatal Safety/Quality
<ul style="list-style-type: none">• Defining and validating optimal quality measures• Designing and studying toolkits for common obstetric emergencies• Developing obstetric early warning systems to predict and prevent adverse outcomes

The practice of medicine continues to evolve and individual circumstances will vary. This document reflects information available at the time of publication and is not intended to establish an exclusive standard of perinatal care. This publication is not expected to reflect the opinions of all members of the Society for Maternal-Fetal Medicine. For further information: www.smfm.org