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Implementation of a multicenter shoulder dystocia injury prevention program

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ABSTRACT

Although the evidence for supporting the effectiveness of many patient safety practices has increased in recent years, the ability to implement programs to positively impact clinical outcomes across multiple institutions is lagging. Shoulder dystocia simulation has been shown to reduce avoidable patient harm. Neonatal injury from shoulder dystocia contributes to a significant percentage of liability claims. We describe the development and the process of implementation of a shoulder dystocia simulation program across five academic medical centers and their affiliated hospitals united by a common insurance carrier. Key factors in successful roll out of this program included the following: involvement of physician and nursing leadership from each academic medical center; administrative and logistic support from the insurer; development of consensus on curriculum components of the program; conduct of gap and barrier analysis; financial support from insurer to close necessary gaps and mitigate barriers; and creation of dashboards and tracking performance of the program.

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Introduction

Working toward safer healthcare systems and practice is a common goal for patients, healthcare providers, insurers, and society in general. Although the evidence for supporting the effectiveness of many patient safety practices has increased in recent years, the ability to implement programs to

positively impact clinical outcomes across multiple institutions is lagging.¹ In a previous edition of *Seminars in Perinatology* we described a process for developing a simulation program and curriculum focused on resident and fellow education.²

Simulation has become an integral part of residency training in the United States. Critics of the effectiveness of

On behalf of the MCIC Ob Simulation Committee: Anna Burgansky, MD; Colleen Nowacki, RN; Christian Pettker, MD; Cheryl Raab, RN, MS; Maureen Revel, RN; Marilyn Robboy, RN; Stacey Richards, RN; Jennifer Suess, RN; Jon Snyder, MD; Bonnie Walden, RN; Beth Wilcox, RN; and Susan Will, RN, MS.

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simulation point out that although the majority of evidence suggests that learners improve their performance of simulated scenarios through training, there is substantially less evidence that clinical outcomes are improved through simulation training. Simulation has become an important component of technical skills training in obstetrics. The American College of Obstetricians and Gynecologists (ACOG) advocates a series of obstetric conditions amenable to simulation training and the Society for Maternal Fetal Medicine's (SMFM) Simulation Committee has highlighted a classification system developed by Deering for the characterization of evidence for simulation.³ The clinical scenario with a preponderance of evidence supporting improved clinical outcomes with simulation training is the reduction of neonatal brachial plexus injuries (BPI) thorough simulated shoulder dystocia drills. The importance of shoulder dystocia simulation is thus two-fold as it has been shown to reduce avoidable patient harm, and reduce the significant percentage of liability claims which arise from BPI in newborns. Consequently, many simulation programs have been developed to teach maneuvers to manage shoulder dystocia. Nevertheless, implementation of a program across multiple healthcare systems and sites is more challenging. We describe the development and the process of implementation of a shoulder dystocia simulation program across five geographically dispersed academic medical centers and their affiliated hospitals united by a common insurance carrier.

MCIC Vermont

MCIC Vermont is a specialty insurance company that provides medical professional and general liability insurance coverage and risk management services to academic medical centers, their affiliated entities, employees, and physicians. The subscriber academic health systems covered by MCIC include Columbia University College of Physicians and Surgeons, Johns Hopkins Medicine, New York Presbyterian Hospital, University of Rochester Medical Center, Weill Cornell Medical College, Yale New Haven Health, and Yale University School of Medicine.

MCIC recognizes that medical malpractice claims continue to be a major contributor to medical cost as well as physician satisfaction. MCIC's *Obstetrics Initiative* began in 2004 and has had a major impact on reducing malpractice claim losses and improving safety cultures. MCIC works via collaboration with its academic medical center's obstetrics leadership to analyze obstetric claims and adverse outcomes in an attempt to identify and implement risk reduction projects aimed at improving practice, increasing patient safety, and subsequently reducing claims. The Obstetrics Clinical Leadership Committee (OBCLC) consists of physician and nursing leaders from each of the component academic medical centers. In 2015, the OBCLC formed a Simulation Committee to investigate the use of simulation to improve safety and reduce obstetric liability claims. The goal was to develop a model program to promote safe patient outcomes and reduce preventable injuries. The committee reviewed claims data from all academic health system subscribers and their affiliates, as well as the evidence for the efficacy of simulation to

improve outcomes. From 2006 to 2015, brachial plexus injuries accounted for 14% of all obstetrics claims from. From 2011 to 2015, 27 cases were associated with \$15 million in paid claims. Based upon the literature on effectiveness of simulation to improve clinical outcomes, the challenges in multicenter implementation, available expert consultation, and combined clinical experience of the Ob Simulation Committee, the group focused on developing a model program for shoulder dystocia simulation.

Shoulder dystocia

According to ACOG, shoulder dystocia is most often defined as a delivery requiring additional obstetric maneuvers following failure of gentle downward traction on the fetal head to affect delivery of the shoulders.⁴ The actual incidence of shoulder dystocia varies depending upon the study population; however, the most consistent estimate for the United States is 1.4% of vaginal births, occurring more frequently in diabetics and in women undergoing operative vaginal deliveries.⁴⁻⁶ Neonatal complications of shoulder dystocia include BPI, clavicular fractures, hypoxic ischemic injury, and death.

BPI is defined as a flaccid paresis of an upper extremity following an injury to the brachial plexus, with passive range of motion greater than active. Estimates generally suggest a BPI rate of 1.6-1.8 per 1000 vaginal births.⁶ Fortunately, the majority of cases resolve, with permanent injury (lasting 12 months or more), occurring in approximately 1-2 per 10,000 births. Although the majority of neonates experience complete and spontaneous recovery from BPI, some have protracted courses requiring prolonged physical therapy or even attempts at surgical repair.^{7,8} Despite being unpredictable and unpreventable in some situations, shoulder dystocia and the complications that arise from them, namely BPI, constitute a large majority of obstetric claims.^{9,10} With approximately 2.7 million births a year in the U.S., the potential societal cost becomes significant.¹¹

Efficacy of simulation for shoulder dystocia

The use of checklists, protocols and shoulder dystocia simulation programs appears to improve shoulder dystocia documentation, reduce harmful maneuvers, and improve neonatal outcomes.¹² In fact, team training with clinical drills is now recommended by The Joint Commission on Accreditation of Healthcare Organizations as part of a strategy to prevent infant death and injury during delivery. When simulation was implemented for resident education at US academic centers, obstetrics and gynecology residents who participated in simulation were more likely to call for additional help and for pediatricians to be at delivery than their untrained counterparts in simulated scenarios.¹³ Similarly, shoulder dystocia simulations increase rates of documentation while reducing BPI rates in large academic centers.^{14,15} Most notably, a study in the UK showed that mandatory multi-professional training on shoulder dystocia management resulted in more effective management with improved neonatal outcomes. No cases of permanent BPI were reported

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