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HEALTH CARE IMPROVEMENT AND EVALUATION

# Strategies to Improve Management of Shoulder Dystocia Under the AHRQ Safety Program for Perinatal Care

Jill McArdle, Asta Sorensen, Christina I. Fowler, Samantha Sommerness, Katrina Burson, and Leila Kahwati Q7

**Correspondence**
Jill McArdle, RN, MSPH, RTI International, 3040 E. Cornwallis Rd., Research Triangle Park, NC 27709.
jmcardle@rti.org

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## ABSTRACT

**Objective:** To assess implementation of safety strategies to improve management of births complicated by shoulder dystocia in labor and delivery units.

**Design:** Mixed-methods implementation evaluation.

**Setting/Local Problem:** Labor and delivery units ($N = 18$) in 10 states participating in the Safety Program for Perinatal Care (SPPC). Shoulder dystocia is unpredictable, requiring rapid and coordinated action.

**Participants:** Key informants were labor and delivery unit staff who implemented SPPC safety strategies.

**Intervention/Measurements:** The SPPC was implemented by using the TeamSTEPPS teamwork and communication framework and tools, applying safety science principles (standardization, independent checks, and learn from defects) to shoulder dystocia management, and establishing an in situ simulation program focused on shoulder dystocia to practice teamwork and communication skills. Unit staff received training, toolkits, technical assistance, and unit-specific feedback reports. Quantitative data on unit-reported process improvement measures and qualitative data from staff interviews were used to understand changes in use of safety principles, teamwork/communication, and in situ simulation.

**Results:** Use of shoulder dystocia safety strategies improved on the units. Differences between baseline and follow-up (10 months) were as follows: in situ simulation (50% vs. 89%), teamwork and communication (67% vs. 94%), standardization (67% to 94%), learning from defects (67% vs. 89%), and independent checks (56% vs. 78%). Interview data showed reasons to address management of shoulder dystocia, various approaches to implement safety practices, and facilitators and barriers to implementation.

**Conclusion:** Successful management of shoulder dystocia requires a rapid, standardized, and coordinated response. The SPPC strategies to increase safety of shoulder dystocia management are scalable, replicable, and adaptable to unit needs and circumstances.

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Jill McArdle, RN, MSPH, is a research analyst in the Program on Health Care Quality and Outcomes, RTI International, Research Triangle Park, NC.

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## Problem Description

Shoulder dystocia is a rare, unpredictable, and unpreventable obstetric emergency that requires swift response and the use of obstetric maneuvers to achieve birth and minimize maternal and neonatal adverse events (American College of Obstetricians and Gynecologists [ACOG], 2017). Shoulder dystocia occurs during vaginal birth when, after birth of the fetus's head, one or both shoulders are impacted against the bones of the mother's pelvis; additional obstetric maneuvers beyond gentle traction are needed to free them up (Allen & Gurewitsch, 2016; Hansen & Chauhan, 2014).

## Available Knowledge

In the United States, shoulder dystocia occurs in about 1.4% of all vaginal births (Hansen & Chauhan, 2014) and is one of the leading causes of obstetric malpractice allegations (Deering, Tobler, & Cypher, 2010). Complications of shoulder dystocia include postpartum hemorrhage and fourth-degree lacerations for women and brachial plexus injuries and fractures of the clavicle and humerus for neonates (ACOG, 2017; Hansen & Chauhan, 2014). More serious fetal complications include permanent paralysis of the arm or hand, asphyxia, and, in rare cases, death (ACOG, 2017; Fahey & Mighty, 2008). The primary management goal is timely birth before Q2









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**Births complicated by shoulder dystocia require rapid, well-coordinated intervention by clinical teams to prevent or reduce the severity of adverse outcomes.**

Asta Sorensen, MA, is a senior research analyst in the Program on Health Care Quality and Outcomes, RTI International, Research Triangle Park, NC.

Christina I. Fowler, PhD, MPH, is a research scientist in the Center for Advanced Methods Development, RTI International, Research Triangle Park, NC.

Samantha Sommerness, DNP, APRN, CNM, is a clinical assistant professor in the School of Nursing, University of Minnesota, Minneapolis, MN.

Katrina Burson, RN, MS, is a research analyst in the Clinical Research Network Center, RTI International, Rockville, MD.

Leila Kahwati, MD, MPH, is a senior research scientist in the Social & Health Organizational Research & Evaluation Program, RTI International, Research Triangle Park, NC.

hypoxic injury to the fetus occurs (Fahey & Mighty, 2008).

In births complicated by shoulder dystocia, a rapid and well-coordinated intervention by the health care team, some of whom may not have worked together before, is critical for the prevention and reduction of adverse outcomes (ACOG, 2017; Fahey & Mighty, 2008; Grobman, 2014; Grobman et al., 2011). Several investigators found positive associations between training in management of shoulder dystocia, including use of appropriate obstetric maneuvers, and favorable clinical outcomes (Draycott et al., 2008; Fahey & Mighty, 2008; Grobman et al., 2011; Inglis et al., 2011). The use of simulation provides an opportunity for clinicians and clinical teams to safely practice skills, procedures, and teamwork (Fahey & Mighty, 2008). Draycott et al. (2008) found that hospital-mandated training for midwifery and obstetric staff that addressed recognition of risk factors for shoulder dystocia, documentation during episodes of shoulder dystocia, and simulation training was associated with a large and significant post-training increase in the use of recommended obstetric maneuvers and significant declines in neonatal and brachial plexus injuries.

Researchers have studied the effects of training labor and delivery unit staff in the use of standardized protocols focused on obstetric maneuvers alone and on a team-level response to ensure systematic and coordinated management of shoulder dystocia by clinical teams. Inglis et al. (2011) found that comprehensive training that included a standardized protocol in management of shoulder dystocia was associated with a significant decrease in brachial plexus injuries. In another study, Grobman et al. (2011) found a reduction in brachial plexus palsy when simulations and debriefings were combined with a protocol focused on improvements to the team response to shoulder dystocia emergencies. These investigators also reported an increase in consistent and complete documentation of management of births complicated by dystocia. Components of the team-focused protocol used in this study included announcing the shoulder dystocia event, summoning personnel, calling out elapsed time, clarifying roles of different personnel, and using a structured documentation tool.

Although the ultimate goal of training and other interventions is to reduce maternal and neonatal injury, interventions can also improve documentation of births complicated by shoulder dystocia. These interventions include the use of a standardized birth form (Moragianni, Hacker, & Craparo, 2012) and a standard electronic checklist that accompanies the birth note (Deering et al., 2010). The use of such forms and checklists helped improve documentation of births complicated by shoulder dystocia (Grobman et al., 2011) and documentation of adherence to a standardized management checklist (Foley & Driver, 2013). Evidence also suggests that checklist implementation interventions can increase nurse confidence in handling shoulder dystocia (Foley & Driver, 2013).

### Specific Aim and Rationale

Interventions to improve management of shoulder dystocia can be quite complex to implement given the degree of staff training and engagement required to support adoption and robust implementation. The purpose of the Agency for Healthcare Research and Quality's (AHRQ's) Safety Program for Perinatal Care (SPPC) was to decrease maternal and neonatal adverse events and improve patient safety, team communication, and quality of care within labor and delivery units (AHRQ, 2017e). The purpose of this article is to describe the implementation experiences and process improvements of labor and delivery units that implemented SPPC shoulder dystocia safety practices.

## Methods

### Context

Between December 2014 and January 2016, 46 hospital labor and delivery units located in 10 states (Arkansas, California, Colorado, Florida, Illinois, Kentucky, New Jersey, North Carolina, Ohio, and Washington) participated in the SPPC. Eighteen of the 46 units chose to implement perinatal safety strategies to improve management of shoulder dystocia. As shown in Table 1, the 18 labor and delivery units varied widely in terms of ownership, size (i.e., number of hospital and unit beds), medical and nursing education programs, number and composition of unit staff, unit staffing and level of neonatal care, and





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