

# Influence of Immediate Skin-to-Skin Contact During Cesarean Surgery on Rate of Transfer of Newborns to NICU for Observation

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SKIN-TO-SKIN CONTACT is defined as placing a naked newborn on a mother's bare chest immediately after birth (World Health Organization & UNICEF, 2009). Skin-to-skin contact should begin immediately after birth and continue uninterrupted for at least 1 hour for all women or until the first feeding for breastfeeding women (World Health Organization & UNICEF, 2009). All routine care can be performed during skin-to-skin contact. Research has shown improved maternal and newborn outcomes related to immediate skin-to-skin contact (Haxton, Doering, Gingras, & Kelly, 2012; Moore, Anderson, Bergman, & Dowswell, 2012). However, most outcomes studies are based on the vaginal birth population. Few studies have examined the physiologic outcomes of immediate skin-to-skin contact after cesarean birth (Stevens, Schmied, Burns, & Dahlen, 2014). To our knowledge, no evidence described the influence of immediate skin-to-skin contact that begins during cesarean surgery and its influence on the proportion of infants transferred to a NICU for observation immediately after birth. We conducted an evidence-based practice project to determine if skin-to-skin contact that began during cesarean surgery influenced the proportion of newborns transferred to the NICU for observation.

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**Abstract:** We conducted an evidence-based practice project to determine if skin-to-skin contact immediately after cesarean birth influenced the rate of transfer of newborns to the NICU for observation. We analyzed data for 5 years (2011 through 2015) and compared the rates for the period before implementation of skin-to-skin contact with rates for the period after. The proportion of newborns transferred to the NICU for observation was significantly different and lower after implementing skin-to-skin contact immediately after cesarean birth (Pearson's  $\chi^2 = 32.004$ ,  $df = 1$ ,  $p < .001$ ). These results add to the growing body of literature supporting immediate, uninterrupted skin-to-skin contact for all mother-newborn pairs, regardless of birth mode.  
<http://dx.doi.org/10.1016/j.nwh.2016.12.008>

**Keywords:** cesarean | cesarean surgery | evidence-based practice | NICU observations | skin-to-skin contact

## Newborn Transfers to NICU for Observation

In our hospital, NICU nurses attend all cesarean births and assess newborns in their warmers. If the NICU nurses have concerns about a newborn, the newborn is transferred to the NICU for observation. If the newborn is still in the NICU after 6 hours, a decision is made about whether the newborn should be admitted to the NICU or transferred to the nursery. The hospital is not reimbursed for NICU observations, and we do not staff for observations. NICU nurses who care for a newborn during the observation period also are caring for neonates who have been admitted to the Level 3 NICU.

## Skin-to-Skin Contact After Vaginal Birth

There is a plethora of literature on the improved maternal and newborn health outcomes observed with immediate skin-to-skin contact after vaginal birth within the first hour of life (Bramson et al., 2010; Haxton et al., 2012; Moore et al., 2012). Enhanced maternal health outcomes include reduced stress; improved maternal responsiveness, competence, and confidence; and improved confidence with breastfeeding (Bramson et al., 2010; Haxton et al., 2012; Moore et al., 2012). In newborns, immediate skin-to-skin contact promotes physiologic stability, including heart rate, respiration, blood sugar, and temperature; enhances self-regulation; reduces crying; and improves breastfeeding outcomes (Bramson et al., 2010; Moore et al., 2012). Bramson et al. showed that skin-to-skin contact had a dose-response effect in which immediate skin-to-skin contact and longer durations of skin-to-skin contact produced even greater improvements in outcomes.

## Skin-to-Skin Contact During and After Cesarean Surgery

Data regarding skin-to-skin contact in women having cesarean birth are limited primarily to quality improvement studies focused on implementing skin-to-skin contact and its influence on patient satisfaction and exclusive breast milk feeding at hospital discharge (Brady, Bulpitt, & Chiarelli, 2014; Haxton et al., 2012; Moore et al., 2012; Moran-Peters et al., 2014; Stevens et al., 2014; Stone, Prater, & Spencer, 2015).

Women who received skin-to-skin contact during cesarean surgery with their second or third cesarean birth were more

satisfied with the surgical experience compared with their first cesarean birth, during which they did not receive skin-to-skin contact (Moran-Peters, Zauderer, Goldman, Baierlein, & Smith, 2014), and they reported that breastfeeding was easier (Brady et al., 2014; Moran-Peters et al., 2014). Newborns who received skin-to-skin contact after a cesarean birth were supplemented with formula less often compared with those who did not have skin-to-skin contact during cesarean surgery (Hung & Berg, 2011). Brady et al. (2014) found that immediate skin-to-skin contact during cesarean surgery increased breastfeeding rates from 30% to 63%.

Despite these positive results from the literature, and despite the fact that most women and newborns are alert and responsive at the time of cesarean birth, in 2013 only 59% of hospitals in the United States reported that most mother-newborn dyads experienced skin-to-skin contact within 2 hours of uncomplicated cesarean surgery (Centers for Disease Control and Prevention, 2015).

## Evidence-Based Practice Project

### Setting

The setting for this project was a 298-bed nonprofit hospital with approximately 2,000 births a year in the Southwestern United States. This hospital was designated as Baby-Friendly in 2009 by Baby-Friendly USA. Although all mother-newborn dyads received immediate skin-to-skin contact after a vaginal birth, those having cesarean birth did not begin skin-to-skin contact until admission to the recovery room. In 2013, nurses implemented immediate skin-to-skin contact during cesarean surgery for all medically stable mothers and newborns.

### Genesis of the Project

The nurses who work in the NICU noticed that after implementing immediate skin-to-skin contact during cesarean surgery, fewer newborns were transferred to the NICU for observation. We conducted this evidence-based practice project to see if the nurses' anecdotal observation was correct.

### Purpose

The purpose of this project was to test for a difference in the proportion of transfers to the NICU for observation before and after we implemented immediate skin-to-skin contact during cesarean surgery.

### Ethical Considerations

We submitted our plan for this project to the health care system's institutional review board, which determined that this project was not research or quality improvement and designated it as an evidence-based practice project.

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### *Design*

We conducted a retrospective analysis of NICU observations before and after the implementation of skin-to-skin contact during a cesarean surgery.

### *Inclusion Criteria*

We included all scheduled and nonemergent cesarean births between 37 and 42 weeks gestation from 2011 through 2015. The analysis included 2 years before implementing skin-to-skin contact during cesarean surgery (2011–2012) and 3 years after implementing skin-to-skin contact during cesarean surgery (2013–2015).

### *Data Analysis*

Pearson's chi-square test was used to test for a difference between the proportion of transfers to the NICU for observation before and after implementing skin-to-skin contact during cesarean surgery.

### *Results*

A total of 2,841 newborns were born by scheduled or non-emergent cesarean from 2011 through 2015. Of these, 1,070

were born before the implementation of immediate skin-to-skin contact during cesarean surgery (January 2011 through December 2012), and 1,771 were born after (January 2013 through December 2015). The median gestational age was 39 weeks. The mean gestational age was 39 weeks (standard deviation = 0.9 weeks; range = 37–41 weeks). Mean birth weight was 3,401 g (standard deviation = 480; range = 1,835–5,291 g). Birth weight was unavailable for four newborns.

Before implementation of immediate skin-to-skin contact during cesarean surgery, 60 (5.6%) of 1,070 infants were transferred to the NICU for observation; after implementation, 31 (1.75%) of 1,771 infants were transferred to the NICU for observation. The proportion of infants transferred for observation in the NICU was significantly different and lower after implementing skin-to-skin contact during cesarean surgery (Pearson's  $\chi^2 = 32.004$ ,  $df = 1$ ,  $p < .001$ ; see Figure 1).

To assess sustainability of the overall decreased transfer rate, we analyzed the proportion of transfers during 2015. We found that 2 years after implementing skin-to-skin contact during cesarean surgery, the rate of transfers to the NICU for observation remained low ( $n = 8$ , 1.4%), despite an increased rate of cesarean birth, as illustrated in Figure 1.



## Discussion

We found a significant difference in the proportion of newborns transferred to the NICU for observation after implementing skin-to-skin contact. Fewer newborns were transferred. This difference was not influenced by season (i.e., time of year), and the difference was sustainable (see Figure 1). Also, there were no policy changes during this time or any other major changes, including patient population or staffing, that would affect the NICU observations.

We believe this difference is also clinically significant based on the known benefits of immediate skin-to-skin contact for mothers and newborns. Because the proportion of newborns transferred for observation in the NICU was significantly lower, fewer mothers and newborns at our hospital were separated during the immediate hours after birth.

### Financial Implications

If immediate skin-to-skin contact during cesarean surgery can reduce transfers to the NICU for observation, then costs might be reduced because NICU observations are not always reimbursable. This potential impact may be more significant in

facilities that budget and staff for NICU observations. Reducing unnecessary NICU transfers for observation may also improve the effective use of scarce resources.

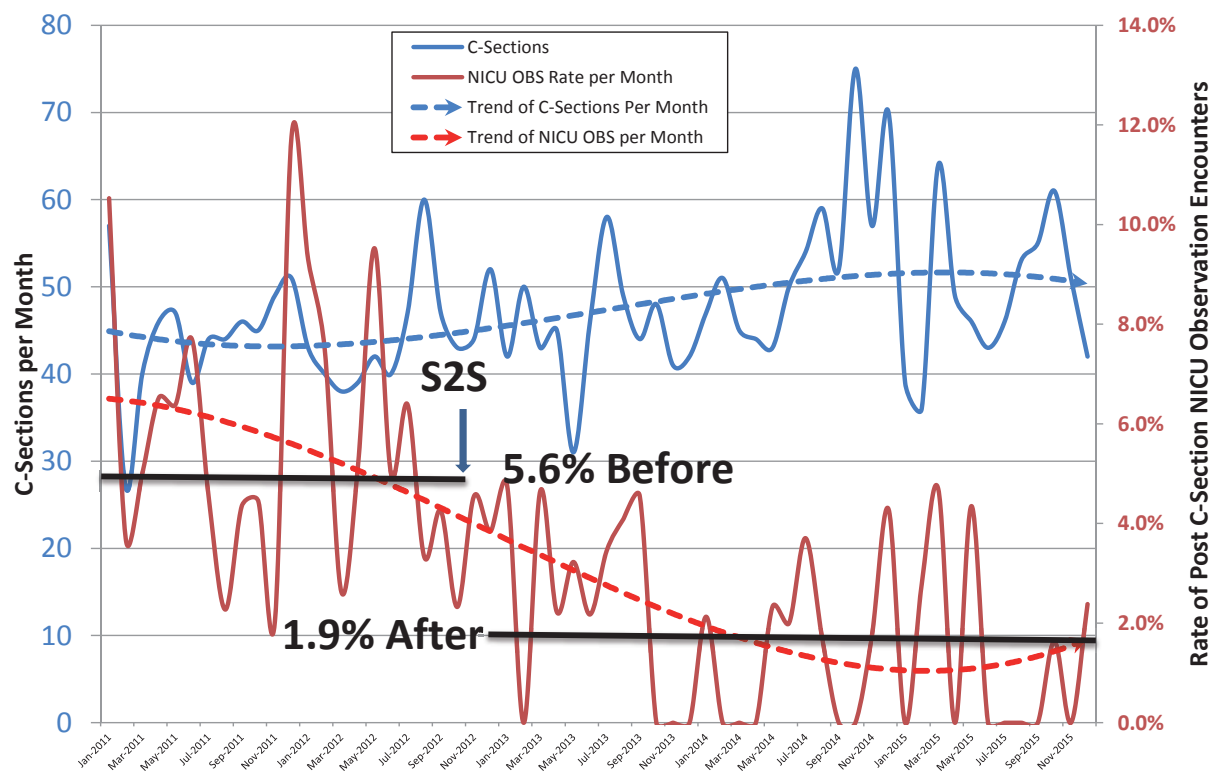
### Safety Implications

Miscommunication during patient handoffs (transfers), a known patient safety risk factor, is a principal cause of sentinel events and can lead to serious injury or even death (Starmer et al., 2013). At our hospital, when a newborn is transferred to the NICU for observation, multiple handoffs occur. We believe that skin-to-skin contact during cesarean surgery can reduce the risk of adverse events by decreasing transfers to the NICU for observation.

### Limitations

This evidence-based practice project was conducted at a single site and included only scheduled and nonemergent cesarean surgeries. We were missing data (birth weight and gestational age) on four of the newborns. We included all newborns born from 37 to 42 weeks gestation. Our overall average age at birth was 39 weeks (standard deviation 0.9 weeks). The number

FIGURE 1  
NICU Observations Versus Cesarean Surgeries



Note. C-section = cesarean; OBS = observation.

of newborns who were born earlier than 39 weeks may have decreased during the data collection period because of guidelines that recommend delaying scheduled, elective cesareans until at least 39 weeks gestation unless a medical indication exists. It may add strength for future projects to limit the population to newborns born at 39 to 42 weeks gestation.

## Implications for Practice

All alert and responsive mothers and their medically stable newborns should receive skin-to-skin contact during and after cesarean surgery, and all women's health professionals should support immediate skin-to-skin contact during cesarean surgery. Interprofessional staff must be educated about the importance of skin-to-skin contact during cesarean surgery and educate parents about the importance of immediate skin-to-skin contact for mothers and their newborns. Additional research is needed on the influence of skin-to-skin contact on NICU observations.

## Conclusion

Our evidence-based practice project adds to the body of literature about immediate skin-to-skin contact during cesarean surgery. A reduction in the proportion of newborns transferred to the NICU for observation was observed after the implementation of immediate skin-to-skin contact during cesarean surgery. As a result, fewer mothers were separated from their newborns during the critical hours after birth.

We urge nurses to use the results of this project to advocate for immediate skin-to-skin contact during cesarean surgery at their hospitals. We urge health professionals to inform women and their families during the prenatal period about the benefits of immediate skin-to-skin contact during medically uncomplicated cesareans. We look forward to the day when all medically stable mothers and their newborns, regardless of the mode of their birth, have immediate, uninterrupted skin-to-skin contact for at least an hour or until after the first feeding for breastfeeding women. We hope our work helps this day come soon. **NWH**



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