



Implementing Evidence-Based Neonatal Skin Care With Parent- Performed, Delayed Immersion Baths

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Bathing newborns soon after birth has been a typical practice in hospitals across the United States for many years. Traditional practice is for hospital personnel to sponge bathe newborns once vital signs are stable, usually within 2 to 4 hours of birth. However, recently, there has been new interest in delaying bathing for term newborns, which may have several benefits, although the optimal timing of the first bath is still unclear (Lund, 2016). Delaying the first bath aligns with the recommendation of the Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) to leave residual vernix caseosa in place after birth (2013). Allowing the vernix to absorb into the newborn's skin can provide protection from infection and improved skin barrier function (Lund, 2016). Additionally, significant benefits can be found with tub or immersion bathing that have been attributed to a promotion in breastfeeding and newborn comfort and decreased hypothermia and hypoglycemia (Lund, 2016).

Abstract: There has been a recent trend toward delaying newborn baths because of mounting evidence that delayed bathing promotes breastfeeding, decreases hypothermia, and allows for more parental involvement with newborn care. A multidisciplinary team from a maternal–newborn unit at a military medical center designed and implemented an evidence-based practice change from infant sponge baths shortly after birth to delayed immersion baths. An analysis of newborn temperature data showed that newborns who received delayed immersion baths were less likely to be hypothermic than those who received a sponge bath shortly after birth. Furthermore, parents reported that they liked participating in bathing their newborns and that they felt prepared to bathe them at home. <http://dx.doi.org/10.1016/j.nwh.2017.10.009>

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Timing of the First Bath and Cultural Implications

Although the optimal timing of the first bath is still unclear, many studies indicate that bathing a term newborn shortly after birth is safe if the newborn is stable and efforts are made to protect the newborn's thermoregulation (Lund, 2016). Practices vary based on culture and beliefs about bathing. A study in Japan found that rectal temperatures of newborns bathed 2 to 5 minutes after birth were higher 30 minutes after birth than temperatures in the dry-care group, indicating that early bathing does not have adverse effects on the stabilization of newborns. In Japan, early bathing is traditional except for those infants who have additional risk factors, such as cesarean birth, asphyxia, or prematurity (Nako et al., 2000). A study performed in Uganda found that bathing term newborns within 1 hour of birth increased the prevalence of hypothermia, even with use of warmed water and skin-to-skin contact after the bath (Bergström, Byaruhanga, & Okong, 2005).

In 2007, a panel of dermatologists and pediatricians from across Europe participated in the first European Round Table meeting on "Best Practice for Infant Cleansing" (Blume-Peytavi et al., 2009). This panel determined that based on previous studies, bathing times can remain flexible to align with family preference for healthy term newborns (Blume-Peytavi et al., 2009).

A study performed in the Philippines found that early bathing, a delay in initial drying and placing the newborn on a cold surface, and transfer to a separate nursery were commonplace, and most newborns were not returned to their mothers until 2½ hours after birth, which caused a delay in thermoregulation and breastfeeding initiation (Sobel, Silvestre, Mantaring, Oliveros, & Nyunt-U, 2011).

Although there is significant variation in the timing of the first bath globally, maintaining thermoregulation of the neonate is of primary importance. Newborns who are cold stressed have an increased metabolic rate, demanding increased use of glucose and oxygen, which can then lead to hypoglycemia and hypoxemia (Blackburn, 2003). Even a healthy term newborn exposed to prolonged cold stress can have respiratory difficulty, which may decrease production of surfactant, causing additional work of breathing (Verklan & Walden, 2004).

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Benefits of Delayed Bathing

Preserving Vernix Caseosa

There are several benefits of delaying the first bath, although the ideal time is not defined. One benefit to delaying the bath is to allow absorption of the vernix into the newborn's skin. Vernix caseosa is thought to protect against infection, prevent transepidermal water loss, cleanse and moisturize the skin, develop appropriate pH levels, help with wound healing, and assist with temperature regulation (AWHONN, 2013). Leaving the vernix in place allows for these defensive and adaptive mechanisms and aligns with the World Health Organization's recommendations to delay bathing and leave vernix on the skin at birth (Visscher & Narendran, 2014).

Breastfeeding Initiation

A second potential benefit to a delay in bathing is an increased likelihood of breastfeeding initiation (Preer, Pisegna, Cook, Henri, & Philipp, 2013). After delaying the bath at least 12 hours, Preer et al. (2013) performed a retrospective analysis to compare in-hospital breastfeeding rates before and after the delay in bathing. The authors found that after the intervention, the odds of breastfeeding initiation increased by 166%. This aligns with the Healthy People 2020 Maternal, Infant and Child Health goal to increase the proportion of infants who are ever breastfed (U.S. Department of Health and Human Services, n.d.).

Temperature Variability

Since 2001, when AWHONN and the National Association of Neonatal Nurses recommended that stable term infants receive an immersion bath, the method of bathing in the United States has slowly begun to transition to tub bathing (AWHONN & National Association of Neonatal Nurses, 2001). Results of a randomized controlled trial (Bryanton, Walsh, Barrett, & Gaudet, 2004) indicated that newborns who were tub bathed experienced less heat loss and were significantly more content than their sponge-bathed counterparts. These results were also duplicated in the late-preterm newborn population (Loring et al., 2012). Recently, a large metropolitan teaching hospital performed a randomized controlled trial to compare sponge bathing with tub bathing for late preterm newborns after 24 hours of life. The researchers found that the newborns who were tub bathed had less fluctuation in their temperatures at the study time points and also were warmer after the bath was completed (Loring et al., 2012). In the third edition of its evidence-based clinical practice guideline on neonatal skin care, AWHONN recommends an immersion bath as a method of bathing (2013).

Umbilical Cord Healing

Traditionally, clinicians have believed that immersion bathing is related to an increased risk of umbilical cord infections and



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a delay in cord healing/drying. Bryanton et al. (2004) studied cord healing in healthy, term newborns after a sponge or an immersion bath. They found no significant differences in cord healing scores between the groups, and no umbilical cord infections were noted in either group (Bryanton et al., 2004).

Parent Involvement

Frequently, health care providers believe that they are able to more efficiently perform infant baths and prevent unnecessary heat loss than parents. Medves and O'Brien (2004) studied 111 newborns and discovered that there was no difference in temperature change between those bathed by a parent and those bathed by a nurse. The study also compared the location of bathing: the nursery versus postpartum rooms. The newborns in the experimental group were bathed by their parents in the postpartum room, and the newborns in the control group were bathed by nurses in the nursery (Medves & O'Brien, 2004). During bathing, the nurse researcher provided feedback and encouragement to complete the bath quickly (Medves

& O'Brien, 2004). Having parents perform the bath in the mother's room supports the Baby-Friendly Hospital Initiative introduced by the World Health Organization and the United Nations Children's Fund in 1991 (Baby-Friendly USA, n.d.). The initiative encourages hospitals to practice rooming-in, which allows mothers and newborns to stay together. Bath time is a great opportunity for labor and birth personnel to teach new parents about how to properly care for their newborn's skin and allow for hands-on learning for those parents who learn best via this method.

Implementing a Practice Change

Planning and Implementation Strategies

Based on an identified need to examine best skin care practices on our Labor & Delivery (L&D) unit, we organized a multidisciplinary team to initiate a practice change based on current evidence. The team was composed of the inpatient Pediatric Medical Director, two registered nurses from the L&D unit, and

FIGURE 1
Newborn Bathtub With Clear Plastic Liner



One benefit to delaying the bath is to allow absorption
of the vernix into the newborn's skin

the Perinatal Clinical Nurse Specialist (CNS). We looked into the current literature and developed an implementation plan to present to the unit director. Once the plan was approved, we moved forward with creating a training plan, updating the unit policy, and updating the standardized electronic health record order set. We purchased a newborn bathtub (see Figure 1), disposable clear plastic tub liners, and 15 duck-shaped magnets. The tub cost \$24.99, and the disposable liners cost \$45.87 for a case of 25. Training was completed for all L&D staff members at a monthly training day, and then the updated bath process was started on November 1, 2015.

Methods

Baths were delayed until 24 hours of life unless parents requested to bathe their newborns earlier. Staff wore gloves

when handling newborns who had not yet been bathed. The parents were given instructions on how to bathe their newborns and were encouraged to complete the bath in less than 5 minutes. The staff brought the newborn bathtub with disposable liner and bath supplies to the mother's room. The tub was filled with water ranging in temperature from 100.0 to 103.9 °F in accordance with the AWHONN *Neonatal Skin Care: Evidence-Based Clinical Practice Guideline* (2013). Parents gently bathed their newborns and then placed them on a prewarmed radiant warmer to towel dry. Then, the newborns were wrapped in a clean, dry towel or blanket, and the parents washed their newborns' hair over the bathtub. Finally, the staff or parents placed the newborns again on the warmer to gently towel dry their hair, obtain their postbath temperature, and then dress if the temperature was 97.7 °F or greater. After the completion of a

newborn's bath, a duck-shaped magnet was placed on the outside of the mother's doorframe to alert staff that the newborn had been bathed.

Data Collection

To evaluate the effectiveness of the practice change, the team decided to compare newborn temperatures from before and after the practice change was implemented. Data were obtained retrospectively from electronic health records for all newborns, regardless of gestational age, born from November 1, 2014, through October 31, 2015. Temperature data for all newborns were included with the assumption that the newborns received sponge baths at approximately 2 to 4 hours of life by L&D personnel. Each temperature was documented as prebath or postbath temperature in the electronic health record. Data were also gathered for newborns born from November 1, 2015, through October 31, 2016. These newborns received a tub bath by their parents after 24 hours of life.

Additionally, the team developed a survey to determine parents' beliefs about the importance of delayed bathing, parent participation, and the bath experience as a whole. The survey was developed in collaboration with several mothers who recently gave birth at this facility and was reviewed by a biostatistician to ensure validity. Parents of all newborns born in December 2016 and January 2017 who received baths were given a survey. The surveys were then collected from the parents before their newborns were discharged.

Results

Data from newborns who had sponge baths 2 to 4 hours after birth were compared with data from newborns who had delayed immersion baths. Newborn temperatures (taken throughout the hospital stay according to a routine schedule) were categorized as normothermic (temperature ≥ 97.7 °F) or hypothermic (temperature < 97.7 °F). A two-sample test of proportions using Stata Statistical Software version 13 was

computed, giving a *p* value of .044. Newborns who had delayed immersion baths were significantly more likely to be normothermic (see Table 1).

Breastfeeding

We did a retrospective review to see how breastfeeding rates were affected by offering a delayed immersion bath. In the year before the process change, there were 426 births, with 93% of newborns receiving breast milk and 76% of newborns receiving exclusive breast milk during their hospital stays. During the first year implementing the delayed immersion bath, we observed a 20% decrease in number of births. Of the 343 births, 94% of newborns received breast milk and 75% received exclusive breast milk during their hospital stays. We were unable to replicate the increase in exclusive breastfeeding noted by Preer et al. (2013) in their study, but we believe that this may be due in part to the high exclusive breastfeeding rate that our unit consistently achieves; the routine skin-to-skin care we offer after birth; and the healthy, well-supported mothers represented in our population. Preer et al. noted that most mothers represented in their study had low income and were medically underserved (2013). Additionally, their initial exclusive breastfeeding rate was 32.7% before the delay in bathing versus our 76% before implementation (Preer et al., 2013).

Survey Results

Parents were given a survey to complete after they bathed their newborns. Over a 2-month period from December 2016 through January 2017, the facility had 61 births, and 36 total surveys were completed and returned. The aim of the survey was to determine if parents had bathed a newborn before, what their preferred method of bathing was, and their knowledge of the benefits of delayed immersion bathing (see Box 1). Overall, 44% of parents had never bathed a newborn before the birth of their newborns; 77% of parents desired to bathe their

TABLE 1
Newborn Temperature Results

Group	Normothermic, <i>n</i> (%)	Hypothermia (< 97.7 °F), <i>n</i> (%)	Total, <i>n</i> (%)
Sponge bath group (<i>n</i> = 142)	100 (70)	42 (30)	142 (100)
Immersion bath group (<i>n</i> = 140)	113 (81)	27 (19)	140 (100)

Note. The *z* score is 2.0101, and *p* = .044.

BOX 1

Parent Survey Questions

Have you ever bathed a newborn baby (prior to this hospital admission)?

[Yes, No]

After bathing my newborn baby here in the hospital, I feel comfortable that I am prepared to bathe my newborn at home.*

During your hospital stay, which style of bathing do you believe is more comfortable for your baby?

[Sponge bath, Tub bath, Unsure]

How would you prefer the bath to be done?

[L&D staff, Parents, Undecided, Don't care]

I believe delaying my baby's first bath is important for his/her skin.*

I want the opportunity to bathe my newborn and feel this is an important part of my birth experience.*

* These questions answered with Likert scale scoring:

5 = *Strongly agree*, 4 = *Agree*, 3 = *Unsure*, 2 = *Disagree*, 1 = *Strongly disagree*.

Bath time is a great opportunity for labor and birth personnel to teach new parents about how to properly care for their newborn's skin and allow for hands-on learning

newborns with staff assistance, and 75% of parents believed that a tub bath was more comfortable for their newborns. Descriptive data were analyzed for each of the three Likert scale questions. A total of 61% of parents strongly agreed that their bathing experience prepared them to bathe their newborns at home. In addition, 89% of parents strongly agreed or agreed that they desired the opportunity to bathe their newborns and believed that this was an important part of the birth experience. A total of 72% of parents agreed that or were unsure if delaying the first bath was important for their newborns' skin. This highlighted the opportunity for education about the benefits of delaying the first bath. To address this need, an educational poster was developed and hung outside the L&D entrance, near the waiting room. Also, the childbirth class instructors were encouraged to continue to emphasize the benefits of delaying a newborn's first bath.

Overall, parent comments were very positive and in favor of the opportunity to bathe their newborns (see Box 2). Several of the parents noted that they did not have the opportunity to bathe their newborns because the L&D staff took over or seemed to be in a hurry. These comments were shared with the L&D team as a whole, and staff were receptive to the feedback from the parents.

Challenges

After delayed immersion bathing was implemented on our unit, the CNS reviewed the process and discovered that the staff were frequently performing the bath instead of assisting the parents with the bath. The CNS identified that several staff members had been asking the parents, "Would you like to do your baby's bath?" instead of "It's time to bathe your newborn. I will be gathering the supplies and then will assist you as you give your baby his/her first bath." The CNS provided training at the next staff meeting and emphasized a scripted style approach to inform the parents of the new process upon admission and again before the bath time. Staff were taught several ways to present the bath to the parents. After this training, we observed a decrease in staff-performed baths.

Another challenge is frequent staff turnover. This L&D unit is in a military treatment facility with a high percentage of active duty staff members. Military members routinely transfer to other medical facilities every 2 to 4 years for career progression and professional development. With this frequent changeover in staff members, we recognize the importance of continued emphasis on delayed immersion bathing and ensuring that each staff member receives adequate training on arrival

BOX 2

Parent Comments

I feel like this experience was important for both the baby and us, as parents. It was also fun. Thanks for the opportunity.

My husband and I bathed our daughter using the newborn bathtub, and the tech gave us instruction on what was ok for baby & her cord, etc. We had a great experience.

[I] liked the delay in bathing [almost 24 hours after birth] and that the tech aided and included family in this procedure.

Liked it much better than the other way. 1st child was bathed in the old [unit] by staff. Thank you for the experience.

Great experience bathing baby, very positive.

Helpful—we knew what to do when we got home.

A special thanks to the hospital staff for a wonderful bathing experience.

Did not get the opportunity to bathe [my] newborn. Felt staff were in a hurry to “just get it done.”

Staff helped so much, everyone was very helpful!

The nurse who assisted us was amazing and gave us great and helpful tips.

Bath time was quick and easy. I received a lot of tips and understand a lot more. I feel really comfortable to bathe my baby at home.

The tech actually bathed our baby, but she explained what she was doing and gave tips to use for when we are home.

Staff performed bath. Staff was great.

to the unit. Therefore, the unit CNS meets with each new staff member to provide training on delayed bathing practices.

The last challenge was a relatively low survey response rate (59%). We noted that although surveys were routinely given to parents, staff members frequently forgot to collect them before a newborn's discharge.

Implications for Practice

It is important for clinicians to develop evidence-based practices that facilitate parent involvement in the care of their newborns. Our study showed a significant decrease in neonatal hypothermia with the implementation of delayed, parent-performed immersion bathing. We believe that the decrease in

the number of newborns who had a temperature less than 97.7 °F during their hospital stay is directly related to the change to delayed immersion baths. As previously noted, Medves and O'Brien (2004) concluded that heat loss during bathing is not associated with location of the bath or who bathes the newborn. We do not believe that allowing parents to perform the bath is associated with the decrease in hypothermia during a newborn's hospital stay. However, we believe that parent satisfaction and confidence were elevated in response to allowing parents to participate in bathing their newborns.

The survey results from our facility indicate that parents would like the opportunity to perform an immersion bath and afterward feel comfortable with their ability to successfully bathe their newborns at home. This aligns with research on parent-performed bathing, which has an increase in parent satisfaction and is an optimal time to teach newborn care while parents interact with their newborns (Medves & O'Brien, 2004). In addition, this practice change adheres to the challenge from the Institute of Medicine that 90% of health care decisions be evidence based by 2020 (2011).

Skin-to-Skin Contact for Rewarming After the Bath

Not all obstetric units are designed with the same staffing model and room organization as ours. Our unit features a Labor, Delivery, Recovery, and Postpartum model. Each of the Labor, Delivery, Recovery, and Postpartum rooms has a radiant warmer that can be used after the bath to towel dry and dress the newborn. We are aware that many larger facilities have a separate postpartum unit without radiant warmers in each room. In a recent study, George et al. (2015) showed that healthy term newborns can be effectively rewarmed with skin-to-skin contact after the bath if needed. Most of our newborns do not require rewarming after an immersion bath, but skin-to-skin contact is a viable option if rewarming is needed.

Conclusion

Overall, we were able to implement a bath process that resulted in decreased newborn hypothermia and increased parent satisfaction. These results were consistent with findings from various research studies investigating delayed baths and newborn immersion bathing. Delayed immersion bathing is a family-friendly process that can be implemented in any type of medical facility, whether large or small. The cost is minimal, and benefits of decreased cold stress, increased skin protection, and increased parent satisfaction are overwhelming and foster optimal newborn outcomes. **NWH**





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