

Implementing Skin-to-Skin Care and Alternative Touch Methods in a Surgical Neonatal Intensive Care Unit

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Background: Sensory experiences of infants in the Neonatal Intensive Care Unit (NICU) are vastly different from those that are biologically expected. The NICU environment can adversely impact the preterm infant's rapidly developing brain.^{1–3} Subsequent alterations in the preterm infant's cognitive, physiological, emotional, and social development may persist beyond the NICU.^{1,4–6} Engaging parents in learning their vulnerable infant's unique abilities and challenges enhances the quality of parent-child relationships, which is critical for optimal neurodevelopmental outcomes.^{7–12} Skin-to-skin care (SSC) promotes parental participation, strengthens the family role in the care of the fragile infant in the NICU, decreases parental feelings of helplessness, and increases responsiveness to the infant's cues.^{13,14} Improved neurodevelopmental outcomes, autonomic functioning, quality of sleep, growth, physiological stability, and attenuated stress and pain responses are associated with SSC for preterm infants.^{15–17}

The evidence for SSC is primarily drawn from preterm or healthy term neonates. Despite growing recognition of similar adverse neurodevelopmental outcomes for infants born around term requiring surgery shortly after birth,^{18–21} there is limited literature specifically discussing the use of SSC in this population. Interventions are needed to address potentially modifiable risk factors. Surgical infants may not be able to be held in traditional SSC. Factors related to their specialized care make providing SSC challenging including wires, tubes, machinery, surgical wounds, environmental constraints of the unit, perceived fragility of the infant, and uncertainty of the safety or feasibility of SSC. Parent touch techniques provided in a responsive and synchronous pattern can attenuate infant stress responses and improve parent-child interactions thus, improving family resiliency and functioning beyond the NICU.^{11,22–24} Supporting alternative interventions that promote parent touch may be important sustainable links in helping these infants achieve optimal neurodevelopmental progress in the surgical NICU and beyond.

Objectives: The purpose of this presentation is to outline the implementation of an initiative focusing on SSC and alternative touch methods within the context of a developmental care program in a surgical NICU. The objectives are to: (a) discuss educational strategies used during implementation, (b) describe adaptations necessary for success within a surgical NICU, (c) highlight challenges experienced during implementation, and (d) outline plans for evaluation.

Approach: Prior to December 2016, SSC was infrequently and inconsistently practiced. The multidisciplinary initiative was implemented over three months in an 18-bed level III outborn NICU that cares for neonates with surgical and/or cardiac conditions pre- and post-operatively. When unable to be held in traditional SSC, the initiative encouraged parental alternative touch methods including: (a) cradle holds with skin contact, (b) side-lying SSC, (c) in-bed skin contact using arm encirclement, and (d) responsive parent touch such as supporting finger grasps or hand swaddling based on infant cues. Although seemingly simple, SSC and alternative touch methods were difficult to integrate into the highly technological, rapid-turnover NICU. Paired with the intensive monitoring and medical support provided to the infants, the physical environment and staff attitudes also presented as challenges. A systematic and adaptive approach was necessary that addressed the unit's unique challenges and staff apprehensions, by allowing ample opportunity for engagement, discussion, and critical reflection.

A multidisciplinary team created a comprehensive SSC package. Pictorial and written tools were developed for staff and parents prior to implementation. Parent resources, created with input from the parent advisory council, outlined the benefits of SSC, introduced safety guidelines, and provided a description of both traditional SSC holding and alternative touch methods. Staff guidelines paralleled parent resources, with greater depth and complexity. These tools were used to facilitate discussion and ongoing review between staff and parents. In collaboration, staff and family determined the most appropriate and feasible method of SSC based on a holistic assessment of the infant. These team huddles also addressed perceived barriers and determined any modifications needed to ensure safety and comfort. Journal articles addressing SSC and touch were posted to the online staff communication forum; although attempts to engage staff in online critical analysis of the articles was difficult, staff engaged in dialogue about article content during education sessions. Low-fidelity mannequins were used to conduct SSC and standing transfer simulations to support staff in learning to navigate the challenging physical constraints of the environment and problem-solve issues that may arise in a safe and anticipatory manner. Once approximately one-third of staff had participated, simulations were no longer deemed necessary by staff. The focus changed from simulations to learning through peer mentorship, with multidisciplinary SSC champions guiding the team in-the-moment. Those comfortable and supportive of the initiative acted as champions for knowledge translation, modelled the safety and efficacy of the initiative, and began to foster this as a socially acceptable change in practice.

A questionnaire will be distributed to staff to assess attitudes and perceptions surrounding the integration of SSC and alternative touch methods into practice. An audit tool is being developed to assess SSC and alternative touch frequency and to capture challenges experienced by staff and parents. Results will guide continual improvement and future direction.

Summary: The initiative was applied systematically due to the medical complexity and high acuity of the tenuous patient population, the resources and manpower needed to facilitate SSC, the challenging physical environment, and staff apprehensions. The healthcare team's clinical judgment was respected in establishing the balance of the infant's medical care with the equally important neurodevelopmental and social-emotional needs to determine the most appropriate and feasible type of touch over time, which fostered participation in the initiative. The fluidity and adaptability in the initiative was critical to providing responsive, infant-centered, and family-

inclusive care at all stages of the infant's illness and convalescence. Adoption of these practices has not been fully embraced by all staff. Continued efforts must focus on supporting staff integration of SSC and touch as essential, routine components of care.

It is anticipated that the benefits of SSC for cardiac and surgical infants will parallel those observed in the preterm and healthy term populations. Delineating neurodevelopmental outcomes specifically attributed to SSC and alternative touch methods may be challenging given the many potential confounders. Future research and discussion regarding the impact of these interventions on the neurodevelopmental outcomes of infants in the surgical NICU is warranted.

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