

Clinician Perspectives on Barriers to and Opportunities for Skin-to-Skin Contact for Premature Infants in Neonatal Intensive Care Units

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Abstract

Objective: Our objective was to investigate key factors in promoting skin-to-skin contact (STSC) in the neonatal intensive care unit (NICU).

Methods: As part of a California Perinatal Quality Care Collaborative on improving nutrition and promoting breastmilk feeding of premature infants, a multidisciplinary group of representatives from 11 hospitals discussed the progress and barriers in pursuing the project. A key component of the collaborative project was promotion of STSC. Sessions were audio-recorded, transcribed, and assessed using qualitative research methods with the aid of Atlas Ti software (ATLAS.ti Scientific Software Development GmbH, Berlin, Germany). Two primary investigators studied the transcripts for themes related to STSC. Using an iterative approach, selected themes were explored, and representative quotes were selected.

Results: Barriers to promoting STSC fell into broad themes of implementation, institutional, and familial factors. The main challenge identified in implementation was defining a clinically stable eligible population of patients. Key institutional factors were education and motivation of staff. Familial factors involved facilitation and sustained motivation of mothers. In response to these barriers, opportunities for promoting STSC were enacted or suggested by the group, including defining clinical stability for eligibility, facilitating documentation, strategies to increase parent and staff education and motivation, and encouraging maternal visitation and comfort.

Conclusions: Our findings may be useful for institutions seeking to develop policies and strategies to increase STSC and breastmilk feeding in their NICUs.

Introduction

SKIN-TO-SKIN CONTACT (STSC), also known as “kangaroo care,” is a beneficial intervention for premature infants. Early STSC in the neonatal intensive care unit (NICU) increases maternal milk supply and guards against insufficient lactation.^{1,2} The mechanisms through which STSC influences infant health outcomes may be partly through direct physiologic effects of attachment in addition to the increased likelihood of breastmilk feeding.³ Studies have shown that STSC improves oxygen saturation,⁴ regulation of stress responses,⁵ and head circumference growth,⁶ while reducing the risk of hypothermia and unstable heart and respiratory rates.⁷

Despite these clinical benefits, STSC is not uniformly practiced. A national survey of nurse managers found that 80% of NICUs practiced some variety of STSC.⁸ However, respondents also acknowledged that barriers to STSC persisted, and some infants (those born to poor, non-white, limited English-speaking, and/or teenage mothers) were less

likely to receive STSC.⁸ Other investigators have found similar maternal demographic disparities in both STSC and breastmilk feeding.⁹ Potential barriers identified by previous research included concern for the safety of the infant and reluctance of parents and healthcare providers to participate in STSC.⁸

We hypothesized that there are many constraints that combine to provide varying levels of opportunity for STSC. In order to explore this issue further, we sought the perspective of an interdisciplinary group of NICU staff interested in promoting STSC as part of a quality improvement collaborative to promote increased breastmilk feeding of premature infants.

Subjects and Methods

Setting

This was a qualitative analysis of recorded meetings of a group of NICUs participating in a quality improvement project

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to improve breastmilk feeding rates. The setting of the study was the California Perinatal Quality Care Collaborative (CPQCC)/California Children's Services Breastmilk Nutrition Quality Improvement Collaborative. The objective of the Collaborative was to use a multidisciplinary approach to increase the proportion of very low birth weight infants (<1,500 g birth weight) being fed breastmilk. One of the best practices implemented as part of this objective was to increase STSC.

Participants

There are 128 member NICUs in the CPQCC, which represents over 90% of NICUs in California. An invitation to participate in the Breastmilk Nutrition Quality Improvement Collaborative was sent to all member hospitals; the Collaborative occurred from 2009 to 2010. Eleven NICUs chose to participate in the project and, as part of the Collaborative's design, met in person or by webcast for monthly group discussions. These discussions involved an expert panel and clinician representatives from the 11 participating hospitals. Representatives included lactation consultants, dietitians, NICU nurses, nurse managers and educators, neonatologists, and infant development experts, such as occupational and physical therapists. In general, about five to 10 members from each NICU participated in discussions.

All 11 participating hospitals were Level III NICUs, with five considered Regional NICUs by California Children's Services (American Academy of Pediatrics Level IIIC designation) and six considered Community NICUs (American Academy of Pediatrics Level IIIA or IIIB designation).¹⁰ Of the regional NICUs, three were located in children's hospitals. The total number of NICU beds ranged from 16 to 104, with a mean of 47 and median of 53 beds.

Data collection

Each monthly meeting had a specific focus for discussion, although any aspect of the Collaborative project could have been discussed at any session. Discussions involved a moderator who was the administrative leader of the Collaborative project, a panel of experts in quality improvement and breastmilk in the NICU, and the participants. Each month's topic was decided beforehand, and participants had a chance to discuss as a team prior to the meeting. Each team had a chance to present its thoughts followed by responses from the other participating NICU teams. In the fourth month of the Collaborative, the discussion focused on the implementation and challenges surrounding STSC, which was considered a "best practice" and a key component of the Collaborative. The group discussion was audio-recorded and transcribed for analysis by a professional transcription service and reviewed by the research team. Although other meetings did not have STSC as the main focus, the participants were invited to comment on any aspect of the Collaborative project for which they had discussion points. Therefore, recordings of the other webcasts were reviewed for any references to STSC, and these were also included in the analysis. In total, five monthly discussions were included in this study: November 2009 and January, March, April, and May 2010.

Data analysis

Any information that identified individuals or hospitals was omitted. Thematic analysis was conducted in an iterative

fashion by two analysts (H.C.L. and S.M.-A.).¹¹ We used Atlas Ti software (ATLAS.ti Scientific Software Development GmbH, Berlin, Germany), which facilitates qualitative research, to analyze the transcript. The analysts independently read and coded the transcript in an iterative manner to identify substantive issues of interest. We then distinguish issues that were commented only repeatedly from idiosyncratic statements. Coding continued until no new issues were identified. We subsequently engaged in dialogue to converge on a set of common themes that best represented the concerns expressed by participants. We present one or two selected quotations to illustrate each issue and theme.

This study was approved by the University of California, San Francisco Committee on Human Research.

Results

There were 11 hospitals that participated in the Collaborative project discussions. During the session that focused on STSC, the participants included developmental specialists ($n=4$), dietitians ($n=6$), nurse specialists/educators ($n=10$), physicians ($n=10$), nurse managers ($n=7$), lactation consultants ($n=8$), and NICU staff nurses ($n=23$). In the discussions regarding promotion of STSC, ideas such as the importance of clinical stability, staff education and buy-in, and parental motivation were raised. We evaluated these ideas and identified three main categories or themes: Patient implementation factors, institutional-level factors, and maternal or familial-level factors.

Implementation factors

Clinical stability and its definition. There was general agreement that infants needed to be clinically stable to be eligible for STSC. However, there was also recognition that there was significant variability in and disagreement over the definition of clinical "stability" among providers and the participating institutions (both between and within institutions). Even when comparing NICUs that did have comprehensive definitions of eligibility for STSC, there was large variation across NICUs as to how that eligibility was defined. According to participants, some of the variables that determined clinical stability were age, current weight, respiratory distress, blood pressure, temperature, apnea, bradycardia, and oxygen desaturation events. There was wide variation in criteria used and in specific parameters. For example, one NICU had a definition of stability of fewer than three apnea/bradycardia events per hour that self-resolve within 15–20 seconds, whereas another NICU had a definition that required absence of apnea or bradycardia during handling. Most units had no formal definition, but instability was determined at the discretion of the attending physician.

Use of equipment/technology. Another factor that posed a barrier to STSC was the type of technology or equipment being used to care for the infant. An infant requiring a moderate amount of oxygen and on high ventilator settings would presumably be less clinically stable. However, even apart from the infant's clinical condition, intubation, catheterization, and other devices may limit the ability to implement STSC. There was variability in NICU policies, with some stating that any infant on a ventilator would not be eligible for STSC; others routinely allowed ventilated infants to receive STSC. Among those that permitted ventilated infants to

receive STSC, some had restrictions on infants requiring a certain fraction of inspired O₂ or those on high settings, whereas others had less stringent restrictions. For those with the most liberal policies, including allowing infants on high-frequency ventilation to receive STSC, one notable challenge was the transition of the infant from bed to mother, which required extra assistance from personnel. These NICUs nonetheless reported success with their approach.

Similarly, the presence of umbilical catheters was a prohibiting factor for STSC in some NICUs but not in others. For most NICUs that allowed STSC with umbilical catheters, there was an exception for those infants with hypotension requiring pressor support.

Policies for implementation. There was also variation in NICU policies regarding who was authorized to permit STSC. Some NICUs required an attending physician to sign a specific STSC order, whereas others incorporated STSC as part of routine care and required a specific order to avoid STSC if the patient was unstable. Having policies in place to address eligibility and procedures may benefit NICUs in which STSC is not consistently performed.

Institutional factors

Barriers related to three institutional themes emerged from the data: documentation and logistics, staff education, and staff buy-in.

Documentation. A frequently mentioned issue was documentation, especially as it pertained to the sharing of information among the physician, nurse, and the mother. Because the responsibility of collecting information on STSC can fall to multiple actors, consistency and reliability of charting are key:

We have a backup method where I or the parent records and still we are picking up more from that form than we are from the form that the nurses are charting on. (Hospital 1 Participant)

[We will] see a mom kangaroo care that day and we'll look at the sheet later on and realize she never checked off that she did that. (Hospital 2 Participant)

Adding to this difficulty is the introduction of electronic medical records into hospitals. It is especially difficult when mixed with traditional paper charting. The recording of STSC is a relatively new concept, as is the use of electronic medical records. Attempting to teach both protocols to staff simultaneously can be challenging. Furthermore, when the task of recording falls to the parents, language and literacy issues pose a challenge to reliable documentation. Without consistent documentation of STSC, participants expressed concerns that they could not intervene with the mothers who needed it the most.

Staff education. Lack of adequate staff education about the importance of STSC and techniques for STSC was another institutional theme. Tenure of staff was a potential barrier, as turnover and expansions mean integrating staff, especially nurses who have no prior experience with STSC:

We know that the staff's going to need support because it hasn't always been an expectation and it hasn't been always positively promoted. (Hospital 3 Participant)

We have a lot of new nurses and unfortunately some of the new nurses have never been to some of the bigger hospitals. And so I think that it's just, they're just uncomfortable with it. (Hospital 4 Participant)

Furthermore, when a certain staff member is the "champion" of STSC, his or her leaving the hospital may make educating the remaining staff on the importance of STSC more difficult.

Staff buy-in. Themes of staff "buy-in," motivation, and interdepartmental communication were noted as barriers. Participants expressed concern that not all staff members believed in the benefits of STSC or were motivated to encourage it and that these variations in motivation were a function of "silo-ed" departments lacking clear communication channels.

Sometimes, introduction of a renewed push for STSC may be seen as contradictory to existing structures of care. One example was the possibility that STSC could be viewed as conflicting with or interrupting another goal: Cluster care. Communicating the importance of STSC in light of seemingly conflicting priorities for eligible infants may be difficult with staff members. Communicating changes in standards for quality care was noted as a barrier when working with different teams within the same hospital.

It was also noted that staff motivation was difficult to sustain over time. Lack of manpower was cited as a key determinant of this barrier: Motivation may be challenging to maintain in the face of staff burnout.

"...there does seem to be some drift and maybe a little bit of loss of enthusiasm that we had when we first started out. (Hospital 4 Participant)

"We're still kind of stumbling a little bit because of our lack of manpower to...move forward with a lot of our things. I think the intent and the will is there, just we require more team members." (Hospital 5 Participant)

Creative opportunities to increase motivation among staff were shared. One remedy is the visual presentation of progress:

At the end of each month we update the graph and we print it out and we have it posted outside the NICU door for the parents to be able to see and also in one of our nursing areas. (Hospital 4 Participant)

Moving from simple to more involved opportunities to address staff motivation, one participant shared his hospital's idea for improving camaraderie and shared goals by holding staff meetings, team slogans, and t-shirts to motivate participation. Participants noted the critical role of physician support as well as having multiple leaders at different staff levels. Spreading the leadership responsibility among staff prevents "cutting off the head of the dragon," as one CPQCC member remarked. Engaging multiple sectors of the hospital increases investment from staff as well as preventing regression of goals in the event of staff turnover. After commenting that her large hospital's staff of roughly 300 NICU nurses were not taking the time out of their schedules to encourage STSC, one CPQCC participant noted that "one of our very well respected nursing team leaders is planning to have a little

talk at the beginning of nursing huddles." The request to integrate STSC into a daily routine may make more of an impact coming from an established, respected colleague rather than from "above."

Familial factors

Discussion surrounding familial-level factors as barriers to STSC uncovered complexities seemingly outside the reach of clinician influence. This discussion focused on clinician perceptions of familial barriers, which should be interpreted with caution given that we did not solicit input from family members in our analysis.

Visitation and transportation. The most frequently cited issue was lack of visitation. Visitation issues may be exacerbated when dealing with vulnerable populations, such as low-income families:

We...have the problem of families being from out of town and not coming regularly so we always have a certain percentage of babies who are not [receiving STSC] because their parents just aren't there. (Hospital 2 Participant)

We do have mothers that are incarcerated or hospitalized or don't have transportation since they live so far away and so that's obviously some of the reasons why babies are not held. (Hospital 6 Participant)

Maternal illness may also play a role in the lack of visitation, particularly in the fragile perinatal period directly after birth. In addition to visitation, these families may also face logistical challenges such as parking and food costs, sleeping, and lack of childcare.

Nevertheless, despite the perceptions noted above, familial issues exogenous to the hospital, such as transportation and visitation, are not completely out of the control of clinicians. Several participants noted that there were successful strategies to promote visitation for parents. Working with hospital administration, participants found that providing more flexible parking arrangements or food vouchers for the cafeteria increased visitation. Comfort at the bedside may be an issue as well; one participant noted that after hearing of mothers sleeping in their cars in the parking lot, efforts were made to make the environment more conducive to visitation. Staff can also make an effort to be knowledgeable and informative about local public transportation options, if available.

Parental education and motivation. As much as waning staff motivation was identified as a barrier to STSC, so was declining parental motivation over time, especially if breastfeeding was not pursued. Confronting deep-seated maternal choices is a challenge, according to those participants who spoke on maternal issues. These choices can be a function of prior beliefs about STSC. Initial education on the benefits of STSC may be helpful, but may be more successful with periodic reminders and follow-up.

One representative noted that some cultures, such as mothers of Hispanic or Asian descent, exhibited hesitation at unwrapping their children for fear of their being too cold. Language barriers can also prove difficult:

Speaking with a couple of the nurses, one thing that popped out was that we have a fair number of women who are origi-

nally from Asia, who after the babies are delivered are expected to stay home inside for a month. And so of course this makes it very difficult to provide skin-to-skin care. (Hospital 7 Participant)

I've often found that sometimes the nurses think the mother is understanding everything and when I try and get into some detail with them, she doesn't even understand enough English to really know what I'm talking about. (Hospital 8 Participant)

Increasing maternal motivation for STSC can be difficult in light of cultural traditions. Using the help of nurses, interpreters, or other staff who speak the same language as the mother may increase opportunities for STSC.

Maternal motivation may be increased through discussion with physicians. Although neonatal care benefits from a multidisciplinary team approach, physicians may have a certain authoritative status in the eyes of parents:

Our docs are...involved daily in the discussions with the parents, particularly encouraging them to...provide skin-to-skin care. (Hospital 2 Participant)

And what we found that worked best for her was just to have a face-to-face conversation with the attending about that particular issue. I mean, a lactation consultant had worked with her, a social worker had worked with her, the nurses had, and nothing really got through until the attending really made a strong case...for the mother to have more of a presence on the unit. (Hospital 6 Participant)

When familial discomfort or insecurity is an issue, the use of mirrors or photos to help the mother see the infant in the skin-to-skin position can be helpful in overcoming maternal reticence. Many participants also suggested increasing paternal opportunity for skin-to-skin; although it was noted that this was a second-best option, it could be a viable one when maternal presence is impeded by cultural barriers or maternal illness.

Discussion

We used a qualitative approach to unravel the complexities of factors that influence STSC in the NICU. Our goal was to look beyond identified risk factors for lack of STSC and to better understand the mechanisms behind these factors. The perspectives of CPQCC/Breastmilk Nutrition Quality Improvement Collaborative participants revealed several key barriers to increasing STSC for premature infants. Challenges to implementation included a lack of clear definitions of clinical stability and unclear eligibility criteria. Institutional factors of documentation, staff education, and motivation as well as familial factors such as visitation and culture were persistent themes. Our findings may benefit NICUs that seek to increase STSC in their patient population.

One of the most prevalent topics in the data was the definition of clinical stability. Indeed, in a national survey, only 40% of NICUs had formal guidelines for STSC.¹² Surveys of NICU nurses and managers have also identified physiologic stability or patient safety as a key factor in the decision to implement STSC, as well as the use of more intensive therapies such as vasopressors and high frequency ventilation.^{8,13,14} Similarly, in our study there was variability in threshold eligibility based on stability, with

some NICUs deeming any infant on a ventilator as unstable, whereas some NICUs did not even consider ventilator status in the definition of instability, even allowing infants on high-frequency ventilation to receive STSC. Our purpose was not to determine the best definition of stability. However, our findings do suggest that in order to optimize the number of infants who receive STSC, policies determining STSC eligibility may be beneficial. Each NICU should determine what is considered a reasonable policy in the context of their patient population and institutional resources. It is likely that not all NICUs would have the same eligibility guidelines; comfort level with different clinical conditions may vary. Therefore, it is important for the staff at an individual NICU to come to their own consensus, as adopting guidelines or policies based on others' experience may not be well accepted. To aid in the development of guidelines, future clinical research should focus on the risk and benefits of STSC in the context of specific clinical conditions.

Previous studies have also suggested that education of both NICU staff and parents in the technique of STSC, as well as the on medical benefit of STSC, could help to overcome barriers in its implementation.^{8,13,14} In a similar vein, we found that lack of staff and maternal education and motivation was often mentioned as a barrier to STSC. We also found that efficient and relevant documentation plays an important role in reducing the time burden on nurses and allows for the tracking of patients who may not be receiving STSC.

Many NICUs now use standardized admission order sheets that incorporate guidelines such as sepsis screening. A similar approach of infants "opting in" for STSC, with exclusions for instability, may increase participation. It is important to note, however, that these recommendations are not evidence-based and may not be appropriate for all NICUs.

Encouraging parents to provide STSC can be difficult for multiple reasons.¹⁵ For optimal education of mothers on the value of STSC, NICUs that have culturally diverse patients may benefit from seeking out staff with similar cultural and language backgrounds to address concerns about STSC. Facilitating visits through transportation resources and providing an environment conducive for parents may also help to increase the uptake of STSC.

Because the group discussions in our data involved only clinicians, the familial-level factors were relatively less discussed. We do not mean to imply that they are less important, but rather that clinicians may see these barriers as outside of their control. However, respondents observed that these factors are often *not* completely isolated from the clinician's influence and that creative solutions could result in gains to STSC utilization. A focus group of NICU parents would likely uncover that familial factors, including parental perception of clinician and institutional factors, are powerful drivers in determining the likelihood of STSC uptake; future research should combine clinician and familial opinions to investigate the issue.

Conclusions

Our research expands the dialogue on STSC by investigating the factors behind the successful application of and

barriers to implementation of this practice in the NICU. Although the medical evidence supporting the benefits of STSC is important, so is qualitative evidence highlighting the institutional and familial issues that pose barriers to STSC. Our research highlights the significance of consistent, well-communicated guidelines for STSC at the institutional level, as well as an infrastructure that supports staff and families in providing STSC. In whatever way the mechanisms of STSC promote infant health, it is imperative that every institution provide an equal opportunity for mothers and their babies to engage in this worthwhile medical treatment.

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Disclosure Statement

No competing financial interests exist.

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