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Gravens By Design: Selected Abstracts from the 38th Annual Gravens Conference on the Environment of Care for High-Risk Infants and Their Families

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Gravens 2025-1

Abstract Title: Development of a Belgian perinatal palliative care intervention: Supporting infants with severe perinatal diagnoses, their families and healthcare providers

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Problem Statement: The overall objective of the project was to develop and pilot test a Perinatal Palliative Care program within the standard perinatal healthcare setting, in order to provide the best possible care for fetuses and neonates with a life-limiting diagnosis, their families, and involved healthcare providers. In this phase, we wish to present the development process and the resulting holistic perinatal palliative care program.

Abstract:

Background: Perinatal palliative care (PPC) addresses the much-needed support for fetuses and infants at the end of life, as well as for their families, and for the healthcare providers. Studies evaluating the best model of care in this setting are lacking. No current Belgian PPC program exists despite a clear need. The target group of this project are parents who receive a life-limiting diagnosis for their child, where the child is expected to die (or be stillborn) during the perinatal period (i.e. from 22 weeks gestation until 28 days after birth), and their healthcare providers.

Methods: During the development phase we followed the extended MRC framework made by Bleijenberg. 1. Existing international evidence regarding perinatal palliative care programs was gathered by means of an integrative review. 2. Furthermore, to inform the program's conceptualization, identifying gaps in current care provision, we performed face-to-face semi-structured interviews with 22 healthcare providers and 18 bereaved parents from 6 different hospitals. Interviews were performed between May 2021 and February 2022 with healthcare providers with experience in end-of-life care in the perinatal period, and bereaved parents who experienced perinatal loss. Drawing from these insights, key program topics for our intended perinatal palliative care intervention were identified by the researchers. After this first phase, a prototype of the perinatal palliative care intervention was drafted. Afterwards, we used a participatory approach to develop a model of our perinatal palliative care intervention. The prototype of the perinatal palliative care intervention was tailored and amended during joint workshops including bereaved parents and healthcare professionals from the same hospital within one workshop, so that they were able to narrate on the policy and care provision of that particular hospital. For each participating hospital (n=3), we conducted two workshops, consisting of a total of 15 healthcare providers and 1 bereaved parent, and 13 healthcare providers and 3 bereaved parents respectively. Workshops took place between March 2023 and May 2023.

Results: We developed a perinatal palliative care approach that fits into standard perinatal care, based on five main intervention components: 1) families receive care from a newly assembled and fixed perinatal palliative care team. The core team will consist of members of the prenatal diagnostics, maternity and delivery ward, as well as members from the neonatal team, and will include both on the people responsible for the medical care of infant and family, and the people focusing on psychosocial support. Team members will hereby become familiar with working together, can be trained and build experience as a team. The perinatal palliative care team will function as a consulting team that can be deployed when needed. A case manager role will be assigned, so that every family will have a personal contact for follow-up or questions. 2) the care team received an extensive perinatal palliative care training. All members of the perinatal palliative care team will receive a two-day training module on perinatal palliative care aspects. 3) the care team follows a new stepwise perinatal palliative care approach including: 3a) A care approach: including clear inclusion criteria for the start-up of perinatal palliative care, a detailed step-by-step plan of how perinatal palliative care should be offered to families, a clear task description for involved care providers, checklists for certain stages in the perinatal palliative care trajectory, and a way to phase out perinatal palliative care when the prognosis of the

child becomes more optimistic. 3b) Centralization of information, guidelines and tools: making information on perinatal palliative care easily accessible for care providers, including information such as templates for advance care planning conversations, guidelines for the dosage of medication in palliative care settings, checklists for bereavement, religion specific information on perinatal palliative care, available community resources such as non-profit organizations and peer support groups, etc. 3c) A way to share case-specific information: we will organize a way for all care providers included in the care for a specific family to share relevant case-specific information, so that everyone is up-to-date before seeing or caring for the family. 4) systematic psychological support is offered to not only bereaved parents but also involved healthcare providers. 5) systematic debriefings are organized for the team after perinatal loss.

Discussion: During this presentation, we will attempt to describe the underlying working theory and processes of the perinatal palliative care intervention, including envisioned outcomes; as well as all prototype information. One of the main strengths of our perinatal palliative care approach is being able to offer a formalized and standardized pathway of increased support for all severe perinatal diagnoses, independent of the moment of diagnosis (prenatal or neonatal) or (end-of-life) care choices made by parents and healthcare providers.

Table 1. Baseline Parental Characteristics

		Control (n=11)	Intervention (n=14)
Gender	Male	1	3
	Female	10	11
Families with both partners participating		1	3
Age	< 20	0	0
	20-24	2	0
	25-29	1	2
	30-34	5	6
	35-39	2	5
	40-44	1	1
	>45	0	0
Race	White	10	8
	Hispanic or Latino or Spanish Origin of any race	0	2
	American Indian or Alaskan Native	0	0
	Asian	0	2
	Native Hawaiian or Other Pacific Islander	0	0
	Black or African American	1	2
	Two or more races	0	0
Employment	Full-time	5	8
	Part-time	1	0
	Homemaker	1	3
	Student	1	0
	Unemployed	3	3
Education	Did not complete high school	0	0
	Completed high school/GED	3	3
	Completed some college (1-3 years)	4	3
	Completed 4 years of college	2	3
	Completed graduate school	2	5
Marital Status	Married	7	11
	Cohabitating but not married	1	2
	Single	3	1
Other children at home	No	3	9
	Yes	8	5
Distance from home to hospital (drive time)	< 30 minutes	4	8
	30 minutes to 1 hour	3	4
	1 to 2 hours	3	2
	2 to 4 hours	1	0
	> 4 hours	0	0
Feeding plan when discharged (asked at time of admission)	Exclusively mom's own milk (breastfeeding or EBM +/- fortification)	6	9
	Breastfeeding or EBM with formula supplementation	4	3
	Formula only	1	2

Table 2. Baseline Infant Characteristics

		Control (n=17)	Intervention (n=15)
Gender	Male	7	10
	Female	10	5
Gestational Age at Birth (Weeks) [Mean ± SD]		31.4 ± 1.7	32.0 ± 1.5
Birthweight (g) [Mean ± SD]		1627 ± 499	1739 ± 342
Sets of Multiples	Twins	2	3
	Triplets	1	0
	Quadruplets	1	0

Table 3: PSS:NICU score on admission, at discharge, and difference from admission to discharge.

Domain	Intervention or Control	Admission		Discharge		Δ	
		Mean ± SD	P-value	Mean ± SD	P-value	Mean ± SD	P-value
Sights and Sounds	I	10 ± 4	0.42	10 ± 3	0.46	-1 ± 3	0.16
	C	9 ± 5		12 ± 5		-4 ± 5	
Infant Appearance	I	31 ± 13	0.51	29 ± 16	0.91	-3 ± 13	0.79
	C	35 ± 16		30 ± 19		-1 ± 12	
Parental Role Alteration	I	23 ± 9	0.10	22 ± 8	0.49	-1 ± 5	0.12
	C	29 ± 6		25 ± 9		3 ± 6	
Total	I	64 ± 20	0.36	61 ± 23	0.68	-5 ± 16	0.71
	C	72 ± 21		67 ± 30		-2 ± 17	

Table 4: PREEMI score at discharge.

Domain	Intervention or Control	Mean ± SD	P-value
Self-Efficacy	I	111 ± 6	0.62
	C	110 ± 7	
Social Support	I	52 ± 4	0.19
	C	47 ± 12	
Outcome Expectations and Intent	I	82 ± 6	0.53
	C	84 ± 5	
Perception of Risk	I	31 ± 6	0.15
	C	33 ± 2	
Total	I	276 ± 15	0.76
	C	274 ± 16	

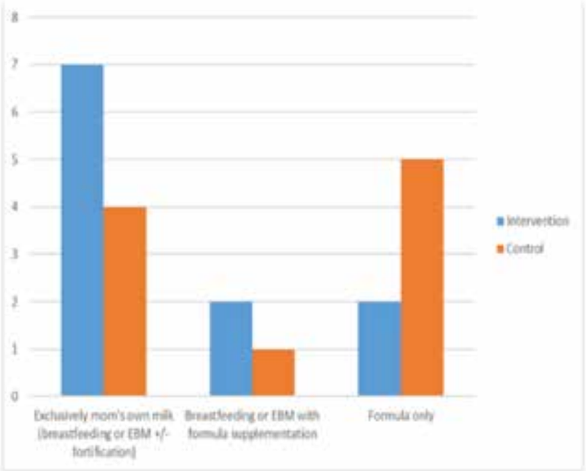

Figure 2. Feeding plans at discharge.

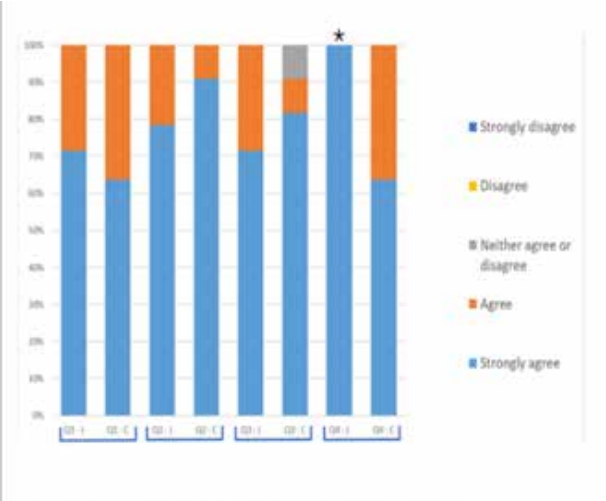

Figure 1. Satisfaction questions for the journal (J) and control (C) group respectively.
Question 1: I am satisfied with the general NICU experience
Question 2: I am satisfied with the medical care my child received
Question 3: I am satisfied with my interactions with the medical staff (providers, nurses, therapists, etc...)
Question 4: I feel comfortable taking my child home

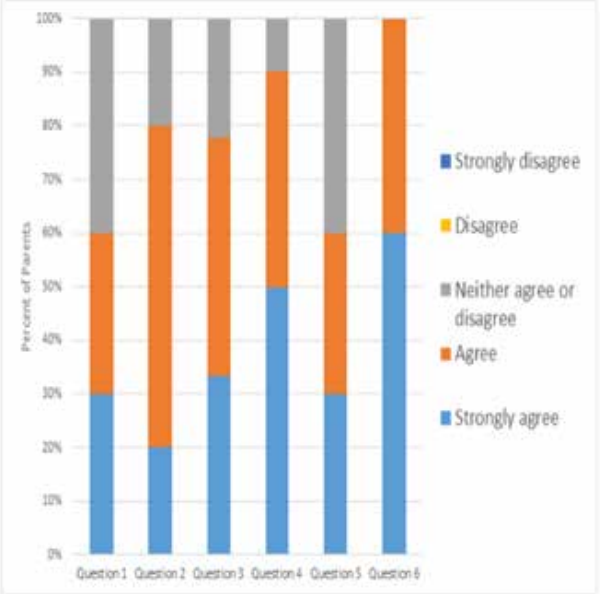

Figure 3. Intervention group only responses regarding journal use.
Q1: Using the journal enhanced your understanding of your child's medical condition.
Q2: Using the journal has enhanced your communication with medical providers, nurses, and other staff.
Q3: Using the journal has promoted participation in your child's care and other bonding activities.
Q4: Using the journal has helped me process through the difficult emotions of having a baby in the NICU.
Q5: Using the journal has enhanced my relationship with my child
Q6: I would recommend for any parent with a child in the NICU to use this journal

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Learner Objectives:

1. To learn which hiatuses families and healthcare providers currently experience regarding perinatal end-of-life care.
2. To identify how existing international PPC models would cope with these hiatuses.
3. To discuss in detail how we developed a PPC model for the Belgian healthcare context, and which care components will be explicitly added, changed and evaluated compared to regular care provision.

Gravens 2025-2

Abstract Title: Empowering Parents: Using Targeted Journals to Improve Parental Stress and Engagement

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Problem Statement:

Hypothesis: NICU parents who are provided with a journal specifically designed to reduce stress and promote engagement will exhibit improved stress levels and higher engagement scores at the time of discharge.

Scientific Question: Our group investigated whether a targeted journal intervention could improve parental mental health and parent-infant engagement. This is significant because the parent-infant relationship can have a profound impact on long-term outcomes for both the infant and the family.

Abstract:

Methods: This was a prospective randomized controlled pilot study conducted at an academic hospital with approximately 800 to 900 NICU admissions annually. A journal was created based on the literature review outlined in the introduction, encompassing three primary domains: processing, prioritizing, and prompting. Following randomization, the journals were distributed to parents in the intervention group. Infants admitted to the University of Florida Shands Children's Hospital NICU were screened for inclusion based on the criteria of being between 28 weeks and 0 days to 33 weeks and 6 days gestational age, with English-speaking parents. Exclusion criteria included transfers to the UF NICU after 1 week of life and NICU stays shorter than 14 days. Both the infant and either one or both parents were included as study participants. Parents that agreed to participate and consented were randomized into the intervention group or standard of care group using a built-in randomizer through the REDCap database. Following informed consent and randomization, participants filled out the initial REDCap survey electronically and were assigned a unique record number to facilitate longitudinal tracking of their responses. The study utilized two validated instruments: the PSS:NICU and the PREEMI to assess parental stress and parental engagement respectively. A REDCap database was developed and on admission we obtained: baseline demographics, preferred parental feeding plan, and baseline parental stress score using the PSS:NICU. At discharge we collected: parental engagement score (PREEMI), parental stress scores (PSS:NICU), visitation

frequency and duration, feeding plan, satisfaction questionnaire, and journaling experience questionnaire. Primary outcomes include parental engagement (PREEMI score) and parental stress (PSS:NICU score). Secondary outcomes will include length of stay, breastfeeding/breastmilk use, parent satisfaction, skin-to-skin frequency, visitation frequency, visitation duration, and journal use. The outcomes were analyzed using Wilcoxon's rank sum test, Pearson's chi-square tests, and Fisher's exact tests as appropriate. Generalized linear mixed effect models will be used to assess the changes in primary outcomes while adjusting for potential confounders.

Results: We enrolled 21 family units (25 individuals) with 11 family units (14 individuals) randomized to the journal group and 10 family units (11 individuals) to the control group (Tables 1 & 2). There was no difference in the primary outcomes (PREEMI and PSS: NICU scores; Tables 3 & 4). There was a trend toward increase in visitation frequency (median 7.0 d per wk journal [IQR 6.2-7.0] vs. 6.0 d per wk control [4.5-7.0]; p = 0.11) and decreased infant length of stay in the journal group (median 25 d [IQR 24-38] journal vs. 55 d [IQR 36-67] control; p = 0.01). There was an increase in parental comfort taking their child home in the journal group (Fig. 1 [Q4]; p = 0.03) and trend toward increased breastmilk usage at discharge (Fig. 2; p = 0.15). Most parents in the journal group stated the journal enhanced their NICU stay and all recommended that any parent with a child in the NICU should use the journal (Fig. 3).

Conclusions: This is the first study that we are aware of to assess the impact of using a journal with prompts designed to mitigate stress and promote engagement. Limitations include a high loss-to-follow up rate, inability to blind investigators, and small sample size. As a pilot study, this study was not powered adequately to establish statistically significant differences in the primary outcome, the intervention was well-received and demonstrated feasibility for a future larger-scale study. Moreover, the intervention was found to enhance multiple dimensions of parental engagement as defined by Samra et al. (Fig. 3). These improvements may still have contributed to increased engagement that was not adequately captured by the primary outcome due to the inherent limitations of survey-based assessments.

Impact: This specific journal may offer a low-cost intervention to improve parental stress and engagement, potentially leading to significant improvements in neonatal and family-centered outcomes.

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2. *Samra HA, McGrath JM, Fischer S, Schumacher B, Dutcher J, Hansen J. The NICU Parent Risk Evaluation and Engagement Model and Instrument (PREEMI) for neonates in intensive care units. J Obstet Gynecol Neonatal Nurs. 2015;44(1):114-126. doi:10.1111/1552-6909.12535*
3. *Miles MS, Funk SG, Carlson J. Parental Stressor Scale: neonatal intensive care unit. Nurs Res. 1993;42(3):148-152.*

Learner Objectives:

1. Review the various domains of parental engagement and significant family stressors experienced during a NICU stay, and explore how the journal intervention addressed these challenges.

2. Analyze the study design and results of this pilot randomized controlled trial (RCT).

3. Discuss the broader implications of the study findings and consider potential future directions for research and practice.

Gravens 2025-3

Abstract Title: Case managers at the NICU: Family Integrated Care, follow Up for mother and child

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Problem Statement: Parents with a (threatened) premature birth (specifically below 32 weeks gestational age) end up on a roller-coaster and are confronted with many disciplines. It is important that all these disciplines work together in the right way to generate better care and continuity, so that the (future) parents can be parents as much as possible. Based on the desire to streamline this care, the care providers involved at Maastricht UMC+ MosaKids children's hospital have developed the preterm birth care path within the Family Integrated Care. We also developed a follow up for mothers. At the age of 6 months post term of the child will start with the NICU follow-up program and the mother will start her own follow-up program. She has an appointment with a gynecologist. Mother and Child have combined appointments at the outpatient clinic.

Abstract:

1. What methods did you use to solve or research the problem? In the first phase of the development of the care path, we looked for points for improvement or bottlenecks by means of a strengths-weaknesses analysis. We considered the current and the desired situation. A patient journey, an employee journey and a stakeholder analysis were performed.Based on the results of this, the implementation of a new function named 'case manager' was made possible.
2. Materials used N/A
3. How did you collect your data?To collect data for the patient journey interviews were conducted with parents of children admitted to NICU from 2020 until now. In the employee journey all steps of the care path were discussed. A large poster with post-it was used, nurses and doctors from delivery room as well as NICU, were invited to share their 'tips and tops' on every step of the care path. About 90 nurses and 20 doctors participated in the employee journey. Stakeholder analysis was performed under a selected group of different specialties such as 4 gynecologists and 4 neonatologists form other hospitals with whom we collaborate and also 6 midwifes who have their practice in the region of the hospital. Social workers, psychologists and physical therapists from our hospital. This brings the whole number to 22 stakeholders who completed the questionnaire sent by email.
4. (Sample size N/A)
5. Data obtained was qualitative, collected by questionnaires and interviews.
6. What were the main outcome measurements? - Quality of care improvement- Patient satisfaction- Reduction of workload for nurses, doctors and paramedic team.

Impact and results:

1. UMC+ MosaKids children's hospital is the first hospital in the Netherlands where case management is integrated in the Family Integrated care for preterm infants, the mother follow-up is the first outpatient clinic in the region combined with the child's follow-up at 6 months. Initially started as a pilot and has become a permanent part of perinatal care at Maastricht UMC+ MosaKids children's hospital since 2022. Surveys show that both patients and staff are positive about the added value of case managers in this specific care, and the mother's follow-up is seen as a great added value. We have the ambition to evaluate this in the future by means of qualitative scientific research. One of the major bottlenecks for patients was the communication and timing of transfer to other hospitals. We incorporated (online) meetings between doctors, nurses and parents to improve this.
2. No evidence-based results available at this time, only best practice. We intend to make the preterm birth care path evidence based through qualitative scientific research.

Conclusions:

Through the use of case managers in the preterm birth care path, continuity is guaranteed, from the moment of admission of a mother with a threatened preterm birth, during the admission to the NICU and the follow-up process until the child is 8 years old at the outpatient clinic. And with the mother follow up, mothers are more satisfied, because they have been able to ask all questions about the premature birth and they view a possible next pregnancy positively, possibly with the right guidance at the time.

Barriers to implementation and how they have been overcome: During the pilot we had to convince the Board of Directors that this care path with two case managers was necessary to provide good care for this vulnerable group of patients. To demonstrate the value of the case managers, questionnaires were created for parents, nurses and doctors. The result was presented to the Board of Directors after which the pilot of two case managers was converted into a permanent position in the care path. We had to convince colleagues in the two departments of the added value of case managers. Nurses preferred a nurse colleague instead of two case managers but it turns out that the case managers ensured that the workload was lower for nurses and doctors. We also had to convince the Board of Directors off the mother follow-up. Because this entails additional costs for the mother. This does not fall under prenatal care but must be paid for by themselves, and additional time, space and a gynecologist had to be scheduled.

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Learner Objectives:

- Better communication and cooperation within the care path improves care for preterm infants and their parents
- The case manager is the key figure within the care path; making a bridge between patients and care providers
- Mothers can ask all questions related to their premature birth and a possible new pregnancy. In addition, an internal inspection can take place if desired

Gravens 2025-4

Abstract Title: Using Transcutaneous Bilirubinometry to Reduce Iatrogenic Blood Loss in the NICU

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Problem Statement: The purpose of this quality improvement project is to reduce iatrogenic blood loss among premature infants 30-34 weeks' gestation in the NICU by using transcutaneous bilirubinometry to monitor hyperbilirubinemia.

Abstract:

Introduction: Premature infants are at higher risk of anemia compared to full term infants due to more frequent blood sampling, shorter life span of their red blood cells, and lower iron stores. Mitigating iatrogenic blood loss while still providing adequate monitoring of laboratory values should be a top priority in this population. Bilirubin is the only value that can be approximated non-invasively, but it was previously thought that it could only be measured transcutaneously on infants 35 weeks' gestation and older. However, recent research endorses the use of transcutaneous bilirubinometry in the premature population, even if there is a history of phototherapy, as long as safeguards are in place. Data collected during project development revealed that over a three-month period, infants 30-34 weeks' gestation lost an average of 6.8 milliliters of blood secondary to total serum bilirubin (TSB) levels. Prior to implementation, less than 20 percent of the bilirubin measurements that were done in infants 30-34 weeks' gestation were transcutaneous (TcB), and no TcBs were done on infants who had been exposed to phototherapy.

Purpose: The purpose of this ongoing quality improvement project is to reduce iatrogenic blood loss among premature infants 30-34 weeks' gestation in the NICU by using transcutaneous bilirubinometry to monitor hyperbilirubinemia.Methods: For this 15-week quality improvement project, an evidence-based transcutaneous bilirubin monitoring guideline was created and implemented in a suburban level III NICU. The guideline is a clinical pathway that assists the ordering provider in entering the appropriate standing TcB order during admission of an eligible infant. To be eligible, an infant must be born between 30 and 34 weeks of gestation and must have a negative direct antigen test (DAT). Infants with an ABO incompatibility were included if they were DAT negative, and per the guideline would have TcB measured every 12 hours instead of every 24 hours. All results automatically plot on the bilirubin nomogram that is already integrated within Epic and corresponds with the infant's gestational age. The guideline specifies that a TSB is indicated if the TcB is within 3 mg/dL of the light level or if it is greater than 15 mg/dL. If an infant requires phototherapy, TcB levels are temporarily suspended until phototherapy has been discontinued for at least 24 hours. At that time, TcB monitoring could be resumed on unexposed skin, such as the buttocks. A chart audit tool was created within REDCap, a HIPAA-compliant web application that securely stores confidential patient data and is accessible by virtual private network. Data is collected by the project lead each week via chart review for a total of 14 weeks from September 1st through December 7th. The data being collected is quantitative and will be analyzed within REDCap and Excel.

Preliminary Results: Since guideline implementation, data collected to date shows that the average blood loss per patient secondary to serum bilirubin levels has decreased from 6.8 milliliters (n=12) to 1.1 milliliters (n=4). Active orders have been compliant with the guideline 90 percent of the time. At this time, 19 bilirubin measurements have been done, 53 percent of which were transcutaneous.

Preliminary Conclusions: The preliminary data from this quality improvement project is very promising for mitigating iatrogenic blood loss in this population. Blood loss secondary to TSB levels is down 84 percent from pre-implementation data, while provider compliance with the guideline is currently 90 percent. These percentages are expected to vary throughout the project as more patients are admitted and different providers are on service, but it is strong evidence for the efficacy of guideline implementation. There was some initial pushback on lowering the gestational age limit of the transcutaneous bilimeter, but because the unit and its staff value evidence-based practice, discussion and presentation of current evidence helped facilitate buy-in.

Implications for Practice: Transcutaneous bilirubin monitoring is significantly cheaper, safe, and supports patient-centered care by decreasing painful heel sticks. Though the project unit does not historically administer many blood transfusions, any decrease in blood loss decreases the workload of these premature infants. Creating and implementing a quality improvement initiative highlights the importance of a thorough evaluation and understanding of the implementation environment to ensure success of the initiative. The skills developed during the project will help inform future involvement in quality improvement efforts as a neonatal nurse practitioner.

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Learner Objectives:

1. Why are premature infants more prone to anemia?
2. List 3 benefits of implementing TcB monitoring in premature infants.

Gravens 2025-5

Abstract Title: Hospitable NICUs - Promoting healing and flourishing for infants, families, and staff through hospitable welcome and care

Authors: Beth Gould Nolson, Doctor of Practical Theology, RN, IBCLC1; Luisa King, RN, IBCLC1

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Problem Statement:

1. While NICU design has contributed to improved infant outcomes and parent experiences, less attention has been given to the healing potential of welcoming and safe relational space within the NICU.
2. How does the ancient practice of hospitality provide a lens through which to assess physical and relational spaces in the NICU, and inform the creation of a safe, therapeutic space for infants, families, and staff?

Abstract:

Background/Purpose: Research supports that an optimal physical environment promotes neuroprotection and improved neurodevelopmental outcomes for NICU infants. While much focus has been on designing the physical space of NICUs, less attention has been given to creating a welcoming environment that fosters healing through safe relational spaces. Hospitality has long been regarded as a virtue and a moral duty. Historically, hospitality involved welcoming strangers into a private home, providing them with physical, emotional, and sometimes spiritual care. The concept of hospitality is equally relevant in healthcare, as the first hospitals emerged out of private, home-based care of the sick. Viewing NICU care through the lens of hospitality, healthcare providers act as both hosts and guests. As hosts, they welcome and care for patients and families, but as guests, they are invited into the personal world of the patient and family. Hospitality also extends to healthcare providers interacting with one another as both hosts and guests, creating safe spaces for collaboration and mutual growth. In a hospitable NICU, both physical and relational spaces are intentionally designed to promote safety and healing not only for infants and their families but also staff members. A hospitable NICU integrates physical design and relational care to create a space where infants, families, and staff can thrive. While the primary goal of hospitable care is directed toward infants and their families, creating a hospitable environment for staff can also improve team collaboration, morale, and retention.

Problem Statement: NICU design has improved significantly over the past two decades, yet a focus on the physical space alone is insufficient to meet the needs of infants or their families.

Hospitable NICUs provide holistic care that addresses physical, emotional, and spiritual needs while fostering a high-functioning healthcare team. This approach aligns with trauma-informed care principles, which emphasize the need for healing environments that encompass both physical and relational spaces. However, creating such a hospitable environment in the NICU is challenging. Limited physical space can negatively impact a family's sense of privacy and relaxation, making it difficult for them to feel at home or participate in the care of their infant. The sensory environment may be noxious for the infant, and high acuity levels, heavy workloads, and strained team dynamics can hinder the creation of safe relational spaces for both families and staff. To address these challenges, four key questions arise: How do parents and staff experience welcome (or unwelcome) in both the physical and relational spaces of the NICU? How can hospitality provide insights that guide staff in forming welcoming, safe spaces for infants and families? How does a hospitable environment reduce stress and promote healing for families in the NICU? How does hospitality inform the creation of safe relational spaces for staff, contributing to high-functioning healthcare teams?

Methodology: This ongoing Quality Improvement (QI) project seeks to understand how both parents and staff experience the NICU environment and identify areas that need improvement to create a more hospitable space. The first phase of the project involved collecting surveys from parents and staff regarding their perceptions of the physical and relational environment within the NICU. These surveys were analyzed for recurring themes, which were then used to develop action steps aimed at improving the sense of welcome and care for families. Future phases will focus on staff experience. Surveys will explore how staff perceive relational safety within team meetings, collaboration, and other interactions. The goal is to understand how hospitable or inhospitable environments impact staff morale, mental health, and their ability to provide care. Action steps will be taken to promote a more hospitable work environment for the healthcare team.

Results: The initial survey revealed two key themes: physical and relational space. While parents highlighted the importance of a private, clean environment that allows for kangaroo care and parent-infant interaction; a higher emphasis was placed on the critical role of safe relational space. Parents identify staff warmth, compassion, communication, and involvement in decision-making as crucial to feeling safe and welcomed. In contrast, staff responses focused more on the physical space, citing heavy workloads and high acuity as barriers to creating meaningful relational connections with both families and colleagues.

Implications for Family Support: Hospitable NICU environments hold promise for improving family experiences and outcomes. A nurturing physical and relational environment promotes a sense of safety, reduces stress, and enhances parental caregiving. Such environments are conducive to healing for both infants and their families. Additionally, healthcare teams that operate in a hospitable environment are better equipped to provide compassionate, holistic care. When the NICU is both physically and relationally welcoming, it enhances the mental health of parents, infants, and staff.

Proposed Workshop Format: This workshop will engage participants through both teaching and interaction. It will begin with a brief didactic session to introduce key concepts of hospitality and how they create safe and healing spaces in the NICU. Following this, participants will engage in self-reflection and collaborative learning. Self-reflection stations will encourage attendees to consider the hospitable practices within their own NICUs and their personal roles in fostering such environments. In group discussions and brainstorming sessions, participants will explore strategies for implementing hospitable care practices in their NICUs. The workshop will conclude with actionable steps for creating more hospitable environments, allowing participants to leave with a clear process for implementation within their own settings.

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Learner Objectives:

Objective #1: Identify the unique features of hospitality which contribute to a healing environment for infants, families, and staff within the NICU.

Objective #2: Assess the ways in which your NICU is hospitable, and identify areas in which your NICU could become more hospitable.

Objective #3: Apply features of hospitable environments by exploring strategies that could be implemented within your NICU.

Gravens 2025-6

Abstract Title: H-HOPE (Hospital to Home: Optimizing the Preterm Infant Environment): Infant, Parent, and Parent-Infant Interaction Outcomes

Authors: Karen Gralton, PhD, RN1, Kathleen Norr, PhD1, Debra Brandon, PhD, RN, FAAN2, Karen Kavanaugh, PhD, RN, FAAN1, Marin Schmitt, PhD1, Rosemary White-Traut, PhD, RN, FAAN1

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Problem Statement: Premature infants have subtle behavioral cues that are challenging for parents to read, interpret, and respond to their infant's behaviors. H-HOPE is a developmental program for fragile infants and their parents with a behavioral focus supporting parents to understand their infant's subtle behaviors and engage with them.

Abstract:

The purpose of the H-HOPE (Hospital to Home: Optimizing the Preterm Infant's Environment) program is to provide optimal developmental support to stable preterm infants and their parents. H-HOPE is an evidence-based standardized program with a behavioral focus that is based on supporting the development of infant sensory systems, infant behavior, growth, and parent engagement. It is offered while the infant is hospitalized and during the transition to home. H-HOPE is an integrated intervention that includes Massage+ (auditory, tactile, visual, and vestibular stimuli) twice daily and four parent teaching sessions by a nurse. The parent-focused component, Parents+, uses a participatory guidance approach to teach parents preterm infant behaviors, and cues while providing Massage+, the infant-focused component. Over the last 40 years, our team has conducted several randomized controlled trials (HD098095, NR232801, NR009418, HD050738)

to document infant, parent, and parent-infant interaction following H-HOPE. In each of the studies, infants meeting eligibility criteria (29-35 weeks gestational age and clinically stable) were randomly assigned to the attention control or intervention groups. Both quantitative and qualitative data were obtained. Data were collected from the infant's medical record, parent questionnaires, and parent interviews. Data represents a compilation of previous and current research. Outcomes measured from 400 parent-infant dyads included: infant behavioral state, the frequency of orally directed behavior prior to feeding, growth, sucking metrics, parent-infant interaction (via the Dyadic Mutuality Code and the Nursing Child Assessment Feeding Scale), length of hospital stay, cost of initial hospitalization and number of illness visits after hospital discharge. In some of the studies, parents were interviewed to document their experience of providing Massage+ to their infants. Quantitatively, infant risk factors were used to determine equivalency between the two groups prior to entry and as time constant covariates in the final analyses. Hypotheses concerning outcomes at one time point were tested using two-level Hierarchical Linear Modeling (HLM) analyses clustered within clinical sites. Hypothesized outcomes such as infant cognitive, language, and motor development apply to only one time point, while others such as infant health care utilization and health care costs were cumulative summary measures from birth through 6-weeks CA and were treated as one-time events. Other outcomes were measured repeatedly: parent-infant interaction, and infant motor development were measured twice, and infant outcomes from birth to hospital discharge were measured weekly during hospitalization. Here the hypothesized effect was that the initial level and/or the improvement in the outcome over time rises faster in H-HOPE than in the Control Group. These hypotheses were tested using HLM software in three-level, mixed-effect models, with time nested within individual parent-infant pairs, clustered within clinical sites. Results of several randomized controlled trials show that infants respond with significantly improved behavioral organization. This included an increased frequency of alert states ($p < .01$) and an increased frequency of orally directed behaviors prior to feeding ($p < .05$, and over days of intervention ($p < .01$)). Oral feeding efficiency improved over the first three oral feedings ($p < .001$). Additionally, a quadratic trend was observed for number of sucks, sucks per burst, and the sucking maturity index with the intervention group increasing significantly faster by day 7 of intervention (model estimates for group × day: $\beta = 13.69$, $p < .01$; $\beta = 1.16$, $p < .01$; and $\beta = 0.12$, $p < .05$, respectively). Sucking pressure increased linearly over time, with significant between-group differences at day 14 of intervention ($\beta = 45.66$, $p < .01$). Infant growth (weight ($p = .04$) and length ($p = .015$) improved over the course of hospitalization. Shorter length of hospital stay was identified for the intervention group when compared to the control group ($p < .05$). Cost of initial hospitalization was lower for H-HOPE group infants (mean H-HOPE charges were $10,185 lower than controls ($p = 0.012$). Propensity score matching showed the largest savings of $14,656 ($p = 0.003$) for H-HOPE infants, and quantile regression showed a savings of $13,222 at the 75th percentile ($p = 0.015$) for H-HOPE infants). Mother-infant interaction improved (Dyadic Mutuality Code, H-HOPE dyads had 2.37 times (95% CI: 0.97-5.80) higher odds of high versus low responsivity compared to control dyads; Nursing Child Assessment Feeding Scale ($p < .05$)). There were reduced visits for illness at 6-weeks corrected age following hospital discharge. H-HOPE infants were half as likely to have acute care episodes as control infants (odds ratio [OR] ¼ 0.46, 95% confidence interval [CI] [0.22, 0.95]). While this intervention has a positive impact on infant behavior, growth, development, health and parent-infant interaction, it also positively influences parents and the parent-infant relationship. Our team is currently funded by the National Institutes of Health to implement H-HOPE in 6 NICUs. Parent responses via interviews have been very positive. Parents consistently stated the bond that they experienced with their infant improved as a benefit of H-HOPE. Parents also reported increased confidence in handling their baby and H-HOPE helped them better understand their infant's cues. Barriers to implementation included challenges for parents to visit more frequently in the NICU, and for nurses to incorporate the H-HOPE intervention into their workflow. Parents identified nurse support and having additional interactions with the nurses as facilitators. Nurses and therapists are key to the successful implementation of the H-HOPE intervention, providing parents with the opportunity to develop confidence in caring for their infant. Engaging with parents as they learn about their preterm infant's behaviors and how they can read, interpret, and respond to their infant's behavioral cues promotes infant growth and development and improves parent-infant interaction.

Learner Objectives:

1. Participants will describe the two components of H-HOPE, Massage+ and Parents+.
2. Participants will cite the results from the H-HOPErandomized controlled trial and implementation research.
3. Participants will identify the impact of H-HOPE for infants, parents, and the parent-infant relationship.

Gravens 2025-7

Abstract Title: Start the Clock: Reducing First-Dose Antibiotic Administration Times in the NICU

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Problem Statement: This Quality Improvement project focuses on reducing the first-dose antibiotic administration times in a Level III NICU through the implementation of an antibiotic administration bundle that includes visual reminders, an algorithm, and increased collaboration between nursing and providers.

Abstract:

Problem: For infants in the Neonatal Intensive Care Unit (NICU), prompt recognition of neonatal sepsis and timely administration of antibiotics are crucial to improve patient outcomes, particularly in preterm infants. Adverse outcomes for delayed antibiotic administration can include an extended hospital stay, prolonged mechanical ventilation, and increased mortality, compared to infants without a sepsis diagnosis. Pre-implementation data was collected from the site, a Level III NICU, and showed an average first dose antibiotic administration time of 128 minutes, 68 minutes greater than the recommended timeline.

Purpose: This ongoing Quality Improvement project focuses on reducing the first-dose antibiotic administration times in a Level III NICU through the implementation of an antibiotic administration bundle that includes visual reminders, an algorithm, and increased collaboration between nursing and providers over a 15 week period.

Methods: To reduce the time to first-dose antibiotic administration in neonates, a visual reminder system was implemented in the NICU. This reminder was placed on admission beds, prompting staff to “start the clock” when an infant is admitted to the unit. This visible cue ensures that all team members are aware of the time-sensitive goal for antibiotic delivery. Additionally, an algorithm was developed to prioritize obtaining IV access, outlining steps for both peripheral and central (umbilical) access. The algorithm specifies that, for infants weighing >1200g, nursing staff prioritize peripheral IV placement while providers focus on blood culture collection. In infants weighing ≤1200g, a conversation is required between nursing and provider to determine optimal IV access for the infant. If central access is obtained, the algorithm further describes the collaboration between nursing and providers to collect the blood culture and administer the prescribed antibiotic prior to x-ray confirmation of line placement. Weekly data collection is being conducted by the project lead through chart audits in the electronic medical record (EMR) and recorded into an electronic, HIPPA compliant audit tool. All newly admitted infant charts are screened for inclusion, and those with an order for Ampicillin are included in the data collection. At the time of this abstract submission, ten infants have been admitted to the NICU during the early implementation phase of the project. Of the ten infants, five infants were prescribed Ampicillin upon admission and were included in the data collection. Gestational ages ranged from 31 5/7 weeks to 40 5/7 weeks and birth weight ranged from 920g to 3725g. Quantitative data was collected and included the patient’s last name, medical record number, date and time of birth, date and time of admission, gestational age, birth weight, type of IV access obtained, date and time IV access obtained, date and time blood culture obtained, and date and time of Ampicillin administration.

Preliminary Results: Preliminary data showed that two infants (40%) received Ampicillin within 60 minutes after admission. All infants had peripheral IVs placed and 60% of those infants had IV access established within 60 minutes after admission. All infants had a blood culture obtained prior to antibiotic administration and 40% of those infants had a blood culture obtained within 60 minutes after admission. The average administration time for Ampicillin has decreased by 25%, from 128 minutes to 97 minutes.

Preliminary Conclusion: While data collection is still in progress, initial trends suggest an improvement in the timeliness of first-dose antibiotic administration however, it is not yet possible to determine whether the antibiotic administration bundle has been successful. Evidence in the literature has shown that delayed antibiotic administration can negatively affect patient outcomes. Early data suggest that following an evidence-based algorithm for timely antibiotic administration may improve the time to first dose which may impact overall patient outcomes.

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Learner Objectives:

1. Understand the impact of timely antibiotic administration in the NICU population.
2. Describe the steps involved in this Quality Improvement project to decrease first dose antibiotic administration times.

Gravens 2025-8

Abstract Title: Family-Driven Feeding: A Quality Improvement Initiative

Authors: Adeline Launay, Elissa Remmer, Christine Labelle, Amanda Camacho, Marc Beltempo, Jessica Duby

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Problem Statement: In the NICU, the transition from nasogastric (“gavage”) feeds to breast/bottle feeds is led either by a doctor’s prescription (example: offer the bottle or breast for 10 minutes two times per day) or by a nurse’s assessment of the infant’s feeding cues (i.e. Infant-Driven Feeding). However, neither approach involves the families who are the ones that need to learn when and how to feed their infant.

Abstract:

Methods: In March 2023, the Level IV NICU at the Montreal Children’s Hospital (MCH) was awarded a $20,000 CAD grant to engage families in their infant’s transition from gavage to breast/bottle feeds. A multidisciplinary committee, including a neonatologist, nurse educator, nurse, occupational therapist, nutritionist, lactation consultant and parent was formed. A literature review found that Infant-Driven Feeding (IDF), in which nurses introduce breast/bottle feeds based on the infant’s cues, results in faster achievement of full breast/bottle feeds compared to relying on a medical order to advance breast/bottle feeds.

1. In the Cornell IDF tool, the nurse evaluates for 1) signs of breast/bottle readiness 2) the quality of breast/bottle feeds; and 3) the technique for feeding.

2. The MCH committee adapted the Cornell IDF tool to create Family-Driven Feeding, a simplified program that encourages families to perform the feeding assessments (Appendix 1). An infant’s feeding readiness and quality are scored every 3 hours by the parent or nurse when the parent is absent. Previously, the MCH NICU relied on medical orders for the nurse to progress breast/bottle feeds. Infants can participate in Family-Driven Feeding if they are 1) ≥ 32 weeks corrected gestational age (CGA) (infants born at term are also eligible); 2) Stable in room air or low flow oxygen; 3) Tolerate gavage feeds; and 4) No other medical contraindication (Appendix 2). Clinical and outcome data as well as the feeding assessments are collected for each infant. Surveys have been obtained from nurses and parents. Descriptive analyses were performed, and future analyses will include a pre-post comparison using propensity-score matched controls to determine the clinical impact of Family-Driven Feeding.

Results: First, a multi-prong educational approach was undertaken. In April 2024, 84% (141/168 of nurses attended a session teaching them 1) how to assess feeding cues and 2) how to train parents to assess their baby's feeding cues. Second, a publicly-available eight minute video detailing how a parent or nurse can assess a baby's readiness and quality of breast/bottle feeds was created (Appendix 3). Third, an educational poster explaining infant feeding cues and signs of disengagement is placed in every baby's NICU room (Appendix 4). Fourth, stakeholders had the opportunity to share feedback during presentations about Family-Driven Feeding. Finally, ongoing bedside education and sporadic Family-Driven Feeding 'games' (example: nurses can enter a raffle when she teaches a parent to perform Family-Driven Feeding) ensure the project's sustainability. Data has been collected on 109 infants who were eligible for Family Driven-Feeding from April 2 - August 1, 2024. The median gestational age at birth was 33 weeks (IQR 30-36 weeks), 50% were male, and the primary reason for admission was prematurity (64%). At the time of discharge, 53% were receiving exclusive mother's milk. Thirty-three percent of infants were discharged home with a median CGA of 40 weeks (IQR 37-41 weeks), 30% of infants were transferred to the pediatric ward at the Montreal Children's Hospital with a median CGA of 38 weeks (IQR 36-39 weeks) and 34% of infants were transferred to a Level II NICU at another hospital with a median CGA of 34 weeks (IQR 34-35 weeks). Seventy-eight percent (85/109) of infants eligible for Family-Driven Feeding had feeding assessments performed. A total of 5,257 individual feeding assessments were recorded. Overall, 18% of feeding assessments were performed by parents (i.e. 1-2 feeds per day) with the remainder of evaluations being completed by the bedside nurse. From an individual patient perspective, parents performed a median of 6.5% of feeds (IQR 0%-20.8%) demonstrating the high level of variation between parents. Parents who provided their infants with breastmilk were more likely to participate in Family-Driven Feeding than parents who did not pump or breastfeed (p=0.01) Errors occurred in 5.5% of parental evaluations and 4.6% of nursing evaluations. Thirty-two nurses were surveyed in May 2024. Eighty-eight percent (n=28) believed that Family-Driven Feeding is important for patient care. Moreover, 94% (n=30) reported comfort in assessing an infant's feeding cues and 78% (n=25) felt comfortable teaching parents. Twenty parents who had been taught Family-Driven Feeding were also polled in May 2024. Ninety-nine percent (n=18) had completed at least one feeding assessment. Only three parents (15%) identified barriers to participating in Family-Driven Feeding. Another round of parental surveys is currently underway.

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APPENDIX 1 : Family-Driven Feeding Form

Infant Oral Feeding Assessment and Documentation Tool

Date (YYYY/MM/DD)									
Time (00:00)									
Assessment by: Parent (P) / Nurse (N)									
Readiness Score									
Quality Score									
Strategies (refer to legend)									
Breast / Nipple type									
Duration (minutes)									
Reason to stop (refer to legend)									
Quantity (mL)									
Top off by gavage (mL) / Over (min)									
Parent Initials									
Nurse Initials									

READINESS TO FEED SCALE			
Score	Baby BEFORE the feed	Action	
1	Alert or fussy prior to care, or once handled, and sustained feeding cues: • Turns head and opens mouth (roots), and/or • Hands to mouth, and/or • Takes pacifier	Put to breast	Offer bottle
2	Sleepy but responds to stimulation. Shows some feeding cues.		
3	Briefly alert during care or sleeps throughout care. Limited or no feeding cues.		No bottle
4	Drops in heart rate or oxygen level (apnea/bradycardia/desaturation). Fast breathing (tachypnea) or difficulty breathing with care.	Gavage only	

Scan QR code to watch educational video

QUALITY OF FEEDING SCALE			
Score	Baby DURING the feed		Action
1	Breast: Latch is deep and strong. Sucks, swallows, and breathes in a coordinated pattern. Drops chin to indicate swallowing.	Bottle: Bottles with a strong suck. Sucks, swallows, and breathes in a coordinated pattern.	Stop at signs of disengagement. Typically about 20 minutes.
2	Breast: Latch is shallow or weak, or frequent need to re-latch. Sucks on and off, may fall asleep.	Bottle: Bottles with a weak / inconsistent suck. Coordinated but tires. Takes breaks spontaneously or needs external pacing. May have some milk loss.	Stop at signs of disengagement. Typically about 10 minutes.
3	Either breast or bottle: Unable to latch or poor suck at the bottle. Unable to coordinate suck, swallow, breathe pattern (coughs, chokes). Drops in heart rate or oxygen level. Fast / difficulty breathing during feed. Large amount of milk lost. Very sleepy.		Stop immediately, complete by gavage.

LEGEND

Strategies Needed
- Side-lying (S)
- Pacing (P)
- Breastfeeding reclined position (RP)
- Partial expression (E)

Breast or Nipple
- Breast (B)
- Dr Brown's™ (Dr)
- Ultra slow flow (USF)
- Slow flow (SF)
- Regular flow (RF)

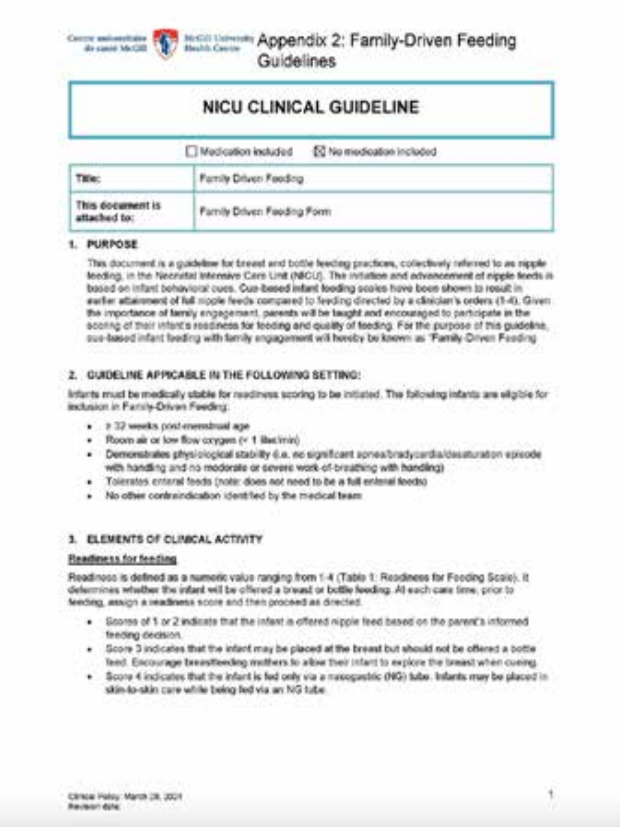
Ø Not applicable

*** Refer to nursing notes**

Reason
- Fatigue (F)
- Refusal (R)
- Event (Ev): cough, drops in heart rate or oxygen

Signature	Nurse/Parent	Initials	Signature	Nurse/Parent	Initials

DM-0911 (REV 2024/02/20) Approbation CPRO (2024/01/16) CUSM Repro MUHC Français au verso



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Appendix 2: Family-Driven Feeding Guidelines

NICU CLINICAL GUIDELINE

☐ Medication included ☒ No medication included

Title:	Family Driven Feeding
This document is attached to:	Family Driven Feeding Form

1. PURPOSE

This document is a guideline for breast and bottle feeding practices, collectively referred to as nipple feeding, in the Neonatal Intensive Care Unit (NICU). The initiation and advancement of nipple feeds is based on infant behavioral cues. Cue-based infant feeding scales have been shown to result in earlier attainment of full nipple feeds compared to feeding directed by a clinician's orders (1-4). Given the importance of family engagement, parents will be taught and encouraged to participate in the scoring of their infant's readiness for feeding and quality of feeding. For the purpose of this guideline, cue-based infant feeding with family engagement will hereby be known as "Family Driven Feeding

2. GUIDELINE APPICABLE IN THE FOLLOWING SETTING:

Infants must be medically stable for readiness scoring to be initiated. The following infants are eligible for inclusion in Family-Driven Feeding:

- ≥ 32 weeks post-menstrual age
- Room air or low flow oxygen (< 1 liter/min)
- Demonstrates physiological stability (i.e. no significant apnea/bradycardia/desaturation episode with handling and no moderate or severe work-of-breathing with handling)
- Tolerates enteral feeds (note: does not need to be a full enteral feeds)
- No other contraindication identified by the medical team

3. ELEMENTS OF CLINICAL ACTIVITY

Readiness for feeding

Readiness is defined as a numeric value ranging from 1-4 (Table 1: Readiness for Feeding Scale). It determines whether the infant will be offered a breast or bottle feeding. At each care time, prior to feeding, assign a readiness score and then proceed as directed.

- Scores of 1 or 2 indicate that the infant is offered nipple feed based on the parent's informed feeding decision.
- Score 3 indicates that the infant may be placed at the breast but should not be offered a bottle feed. Encourage breastfeeding mothers to allow their infant to explore the breast when cueing.
- Score 4 indicates that the infant is fed only via a nasogastric (NG) tube. Infants may be placed in skin-to-skin care while being fed via an NG tube.

Clinical Policy: March 28, 2024
Revision date:

1

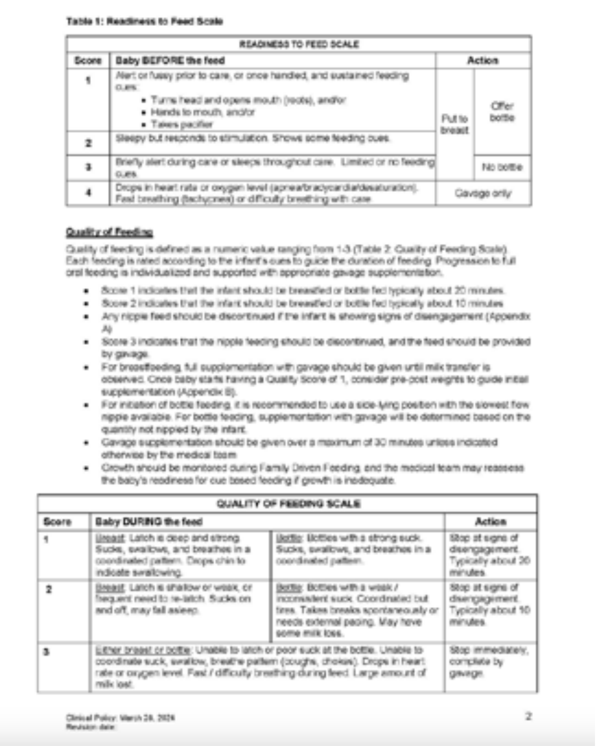

Table 1: Readiness to Feed Scale

READINESS TO FEED SCALE			
Score	Baby BEFORE the feed	Action	
1	Alert or fussy prior to care, or once handled, and sustained feeding cues: • Turns head and opens mouth (roots), and/or • Hands to mouth, and/or • Takes pacifier	Put to breast	Offer bottle
2	Sleepy but responds to stimulation. Shows some feeding cues.		
3	Briefly alert during care or sleeps throughout care. Limited or no feeding cues.		No bottle
4	Drops in heart rate or oxygen level (apnea/bradycardia/desaturation). Fast breathing (tachypnea) or difficulty breathing with care.	Gavage only	

Quality of Feeding

Quality of feeding is defined as a numeric value ranging from 1-3 (Table 2: Quality of Feeding Scale). Each feeding is rated according to the infant's cues to guide the duration of feeding. Progression to full oral feeding is individualized and supported with appropriate gavage supplementation.

- Score 1 indicates that the infant should be breastfed or bottle fed typically about 20 minutes.
- Score 2 indicates that the infant should be breastfed or bottle fed typically about 10 minutes.
- Any nipple feed should be discontinued if the infant is showing signs of disengagement (Appendix A)
- Score 3 indicates that the nipple feeding should be discontinued, and the feed should be provided by gavage.
- For breastfeeding, full supplementation with gavage should be given until milk transfer is observed. Once baby starts having a Quality Score of 1, consider pre-post weights to guide initial supplementation (Appendix B).
- For initiation of bottle feeding, it is recommended to use a side-lying position with the slowest flow nipple available. For bottle feeding, supplementation with gavage will be determined based on the quantity not nippled by the infant.
- Gavage supplementation should be given over a maximum of 30 minutes unless indicated otherwise by the medical team.
- Growth should be monitored during Family Driven Feeding, and the medical team may reassess the baby's readiness for cue based feeding if growth is inadequate.

QUALITY OF FEEDING SCALE			
Score	Baby DURING the feed		Action
1	Breast: Latch is deep and strong. Sucks, swallows, and breathes in a coordinated pattern. Drops chin to indicate swallowing.	Bottle: Bottles with a strong suck. Sucks, swallows, and breathes in a coordinated pattern.	Stop at signs of disengagement. Typically about 20 minutes.
2	Breast: Latch is shallow or weak, or frequent need to re-latch. Sucks on and off, may fall asleep.	Bottle: Bottles with a weak / inconsistent suck. Coordinated but tires. Takes breaks spontaneously or needs external pacing. May have some milk loss.	Stop at signs of disengagement. Typically about 10 minutes.
3	Either breast or bottle: Unable to latch or poor suck at the bottle. Unable to coordinate suck, swallow, breathe pattern (coughs, chokes). Drops in heart rate or oxygen level. Fast / difficulty breathing during feed. Large amount of milk lost.		Stop immediately, complete by gavage.

Clinical Policy: March 28, 2024
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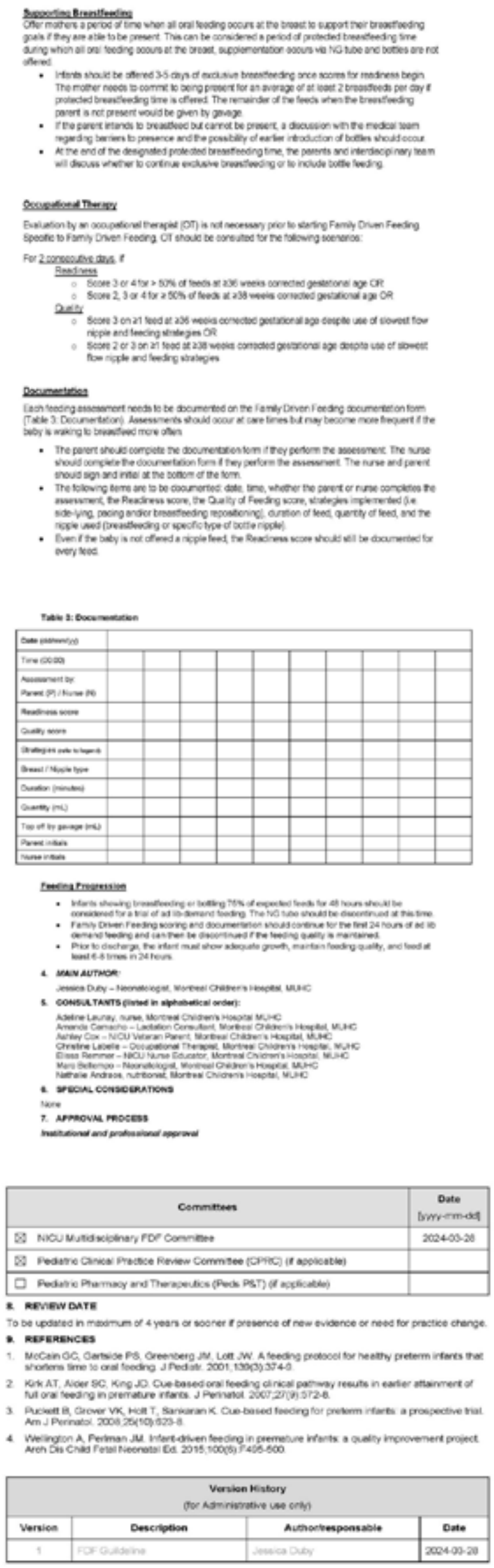


Supporting Breastfeeding

Offer mothers a period of time when all oral feeding occurs at the breast to support their breastfeeding goals if they are able to be present. This can be considered a period of protected breastfeeding time during which all oral feeding occurs at the breast, supplementation occurs via NG tube and bottles are not offered.

- Infants should be offered 3-5 days of exclusive breastfeeding once scores for readiness begin. The mother needs to commit to being present for an average of at least 2 breastfeeds per day if protected breastfeeding time is offered. The remainder of the feeds when the breastfeeding parent is not present would be given by gavage.
- If the parent intends to breastfeed but cannot be present, a discussion with the medical team regarding barriers to presence and the possibility of earlier introduction of bottles should occur.
- At the end of the designated protected breastfeeding time, the parents and interdisciplinary team will discuss whether to continue exclusive breastfeeding or to include bottle feeding.

Occupational Therapy

Evaluation by an occupational therapist (OT) is not necessary prior to starting Family Driven Feeding. Specific to Family Driven Feeding, OT should be consulted for the following scenarios:

For 2 consecutive days, if

Readiness
- ○ Score 3 or 4 for > 50% of feeds at ≥36 weeks corrected gestational age OR
- ○ Score 2, 3 or 4 for ≥ 50% of feeds at ≥38 weeks corrected gestational age OR

Quality
- ○ Score 3 on ≥1 feed at ≥36 weeks corrected gestational age despite use of slowest flow nipple and feeding strategies OR
- ○ Score 2 or 3 on ≥1 feed at ≥38 weeks corrected gestational age despite use of slowest flow nipple and feeding strategies

Documentation

Each feeding assessment needs to be documented on the Family Driven Feeding documentation form (Table 3: Documentation). Assessments should occur at care times but may become more frequent if the baby is waking to breastfeed more often.

- The parent should complete the documentation form if they perform the assessment. The nurse should complete the documentation form if they perform the assessment. The nurse and parent should sign and initial at the bottom of the form.
- The following items are to be documented: date, time, whether the parent or nurse completes the assessment, the Readiness score, the Quality of Feeding score, strategies implemented (i.e. side-lying, pacing and/or breastfeeding repositioning), duration of feed, quantity of feed, and the nipple used (breastfeeding or specific type of bottle nipple).
- Even if the baby is not offered a nipple feed, the Readiness score should still be documented for every feed.

Table 3: Documentation

Date (dd/mm/yy)										
Time (00:00)										
Assessment by: Parent (P) / Nurse (N)										
Readiness score										
Quality score										
Strategies (refer to legend)										
Breast / Nipple type										
Duration (minutes)										
Quantity (mL)										
Top off by gavage (mL)										
Parent initials										
Nurse initials										

Feeding Progression

- Infants showing breastfeeding or bottling 75% of expected feeds for 48 hours should be considered for a trial of ad lib-demand feeding. The NG tube should be discontinued at this time.
- Family Driven Feeding scoring and documentation should continue for the first 24 hours of ad lib demand feeding and can then be discontinued if the feeding quality is maintained.
- Prior to discharge, the infant must show adequate growth, maintain feeding quality, and feed at least 6-8 times in 24 hours.

4. ***MAIN AUTHOR:***

Jessica Duby – Neonatologist, Montreal Children's Hospital, MUHC

5. **CONSULTANTS (listed in alphabetical order):**

Adeline Launay, nurse, Montreal Children's Hospital MUHC
Amanda Camacho – Lactation Consultant, Montreal Children's Hospital, MUHC
Ashley Cox – NICU Veteran Parent, Montreal Children's Hospital, MUHC
Christine Labelle – Occupational Therapist, Montreal Children's Hospital, MUHC
Elissa Remmer – NICU Nurse Educator, Montreal Children's Hospital, MUHC
Marc Beltempo – Neonatologist, Montreal Children's Hospital, MUHC
Nathalie Andraos, nutritionist, Montreal Children's Hospital, MUHC

6. **SPECIAL CONSIDERATIONS**

None

7. **APPROVAL PROCESS**

Institutional and professional approval

Committees	Date [yyyy-mm-dd]
☒ NICU Multidisciplinary FDF Committee	2024-03-28
☒ Pediatric Clinical Practice Review Committee (CPRC) (if applicable)	
☐ Pediatric Pharmacy and Therapeutics (Peds P&T) (if applicable)	

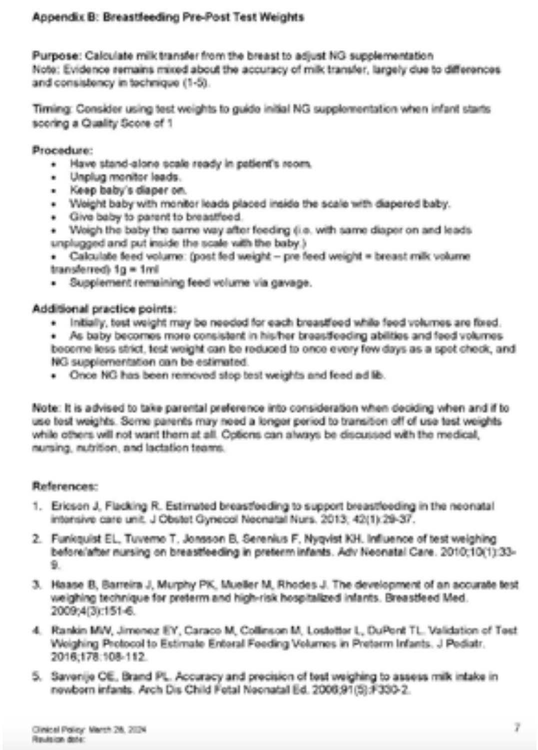
8. **REVIEW DATE**

To be updated in maximum of 4 years or sooner if presence of new evidence or need for practice change.

9. **REFERENCES**

1. McCain GC, Gartside PS, Greenberg JM, Lott JW. A feeding protocol for healthy preterm infants that shortens time to oral feeding. J Pediatr. 2001;139(3):374-9.
2. Kirk AT, Alder SC, King JD. Cue-based oral feeding clinical pathway results in earlier attainment of full oral feeding in premature infants. J Perinatol. 2007;27(9):572-8.
3. Puckett B, Grover VK, Holt T, Sankaran K. Cue-based feeding for preterm infants: a prospective trial. Am J Perinatol. 2008;25(10):623-8.
4. Wellington A, Perlman JM. Infant-driven feeding in premature infants: a quality improvement project. Arch Dis Child Fetal Neonatal Ed. 2015;100(6):F495-500.

Version History (for Administrative use only)			
Version	**Description**	**Author/responsable**	**Date**
1	FDF Guideline	Jessica Duby	2024-03-28



Appendix B: Breastfeeding Pre-Post Test Weights

Purpose: Calculate milk transfer from the breast to adjust NG supplementation
Note: Evidence remains mixed about the accuracy of milk transfer, largely due to differences and consistency in technique (1-5).

Timing: Consider using test weights to guide initial NG supplementation when infant starts scoring a Quality Score of 1

Procedure:
- Have stand-alone scale ready in patient's room.
- Unplug monitor leads.
- Keep baby's diaper on.
- Weight baby with monitor leads placed inside the scale with diapered baby.
- Give baby to parent to breastfeed.
- Weigh the baby the same way after feeding (i.e. with same diaper on and leads unplugged and put inside the scale with the baby.)
- Calculate feed volume: (post fed weight – pre feed weight = breast milk volume transferred) 1g = 1ml
- Supplement remaining feed volume via gavage.

Additional practice points:
- Initially, test weight may be needed for each breastfeed while feed volumes are fixed.
- As baby becomes more consistent in his/her breastfeeding abilities and feed volumes become less strict, test weight can be reduced to once every few days as a spot check, and NG supplementation can be estimated.
- Once NG has been removed stop test weights and feed ad lib.

Note: It is advised to take parental preference into consideration when deciding when and if to use test weights. Some parents may need a longer period to transition off of use test weights while others will not want them at all. Options can always be discussed with the medical, nursing, nutrition, and lactation teams.

References:

1. Ericson J, Flacking R. Estimated breastfeeding to support breastfeeding in the neonatal intensive care unit. J Obstet Gynecol Neonatal Nurs. 2013; 42(1):29-37.
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5. Savenije OE, Brand PL. Accuracy and precision of test weighing to assess milk intake in newborn infants. Arch Dis Child Fetal Neonatal Ed. 2006;91(5):F330-2.

Clinical Policy: March 28, 2024
Revision date:

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Appendix 3: Link to Family-Driven Feeding Educational Videos

English
https://youtu.be/iKRp5crLnQi
French
https://youtu.be/9d1hulCh1m8

Conclusions: Engaging NICU families to participate in their infant's transition from gavage to breast/bottle feeds is a feasible intervention. Family-Driven Feeding was a culture shift for the MCH NICU which had previously relied on medical prescriptions to initiate and advance breast/bottle feeds based on the doctor's perception of the infant's clinical stability during medical rounds. After four months of education and implementation, parents are now assessing their infant's feeding cues 1-2 feeds per day with nurses performing the evaluations for the remainder of feeds. However, there is significant variability in parental participation. Despite initial reluctance, survey data demonstrate that nurses perceive Family-Driven Feeding as important for patient care. While the current rate of parental assessments is an important first step, further PDSA cycles will target methods for increasing the number of parental feeding assessments.

Impact: Achievement of breast/bottle feeds has been shown to impact length-of-stay in the NICU.3 Engaging families in the transition from gavage to breast/bottle feeds has the potential to expedite discharge. Future analyses will compare the clinical outcomes of infants' enrolled in Family-Driven Feeding to infants hospitalized during the pre-intervention period. We have designed Family-Driven Feeding to inspire adaptations that ensure a good fit between intervention and context. For example, at the MCH NICU, approximately 66% of our patients are transferred to another ward or hospital prior to discharge home. Therefore, for our Family-Driven Feeding Program to reach maximum success, it is important for us to engage our hospital's pediatric wards and community hospitals. Similarly, we encourage other NICUs to use Family-Driven Feeding as a template that can be adapted to their specific needs.

References:

1. *Kirk AT et al. J Perinatol. 2007;27(9):572-8.*
2. *Wellington A, Perlman JM. Arch Dis Child Fetal Neonatal Ed. 2015;100(6):F495-500.*
3. *Eichenwald EC et al. Pediatrics. 2001;108(4):928-33.*

Learner Objectives:

At the end of this presentation, participants will be able to:

1. Describe the importance of family engagement in the transition from gavage feeds to breast/bottle feeds in the NICU
2. Appraise the Family-Driven Feeding initiative started in the NICU at the Montreal Children's Hospital in April 2024
3. Adapt the Family-Driven Feeding program to the culture and needs of different NICUs

Gravens 2025-9

Abstract Title: Line insertion through a long umbilical stump, a concept generating laboratory study

Authors: Itamar Nitzan MD; Yshia Langer MD; Yair Kasirer MD; Liat Nasich MD; Robert Koppel MD; Francis B. Mimouni ND; Anup V. Katheria MD

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Problem Statement: Current methods for venous line securement are commonly performed during the golden hour after birth and often cause significant pain or discomfort to the baby.. We hypothesized that a 10-20 cm portion of the umbilical cord can be catheterized with the use of an appropriate guide wire. This may help in establishment of secure vascular access with minimal (if any) discomfort

Abstract:

Background: Preterm neonates require early Intravenous (IV) fluid. This typically requires percutaneous insertion of an IV cannula which is technically challenging and involves pain for the baby. Not infrequently, several attempts and multiple skin breaks are needed. Skin breaks are associated with adverse neurodevelopmental outcome in preterm neonates (Duerden 2020), and when performed during transition of extreme preterm, may increase the risk for intraventricular hemorrhage. For umbilical line insertion, the abdomen of the baby is commonly disinfected with agents that may cause skin irritation and burns and involves discomfort that is considered harmful for preterm infants. It has been shown that the umbilical vein (UV) can be temporarily canulated with a needle to allow caffeine administration in the delivery room (Dekker 2017). We hypothesized that a 10-20 cm portion of the umbilical cord can be catheterized with the use of an appropriate guide wire. This may assist in achieving secure vascular access with minimal (if any) baby discomfort (figure 1). In addition, we hypothesized that a Venflon catheter can be inserted into the UV to enable rapid fluid administration.

Methods: A laboratory proof of concept study, performed on umbilical cord segments removed from babies after delivery. We attempted to catheterize a long portion of the UV. In phase 1, we determined which of several different techniques was optimal for UV catheterization. In phase 2, we documented the rate of successful cannulation and catheter advancement using this method. Umbilical cord segments were obtained as follows: Following maternal consent, we asked obstetricians to preserve an extended length of cord connected to the baby. We applied three clamps to the cord, and we were able to cut the cord and remove the surgical clamps while maintaining the UV distended with blood in a long portion of the cord between the two clamps (Fig. 2). In phase 2, the cannulation procedure was as follows: 1. The UV was cannulated with a Venflon; 2. A guidewire micropunture introducer set 0.18"/40cm or the 60 CM Cope Mandril wire guide (Cook Medical Bloomington Indiana, USA) was introduced and advanced until resistance was felt; 3. The insertion point was dilated with a dilator; 4. The dilator was removed, and the line was advanced upon the guide wire; 5. If the guidewire was stuck at a point of resistance less than 20 cm from cannulation point, further attempts to advance the guidewire after inserting the line were performed (Fig. 3). After advancing the line, to confirm the location within the blood vessel, we cut the cord before the proximal clamp and advanced the line through the proximal orifice of the vessel, and visually confirmed that it was within the vessel and whether the vessel was a vein or an artery. Two senior physicians visually confirmed whether the line was within the vessel or in a false lumen.

Results: We succeeded in advancing the catheter from the point of insertion to the proximal end of the cord, an average distance of 15.7±3.5cm, in 7 out of 10 cord segments. Venflon insertion into the UV was successful in all 10 cords. The Venflon can be easily taped and secured to cord clamp applied on the cord distal to the Venflon insertion point.

Conclusions: It is possible to advance a catheter within the umbilical vein through a long segment of umbilical cord. Larger laboratory studies are needed to determine parameters, such as the degree of UV coiling, that may influence success or failure of the method. Clinical studies are required to evaluate whether

this method may facilitate insertion of UV catheters with minimal discomfort for the babies.

Impact: Even short duration use of the proposed lines or Venflon secured to the umbilical cord, may postpone skin breaks for vascular access beyond the first golden hours after birth. Furthermore, this method may allow earlier administration of caffeine, dextrose, and antibiotics.

Figure 1: Schematic drawing of the suggested method of long segment umbilical vein cannulation. The sterile field will be only around the insertion point and not in proximity to the baby.

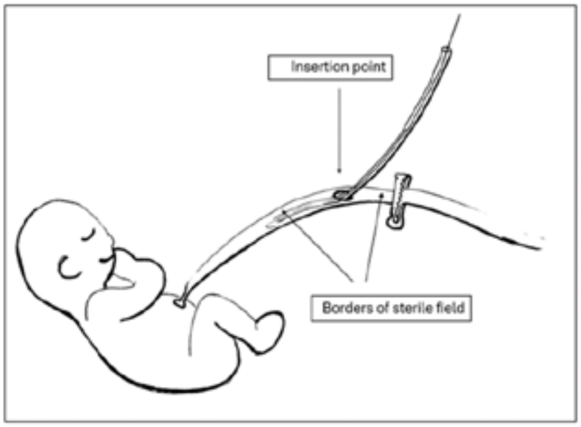


Figure 2: Sourcing of the long segment of the cord without blood spillage and vessel collapse.

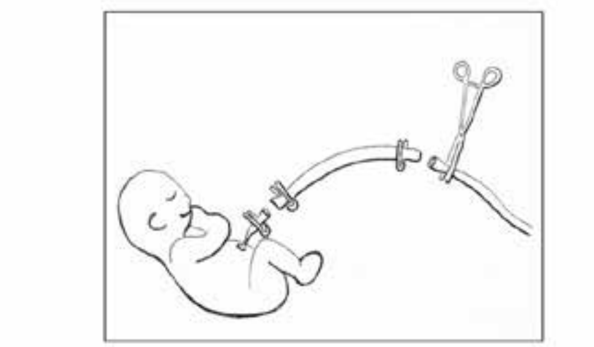
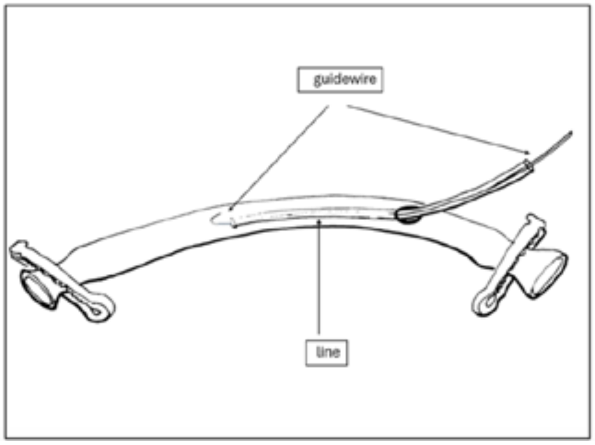
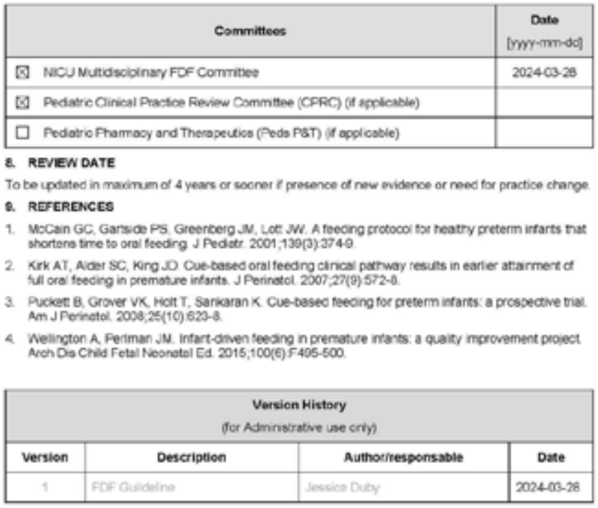


Figure 3: Schematic drawing of long segment umbilical vein cannulation during the study, with a line a guidewire.



Learner Objectives:

1. To recognize the problem of performing painful and uncomfortable procedures on preterm babies after birth.
2. To learn about a novel method for painless neonatal vascular access that may eliminates skin breaks.
3. To be encouraged to seek novel ways or procedures modifications to minimize pain during procedures.



Committees	Date [yyyy-mm-dd]
☒ NICU Multidisciplinary FDF Committee	2024-03-28
☒ Pediatric Clinical Practice Review Committee (CPRC) (if applicable)	
☐ Pediatric Pharmacy and Therapeutics (Peds P&T) (if applicable)	

8. REVIEW DATE

To be updated in maximum of 4 years or sooner if presence of new evidence or need for practice change.

9. REFERENCES

1. McCain GC, Gartside PS, Greenberg JM, Lott JW. A feeding protocol for healthy preterm infants that shortens time to oral feeding. J Pediatr. 2001;139(3):374-9.
2. Kirk AT, Alder SC, King JD. Cue-based oral feeding clinical pathway results in earlier attainment of full oral feeding in premature infants. J Perinatol. 2007;27(9):572-8.
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4. Wellington A, Perlman JM. Infant-driven feeding in premature infants: a quality improvement project. Arch Dis Child Fetal Neonatal Ed. 2015;100(6):F495-500.

Version History (for Administrative use only)			
Version	Description	Author/responsable	Date
1	FDF Guideline	Jessica Duby	2024-03-28

Gravens 2025-10

Abstract Title: Assessing perceived safety and convenience of use of the Skincubator 2.0 (a device for prolonged skin-to-skin-care for extreme preterm infants) in a structured manikin simulation in a tertiary NICU in Australia.

Authors: Emma Yeomans, Shannon Paton, Elly Kuipers, Arvind Sehgal MD, Calum Roberts, Lindsay Zoe, Itamar Nitzan

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Problem Statement: Skin-to-Skin-Care (SSC) is an integral component of kangaroo mother care (KMC) and has been shown to reduce morbidity and mortality in preterm infants. However, transferring from the incubator to the parent and ongoing care during SSC for a critically ill preterm infant with multiple lines for vascular access may be challenging. While not supported by data, common concerns may be the risks of hypothermia and line dislodgment during SSC. We hypothesized that the Skincubator 2.0 will be rated by the nursing staff as safer, with less handling and as more convenient option during the provision of KMC, compared to the traditional method SSC.

Abstract:

Background: Skin-to-Skin-Care (SSC) reduces morbidity and mortality in preterm neonates. However, extreme preterm neonates are generally ineligible for early, prolonged SSC for several reasons, including the need to regulate humidity levels using traditional incubators, concerns of line dislodgment and the need for nurses to evaluate the baby and perform cares and nursing procedures. To enable continuous SSC in this population we invented the Skincubator a novel, small incubator, designed to attach to the caregiver's torso without any barrier between the parent chest and the baby. The Skincubator creates a controlled environment with all advantages of a neonatal incubator, while enabling parents of very preterm and extreme preterm neonates to provide SSC to their infants from birth for extended periods. We have previously demonstrated that the Skincubator enables improved thermoregulation during SSC that may have clinical significance in extreme preterm infants. The Skincubator 2.0 is also used to transfer the baby to SSC within his nest in warm humidified environment without exposure to ambient air (figure 1). All tubes and cables are secured to the Skincubator and does not need to be held by a nurse during transfer. In this study we evaluated nurses perspectives regarding safety, baby handling and convenience for the nurse while using the 2.0 Skincubator in a structured simulation, and in real life clinical usage. We hypothesized that nurses will rate Skincubator SSC as safer, with less handling and as more convenient for the caring nurse than traditional SSC.

Methods: Prior to commencement of a feasibility trial of the Skincubator 2.0 in a tertiary NICU in Melbourne Australia, we performed structured simulations in which nurses were asked to transfer a manikin connected to common tubes, lines and monitoring cables from a neonatal incubator to a volunteer and perform several common nursing procedures on the manikin inside the Skincubator. Following the simulations they were asked to rate each procedure for Skincubator SSC, traditional SSC (t-SSC) and, if applicable traditional incubator care. Each procedure was evaluated separately for 4 aspects: Ability of performance, safety, handling of the baby and nurse convenience in a Linkert scale of 1-5 (1 very unsatisfied, 5 very satisfied). The nurses were also asked to enter free text appreciation of the Skincubator use. Simulations were performed separately on a manikin with a CPAP and a Peripherally Inserted Central Line (PICC) resembling a 29-week preterm and an intubated manikin with umbilical arterial and venous catheter resembling a 25-week preterm neonate at the second day of life. In addition, after the clinical trial commencement, nurses will fill a similar questionnaire after caring for CPAP supported and intubated preterm babies in the Skincubator. Population: Registered NICU nurses with experience in caring for preterm babies in SSC in a tertiary NICU in Melbourne Australia.

Outcomes: Primary outcome: the rating for the safety of transfer of a manikin/baby. Secondary outcomes: all other Skincubator and t-SSC ratings as described above.

Data collection: Each nurse rated each procedure using a electronic questionnaire using the Typeform platform. Recorded answers were transferred by the platform to excel.

Statistical analysis: Answers were analyzed for statistical significance by SPSS using Wilcoxon signed rank test.

Results: Twenty NICU nurses have performed each of the structured simulations. Nurses years of NICU experience were 10±6 years (mean±SD). Nurses were very satisfied with the safety of a Skincubator transferring system for a manikin with CPAP and ETT (Likert scale 5 (5,5) and 5 (3.5,5,5) (median (25%,75%) and only satisfied and neutral with the safety of traditional SSC transfer for CPAP and ETT (Likert scale 4 (4,4.5) 3 (3,4) (p=0.001 and p=0.003) Wilcoxon Signed-Rank Test (WSRT). In most procedures the nurses rated the ability of performance, safety, handling of the baby and nurse convenience as higher than in traditional SSC. Detailed rating is presented in table 1.

Conclusions: After performing structured manikin simulations, Nurses with extensive NICU experience perceive that Skincubator SSC may increase safety, reduce baby handling and enable more convenient nursing care as compared to traditional SSC. This will be further evaluated in real life during 10-12 2024 together with parents' convenience and safety perception. As traditional SSC is a safe and recommended method of care, large randomized controlled trials will be needed to evaluate if the Skincubator 2.0 will reduce rare safety events of line and tube dislodgment.

Impact: Nurses and parents' convenience and perception of safety may help to promote early continuous SSC.

Learner Objectives:

1. 1. To know some of the physical challenges in performing early prolonged SSC in extreme preterm neonates.
2. 2. To state potential ways to overcome those challenges.
3. 3. To be encouraged to seek ways to overcome barriers and increase SSC.

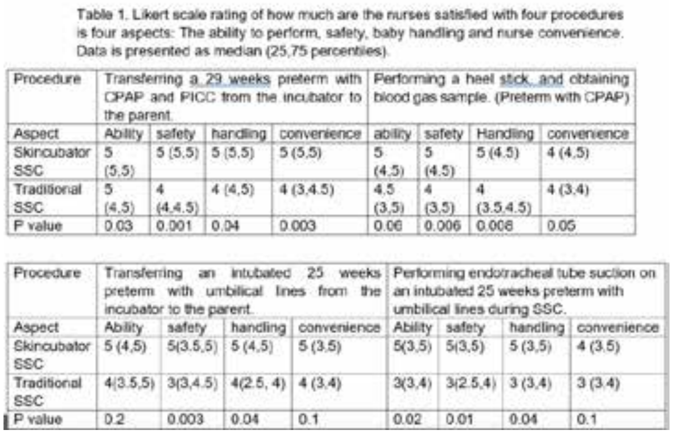

Table 1. Likert scale rating of how much are the nurses satisfied with four procedures is four aspects: The ability to perform, safety, baby handling and nurse convenience. Data is presented as median (25,75 percentiles).

Procedure	Transferring a 29 weeks preterm with CPAP and PICC from the incubator to the parent				Performing a heel stick and obtaining blood gas sample. (Preterm with CPAP)			
Aspect	Ability	safety	handling	convenience	ability	safety	Handling	convenience
Skincubator SSC	5 (5,5)	5 (5,5)	5 (5,5)	5 (5,5)	5 (4,5)	5 (4,5)	5 (4,5)	4 (4,5)
Traditional SSC	5 (4,5)	4 (4,4.5)	4 (4,5)	4 (3,4.5)	4.5 (3,5)	4 (3,5)	4 (3.5,4.5)	4 (3,4)
P value	0.03	0.001	0.04	0.003	0.06	0.006	0.008	0.05

Procedure	Transferring an intubated 25 weeks preterm with umbilical lines from the incubator to the parent.				Performing endotracheal tube suction on an intubated 25 weeks preterm with umbilical lines during SSC.			
Aspect	Ability	safety	handling	convenience	Ability	safety	handling	convenience
Skincubator SSC	5 (4,5)	5(3.5,5)	5 (4,5)	5 (3,5)	5(3,5)	5(3,5)	5 (3,5)	4 (3,5)
Traditional SSC	4(3.5,5)	3(3,4.5)	4(2.5, 4)	4 (3,4)	3(3,4)	3(2.5,4)	3 (3,4)	3 (3,4)
P value	0.2	0.003	0.04	0.1	0.02	0.01	0.04	0.1

Gravens 2025-11

Abstract Title: Maternal Engagement in a NICU in Uganda: Perspectives of Healthcare Workers

Authors: Fahima Kahn, Nathan Kenya-Mugisha, Harriet Nambuya, Jessica Duby, Olive Kabajaasi

Corresponding Author:

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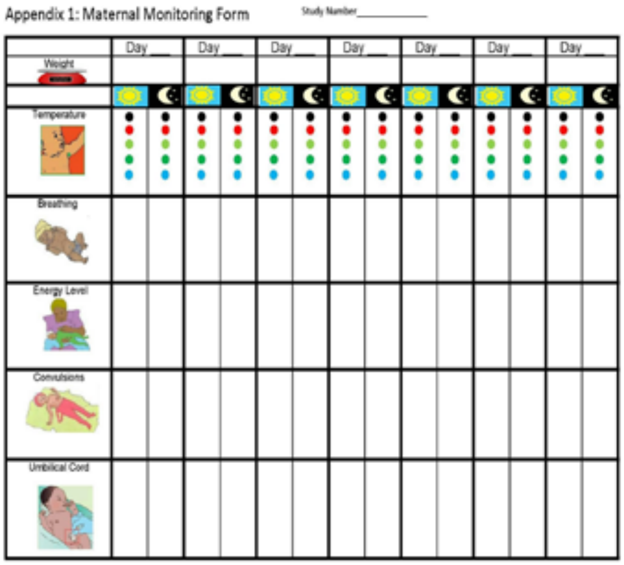
Problem Statement: In low-income countries, healthcare worker shortages are common, often preventing vital monitoring tasks from being performed in the NICU. Our group has previously shown that mothers in an Ugandan NICU can reduce healthcare worker burden by assuming monitoring tasks, such weighing their baby, tracking their baby's feeds, and monitoring for "danger signs."(1) However, one of the biggest barrier to implementation is the time required to train the mothers (30-45 minutes per mother) (2) (Appendix 1). Therefore, we are seeking to understand whether video-assisted education can adequately train mothers to collaborate with healthcare workers while reducing the time it takes to train mothers.

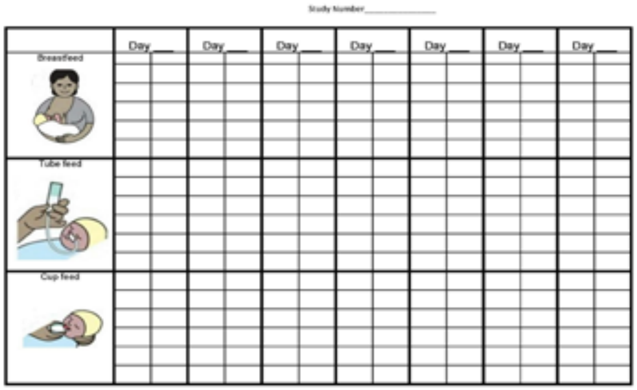

Appendix 1: Maternal Monitoring Form   Study Number__________

	Day ___	Day ___	Day ___	Day ___	Day ___	Day ___	Day ___
Weight							
	☀ ☾	☀ ☾	☀ ☾	☀ ☾	☀ ☾	☀ ☾	☀ ☾
Temperature	● ●	● ●	● ●	● ●	● ●	● ●	● ●
Breathing							
Energy Level							
Convulsions							
Umbilical Cord							

Abstract:

Methods: As part of a larger ongoing study to test video-assisted maternal training in a low-income NICU (Appendix 2), we surveyed healthcare workers to gather insights into their perspectives on maternal education and engagement in the NICU. The study is occurring at Jinja Regional Referral Hospital's Special Care Unit (SCU) in Uganda. This unit has with a nurse/midwife-to-patient ratio of approximately 1:10 and admits 1200-1800 infants annually. The survey questions assessed the time availability for maternal education, identified essential maternal care skills, and explored preferences for educational methods that could be integrated into the SCU's existing workflow. Descriptive analyses were performed to determine the healthcare workers time availability for education sessions and rankings of maternal care skills deemed most critical and feasible to teach within the SCU's operational constraints. Qualitative data describing participants' additional perspectives were collated. Ethical approvals were obtained from the Makerere University, Uganda National Council for Science and Technology, and the McGill University Health Centre. Participants gave informed consent prior to completion of the survey. Please note that by time of conference in March 2025, we may be able to share preliminary results on the larger study to test video-assisted maternal training in Uganda (Appendix 2). (Protocol can be obtained from corresponding author.)

Results: Twelve healthcare providers were surveyed in June 2024, including 1 pediatrician, 2 interns, 8 nurses/midwives, and the head nurse. The study sample represents the full NICU staff during the study period. In July 2024, 12 healthcare providers were surveyed, including one pediatrician, two interns, eight nurses/midwives and the head nurse. The sample represented all eligible physicians during the study period and all eligible nurse/midwives who work in the SCU. Seven respondents (58.3%) reported that they have less than 10 minutes per admission to spend educating each mother on how to participate in their infant's hospital care, while 2 respondents (16.7%) indicated that they had no time to allocate to maternal education. When provided a list of potential skills, all respondents (n=12, 100%) reported that monitoring and identification of "danger signs" was the most important skill for mothers to learn. Danger signs are non-technical indications of clinical deterioration developed by the World Health Organization.(3) The majority of respondents (n=9, 75%) answered that training mothers how to weigh their infant daily on the SCU's electronic scale would be the easiest skill to teach. During the semi-structured survey, respondents generally remarked that video-enhanced maternal education may be an effective strategy to train mothers with one respondent suggesting that a video teaching key maternal skills should play continuously on a screen mounted on the wall in the SCU. Another respondent advocated for identifying a "champion" mother to teach and support other mothers to participate in their infant's hospital care. Please note that by time of conference in March 2025, we may be able to share preliminary results on the larger study to test video-assisted maternal training in Uganda (Appendix 2).


Study Number__________

	Day ___	Day ___	Day ___	Day ___	Day ___	Day ___	Day ___
Breastfeed							
Tube feed							
Cup feed							

Conclusions: This study demonstrates that healthcare workers in a resource-limited NICU in Uganda have minimal time to engage mothers as collaborators in their infants' hospital care. Furthermore, due to healthcare worker shortages coupled with continuous maternal presence at bedside, all healthcare workers agreed that it was crucial for mothers to know how to monitor and identify signs of clinical deterioration ("danger signs"). Therefore, alternative approaches to maternal education, including our ongoing study of video-enhanced education, could be an effective strategy for partnering with mothers in a resource-limited NICU, while also respecting the time constraints of healthcare workers.

Impact: By identifying practical and impactful maternal care skills, this study lays the groundwork for developing efficient, time-conscious educational strategies that resonate with frontline healthcare providers and maternal caregivers alike. Central to these strategies is the potential widespread adoption of video-enhanced maternal education, which offers learning opportunities without imposing additional burdens on overburdened healthcare providers. By promoting maternal competence and confidence in infant care, these initiatives have the potential to enhance caregiver satisfaction, improve health outcomes, and optimize the limited resources available in understaffed NICUs. We are eager to see if the results of our ongoing time-motion study of video-assisted maternal education meets the needs of mothers and healthcare workers in a Ugandan NICU. Key lessons learned from this study include the importance of adaptable educational methods tailored to the unique challenges of resource-limited environments and the value of stakeholder collaboration in shaping effective interventions. Moving forward, advocating for policy changes to support innovative maternal education programs and securing resources for technology-driven initiatives will be essential in translating research findings into sustainable healthcare practices.

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2. *Feeley N, Kabajaasi O, Kenya-Mugisha N, Tagoola A, O'Brien K, Duby J. Benefits and Challenges of Implementing an Adaptation of Family Integrated Care in a Ugandan Setting. Adv Neonatal Care. 2024;24(2):172-180.*
3. *Young Infants Clinical Signs Study Group. Clinical signs that predict severe illness in children under age 2 months: a multicentre study. Lancet. 2008;371:135-42.*

Learner Objectives:

After this presentation,

1. Participants will be able to summarize the importance of parental engagement in resource-limited NICUs
2. Participants will be able to explain the time constraints that healthcare workers face when collaborating with parents in resource-limited NICUs
3. Participants will be able to list the care-taking skills that healthcare workers perceive as valuable and easy for mothers to perform in resource-limited NICUs

Gravens 2025-12

Title: The impact of medical factors and feeding therapy on achievement of full oral feeding in preterm infants in the NICU

Authors: Tiana Nguyen, PhD, OTD, OTR/L; Audrey Kane, PhD, OTR/L, FAOTA

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Problem Statement: A stay in the neonatal intensive care unit (NICU) is very costly and inadequate oral feeding is the most common barrier to discharge for preterm infants. Thus, my aim is to determine the medical factors related to the time it takes to achieve full oral feeding and to determine if the post-menstrual age (PMA) at initiation of feeding therapy influences the time for preterm infants to achieve full oral feeding in the neonatal intensive care unit, while controlling for medical factors.

Abstract:

Methods: This study used a retrospective study design to analyze data from the electronic medical records (EMR) of preterm infants born at less than 37 weeks of gestation who were admitted to the UCSF Benioff Children's Hospital (BCH) between January 2017 and December 2019. Infants were included if they had received feeding therapy services and were discharged fully orally feeding. Infants who had transferred between hospitals, had died during the study period, or discharged with tube feeding (e.g., nasogastric tube or gastrostomy tube) were excluded. UCSF BCH has a certified regional 60-bed, Level IV NICU that serves infants throughout Northern California. Referrals for feeding therapy were provider dependent and were placed either before or after oral feeding was initiated based on concerns for oral motor development, feeding readiness, poor feeding coordination, or swallowing issues. Feeding therapists, which included occupational therapists and speech and language pathologists, provided feeding therapy services. Feeding therapy interventions included cue-based feeding, positioning, pacing, providing cheek and jaw support, adjusting flow rate, and altering the viscosity of the liquid to support oral feeding. The primary outcome was time to full oral feeding, which was measured in days from the first oral feeding to the last tube feeding. Secondary outcomes of interest were PMA at first oral feeding and PMA at full oral feeding. The primary predictor was PMA at initiation of feeding therapy. Medical factors included gestational age at birth, birthweight, delivery type, medical complexity, presence of bronchopulmonary dysplasia, history of mechanical ventilation, multiple birth, and PMA at discharge. Univariate linear regression was used to assess relationships between medical characteristics and time to full oral feeds. Multivariate linear regression was used to assess the relationship between PMA at initiation of feeding therapy and time to full oral feeding while controlling for those medical factors.

Results: A total of 143 infants met the inclusion and exclusion criteria. Infants were born at an average gestational age of 31.3 (SD 3.3) weeks, with a birthweight of 1738.4 (SD 654.7) grams, and had a length of stay of 47.4 (SD 37.9) days. The majority of infant had no complex chronic disease (87%), were White (39%), were English-speaking (90%), and had commercial insurance (59%). On average, infants discharged at 38.4 (3.0) weeks, initiated oral feeding at 34.7 (1.4) weeks, initiated feeding therapy at 36.2 (16.4) weeks, and reached full oral feeding at 37.3 (2.0) weeks. Infants who were born at a lower gestational age ($p<.001$), born at a lower birthweight ($p<.001$), had a history of mechanical ventilation ($p<.001$), and discharged at a higher PMA ($p<.001$) took longer to achieve full oral feeding. Infants who had feeding therapy initiated later required more time to reach full oral feeding ($p=.003$). While controlling for infant medical characteristics (gestational age, birthweight, history of mechanical ventilation, PMA at discharge), for every week feeding therapy was initiated later, it took .12 days longer to reach full oral feeding ($p=.020$).

Conclusion: Earlier initiation of feeding therapy may help preterm infants achieve full oral feeding earlier, thus, potentially decreasing length of stay. These findings highlight the importance of timely referrals to feeding therapists, who play a critical role in supporting oral motor development and feeding readiness. Feeding therapy interventions can begin before initiating oral feeding to prepare the infants for successful feeding outcomes.

Learning Objectives:

- To understand the medical factors related to the time it takes to achieve full oral feeding for preterm infants in the NICU
- To understand how timing of initiation of feeding therapy impacts time to achieve full oral feeding for preterm infants in the NICU

Gravens 2025-13

Title: Trauma-Informed and Resilience-Promoting Care Trainings for NICU Providers

Authors: Alyssa Morris, Sierra Kuzava, Kalen Kennedy, Alyssa Palmer, Corinna Klein, Lanna Pathman, Catherine Mogil

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Problem Statement: Medical teams working with infants serve a unique role, as caring for an infant also entails caring for the family and equipping them to provide a nurturing environment for their child during a Neonatal Intensive Care Unit (NICU) stay and beyond. However, medical teams do not often receive formalized training in the mental health and general care needs of the family. To help infants and families, we have developed a NICU-related resource initiative to provide guidance to both NICU providers and families related to mental health needs and common questions for NICU families. We assess the usefulness of training materials created for pediatric acute-care providers to develop curated and accessible training materials for enhancing trauma-informed care.

Abstract:

Methodology: The Family Development Program (FDP) providers have worked in collaboration with the University of California Los Angeles (UCLA) Prevention Center of Excellence to launch trainings, videos, and handouts for NICU staff and parents. These materials are available for free to the public on the Department of Mental Health (DMH) + UCLA Wellbeing for LA Learning Center and Prevention Center of Excellence website. The overarching goal in creating these materials is to provide education on delivery of culturally-responsive services, support the recognition of grief, loss, and trauma, and support a sense of competency for families and providers. The most comprehensive resource created in this effort is an online, asynchronous, trauma-informed training course for NICU providers entitled, "The Resilient NICU." This course was created after gathering feedback from pediatric acute care providers after delivery of a strengths-based, trauma-informed, prevention curriculum delivered in the spring of 2022. This training included two, four-hour virtual training sessions, schedule one month apart from each other. This training was comprised of a five module-curriculum: 1) The Family Experiences in the Hospital, 2) Understanding Trauma and Resilience, 3) Supporting Healthy Bonding and Attachment, 4) Managing Communication with Family Members, and 5) Building Resilient Teams. Following the training, providers were asked to rate their pre- and post-training knowledge on trauma-informed care, overall satisfaction with the course, perception of value in disseminating the course to others, and impact of the course on their clinical practice. Participants in the training included medical staff such as registered nurses, occupational therapists, and child life specialists. 100 participants completed the training, and 80 participants provided evaluation feedback on the training.

Outcomes: Post-training surveys of provider participants were positive. With respect to overall course satisfaction, 91.5% of respondents rated the course as "excellent" or "very good" and 8.5% of respondents rated the course as "good." 98% of respondents "agreed" or "strongly agreed" that other staff should receive the training. Furthermore, 100% of respondents reported confidence in their ability to implement trauma-informed care following their participation in the training, and of those, 30% of respondents stated they would not have been able to implement skills at all prior to receiving training. Based on the feedback we received through surveying providers, we created "The Resilient NICU" online course with support from the Tikun Olam Foundation. It was launched as an introduction to integrating trauma- and resilience-informed practices in the NICU using everyday scenarios faced by providers and staff. This hour-long course is approved for 1 CE and is available for free to providers and staff. All views and access are tracked through our online platform. The Resilient NICU" online course has been viewed over 2000 times. We received qualitative feedback on this course highlighting the value of this course: "Very engaging and interactive. I loved the topics that were discussed because I feel like I have gained more insight about the traumas people deal with and how they deal/present those traumas and how we as healthcare providers can help in those instances to make it a more trusting and safe space for them." –Nurse/participant "I so appreciated the incredible commitment from and knowledge base of its organizers. I loved doing this with colleagues from perinatal and NICU to get different perspectives. I'm immensely grateful to my administrators for prioritizing and encouraging this training!" –Nurse/participant "I really liked using the case examples in the videos to demonstrate how trauma-informed care can look like when done well. The formatting was excellent and I liked how the concepts were broken down into bite sized pieces, as well as the immediate questions to test our understanding of the material. I also appreciate being able to download the PDFs." "I'm a NICU Social Worker and I loved everything about this training. I'm sharing this with our unit's RN Clinical Educator right now as the examples/videos are spot on as to concerns we see regularly. Thank you so much for making this training and for making it so accessible - your efforts are so very much appreciated!"

Conclusions: Pediatric acute-care medical staff report knowledge

Abstract 14 poster

To Err is Human: Improving the Way we Honor our Bedside Mistakes and Support our Team do the Same

Louisa Ferrara-Gonzalez, PhD, CCC-SLP, BCS-S, CNT, NTMCT

We are Human = We Make Mistakes = We feel it

Mindset & Personal Coping Styles Matter

Shame vs Guilt

Ways to Honor our Mistakes

Increase Awareness

Take Responsibility

Growth Mindset

Set Intentions

Self-Compassion

Share your Story

Practice Self-Forgiveness

Support your Team

gains and value in trauma- and resilience-informed training and report that this training impacts the way they practice. Providers are eager to increase knowledge and incorporate trauma-informed, culturally-sensitive principles into their care practices. There is immense value in future work aimed at developing resources and educational materials for pediatric acute-care providers from a trauma-, resilience-, and culturally-informed lens.

Reference:

DMH+UCLA Prevention Center of Excellence. The Resilient NICU. Wellbeing for LA Learning Center. 2019. https://learn.wellbeing4la.org/detail?id=1207&k=1604426725

Learning Objectives:

1. Describe the Family Development Program's NICU-related resource initiative.
2. Assess value of NICU-related resources and trainings for NICU providers.
3. Provide descriptive analysis of online access to NICU-related resource initiative.

Gravens 2025-14

Title: The Road to Excellence is Paved with Wrong Turns: Improving the Way we Honor our Bedside Mistakes

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Abstract:

To err is human" is a popular phrase we hear in healthcare, however, it does not seem to help anyone after an error was made. Admitting that a baby or family was potentially hurt by one of your mistakes is a personally daunting experience, and one that may haunt you for years. In truth, we all have regrets, but how you self-reflect on your mistakes and use them to make conscious improvements to your practice is exactly how we can honor that experience and release any guilt we may feel. This lecture will be conversational in nature, as the presenter will share some stories of her least successful infant-parent, and inter-professional interactions. Each story will be followed by audience polling on the most striking error (to improve upon awareness skills), as well as a review of the evidence emphasizing the impact of that mistake. Each story will be accompanied by clear steps to avoid future occurrences, improve success at the bedside and release guilty thoughts, though a review of the Self-Reconciliation Theory. This lecture will have a strong focus on neurodevelopmental care, family-centered care, trauma-informed care, inter-professional practices, ethics, self-love and forgiveness. Audience members will have an opportunity to share some of their mistakes and seek support from their peers in order to honor their errors and promote self-growth. Ideal length of presentation is 2-hours, but it can be shortened to 1-hour, and we will reduce audience polling opportunities.

Learning Objectives:

1. Describe the negative effects of errors on occupational stress, emotional wellbeing, and overall quality-of-life for healthcare providers who work in the NICU.
2. Summarize important foundational theories to incorporate into their practice in attempts to improve upon any mistakes (i.e., neurodevelopmental care, family-centered care, trauma-informed care, inter-professional practices, self-reconciliation).
3. List clear, evidence-based strategies to increase awareness and to take responsibility of a mistake, as well as how to take action for improvements at bedside, and find forgiveness with themselves and co-workers.

Gravens 2025-16

Title: Post COVID - an approach to bringing families back to face-to-face participation

Authors: Alejandra Barrero-Castillero, MD; Marge Day, MSW, LICSW; Kathy Tolland, RN, DNP; Heidi Gates, RN; Emily Whitesel, MD

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BIDMC

Problem Statement: The COVID-19 surge and subsequent lockdown in March of 2020 dramatically altered parental presence and participation in the NICU. We describe our focus on rebuilding our culture of family centered care and lessons learned in again making the NICU a safe and inclusive space for families.

Abstract:

Family-Centered care (FCC) is well known to be an effective approach to care in the Neonatal Intensive Care Unit (NICU), and has been shown to lead to improved health outcomes as well as improved family experience (Johnson, 2012). At Beth Israel Deaconess Medical Center (BIDMC), a 63-bed level III NICU, there has been a longstanding commitment to FCC. In the years leading up to March 2020, we had made great progress in shifting perspective and workflow in our NICU to be more Parent led and Family Centered. With the initial COVID surge and subsequent lockdown in March of 2020, infection control measures dramatically altered parental presence and participation in the NICU. From a model that welcomed families 24/7, restrictive visitor policies were put in place, and families were no longer included in medical rounds or hands on care. The relationship with a newborn is unique, and limiting parental presence has been shown to heighten parental anxiety and stress (Bembich, 2021; Meesters, 2022). It has now been almost four years of gradually working on building our post-covid culture on the NICU and again making the NICU a safe and inclusive space for families. While we have had to rebuild much, we have also brought a great deal of learning and fresh perspectives to this new roll out and are gradually working our way back to being a NICU robust with parent led initiatives. Family feedback has been essential in helping to direct our efforts and initiatives.

Programmatic Development: Our differentiated approach to support families during COVID restrictions resulted in some lessons learned and tools developed, as well as a need to reintroduce many of our family programs to the NICU day-to-day culture. We focused on 4 main areas with our approach, including: 1) medical rounds, 2) discharge planning 3) family integrated care (FiCare), and 4) family programming. i. Multidisciplinary Medical Rounds Multidisciplinary medical rounds in the NICU provide a key opportunity to review data, formulate a treatment plan, and optimize communication within the medical team.

Offering parental participation in rounds is one facet in creating a collaborative family centered team. During COVID, we no longer allowed families to participate in rounds. This prohibition lasted 6 months until 9/2020 when families could attend rounds again on a limited basis. However, the staff attitude about parents on rounds shifted. A staff survey done in the context of changing the rounding structure in May of 2023 showed that only 46% of the staff agreed or strongly agreed with families participating on rounds, while 27% disagreed or strongly disagreed (figure 1). However, at that same time a limited survey of families showed that 100% valued their attendance at rounds, feeling either "satisfied" or "very satisfied" (figure 2). With work to streamline rounding time and education, a repeat survey in September showed that now 60% of the staff agreed or strongly agreed with family participation on rounds, and only 21% disagreed or strongly disagreed (figure 1). ii. Discharge Rounds Discharges during COVID were pared down to the minimal tasks necessary. Formal and informal feedback from families and staff have identified specific issues including: 1) delayed discharge preparation; 2) inconsistent information about discharge from staff to families resulting in family stress and uncertainty, and 3) variation in handling of discharge transition by staff members driven by staff member's experience/lack of familiarity with family at the time of discharge. To ensure that discharge planning and teaching occurs in a family-centered, timely, organized, and consistent manner, our NICU has supported the following programs: 1. A NICU Discharge Coordinator paid position; 2. Weekly multidisciplinary discharge planning rounds to improve communication regarding discharge needs and aim for discharge preparation completeness by 48 hours prior to the day of discharge; 3. Qualitative data analysis from parent feedback collected by our designated discharge coordinator to identify key metrics to inform discharge planning committee operations and inform care; 4. Continued parent readiness score on day of discharge; 5. In person and video CPR and discharge classes bringing parents back to the unit; 6. Offering discharge celebrations. iii. Family Integrated Care In 2019, our NICU piloted a successful family integrated care program (FiCare) that was halted in the setting of the pandemic. In the rebuilding, we have moved towards integrating FiCare as part of our care model, rather than a separate program. All patient rooms now have a caregiver guide that outlines caregiver and nursing responsibilities, and a "ways to engage in your baby's care" checklist. These tools allow the nurse and caregiver to check off skills that families have mastered. The reintroduction of FICare appears well received. A survey was done in March 2024, with 79% of staff referring to the checklist with families when providing care. 57% of staff feel that families are more prepared to go home when they participate in FICare. Additionally, FICare checklists were audited in May 2024 and 50% of rooms had audits filled out by parents. 4. Family Programming During COVID, we recorded a video introduction to nonclinical information on the NICU, called "Welcome to the NICU", paired with an internet-based dashboard for families. This information is accessed via QR codes, located in all patient rooms and family spaces, in our top five languages. To date the welcome videos have had over 1500 views with 360 of those being of the non-English videos that are hosted by native speakers. While we are now back at the bedside talking to families regularly, we have received positive feedback from families regarding their availability in a variety of formats. This has served as a lesson learned from the Covid differentiation that we will continue to use alongside in-person introductions and explanations.

Conclusion: While COVID precautions brought many of our family-driven initiatives to a halt, we have slowly begun to rebuild and in many ways improve upon our approach to family engagement in the NICU. We pivoted to a more electronic and digital approach during covid and have learned from families that these tools are an effective addition to in person engagement.

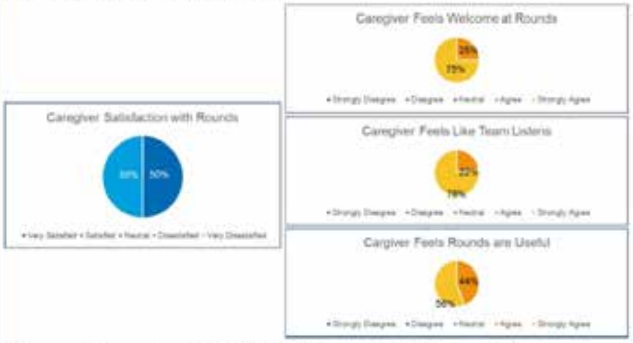
Learning Objectives:

1. Concrete ways to restart and rebuild parent led activities in the NICU
2. Learn about the use of technology to engage families in the NICU

Figure 1: Staff opinion on family presence at rounds

Pre-intervention staff opinion on family presence at rounds (n=78), with survey repeated 4 months later after changes to rounding structure and staff education on parental involvement. Post-intervention n=60.

Figure 2: Caregiver opinion on medical rounds.



Audit survey of families present on the NICU with brief satisfaction survey. 9 of 16 families responded.

Gravens 2025-17

Title: Improving Fluconazole Prophylaxis Guideline Adherence in the Neonatal Intensive Care Unit: A Quality Improvement Initiative

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Problem Statement: The problem addressed in this project is the inconsistent adherence to fluconazole prophylaxis guidelines in extremely low birth weight (ELBW) infants in the NICU, contributing to a risk of invasive candidiasis (IC). This project aims to standardize guideline adherence to reduce the incidence of IC and improve outcomes in this vulnerable population.

Abstract:

Background: Invasive candidiasis (IC) remains a significant concern in extremely low birth weight (ELBW) infants, with mortality rates reaching up to 30%. Despite evidence supporting fluconazole prophylaxis in reducing IC, adherence to prophylactic guidelines has been inconsistent in a 52-bed Level IV Neonatal Intensive Care Unit (NICU). A January and March 2024 chart

audit highlighted variable identification of inclusion criteria and inconsistent monitoring for fluconazole-related adverse events. In 2023, 71 infants received fluconazole prophylaxis at 3 mg/kg/day twice weekly, while 13 infants received antifungal treatment dosing. Two cases of IC were reported in 2023. This quality improvement (QI) project aims to standardize fluconazole prophylaxis among ELBW infants in the NICU by implementing and measuring adherence to an updated, evidence-based guideline.

Methods: The QI initiative is ongoing, with implementation starting in August 2024 and concluding in December 2024. A revised fluconazole prophylaxis guideline was developed using current evidence to clarify inclusion criteria for prophylactic therapy, correct dosing and duration based on infant risk factors, and monitoring parameters for adverse effects. Weekly audits are being conducted to assess adherence to the guideline, including gestational age, birth weight, fluconazole initiation date, dosing, therapy duration, and abnormal laboratory findings. Educational sessions were conducted virtually, with knowledge and confidence levels assessed via post-education surveys. Central line discussions were introduced during daily interdisciplinary rounds to evaluate the ongoing necessity of central lines and fluconazole therapy. Data collection includes central line days, the rationale for insertion or discontinuation, abnormal laboratory or assessment findings, medications, and indications for discontinuing fluconazole therapy.

Preliminary Results: Preliminary data from August to September 2024 show improved adherence to the fluconazole prophylaxis guideline among the 14 infants included in the project to date. Fluconazole was initiated within the first 72 hours for 57.1% (n=8) of infants, with 42.8% (n=6) starting beyond the recommended therapeutic window. Prophylaxis was prescribed at 3 mg/kg/day twice weekly for 100% of patients thus far (n=14). Clinical and laboratory findings were within normal limits for 85.7% (n=13) of infants, with 7.1% of patients with elevated AST/ALT levels (n=1). One patient did not have laboratory testing reported (n=1). No abnormalities were found in urinary output, creatinine levels, or cultures, and no new cases of IC have been reported to date. The preliminary average for central line days while on fluconazole therapy for the 14 enrolled patients is eight days, ranging from 1 to 34 days.

Preliminary Conclusions and Implications: Although still ongoing, this QI project demonstrates promising progress in standardizing fluconazole prophylaxis in the NICU, with improved adherence to the updated guidelines and no new IC cases reported during the preliminary observation period. Fluconazole was initiated within 72 hours for 57.1% (n=8) of infants, with all receiving the correct dosing regimen. Adverse events were minimal, with only one elevated AST/ALT level. Continued data collection will provide more comprehensive insights into the effectiveness of the intervention. If sustained, this project could improve the overall safety and care of ELBW infants in the NICU.

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2. *Valenzuela-Stutman D, Romero A & Astudillo P. Prophylactic fluconazole protocol in very low birth weight infants: Invasive candidiasis prevention in a Latin America neonatal intensive care unit. Journal of Perinatology. 2023;42:1139-1144. DOI: 10.1038/s41372-023-01699-0*
3. *Zhang D, Xie D Wang X, Dong W & Lei X. Prophylactic use of fluconazole in very premature infants. Frontiers in Pediatrics. 2021;9:726769. DOI: 10.3389/fped.2021.7267*

Learning Objectives:

Ensure that fluconazole prophylaxis is initiated within 72 hours of birth for at least 80% of eligible ELBW infants by the end of the project, as monitored through patient records.

Decrease the average number of central line days among ELBW infants on fluconazole prophylaxis by 10% compared to baseline, as measured through NICU records.

Reduce the incidence of fluconazole-related adverse events, such as elevated AST/ALT levels, to less than 5% among ELBW infants receiving prophylaxis, as evaluated through lab results and clinical assessments.

Gravens 2025-18

Title: Infant Voice Exposure Through a Reading Program: Comparing Experiences in an Open Bay to a Single-Family Room NICU

Authors: Malathi Balasundaram; Melinda Porter, RN, CNS, NNP-BC, C-NNIC; Cody Arnold, MD; Annie Le, RN; Rebekah Babcock, RNC-NIC; Kelly Matsumoto, RNC-NIC; Anna Celestino, RNC-NIC; Melissa Suarez, RN; Dharshi Sivakumar, MD

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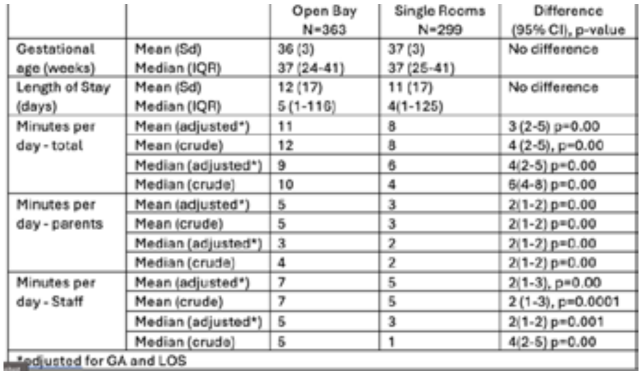
Problem Statement: We implemented a reading program [Reach Out and Read (ROAR)] in 2020 to provide critical vocal stimulation to Neonatal Intensive Care Unit (NICU) babies' developing brains. European studies have shown benefits for babies in SFR NICUs such as increased parental presence, enhanced parent−infant closeness and engagement in infant care, and improved parental psychological well-being with reductions in maternal depression and stress in both parents. 1. A meta-analysis combining Scandinavian, Australian, and US studies showed equivocal neurodevelopmental outcomes, decreased infections, and increased breastfeeding rates in SFR units. 2. In the US the negative impacts of the SFR NICU were lower language scores and a strong trend toward worsening motor scores at 24-month follow-up. 3. This could be due to the sensory isolation within the SFR environment if parental presence and engagement were low. In October 2023, we moved from a 20-bed open bay (OB) NICU to a new 24-bed Single-Family Room (SFR) NICU, and after one year in our new SFR NICU we reviewed our ROAR program data to see if the new unit had an impact on the success of the program as measured by newborns' average reading time per day and determine if any changes to the program were needed.

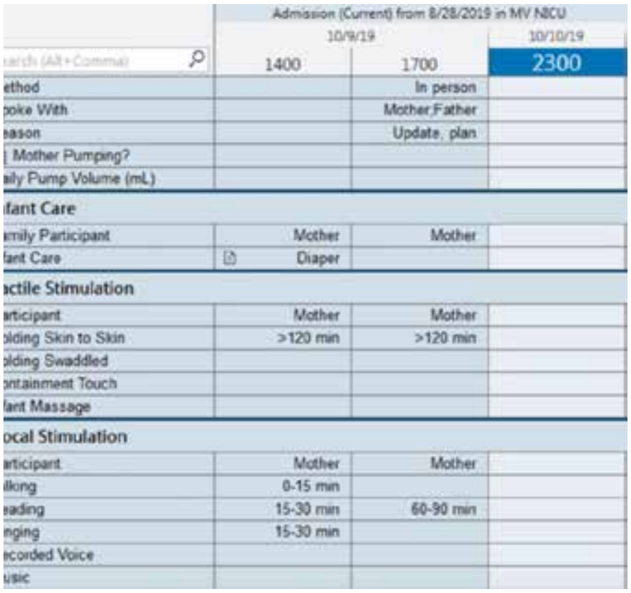
Abstract:

Methods: We are a 24-bed Community Level III NICU with approximately 4900 deliveries and 500 NICU admissions per year. We targeted increased time spent reading to all infants admitted to the NICU in 2020 by creating the ROAR program. The initial goal was direct reading by staff or a parent/family member to babies for 10 minutes per shift for a total of 30 minutes per day. Nurses and parents played a crucial role in this initiative, and their efforts were documented in the Electronic Health Record (EHR) (Figure 1). Our ROAR program showed continued improvement in minutes read to babies over 3 years in the OB NICU. We moved to a new SFR environment in October 2023. We compared the minutes reading to babies in the OB NICU (January 2023 to October 2023) to the minutes reading to babies in the new SFR NICU (November 2023 to June 2024). We collected the quantitative data by running a report from our EHR on the total reading time per baby per stay and dividing the total minutes by the number of days in each baby's length of stay to calculate average reading time per day. We also analyzed the time spent reading to each baby by parents/families versus staff.



		Open Bay N=363	Single Rooms N=299	Difference (95% CI), p-value
Gestational age (weeks)	Mean (Sd) Median (IQR)	36 (3) 37 (24-41)	37 (3) 37 (25-41)	No difference
Length of Stay (days)	Mean (Sd) Median (IQR)	12 (17) 5 (1-116)	11 (17) 4(1-125)	No difference
Minutes per day - total	Mean (adjusted*)	11	8	3 (2-5) p=0.00
	Mean (crude)	12	8	4 (2-5), p=0.00
	Median (adjusted*)	9	6	4(2-5) p=0.00
	Median (crude)	10	4	6(4-8) p=0.00
Minutes per day - parents	Mean (adjusted*)	5	3	2(1-2) p=0.00
	Mean (crude)	5	3	2(1-2) p=0.00
	Median (adjusted*)	3	2	2(1-2) p=0.00
	Median (crude)	4	2	2(1-2) p=0.00
Minutes per day - Staff	Mean (adjusted*)	7	5	2(1-3), p=0.00
	Mean (crude)	7	5	2 (1-3), p=0.0001
	Median (adjusted*)	5	3	2(1-2) p=0.001
	Median (crude)	5	1	4(2-5) p=0.00

*adjusted for GA and LOS



Admission (Current) from 8/28/2019 in MV NICU

	10/9/19 1400	10/9/19 1700	10/10/19 2300
ethod		In person	
poke With		Mother,Father	
eason		Update, plan	
Mother Pumping?			
aily Pump Volume (mL)			
fant Care			
amily Participant	Mother	Mother	
fant Care	Diaper		
actile Stimulation			
articipant	Mother	Mother	
olding Skin to Skin	>120 min	>120 min	
olding Swaddled			
ontainment Touch			
fant Massage			
ocal Stimulation			
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lking	0-15 min		
eading	15-30 min	60-90 min	
nging	15-30 min		
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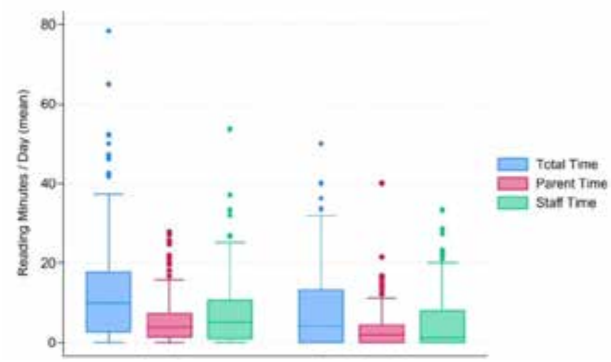

Results: There were 363 and 299 babies in the OB and SFM cohorts, respectively. Although gestational age (GA) and length of stay (LOS) were positively correlated with average reading minutes per day (aveRM/d), mean/median GA and LOS were nearly identical between cohorts. [Table1] Figure 2 shows that mean aveRM/d was larger in the OB environment, for parents, staff, and overall. Adjusting for small differences in GA and LOS, the mean and median aveRM/d for OB versus SFM were 11 and 9 minutes versus 8 and 6 minutes, p-values < .001. Likewise, adjusted mean and median aveRM/d read by parents were larger in the OB than in SFRs: 5 and 3 minutes versus 3 and 2 minutes, p-values <.001 (Table 1).

Conclusions/Impact: Our findings are consistent with previous studies suggesting decreased vocal exposure and potentially greater sensory isolation in a SFR environment. Our reading program is four years old and we've seen steady increases in the total minutes reading to babies year over year, although we had not yet reached the goal of 30 minutes per day before our move. Although we encouraged longer family presence at the bedside in SFR environment, we saw a decrease in family participation in reading time in the new SFR NICU. Potential causes for this decrease are less focus on the reading program while staff adapted to the new SFR unit, inconsistent documentation of reading time done by staff, or increased workload for staff who are now spread out over a larger unit and do not have as much time to help each other with reading as they are isolated in separate rooms. It's crucial to emphasize the importance of parental presence in the SFR environment, as it can significantly benefit babies and mitigate sensory isolation. Encouraging staff participation in vocal exposure would further enhance this effect when parental presence is not possible. We plan to conduct refresh education with staff showing our data to highlight the importance of refocusing on the reading program and also explore additional technologies to mitigate the sensory isolation in single room environment.

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Acknowledgement: Gopal Vedartham; Jody Charles, RN, MSN, NE-BC; Family partnership Council

Learning Objectives:

1. Understand the importance of implementing a reading program to support the early neurodevelopment of all infants admitted to the NICU.
2. Recognize the importance of both staff and parental support of a reading program in the NICU.
3. Explore potential effects of a new SFR NICU on an existing reading program and describe possible mitigation strategies to overcome them.

Gravens 2025-19

Title: Reflective Practice as a Catalyst for Trauma-Informed Professional Development: Insights from the TIP 1.0 Program

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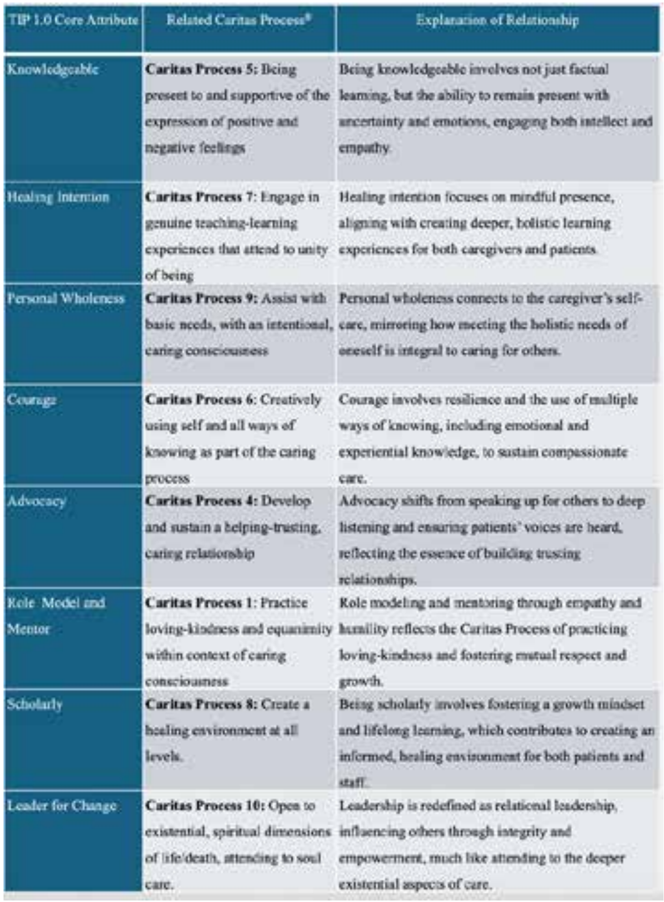
Problem Statement: This study addresses the need for healthcare professionals to deeply understand and embody the principles of trauma-informed care in their daily practice. The scientific question posed is: How does reflective practice enhance the understanding of core attributes of trauma-informed care among healthcare professionals? This is important because trauma-informed care is essential for improving both patient outcomes and caregiver well-being, yet many professionals struggle to operationalize these principles in practice.

Abstract:

The Trauma-Informed Professional (TIP) 1.0 Certificate Program was developed to enhance healthcare professionals' engagement with trauma-informed care principles through reflective practice, grounded in caring science, specifically for those caring for critically ill babies and their families. The program emphasized eight core attributes, which were defined through collaboration with an international, interdisciplinary board of neonatal experts. These attributes—Knowledgeable, Healing Intention, Personal Wholeness, Courage, Advocacy, Role Model and Mentor, Scholarly, and Leader for Change—represent the essential qualities that embody trauma-informed care in practice. This study employed a qualitative thematic analysis to explore how reflective practice reshaped participants' understanding of these attributes, drawing on the principles of Jean Watson's Human Caring Theory to emphasize the holistic, compassionate aspects of care. Data was collected from 40 healthcare professionals, representing 40% of the first 100 graduates of the TIP program. These participants, primarily neonatal clinicians were selected for the depth and completeness of their reflective responses. Written reflections were gathered at two points in the program: before participants engaged with each module's content and after completing the reflective exercises. A thematic analysis of these reflections revealed significant shifts in participants' understanding of the eight attributes, aligning with caring science by emphasizing empathy, emotional resilience, and the nurturing of human connections. The results demonstrated a deep transformation in participants' perspectives. The attribute Knowledgeable shifted from a focus on knowledge as the accumulation of facts to a broader emphasis on curiosity and lifelong learning, mirroring the caring science principle of embracing uncertainty and continuous growth. Healing Intention evolved from being outcome-driven to centering on mindful, intentional presence, addressing the emotional and spiritual needs of patients, a key tenet of Watson's caring theory. Participants redefined Personal Wholeness, recognizing that self-care is not only a personal responsibility but essential for sustaining compassionate caregiving, consistent with the Caritas Process® of self-care as an integral aspect of professional well-being. The understanding of Courage shifted from bold, isolated actions to everyday resilience—the ability to maintain integrity and persist in challenging circumstances. Similarly, Advocacy transformed from simply speaking on behalf of patients to deep listening and ensuring that patients' and families' voices were heard and respected, highlighting the importance of authentic connections in caregiving relationships. Other attributes saw equally profound shifts. Role Model and Mentor evolved from an authoritative role to a collaborative partnership, where learning is mutual and mentorship is rooted in empathy and humility. The Scholarly attribute expanded beyond intellectual authority to fostering a growth mindset and embracing reflection and continuous learning, essential to caring science's emphasis on openness to new knowledge. Finally, Leader for Change was redefined as relational leadership, where influence is driven by leading through example and empowering others, rather than asserting control or authority. These findings underscore the importance of reflective practice, rooted in caring science, in fostering a deeper, more holistic understanding of trauma-informed care. By engaging deeply with these core attributes, neonatal professionals were able to cultivate emotional resilience, improve their ability to provide family-centered care, and align their actions with trauma-informed and caring science principles. This study demonstrates the potential for reflective practice to enhance both professional development and infant-family outcomes in trauma-affected care environments such as the NICU.



TIP 1.0 Core Attribute	Related Caritas Process®	Explanation of Relationship
Knowledgeable	**Caritas Process 5:** Being present to and supportive of the expression of positive and negative feelings	Being knowledgeable involves not just factual learning, but the ability to remain present with uncertainty and emotions, engaging both intellect and empathy.
Healing Intention	**Caritas Process 7:** Engage in genuine teaching-learning experiences that attend to unity of being	Healing intention focuses on mindful presence, aligning with creating deeper, holistic learning experiences for both caregivers and patients.
Personal Wholeness	**Caritas Process 9:** Assist with basic needs, with an intentional, caring consciousness	Personal wholeness connects to the caregiver's self-care, mirroring how meeting the holistic needs of oneself is integral to caring for others.
Courage	**Caritas Process 6:** Creatively using self and all ways of knowing as part of the caring process	Courage involves resilience and the use of multiple ways of knowing, including emotional and experiential knowledge, to sustain compassionate care.
Advocacy	**Caritas Process 4:** Develop and sustain a helping-trusting, caring relationship	Advocacy shifts from speaking up for others to deep listening and ensuring patients' voices are heard, reflecting the essence of building trusting relationships.
Role Model and Mentor	**Caritas Process 1:** Practice loving-kindness and equanimity within context of caring consciousness	Role modeling and mentoring through empathy and humility reflects the Caritas Process of practicing loving-kindness and fostering mutual respect and growth.
Scholarly	**Caritas Process 8:** Create a healing environment at all levels.	Being scholarly involves fostering a growth mindset and lifelong learning, which contributes to creating an informed, healing environment for both patients and staff.
Leader for Change	**Caritas Process 10:** Open to existential, spiritual dimensions of life/death, attending to soul care.	Leadership is redefined as relational leadership, influencing others through integrity and empowerment, much like attending to the deeper existential aspects of care.

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Learning Objectives:

1. Understand how reflective practice can enhance healthcare professionals' comprehension of key trauma-informed care attributes, including empathy, emotional resilience, and leadership.
2. Identify specific shifts in professional perspectives on core trauma-informed care attributes, such as transitioning from task-oriented care to family-centered and holistic care approaches.
3. Apply the principles of reflective practice in trauma-informed care to foster emotional resilience and improve both caregiver well-being and patient/family outcomes in daily practice.

Gravens 2025-20

Title: It's Time for Kangaroo Care: A Quality Improvement Project to Improve Time Spent Skin-To-Skin in the Sunnybrook Health Sciences Centre Neonatal Intensive Care Unit

Authors: Elise M Halpern, MB BCh BAO; Carisse Thomas, MD; Gilad Lazarovits, MD; Doaa Al-Dweik, MD; Federica Savio, MD; Mohammed Ellebany, MD; Nosheen Akhtar, MD; Osagie Ugowe, MBBS; Roshni Gowda, MD; Tanisha Austin, MD; Ujjwala Mantha, MD; Lisa Sampson, RN; Maya Dahan, MD

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Problem Statement: International guidelines for care of preterm and low birth weight infants recommend Kangaroo Care (KC) for non-critically ill infants for 8-24 hours per day or 'as many hours as possible' and the rates of KC in our Neonatal Intensive Care unit are well below recommendations. Using quality improvement methodology, we aimed to increase time in Kangaroo Care by 20% from an average of 49 minutes/baby/day to an average of 59 minutes/baby/day over a 6-month project timeline.

Abstract:

Background: International guidelines for care of preterm and low birth weight infants recommend Kangaroo Care (KC) for non-critically ill infants for 8-24 hours per day or 'as many hours as possible'. KC is associated with lower mortality, reduction in infection, stabilization of physiological parameters, and improved breastfeeding outcomes. In our Level III Neonatal Intensive Care Unit (NICU) at Sunnybrook Health Sciences Centre (SHSC) in Toronto, Ontario, Canada, infants spend less than 1 hour per baby per day in KC and as of the initiation of this project in November 2024, the rates of KC on the unit had been declining over several years.

Objective: By May 2024, we aimed to increase time spent in Kangaroo Care for all eligible babies in the SHSC NICU by 20% from an average of 49 minutes/baby/day (95% CI; 44 minutes/baby/day - 54 minutes/baby/day) to an average of 59 minutes/baby/day.

Methods: A multidisciplinary team of stakeholders was assembled for this quality improvement initiative. Barriers to KC on the unit were identified through the development of a fishbone and driver diagram. Using the Plan-Do-Study-Act (PDSA) methodology, further characterization of the barriers and enablers of KC was achieved through anonymous bedside staff questionnaire. Subsequent PDSA cycles targeting increased awareness and intentional conversations around KC both for staff and caregivers followed by the application of bedside signage to further prompt conversations around KC and encourage its implementation.

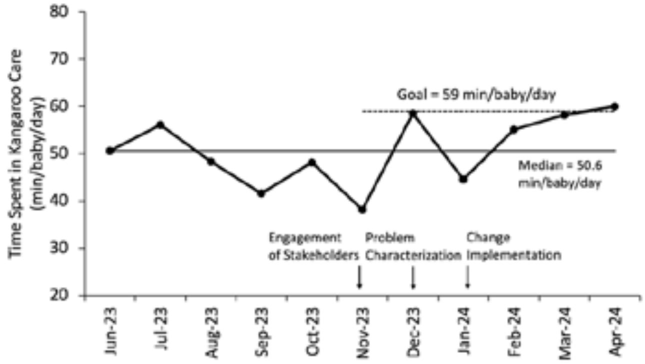

Figure 1. Run chart of the outcome measure of time spent in Kangaroo Care per baby per day with data crossing the goal of 20% improvement set out in the aim statement in April 2024 with infants spending 60 min/baby/day in Kangaroo Care.

Impact: We achieved our aim of improvement with 60 minutes/baby/day spent in KC in April of 2024. Through our initiatives, we were able to identify many important factors hindering time spent in KC including parental presence and comfort, staff knowledge and unit culture, as well as unit acuity and staffing shortages. Future directions include goals for sustained unit practices using parent-targeted initiatives and a unit-wide emphasis on the importance of KC and its positive impact on patient outcomes.

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Learning Objectives:

The purpose of this presentation is to describe our quality improvement approach to Kangaroo Care in our unit. Our goal is to demonstrate how even small changes to a complex, multifactorial problem can have an appreciable impact. At the conclusion of the presentation the participants will be able to evaluate the approach to Kangaroo Care in their own unit and apply quality improvement strategies to their current approaches.

Gravens 2025-21

Title: Implementing a NICU Nourishment Center through Community Collaboration

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Problem Statement: Families with infants in the NICU often face significant challenges accessing nutritious food, which can exacerbate stress and hinder their ability to participate in their infant's care. To address this, we partnered with community organizations to create a 24-hour NICU Nourishment Center, ensuring equitable access to food for all families.

Abstract:

Methods/Program Development: Food insecurity is a critical social determinant of health that can significantly impact developmental and health outcomes for infants, particularly in NICU settings where families face heightened financial stress due to medical expenses and prolonged time away from work. Over a six-month period, we assessed food insecurity among families in our Level IV NICU, finding that approximately 17% reported experiencing some degree of food insecurity within the previous 12 months. Recognizing the need for immediate intervention, we initiated efforts to establish an on-site food pantry to support these families during their infant's hospitalization. This initiative began with a modest $1,000 grant, which allowed us to repurpose a small closet adjacent to the NICU social worker's office into a food pantry stocked with non-perishable goods. Soon after, a fortuitous encounter between a NICU team member and the CEO of the local food bank, during a community event, led to a larger collaboration. Their "Food is Medicine" initiative, supported by funding from a national insurance company, aligned with our goals. This partnership resulted in the creation of the NICU Nourishment Center, a dedicated space within the hospital to provide ongoing nutritional support for families affected by food insecurity. Upon each admission, the NICU social worker ensures that every family is informed about the Nourishment Center and provided with access, regardless of financial need.A portion of the funding was allocated to redesign the nearby NICU waiting room into a multi-functional nourishment space. This area was transformed into a welcoming environment where families could relax, share meals, and congregate. It also included a walk-in food pantry with both perishable (refrigerator and freezer) and non-perishable items, as well as a microwave for food preparation. During the design phase, we engaged members of our Family Advisory Council, whose insights led to two key priorities: ensuring the center's proximity to the NICU for easy access and providing 24-hour availability to allow families autonomy in using the pantry without stigma or the need to request permission.

Outcomes/Lessons Learned: Figures 1, 2, and 3 depict the completed NICU Nourishment Center and food pantry. Since its opening on February 27, 2024, through August 20, 2024, 229 NICU families have accessed the center upon admission. Among these, 44 families (19%) reported experiencing food insecurity within the past 12 months. Tracking food consumption patterns revealed that high-protein items (e.g., yogurt, nuts) and quick "grab-and-go" snacks (e.g., small salads, cheese) were the most frequently utilized. Families who participated in an informal QR code survey expressed a preference for additional beverage options, including milk, orange juice, energy drinks, and water. Unexpected benefits emerged, such as the use of the space for weekly NICU family support groups and feedback from mothers who appreciated the convenience of high-protein snacks while using the nearby lactation rooms. Families also reported reduced stress from not having to travel far from the NICU to access meals, with the center conveniently located just across the hall from the unit. Logistical and operational challenges included delays in the design and construction process, which made it difficult to find alternative waiting areas. Achieving consensus on the center's design while adhering to hospital branding and regulatory guidelines also proved challenging. Additionally, maintaining food supplies during periods of high NICU census and managing key card returns posed ongoing operational hurdles.

Figure 1.

Figure 2.

Figure 3.

Conclusions: The NICU Nourishment Center serves as a model initiative for promoting health equity in a Level IV NICU by providing 24-hour access to nutritious food for all NICU families, regardless of socioeconomic status. This initiative was designed to reduce stigma surrounding food insecurity and alleviate the burden of meal planning and traveling far from the NICU while caring for a hospitalized infant. The integration of feedback from both past and current NICU families ensured that the program addressed the needs of NICU families and fostered engagement in NICU care, rather than serving the interests of external organizations. Next steps include securing additional resources and partnerships to sustain the Nourishment Center, such as pursuing local and national grants and philanthropic support. Expanding data collection on program impact is also a priority, with plans to track food pantry usage patterns (e.g., frequency of use and peak times) and conduct qualitative interviews to evaluate family engagement and potential effects on psychological well-being. These efforts will enhance our understanding of the program's utilization, benefits, and areas for quality improvement.

Impact: The NICU Nourishment Center was made possible through critical partnerships with community organizations, which played a key role in establishing and maintaining the 24-hour access food pantry and directly aligns with the hospital's mission to serve the poor and vulnerable. Despite the logistical challenges encountered, this model demonstrates that healthcare organizations can effectively collaborate with local partners to address NICU family needs. These collaborations not only fulfill immediate necessities but also strengthen relationships between healthcare institutions and community organizations, creating a network that can support future initiatives and program expansions. Future evaluations will focus on assessing the long-term impact of the Nourishment Center on family engagement, parental mental health, and overall NICU outcomes. By leveraging strong community partnerships and hospital administrative support, the NICU Nourishment Center not only addresses food insecurity but also serves as a replicable model for promoting health equity and enhancing family well-being in NICU settings.

Learning Objectives:

1. Recognize the importance of addressing health equity in the NICU and its implications for family-centered care.
2. Identify strategies for developing a 24-hour nourishment center in a healthcare setting through community partnerships.
3. Learn about the process and challenges of implementing a sustainable food pantry program in a hospital environment.

Gravens 2025-22

Title: Prenatal workshop and support group for parents of children who will come to the NICU

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Problem Statement: We want to prevent the lack of prenatal education and support for parents with a high-risk pregnancy. It is important to prevent isolation, anxiety or depression of parents expecting sick newborns.

Abstract:

Introduction: Prospective parents who know their baby will be sick at birth may experience anxiety and depression; women in high-risk pregnancy units also suffer from isolation. Support groups in the NICU have been demonstrated to have a positive impact on parents but they do not exist in a prenatal fashion.

Objectives: To describe the development and evaluation of a prenatal education and support group for parents whose baby will be admitted to the NICU because of prematurity or congenital anomalies.

Methods: The format of the workshop and themes to discuss were developed in a needs assessment phase by questioning 45 parents. These 45 parents identified several important themes: maternal guilt, their future parental role, normalizing their experience/emotions, coping with their "broken dreams" (mourning their objectives: pregnancy, delivery, breastfeeding, parenting, etc), adapting to their new reality, control and trust. They also described educational themes: information about the NICU, what the baby would look like, technology around the baby and common neonatal interventions, who was part of the neonatal clinical team and the role of parents in this team. These findings were used by our parent-partner group to design a checklist and a presentation with pictures to moderate the workshop. A pilot phase optimized workshop time and delivery. For example, more fathers participated when it was called a workshop compared to a support group. The study took place in a large academic level 4 hospital. During eight months, prospective parents were invited to participate in the workshop when a diagnosis made admission to the NICU highly likely. Parental perspectives were investigated using mixed methods at two different times: after the workshop and after one week in NICU, where recall was also evaluated.

Results: A total of 136 parents participated in the workshop: 114 pregnant women and 22 partners. 55 were hospitalised in the high risk pregnancy unit and, 83 were followed up in the fetal anomaly center. The response rate was 65% for the first questionnaire and 41% for the second questionnaire. The mean age of the mothers was 32 years. The average gestational age at the time of the workshop was 32 weeks. 48% were primiparous. During the evaluation immediately after the workshop, the average score given by parents was 9.6/10. Almost all agreed/strongly agreed that the workshop was useful (98%); that the workshop help to prepare the birth of the child (95%); that the workshop made them feel less lonely and isolated (90%); and that exchanges with other parents were beneficial (92%). All answers to open-ended questions were positive, for example: "I think it's an essential workshop for any parent expecting this type of birth. Thank you so much!" or parents say they appreciate "the presentation and all they do to care for babies." After the birth, all parents remembered the workshop and could recall and identify topics that were discussed. 95% of parents would recommend it to other parents. Open-ended questions helped us improve the workshop content.

Conclusion: Prenatal educational workshops provide a unique and useful means to support future NICU-parents and to prepare for a neonatal hospitalization.

Learning Objectives:

1. Describe the development of a prenatal workshop with parent partners.
2. Examine the utility of prenatal workshops for prospective parents whose child will be admitted to the NICU.

Gravens 2025-23

Title: Project Milestones: Creating a Positive Environment for Bonding Families and Newborns One Photo at a Time

Authors: Elisa Abdulhayoglu, Rachelle Rubin, Bhumi Patel, Julianna Farnam, Sarah Martorano, Helen Christou

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Problem Statement: The Project Milestones team aimed to empower families and caregivers by creating opportunities through photoshoots and social media, to facilitate an environment of hope and comradery, and simultaneously celebrate the resiliency of NICU babies and their families. We hypothesized that giving NICU families the opportunity to celebrate important holidays and special milestones would lead to improved emotional support and bonding with their infants.

Abstract:

Background and Purpose: The Brigham & Women's Hospital (BWH) neonatal intensive care unit (NICU) is a 66-bed tertiary unit that cares for babies born as early as 22-weeks of gestation. Babies born prematurely have complex medical needs and could stay in the NICU for weeks to months at a time. This can be distressing (1) especially since the babies miss milestones with their families like their first holiday, first time smiling, and others. Lack of opportunity to bond can make it difficult for families to feel connected to their NICU infant (2). The NICU experience unfortunately creates a gap in bonding (1). At BWH, neonatologists, nurses, family support specialists, respiratory therapists and multi-disciplinary teams encourage families to create memories with their infants by reading, singing, holding them, and participating in their infants' case as medically appropriate. Nurses make scrapbooks for families to show how strong their little ones are becoming. These small moments are integral to enhancing family-centered care in the NICU and pivotal in the infant's journey (3). Project Milestones takes a comprehensive approach in creating celebratory moments to bridge the NICU journey with everyday life.

Methods: Project Milestones, led by the NICU medical director with three administrative support members and one family support specialist, produces photoshoots once or twice a month that are posted on the departmental Instagram page. Initial recruitment of families and infants was one-on-one, with careful consideration of the infant's medical condition, and family/staff acceptance. Between October 2023 and September 2024, we conducted a total of 82 themed-photoshoots with philanthropic support for props/costumes. The photoshoots were planned around major holidays (i.e. Halloween), celebratory days (i.e. NICU Awareness Day), and discharge day. To evaluate the program's impact, we surveyed families who participated in at least one photoshoot. Through a mix of multiple-choice and open-ended questions, the survey aimed to assess the perceived benefits of participation, the emotional responses and satisfaction with the photoshoots, and feedback for improvements. The team also tracks social media data to gauge engagement and community response.

Results: In October 2024, surveys were sent to 37 families who participated in the NICU photoshoots, with a response rate of 51%. The survey collected quantitative data (ratings, yes/no responses, and frequency measures), qualitative data (open-ended comments), and categorical data. One family was still in the NICU, 10 were discharged less than 6 months prior, and 8 were discharged greater than 6 months. All families would recommend the experience to other families. All respondents rated their overall experience as a 5 out of 5 (1 = poor experience, 5 = excellent experience). Additionally, 94.74% of participants reported NICU photoshoots helped them feel more connected as a family. We were interested in whether families revisited the photos post-discharge. Results showed that most families revisited the photos often, even families who had been discharged home for greater than 6 months. Overall survey results indicated overwhelming satisfaction with the photoshoots and were viewed as a source of positivity. Participants described these sessions as uplifting and a vital break from the stress of NICU life; one respondent said "We looked forward to photoshoot day. It broke up the monotonous days for us." The photoshoots provided joy for the families in unit and allowed family members externally to engage through social media; one family shared, "We absolutely loved being involved in the NICU photoshoots. It was always exciting for us but also for our family who followed the BWH NICU Instagram to see all the pictures." These experiences fostered a sense of normalcy amidst the emotional NICU journey, enabling parents to focus on celebrating their babies and creating memories; another family shared, "Instead of beeping monitors all day long it was nice to take our minds off of those beeps and enjoy the holiday and our baby. It also helped make things feel a bit more normal in a crazy scary time of our lives!"

Conclusions: In the first year of the program, we saw an impact on morale in the NICU and an increased interest in participation from families and staff. The medical director conducted initial recruitment by individually seeking out potential families. As families were unfamiliar with the program, some shared concerns of posting their newborn on Instagram. However, as the photoshoots increased, eagerness increased. The team took careful measures to keep patient identifiers hidden and only included details in posts with parental consent. This attention to detail has led to an environment of trust and collaboration. Our survey results support that families found a sense of normalcy, beyond tubes and wires, by seeing their babies in costumes during holidays they would have been celebrating at home. NICU photoshoots enhanced emotional well-being for parents during a challenging time. With the growth of Project Milestones, the team established weekly meetings, coordinated in unit and external support, and resource alignment. Our family support specialist played a key role in connecting with non-profit organizations, such as Project Sweet Peas, former NICU families and independent donors, to provide supplies and costumes. Our Instagram has an increased engagement rate correlating with the consistent photoshoots. Next steps include validated surveys for families and staff, increased opportunities for all NICU families, and growing our Instagram presence. The Project Milestones team continues to provide opportunities for families to see their baby beyond the hospital environment, one photo at a time.

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Learning Objectives:

Describe the importance of creating opportunities for NICU families to bridge everyday life with their infants' NICU journey.

Define how NICU staff, administration, and families can collaborate to create positive family experiences in the NICU by celebrating special milestones.

Gravens 2025-24

Title: Phototherapy in the Skincubator, a feasibility laboratory test

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Problem Statement: Skin-to-Skin-Care (SSC) reduces morbidity and mortality in preterm neonates and also reduces bilirubin. However, need for phototherapy is one of the barriers for performing SSC for extreme preterm infants in some units. We hypothesized that the transparent Skincubator will not reduce the intensity of phototherapy in a manner that will prevent it's use during phototherapy.

Abstract:

Background: In the first week of life preterm babies commonly receive phototherapy for neonatal jaundice. Traditional skin to skin care includes covering the baby with a blanket that is not transparent and hence prevent from using many phototherapy providing devices. Kangaroo mother care reduces serum bilirubin and hence enhances phototherapy. 1. Phototherapy during SSC is occasionally performed with phototherapy blankets however, this may be less effective than blue light-emitting diode (LED) lights. 2.The Skincubator is a transparent, bottomless, wearable incubator for skin to skin contact. The top part of the Skincubator is made from a PETG (Polyethylene Terephthalate Glycol) cover that is fully transparent to visible light. The Skincuabator has an additional layer that radiates back into the skincubator heat emitted as infrared light that is applied if needed in order to improve heat preservation. This layer reflects back 70% of infrared and has 70% transparency for visible light. Hence, it the Skincubator has the potential to enable phototherapy with traditional phototherapy providing devices.

Aim: To evaluate Phototherapy intensity in the Skincubator.

Methods: A NeoBlue Led phototherapy system (Natus Medical incorporated, Wisconsin USA) unit was placed 30 centimeters from a NeoBlue LED phothotherapy radiometer (Natus Medical incorporated, Wisconsin USA).Phototherapy intensity was tested with and without the Skincubator PETG cover, without changing the location or relative configuration of the phototherapy source or the detector. This was performed for high and low phototherapy intensities. In addition, after documenting the phototherapy intensity with the PETG cover the Skincubator infrared reflector was applied on top of the PETG cover. The combined intensity reduction of the PETG cover and the infrared reflector was then documented for high and low phototherapy intensities.

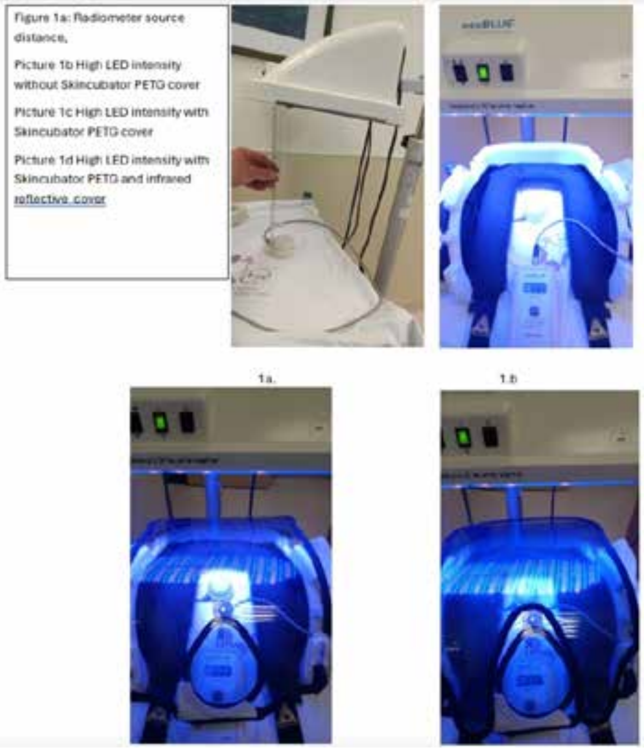

Figure 1a: Radiometer source distance,

Picture 1b High LED intensity without Skincubator PETG cover

Picture 1c High LED intensity with Skincubator PETG cover

Picture 1d High LED intensity with Skincubator PETG and infrared reflective cover

Results: Phototherapy measured intensity using high intensity was 58.5 μW/cm^2 per nm without the Skincubator PETG cover. Applying the PETG cover reduced the intensity by ≈10% to 52.2 μW/cm^2 per nm. Applying the infrared reflector upon the PETG cover further reduced the intensity by additional ≈25% to 37.6 μW/cm^2 per nm. When using low intensity setting, the measured intensity was 19.7 μW/cm^2 per nm without the Skincubator PETG cover. Applying the PETG cover reduced the intensity ≈10% to 17.6μW/cm^2 per nm. Applying the infrared reflector upon the PETG cover further reduced the intensity by additional ≈25% to 12.6 μW/cm^2 per nm.

Figure 2 Phototherapy treatment for a 29 weeks preterm baby in the Skincubator .

Conclusions: The Skincubator PETG cover mildly reduces phototherapy intensity by 10% when using high or low intensity phototherapy, and keeps phototherapy in the higher range of high and low intensities. Even when using the infrared reflector, high intensity phototherapy that is defined >30 μW/cm^2 is achieved. From our laboratory study it seems that phototherapy within the Skincubator is reasonable for the vast majority of preterm babies. The exception are rare cases with extremely elevated bilirubin level that are in threatened need of exchange transfusion. Clinical studies of phototherapy within the Skincubator are needed to confirm our findings.

Impact: Skin-to-Skin-Care reduces morbidity and mortality in preterm neonates and also reduces bilirubin. However, need for phototherapy is one of the barriers for performing SSC for extreme preterm infants in some units. Providing methods to perform phototherapy during SSC may increase the rate of this life saving and brain saving intervention.

Learning Objectives:

1. To know the advantage of SSC in reducing bilirubin and enhancing phototherapy.
2. To state several ways to perform phototherapy during SSC.

Gravens 2025-25

Title: Financial Hardship in Neonatal Care: Development of a Conceptual Framework

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Problem Statement: Within neonatal care, there is limited understanding of financial hardship, lack of standardization for defining and measuring the concept, and its distinction from other terms. Therefore, the purpose of this study was to develop a conceptual framework of financial hardship for neonatal care to guide neonatal nursing practice and research. This conceptual framework is important because it addresses a critical but often overlooked aspect of neonatal care: the financial hardship faced by families. Neonatal care, which can be highly specialized and costly, can impose significant financial burdens on families that may not only affect their finances but also impact their mental and physical health, relationships, and quality of life. This work is also an important aspect of family centered care by acknowledging and prioritizing financial well-being as a fundamental component of family health. It supports healthcare providers in recognizing the full scope of a family's experience, including non-medical factors.

Abstract:

Introduction: One in ten infants born annually will need highly specialized and costly neonatal medical care. One unintended consequence of this specialized care is financial hardship, which can adversely affect family health and quality of life. The concept of financial hardship was first introduced by oncology researchers and defined as the adverse financial consequences resulting from a cancer diagnosis. More broadly, financial hardship is understood as the distress and hardship caused by overwhelming healthcare costs. The relevance of this concept extends far beyond cancer care, impacting various healthcare settings, including neonatal care. Furthermore, focusing on financial hardship and addressing how these financial stressors impact family well-being is an aspect of family-centered care (FCC). Family-centered care emphasizes supporting the whole family, considering their needs, values, and preferences, and involving them in decision-making processes. Despite the growing awareness of the financial implications of neonatal care, there remains a significant gap in research exploring its prevalence, impact, and potential solutions within this context. Within neonatal care, there is limited understanding of financial hardship, lack of standardization for defining and measuring the concept, and its distinction from other terms. Therefore, the purpose of this study was to develop a conceptual framework of financial hardship for neonatal care to guide clinical practice and research.

Methods: This conceptual framework was informed by a systematic search of published literature describing financial hardship, financial burden, or financial toxicity in neonatal care. Our search was conducted in Ovid Medline, Elsevier Embase, EBSCOhost CINAHL, and Clarivate Web of Science and included peer-reviewed studies available in English. Results. The search yielded 1825 articles. Covidence software was used for data management and data extraction was completed on 32 articles using an excel matrix, including information about how financial hardship was conceptualized and measured. Related terms such as financial stress, worry, strain, hardship or burden, and economic hardship, burden, or strain are also defined and include information about the similarities and differences. The conceptual model focuses on factors related to the familial costs of neonatal care, or the financial bills the family is directly responsible for. The model includes important elements such as the objective and subjective measurement of financial hardship and rationale for deciding how to measure financial hardship, and the various ways of categorizing healthcare expenses (e.g., direct medical, direct non-medical, indirect, and intangible costs). The conceptual model was also informed by relevant qualitative studies highlighting cross-cutting themes such as "financial constraints", "limited resources and limited reach financial assistance programs", "financial burden", "mental load of financial decision making" (e.g., worry, stress, management of transportation, childcare, visits, etc).

Conclusion: Even though financial hardship exists in neonatal care, this phenomenon is not well described, and the current evidence is difficult to synthesize given the heterogenous nature of the studies. This work addresses a vital gap in our understanding of the financial consequences of neonatal care by offering a framework to guide future research, and ultimately inform tailored interventions that reduce the risk of financial harm and improve family financial health. This framework could guide policies or resources that alleviate financial burdens for families, such as financial assistance programs or support services, an important aspect of FCC. With this conceptual framework, we can stimulate attention and bring clarity to this significant issue by prioritizing the family's financial and emotional needs, integrating those needs into neonatal care practices, and paving the way for interventions that reduce financial harm and enhancing family resilience and support throughout neonatal care.

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Learning Objectives:

1. Participants will be able to identify key themes and factors

contributing to financial hardship.

2. Participants will be able to describe the main elements of the conceptual framework to support their research and clinical practice.

Gravens 2025-27

Title: Transforming Preterm Oral Feeding with Innovative Algorithms: Insights from a Qualitative Improvement Initiative

Authors: Rena Rosenthal, Jean Chow, Erin Sundseth Ross PhD, Rudaina Banihani MD, Natalie Antonacci, Karli Gavendo, Elizabeth Asztalos MD

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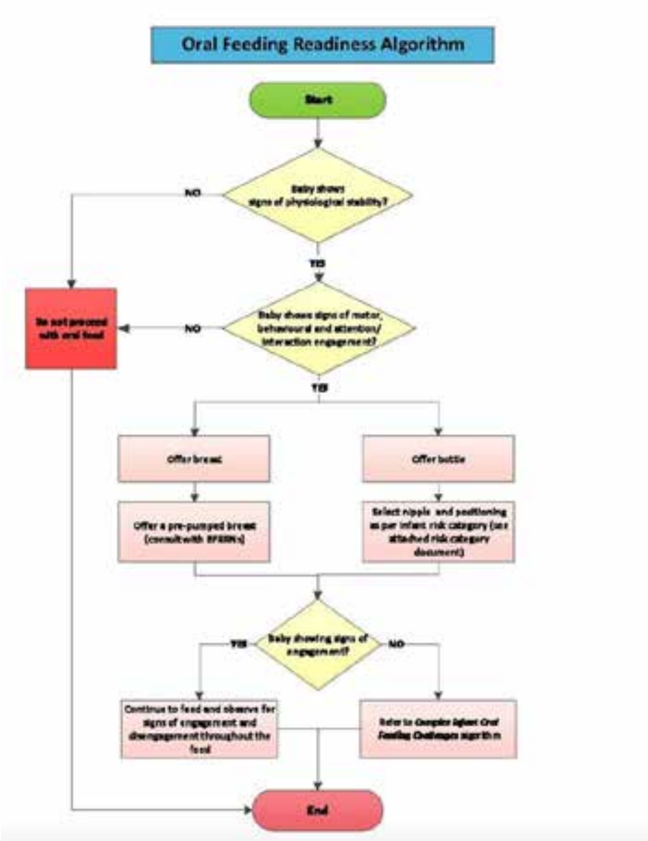
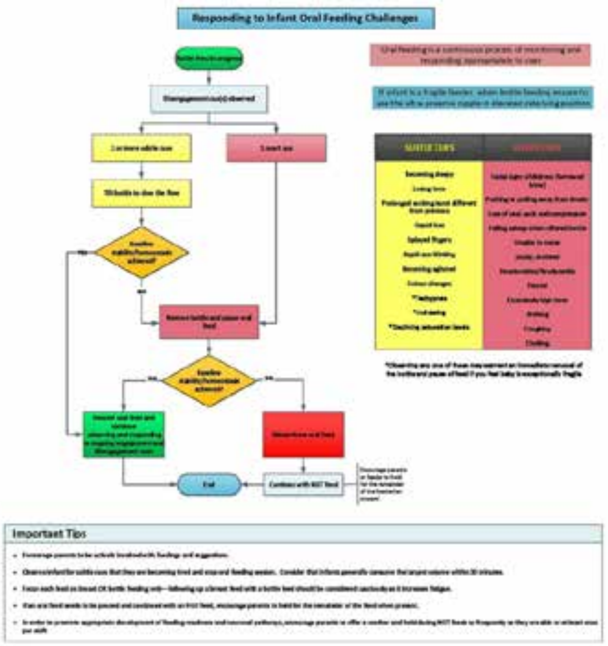
Problem Statement: Establishing safe, efficient oral feeds for preterm infants is a crucial yet challenging milestone before NICU discharge. This process is often accompanied by heightened stress and anxiety among NICU staff and parents, as nonlinear feeding progression and a lack of standardized protocols add uncertainty. Without a structured approach, feeding practices rely heavily on individual experience, leading to inconsistent care and increased caregiver stress. This quality improvement initiative at Sunnybrook Health Sciences Centre, a tertiary perinatal care unit in Toronto, Ontario, was conducted to address these challenges and to improve the transfer of knowledge around preterm oral feeding practices.

Abstract:

The primary aim was to create a structured, evidence-based approach to oral feeding that is adaptable to both breast and bottle feeding, reduces variability, and ensures consistent practices across all caregivers. This structured approach not only promotes safer and more effective feeding but also supports caregivers, including parents, by providing clear, actionable guidance. Why This Matters: Oral feeding is fundamental to preterm infant development and readiness for discharge. Inconsistent feeding practices can delay feeding milestones, prolong NICU stays, and negatively impact caregiver confidence. A standardized approach reduces reliance on subjective decision-making, allowing caregivers to provide more uniform, cue-based feeding that aligns with each infant's needs. Improved feeding practices lead to reduced anxiety, smoother transitions to home care, and better developmental outcomes for preterm infants.

Methodology: The COVID-19 pandemic highlighted a pressing need for knowledge transfer in feeding practices, as high staff turnover introduced variability in the NICU. In 2020, the multidisciplinary Sunnybrook Feeding Committee was established, comprising physicians, nurses, nurse practitioners, occupational therapists, and dietitians. Initial staff training used Supporting Oral Feeding in Fragile Infants (SOFFI®) modules to create a consistent understanding of feeding principles. With guidance from the SOFFI® creator (Consultant), our committee adapted these modules to develop two specific, tailored algorithms: the Oral Feeding Readiness Algorithm and the Oral Feeding Challenges Algorithm. Oral Feeding Readiness Algorithm: Assessing feeding readiness before each feeding, it applies to both breast and bottle feeding. Based on infant cues, this algorithm provides structured steps to determine readiness, initiate feeds, or pause. Oral Feeding Challenges Algorithm: Targeted for fragile preterm infants born under 26 weeks gestation, it provides step-by-step guidance for bottle feeds, directing caregivers in assessing challenges, implementing specific interventions, and deciding when to revert to gavage feeding. Data Collection and Evaluation: Approximately 80 NICU staff members participated in surveys and focus groups, offering qualitative feedback on the algorithms' impact. Data





indicated that caregivers experienced a significant reduction in stress due to the clear, consistent framework provided by the algorithms. The algorithms introduced a reliable YES/NO decision flow, enabling caregivers to respond confidently to infant cues, such as engagement or disengagement, and adjust feeding practices accordingly.

Results: The algorithms demonstrated notable improvements in caregiver confidence, communication, and consistency in feeding practices. Staff surveys revealed that the structured protocols reduced variability clarified feeding readiness, and challenged decision-making. The algorithms ensured a universal language and framework for all care providers, reducing subjective variations and providing clear guidance for safe, supportive feeding practices that align with each infant's cues. These changes reduced stress and anxiety for both staff and parents, creating a more cohesive NICU environment focused on supporting infant well-being.

Conclusions and Future Directions: This initiative represents Phase 1 of a broader effort to transform oral feeding practices in the NICU, establishing a foundation for consistent knowledge transfer and scalable feeding support. The development and integration of these algorithms provided a reliable, evidence-based approach that aligns with infant cues, facilitating a smooth transition from NICU to home. Moving forward, our next phase will focus on refining the algorithms, adapting them for parental use, and developing a comprehensive training program for families to support safe, consistent feeding practices post-discharge. In sum, this structured approach provides caregivers with tools for confident, informed feeding care, reducing stress and enhancing outcomes for preterm infants. The ongoing work underscores the critical role of knowledge-based protocols in clinical practice, advancing sustainable knowledge transfer across caregivers and contributing to the long-term developmental success of preterm infants.

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Learning Objectives:

1. To recognize and understand that oral feeding is a dynamic relationship between the infant and its caregiver and cannot be determined by corrected gestational age alone.
2. To learn a structured and evidence-based framework for initiation and advancing oral feeds so that its adjustments objective and not solely dependent on the experience of the feeder.
3. To understand the importance of supporting safe oral feeding in the transition from NICU to home.

Gravens 2025-28

Title: Sustaining a Nurturing Culture

Authors: Lisa Sampson, RN; Eugene Ng, MD

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Problem Statement: How do we shift the unit culture to change perception that nurturing encounters are as essential to outcomes for Neonatal Intensive Care Unit (NICU) patients as providing medications and other life-saving procedures? This is important as we strive to minimize the deleterious effects from sustained or repeated stress, thereby promoting resilience in these vulnerable infants.

Abstract:

Background: Premature infants are thrust into a world full of experiences that they may not be neurologically developed enough to process or understand. In the NICU environment, infants are bombarded with noxious stimuli and must undergo life-saving procedures that often induce stress and pain. Emerging literature suggests that balancing these stressors with positive and nurturing stimuli can positively affect neurosensory development of the brain [1][2]. Creating a space that is developmentally appropriate and encourages positive interactions between the world and the infant, enhances the unit culture that supports developmentally supportive care.

Methods and Results: Utilizing a quality improvement framework, we set out to develop a program to enhance nurturing encounters in our NICU. Initially, we focused on one small age-group of infants, setting our SMART aim to increase the total time spent providing nurturing encounters a micropremature infant experiences in the first 2 weeks of age by 15% by December 2021. We developed a unit policy on neuropromotion including clear definitions of NE activities and a NE documentation paper tool for families and staff. To further enhance consistent, accurate, and easy documentation of NE, we modified our electronic medical record (EMR). Usability testing was conducted of the documentation and compliance with the documentation form evaluated. We then focused on improvement in the total minutes of NE for micropremature infants in their first 2 weeks of age. Formal and informal education sessions provided bedside staff the rationale for the aforementioned changes in practice. To further support the nurturing care model, our team created an annual event to raise awareness of NE, a unit-wide challenge to increase total number NE minutes. Throughout the month of October, "Autumn Leaves and Cuddles Please" provides learning material and incentives for staff and families alike to enhance understanding and celebrate the importance of nurturing encounters. This run chart (Figure 1) depicts the incremental improvement of NE time. Over time, we found that NE time fluctuates based on acuity and busyness of the unit (Figure 2), and we questioned what more could be done to increase the amount of NE occurring in our unit. Surveys were distributed to families and clinicians in the Sunnybrook NICU to further characterize the local need. Amongst clinicians, most respondents (68%) did not feel they had enough education related to the various stages of neonatal sensory development.

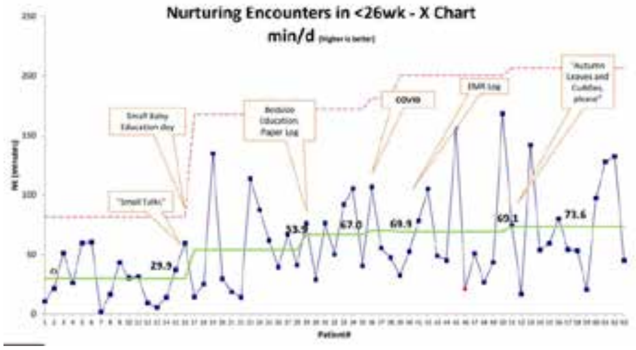
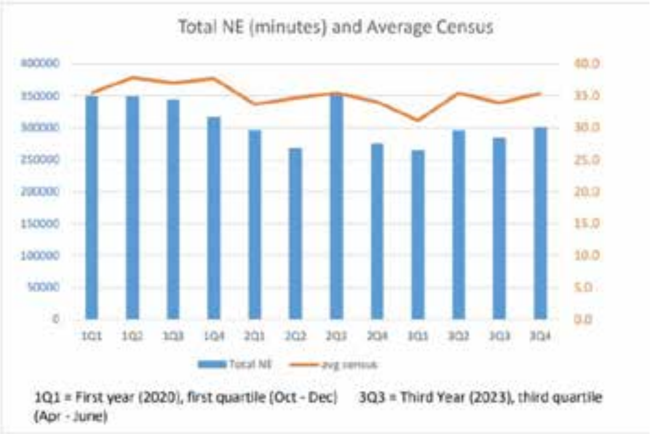


Figure 2

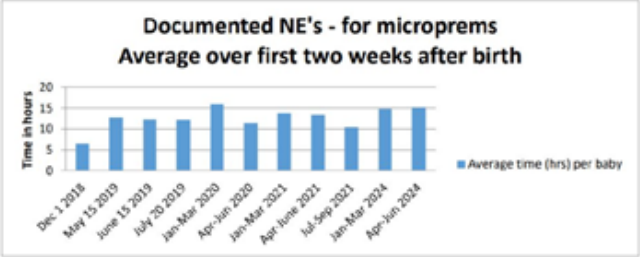


1Q1 = First year (2020), first quartile (Oct - Dec) 3Q3 = Third Year (2023), third quartile (Apr - June)

One-third (32%) did not feel that they knew the difference between neuroprotection and neuropromotion, a central tenant to providing developmentally appropriate care. In addition, 31% did not feel comfortable teaching parents about their baby's brain development. In the family survey, all parents (100%) identified that nurses were the most important person they relied on to learn about their baby's development. Parental surveys further identified families had information about hand hugs and kangaroo care (KC) but lacked information about developmental stages. We identified a significant knowledge gap in stages of sensory development of a preterm infant. Using information from the literature, interviews and the gap analysis, our multidisciplinary team created the Sensory Developmental Care Map (Figure 3). This map, placed at every bedside, shows a gradual onset and/or offset of activities based on developmentally age-appropriate readiness. It is a pictorial guide on the ontogeny of senses development, along with protective and promotive strategies at different gestational ages. It is one chart that can guide appropriate care activities throughout the continuum of their NICU journey. It is a global presentation of sensory development along with appropriate strategies that can be used by families and clinicians alike. It uses language that is clear and consistent with that used in the Sunnybrook NICU. Maintaining a focus on nurturing activities, including educational opportunities for staff, an annual celebratory event, the use of a tool that is accessible for all families, and periodic feedback to staff and families about our ongoing NE data, builds capacity to sustain our quality improvement efforts.

Conclusion: We have implemented a comprehensive program to promote and normalize the culture of providing a nurturing environment for the developing brains of preterm infants in the NICU. Through small, incremental tests of changes, we have addressed the knowledge gap in sensory development and created tools to guide, document and encourage NE activities to promote sensory development in preterm infants. These efforts have led to a significant improvement in our primary goal of increasing total time spent in NE. In the most at-risk population of micropremature infants, this program has successfully achieved and sustained a three-fold increase in NE time (Figure 4). During the implementation process, we observed that unit acuity level, staffing challenges and levels of staff experience are key potential barriers to consistently providing NE. However, efforts to continue providing education on the impacts of pain and stress and how to mitigate these through positive, promotive activities has helped solidify the perception that NE is an essential intervention that will positively affect long term developmental outcomes.

Figure 4



Impact: All of these efforts together have, and will continue to shift our unit culture to one that prioritizes positive, family focused, nurturing encounters.

References:

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Learning Objectives:

1. Understand the impact of stress and pain on infants in the NICU

2. Describe one hospitals approach to changing and sustaining a nurturing culture

Gravens 2025-29

Title: The Impact of Social Determinants of Health on Infant and Maternal Health Using a Reproductive Justice Lens

Authors: Kathryn Malin, PhD, RN, NNP-BC, APNP; Ashlee Vance, PhD, RN; Rebecca Koerner, PhD, APRN, CPNP-PC; Jessica Zemlak, PhD, RN, FNP-BC, PMHNP-BC; Cheris Edwards, RN; Jacqueline McGrath, PhD, RN, FNAP, FAAN; Rosemary White-Traut, PhD, RN, FAAN; Kelly McGlothen-Bell, PhD, RN, IBCLC

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Problem Statement: Despite efforts to improve perinatal healthcare, adverse birth outcomes such as preterm birth and

NICU admissions remain high in the U.S., disproportionately affecting structurally marginalized populations. Understanding how social determinants of health (SDOH) and maternal mental health, using a reproductive justice lens, contribute to these disparities is crucial to developing interventions that address root causes and promote equitable health outcomes.

Abstract:

Statement: Our use of the word maternal is not meant to be exclusive, however, we are using the language of the PRAMS survey in this abstract. We acknowledge the limitations of using the word 'maternal' and will address these limitations in the presentation.

Background: Despite national efforts to improve perinatal healthcare access and quality, rates of preterm birth, low birth weight, and Neonatal Intensive Care Unit (NICU) admissions continue to rise in the United States. These adverse birth outcomes disproportionately affect mothers and infants of color, Medicaid recipients, and those with chronic health conditions.1 Social determinants of health (SDOH) are recognized as significant contributors to maternal and infant health, underscoring the need for research frameworks that incorporate SDOH concepts. The Restoring Our Own Through Transformation (ROOTT) theoretical framework is rooted in reproductive justice (i.e. reproductive rights and social justice-based framework), emphasizes both structural and social determinants as root causes of health inequities.2 SDOH impacts on infant and maternal mortality and morbidity can often be traced to structural determinants unique to the United States, including slavery, Jim Crow laws, redlining, and the GI Bill. These determinants relate to SDOH factors such as food security, education, income, neighborhood conditions, housing, healthcare access, incarceration, and safety. Maternal mental health is another important but understudied factor influencing maternal and infant health outcomes. Thus, using a framework that account for root causes of health inequities can be leveraged to rigorously evaluate perinatal health outcomes in the United States, and assess the impact of mental health and mental healthcare access on outcomes to guide future research and clinical practice.

Aims: Using data from the Pregnancy Risk Assessment Monitoring System (PRAMS) 8 database3, we aim to (1) develop a structural equation model assessing pathways between SDOH (as guided by the ROOTT Framework) and infant and maternal health outcomes and (2) evaluate whether maternal mental health moderates the relationships between SDOH and health outcomes.

Methods: Data were analyzed from 13 states that included the SDOH supplement in their PRAMS 8 data collection. Institutional Review Board (IRB) approval was obtained from Marquette University. Variables from the PRAMS 8 database and the SDOH supplement were selected by co-authors based on their alignment with the ROOTT framework and conceptual measurement adequacy. Analysis used a weighted sample of 431,650, with 7,885 complete cases for analysis. Data were processed using STATA 18. Bivariate analyses examined relationships between SDOH measures guided by the ROOTT framework (e.g. food stability, education, income, access to healthcare, housing) and infant outcomes (e.g. preterm birth, NICU admission), maternal morbidity (e.g., hypertension/eclampsia, gestational diabetes, chorioamnionitis), and breastfeeding. Pre-identified covariates, including preexisting maternal health conditions, insurance, substance use, delivery mode, partner status, race, maternal nativity, and prior preterm birth, were controlled for in the logistic and linear regression models. Maternal stress, depression ever, and depression during pregnancy were then included int he models to evaluate for moderating effects.

Results: Preliminary findings indicate that preterm birth, NICU admission, maternal morbidities, and breastfeeding are significantly associated with SDOH measures linked to structural determinants in the United States. Access to healthcare, including timing of the first prenatal care visit, significantly predicted both NICU admission ($p < 0.0001$, 95% CI [0.877-0.936]) and gestational age at birth ($p < 0.05$, 95% CI [-1.46 to -0.161]). Both NICU admission and gestational age at birth were significantly predicted by maternal reports of emotional/physical abuse before and during pregnancy ($p < 0.05$, 95% CI [1.07-5.22] and $p < 0.05$, 95% CI [-1.22 to -0.13], respectively). Maternal morbidity was associated with multiple access-to-care and housing variables. For example, maternal gestational diabetes was predicted by lack of stable housing ($p < 0.01$, 95% CI [0.053-0.549]), and housing insecurity significantly predicted ever breastfeeding ($p < 0.05$, 95% CI [0.321-0.918]). There was a significant difference in predicted probability of breastfeeding ever between mothers with no prenatal care and those with any prenatal care. This difference was largest when mothers reported depression during pregnancy (OR=0.15, 95% CI: 0.022-0.92, p= 0.02). Similarly, the predicted probability of breastfeeding ever between mothers who reported not having a steady place to live and those with a steady place to live or had a place to live was significant, this difference was largest for mothers who reported depression during pregnancy (OR=0.13, 95% CI: 0.026-0.689, p=0.02). Final model results and recommendations are anticipated by December 2024. Conclusions: Early results indicate that SDOHs rooted in structural determinants are important predictors of poor maternal and infant health outcomes in the United States. Evaluating maternal and infant health outcomes through a reproductive justice framework reveals modifiable risk factors, including access to stable healthcare, safety, and housing. Our early moderating results also point to the possibility that any prenatal care may be protective. Our final analysis evaluating if and how the number of prenatal care visits influences maternal and infant health outcomes is forthcoming. Comprehensive healthcare provision must ensure early and consistent access to healthcare and resources for safety and housing stability to support maternal and infant health.

Impact: These findings have significant implications for state and federal policies affecting SDOH for mothers and infants. Policies such as permanent supportive housing services, tenant protections, extensions of Medicaid services and additional coverage through private insurance may have the most substantial impacts on maternal and infant health outcomes and require further support and research. Clinicians are uniquely positioned to advance these types of policies through advocacy and education efforts.

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Learning Objectives:

1. Learners will be able to describe how factors such as housing stability, access to healthcare, and mental health impact birth outcomes and maternal health, using data

from the Pregnancy Risk Assessment Monitoring System (PRAMS) and the ROOTT framework.

2. Learners will be able to explain how maternal mental health, including stress and depression, can influence the impact of SDOH on preterm birth, NICU admissions, and breastfeeding, informing future research and clinical practices.

Gravens 2025-30

Title: Using a Trauma Informed Approach to Share Lessons Learned During My Transition from NICU Professional to NICU Parent

Author: Jessi Barnes

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Jessi Barnes

Emory University

Grady Memorial Hospital

Abstract:

I'd like to preface this submission by saying it is not data driven and may not fit in with the desired abstracts. I wanted to share my unique perspective as a NICU nurse educator who went on to experience the NICU as a parent. Trauma informed care is an integral part of family centered care. My pre-existing passion for both increased tenfold after our NICU experience. Learning from the lived experiences of our families is an imperative way to increase our ability to create safety and improve outcomes for our patients and their families.

Parenting in the NICU is anything but normal. Parents struggle to bond with and care for their new baby in a foreign, invasive, and traumatic environment. Neonatal professionals are uniquely positioned to foster resilience in parents and potentially mitigate the traumatic experience that often accompanies a NICU admission. Drawing from experiences in my personal and professional journey, this presentation will focus on how the healthcare team can develop relational awareness skills and subsequently improve the quality of relationships we build with our families. Specifically, this presentation will discuss the following: 1. awareness of the relational environment and communication skills, 2. implications and impact of power dynamics, and 3. the importance of parent/caregiver presence. This presentation will use a trauma informed approach to explore the ways the healthcare team can empower families in the NICU to advocate for their child(ren) and collaborate with the multidisciplinary team. This presentation will discuss how to implement specific actions such as active and empathetic listening, how to avoid toxic positivity, and how to cultivate space for the authentic emotions of NICU families.

Needs Assessment/Description of Presentation: Centering the experiences of the family is paramount to building collaborative, empowering relationships in the NICU. Cultivating resiliency in NICU families is primarily facilitated by the neonatal nursing team. Through sharing my personal experience transitioning from NICU professional to NICU parent, this presentation will discuss ways in which NICU team members can be a safe haven for families to thrive. Learning from the experiences of NICU families allows us to grow professionally, hold ourselves to a higher standard, and help our patients and their families start life from a place of acceptance, grace, and hope.

References:

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Learning Objectives:

Recognize the impacts of birth related trauma and how it impacts the multidisciplinary team's relationship with the NICU family.

- Define toxic positivity and discuss how it is propagated in the NICU
- List three ways the neonatal team members can cultivate resiliency in NICU families

Gravens 2025-31

Title: Small wins for small babies: a program celebrating babies' successes helps parents cope with the hospitalization in neonatology

Authors: Fanny Labelle, Elisabeth Legault, Béatrice Boutillier, Sophie Fournier, Emilie Lancastre, Annie Janvier, Christine Laurin, Magali Rey-Le Lorier

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Problem Statement: Neonatal hospitalizations are generally long and often complex, with periods of instability or stagnation. In studies, parents report that clinicians are often pessimistic and rarely focus on what is going well with their children. With this program, we want help parents cope and let them celebrate weekly accomplishments of their baby in the NICU.

Abstract:

Background: Parents in the NICU (Neonatal intensive care unit) often mourn a "normal" delivery and/or baby and may experience guilt, anxiety and sadness. Neonatal hospitalizations are generally long and often complex, with periods of instability or stagnation. In studies, parents report that clinicians are often pessimistic and rarely focus on what is going well with their children.

Objectives: The aim of this study was to describe the creation and implementation of a project to celebrate babies' achievements and progress throughout the hospital course in a large level 4 NICU and examine parental perspectives.

Methods: This project was suggested by parent partners and developed with them. In a feasibility and implementation study, 82 parents were investigated. Similar to the literature, they reported the lack of optimism in the NICU. They recommended weekly celebration of accomplishments, with picture and words. For example, "I now weigh 1000 grams," "I have received my mother's milk for one month," "I was read my first book" (figure).

The formats recommended by parents were both physical (receiving paper “certificates” that could be placed together as a garland above the baby’s bed) and virtual (receiving a text, mostly recommended by fathers who resume work during the hospitalization). Some certificates were “generic” (“I was strong during my surgery”) and chosen from a bank of certificates, while others had to be created when the situation of the baby was less stable (for example, “I met my grandfather who came all the way from France”). Families were included after one week of life. The inclusion criteria were 1) babies who were likely to be hospitalized longer than a month, 2) were likely to survive and 3) for whom we obtained parental consent. Every week, one or several certificates were brought to the baby’s room and text messages were sent to the parents, including a picture, to celebrate an important weekly success, or if there was none, a message of encouragement. The corresponding “certificates” were also displayed above the baby’s bed. We investigated parental perspectives about this program with a questionnaire sent via text at the end of the hospitalization.

Results: The parents of 136 babies accepted to participate and 128 received weekly certificates (8 babies died before the first certificate was given). The length of stay was on average 99 days, and the average number of certificates/texts received was 12 (range 3-40), for a total of 980 certificates received; 40% of parents answered the questionnaire sent one week post discharge. The overall evaluation (on 10) of parents for this project is 9.4; 85% of parents think it has helped them cope with hospitalization. 83% think that the weekly frequency is appropriate, the rest would want more certificates. Some suggestions were made by parents and have already been implemented during the project: removing and (mostly) adding some certificates, adding dates on certificates or having more certificates celebrating the bonding between fathers and babies. Parental answers to open-ended questions were all positive and they gave advice to new parents. “(it helps to) keep the light at the end of the tunnel in perspective!” or “be optimistic and above all patient”. There were no adverse impacts associated with the project.

Conclusion: Sending text messages and weekly certificates to NICU parents to celebrate weekly accomplishments was appreciated. It celebrates their child’s achievements and helps parents cope. It is possible to instill healthy optimism in the NICU.

Learning Objectives:

Describe the creation and implementation of a project to celebrate babies’ achievements and progress throughout the hospital course
Examine parental perspectives about weekly small celebration of their babies’ achievements

Gravens 2025-32

Title: Therapy BRIDGE (Bringing Real-Time Instruction via Developmental and Gestationally-appropriate Education/Coaching) Program: A pilot study

Authors: Ashley Pinger, Grace Sagester

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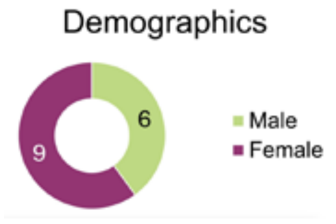
Problem Statement: Research has shown that caregiver involvement in their infant’s care in the NICU helps to improve outcomes however there is often a gap between care provided in the NICU and discharge home. The overall objectives of the Therapy BRIDGE program were to 1) create a novel caregiver education and coaching intervention focused on infant development and caregiver needs to “bridge the gap” during the NICU-to-home transition and 2) pilot test the feasibility, acceptability, and efficacy of this program for infants and their caregivers.

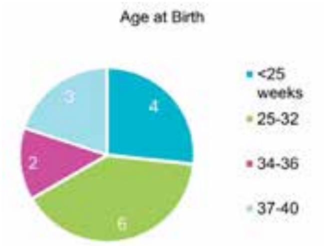
Abstract:

Introduction: Infants born with complex medical and/or surgical conditions are at high-risk for neurodevelopmental challenges (1). During their Neonatal Intensive Care Unit (NICU) stay, infants and caregivers receive continuous support and constant access to a variety of specialists. However, caring for these infants upon discharge can be overwhelming to caregivers in the absence of their care teams (2). Currently at our institution, there is no formal intervention in place to support caregivers as they transition their infant home from the NICU setting. This study focused on the development and implementation of a standardized caregiver education program, individualized to meet the needs of each infant-caregiver dyad to provide a safe and supportive learning environment to optimize outcomes.

Methods: The Therapy BRIDGE program was a prospective, longitudinal, non-randomized pilot study for infants diagnosed with intraventricular hemorrhage (IVH) and their caregivers. The study was conducted in our Level IV NICU as well as our affiliated outpatient therapy locations. The intervention, the Therapy BRIDGE menu, was created based on evidenced-based principles used in neonatal therapy and was individualized to meet the specific needs of the infant-caregiver dyads. The Therapy BRIDGE menu included various standardized educational topics to address development, feeding, socialization, and cognition. Therapists were given the opportunity to provide feedback regarding education points to ensure that appropriate topics were included prior to the rollout of the program. Once finalized, formal staff training was completed prior to the start of the enrollment process. This pilot study enrolled 15 infant-caregiver dyads. Infants were included if they were diagnosed with IVH and were admitted to the NICU. Caregivers were required to be 18 years of age at the time of enrollment. Infants were excluded if they transferred out of the NICU prior to discharge or if caregivers lived outside of the hospital service area. The Therapy BRIDGE program consisted of up to 10 therapy sessions across the inpatient and outpatient settings for each dyad. Therapy sessions occurred in either the NICU or the hospital-affiliated outpatient clinic. Therapy sessions were completed by either an OT or PT or a combination of both, depending on the needs of the infant. Telehealth was offered to each infant-caregiver dyad however was not utilized during the study. The Therapy BRIDGE program aimed to promote carryover of education learned in the NICU through coaching to nurture the developmental needs of infants and the informational needs of their caregivers through evidence-based knowledge in developmental care and caregiver support. This study utilized both qualitative and quantitative variables; descriptive statistics summarized demographic variables and subject characteristics. The Canadian Occupational Performance Measure (COPM)3, caregiver surveys and therapist surveys were utilized, and data was collected directly into REDCap. Feasibility and acceptability were measured using 5-point Likert scales completed by caregivers and therapists. Feasibility was also measured by the total number of education sessions and home programs completed. Efficacy was measured by COPM data to identify clinically significant changes of caregivers' perception of their infant's occupational performance over time.

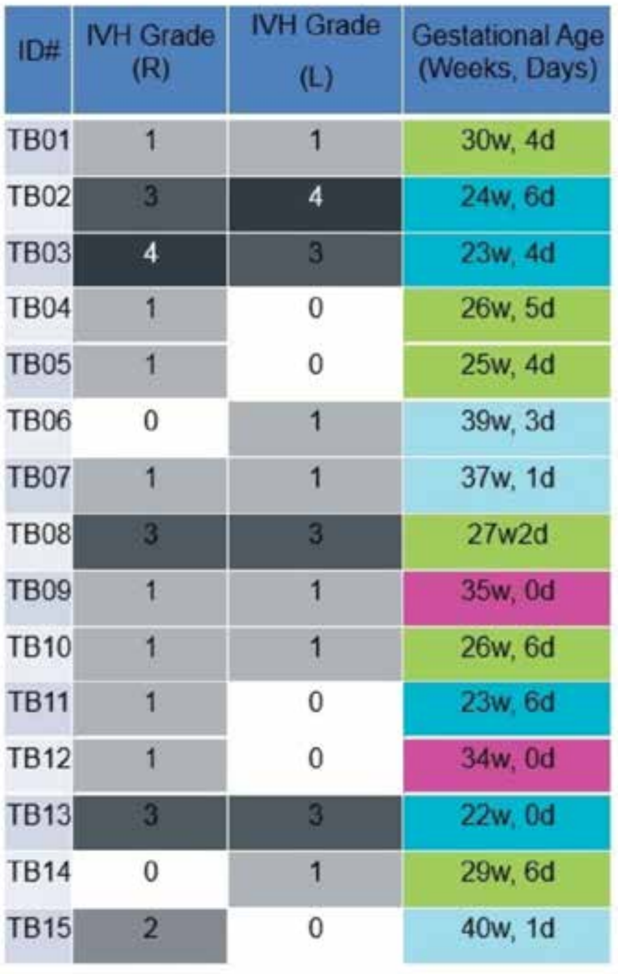
Results: At the conclusion of the study, 14 infant-caregiver dyads completed the program; one infant-caregiver dyad was lost to follow-up. There were nine females and six males enrolled. Gestational age and level of IVH are depicted in Figures (attached). Participants received an average of 4.2 sessions during their inpatient stay (SD 2.2, range 1-8 visits) and 4.3 sessions during their outpatient episode of care (SD 1.9, range 1-7 visits). Inpatient session durations averaged 23.7±6.0 minutes, and outpatient session durations averaged 50.5±4.7 minutes. Our data indicate that 13 out of 14 caregivers and 11 out of 12 therapists felt that the BRIDGE program was acceptable; 100% of caregivers felt the program was feasible. The data from the COPM indicate that 8 out of 14 infant-caregiver dyads had clinically significant change; additionally, 3 infant-caregiver dyads reported an increase in performance score over the course of the study however these increases were not clinically significant.





Conclusions: Our results indicate high acceptability and feasibility for the Therapy BRIDGE program from the perspective of both caregivers and therapy providers. This program demonstrates good potential to "bridge the gap" during the NICU-to-home transition for infants with IVH. The COPM data indicate that the majority of caregivers reported a clinically significant change in COPM scores for both performance and satisfaction, indicating good efficacy for the Therapy BRIDGE program. Overall, the Therapy BRIDGE program appears to help build confidence and competence for caregivers during the NICU-to-home transition, as evidenced by the high levels of feasibility and acceptability reported.

Impact: This novel caregiver education program can help build confidence and competence during the NICU-to-home transition. Of note, while the majority of infant-caregiver dyads reported a clinically significant increase in COPM performance and satisfaction scores, caregivers' perception of their infant's performance and associated satisfaction appeared to be influenced by the discharge to home environment and may explain the variability of satisfaction towards developmental goals at the conclusion of the



ID#	IVH Grade (R)	IVH Grade (L)	Gestational Age (Weeks, Days)
TB01	1	1	30w, 4d
TB02	3	4	24w, 6d
TB03	4	3	23w, 4d
TB04	1	0	26w, 5d
TB05	1	0	25w, 4d
TB06	0	1	39w, 3d
TB07	1	1	37w, 1d
TB08	3	3	27w2d
TB09	1	1	35w, 0d
TB10	1	1	26w, 6d
TB11	1	0	23w, 6d
TB12	1	0	34w, 0d
TB13	3	3	22w, 0d
TB14	0	1	29w, 6d
TB15	2	0	40w, 1d

FIGURE 1: THERAPY BRIDGE PROGRAM TIMELINE

Final Report: Within 6 months after end of project
Dissemination: Within 12 months after end of project

Therapy BRIDGE program. This could be attributed to increasing developmental demands, adjustment to home and/or change in perception of the infant's current abilities once in their natural environment. Despite this, the Therapy BRIDGE program has the potential to transform evidence-based care by promoting caregiver engagement in a safe learning environment during the transition from NICU to home. Overall, the Therapy BRIDGE program is feasible and can potentially be generalized to all infants in our NICU as well as in other institutions.

References:

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2. *Dusing S C, Tripathi T, Marcinowski EC, Thacker LR, Brown LF & Hendricks-Muñoz KD. Supporting play exploration and early developmental intervention versus usual care to enhance development outcomes during the transition from the neonatal intensive care unit to home: a pilot randomized controlled trial. BMC pediatrics. 2018;18(1):1-12.*
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Learning Objectives:

At the end of this presentation, the learner will:

1. Identify key aspects of caregiver education and benefits of standardized discharge planning to enhance developmental trajectories in order to optimize outcomes for babies in the NICU, as well as the caregivers and staff who interact with them.
2. Establish the need for a standardized, individualized, evidence-based caregiver education program that can be adapted to the unique needs of the infant and caregiver in the NICU setting and upon discharge home.
3. Prepare to implement customized caregiver education and coaching in your NICU setting to promote caregiver confidence and competence in preparation for discharge home.

Gravens 2025-33

Title: Hold Me Close: Broadening Skin-to-Skin Criteria in a Canadian Quaternary Care NICU

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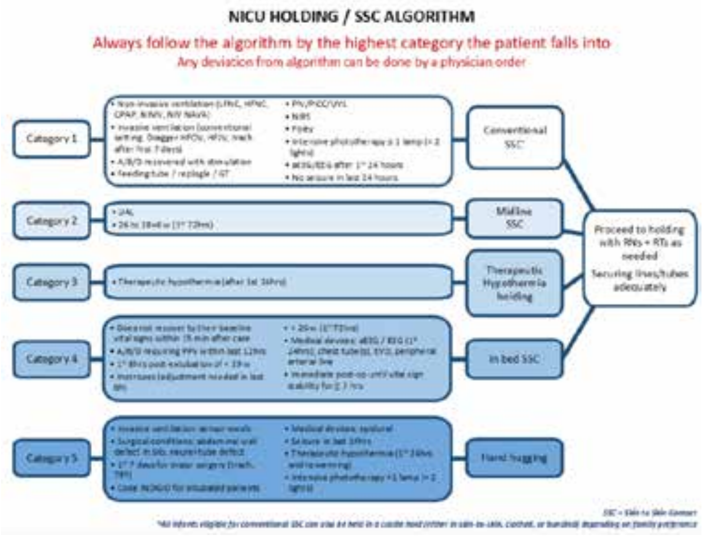
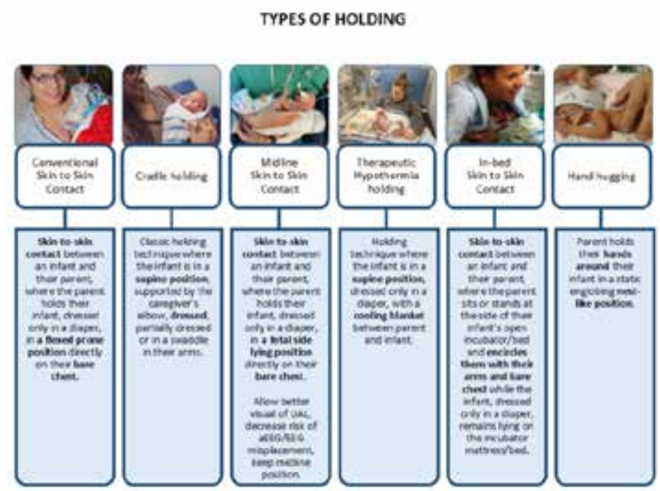
Problem Statement: Skin-to-skin care (SSC) has shown to be invaluable for infants and their parents in the Neonatal Intensive Care Unit (NICU). However, SSC and holding in Level III/IV NICUs in North America is not always implemented for acutely ill infants due to health-care providers' concerns with certain diagnoses, treatments and/or medical devices as well as patient stability and resources available. This quality improvement initiative sought to broaden the criteria for holding/SSC to enhance outcomes for both neonates and parents.

Abstract:

Method: In 2023, the NICU at the Montreal Children's Hospital (MCH) decided to focus on family engagement as a key quality indicator. Improving accessibility to skin-to-skin care (SSC) was identified as a strategy for engaging families, and multiple barriers to SSC were recognized. A review of the current medical guidelines at the MCH revealed that patients undergoing therapeutic hypothermia, extremely premature infants in the first 72 hours of life, infants with an arterial line, and infants on high-frequency jet ventilation were not considered eligible for SSC. While a SSC protocol was in place, these restrictions highlighted the necessity to review the protocol and expand the criteria to better support our most vulnerable patients and their families. After reviewing the literature and conducting an international benchmarking process, a multidisciplinary team—including two neonatologists, a nurse educator, a senior bedside nurse, and a lactation consultant—developed a new protocol where every baby is eligible for some form of SSC or holding from their family. The revised protocol underwent multiple iterations to incorporate and address feedback from all stakeholders. A newly created simple algorithm guided healthcare providers (HCP) on the type of holding/SSC that was most appropriate for the infant based on their current clinical status (Appendix I and II). Prior to implementation of the protocol,





a concentrated period of education was provided to the HCP working in the NICU over 3 weeks. Education included didactic presentations, hands-on simulation, educational videos and bedside coaching. In total, 82.5% of nurses and 88% of respiratory therapists working in the NICU participated in simulations and activities to practice holding/SSC for a baby undergoing therapeutic hypothermia, an extreme preterm with an arterial line, and a baby on high-frequency jet ventilation. Furthermore, several checklists were created for HCP to complete before transferring a baby to skin-to-skin contact, including guidelines for securing medical devices and safety checklists for specific populations. The protocol was officially implemented in May 2024 and made available online through our NICU internal database.

Results: Four months after the launch of the new protocol, a qualitative survey was done with nurses who had the chance to apply the new protocol with families. While they continued to voice concerns about insufficient human resources for safely performing holding/SSC with critically ill infants—worrying about potential line misplacement and unplanned extubation, despite no evidence of increased adverse events—they also expressed usefulness of the provided resources, including the algorithm, educational videos, and checklists. Additionally, they emphasized the importance of ongoing practice to maintain the skills they had learned. Nurses were also encouraged to write their names on the SSC "wall of fame" located in the main NICU hallway when they offered a new type of holding/SSC to their patients in order to maintain enthusiasm and awareness of these new practices. In total, three patients undergoing therapeutic hypothermia, two extremely premature infants in the first 72 hours of life, four infants with an arterial line, and one infant on high-frequency jet ventilation were offered holding/SSC multiple times in that period. Their families were also interviewed to obtain their perspective of the impact and safety of the new practices. Overall, the feelings expressed were positive, with most parents appreciating the ability to hold their child despite their medical fragility.

Conclusion: Some form of SSC or holding is feasible for all infants in the NICU, regardless of their diagnosis or clinical status. This new protocol provides clear guidelines, processes and support for providing holding/SSC to all infants. Important practice changes that have implications for HCP workload and patient safety are often difficult to implement and sustain. Adequate education as well as ongoing support and reinforcement are essential to sustain such practice changes. Current sustainability efforts rely heavily on the NICU lactation consultants, who visit with each family regularly to encourage them to participate in SSC and offer practical support to their nurses. Future steps to reinforce this protocol will have to include further simulations and peer mentorship to support a sense of safety amongst HCP.

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3. *Craig A, Deerwester K, Fox L, Jacobs J, Evans S. Maternal holding during therapeutic hypothermia for infants with neonatal encephalopathy is feasible. Acta Paediatr. 2019 Sep;108(9):1597-1602. doi: 10.1111/apa.14743.*

Learning Objectives:

At the end of this presentation, participants will be able to:

1. Identify what type of holding/SSC should be offered to critically ill infants with a variety of diagnoses, including extreme prematurity and hypoxic ischemic encephalopathy
2. Enumerate key steps in the process of implementing this practice change

Gravens 2025-34

Title: Characteristics of Communication in Interpreted and Non-Interpreted NICU Family Meetings

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Problem Statement: Family meetings in the neonatal intensive care unit (NICU) are widely recognized as a crucial aspect of family-centered care, which is associated with an array of parent and infant health outcomes. However, little is known about family satisfaction or the patient-centeredness of clinician communication during family meetings. The goal of this study is to characterize elements of communication during family meetings for both English and non-English speaking families.

Abstract:

Methodology: We audio-recorded first family meetings (family meetings occurring within the first week of life, with the goal of providing an overarching understanding of the anticipated NICU course) for infants born <35 weeks gestational age in a level III NICU in Massachusetts. We administered the "Communication Assessment Tool (CAT)," a validated Likert-scale questionnaire, to assess family satisfaction. Additionally, we will be applying the RIAS method - a standardized coding system enabling for a quantitative assessment of clinician-patient communication quality which has been widely used to evaluate medical interactions from audio-recordings - to the recorded meetings. Briefly, coders classify statements in audio-recordings according to predefined communication quality criteria (e.g. codes include medical questioning, biomedical information, and emotional support). Currently, we have 19 audio recordings (16 recordings of English-speaking families and 3 of non-English-speaking families). Of these meetings, 14 families have completed surveys, providing self-reported sociodemographic characteristics and responses to the CAT, offering quantitative family-provided data about families' meeting experience. We are preparing for the Roter Interaction Analysis Method (RIAS) coding application. Our aim is to report the following measures of communication quality: 1) Family satisfaction with communication during family meetings; 2) Ratio of duration of clinician to parent speech; and 3) Patient-centeredness (using the RIAS).

Results: Of the 44 families who consented to the study, we obtained 19 recordings (43%), 3 of which (16%) were performed with the assistance of interpreters. The subset of families represented in this study are described in Table 1; most families described themselves as White, English-speaking, and having high literacy, as shown by never needing assistance to read healthcare instructions. Using the CAT to report family satisfaction, parents broadly described their meetings as excellent, with the average score for all CAT questions being above 4.5. RIAS coding is being completed to provide duration of clinician and parent speech as well as patient-centeredness, and we anticipate being able to present these results at the Gravens conference.

Table 1: Family-reported sociodemographic characteristics

Self-reported sociodemographic characteristics	**n (%)**
Maternal self-reported race and ethnicity	
White	11 (78.6)
Black or African American	2 (14.3)
Asian	--
American Indian or Alaska Native	--
Native Hawaiian or other Pacific Islander	--
Multiracial	--
Prefer not to answer	1 (7.1)
Hispanic or Latinx (n=13)	3 (23.1)
Languages spoken fluently	
English	11 (78.6)
Spanish	3 (21.4)
Cape Verdean	--
Portuguese	2 (14.3)
Other	3 (21.4)
Families speaking multiple languages	4 (28.5)
In which language do you prefer to conduct healthcare discussions? (n = 14)	
English	11 (78.6)
Spanish	1 (7.1)
Cape Verdean	0 (0)
Portuguese	2 (14.3)0 (0)
Other	
Family meetings using an interpreter	3
Highest level of education completed (n = 14)	
High School or less	1 (7.1)
Some college, but degree not completed	3 (21.4)
College graduate	4 (28.6)
Professional or graduate degree	6 (42.9)
How well do you speak English? (n = 14)	
Very Well	11 (78.6)
Well	0 (0)
Some	3 (21.4)
Not at all	0 (0)
How often do you need help reading instructions, pamphlets or other written information given to you in your preferred language by your doctor or your pharmacy? (n = 14)	
Always	0 (0)
Often	1 (7.1)
Sometimes	1 (7.1)
Rarely	1 (7.1)
Never	11 (78.6)

Conclusions: This study presents a novel assessment of first family meetings in the NICU, a highly vulnerable moment that provides an opportunity to communicate comprehensive medical management and for parents to ask questions, present concerns, and build trust with providers. Administering the CAT immediately after the meeting allows families to report their understanding and experience using a validated tool, and completion of the RIAS coding will allow for in-depth analysis of the types of interactions between clinicians and families during the meeting. This will provide a data-driven understanding of the first targeted update with a provider that families receive during their NICU stay. Preliminary results suggest that families are satisfied with communication during their first family meetings. However, these results are limited in generalizability at this time due to the small number and high literacy of participants. Implementation of this study has been challenging due to the variation in first family meeting completion. Only 43% of families who consented for the project had recorded first family meetings, due to a combination of missed recordings and meetings not occurring. We hypothesize that families are receiving information about their infants from different modes of communication, including phone calls and participation in daily NICU rounds. This highlights the need for continued understanding of preferred modes of information delivery for parents whose infants are admitted to the NICU.

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3. *Sigurdson K, Profit J, Dhurjati R, et al. Former NICU Families Describe Gaps in Family-Centered Care. Qualitative Health Research. Published online July 25, 2020:104973232093289. doi:10.1177/1049732320932897*

Learning Objectives:

1. Recognize the research gap in assessment of clinician-family communication in the NICU

2. Describe two possible methods (the Communication Assessment Tool and the Roter Interaction Analysis Method) for quantitative assessment of family meetings

Gravens 2025-35

Title: Family Well-being Outcomes for Infants with Severe Bronchopulmonary Dysplasia: Comfort and Quality of Life Surrounding Transition to Home

Authors: Kathleen E Hannan MD MSCS; Stephanie L Bourque MD MSCS; Blair W Weikel MPH; Igor Shumskiy MD; Erica W Mandell DO; Satya S Houin; Laura G Sherlock MD

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Problem Statement: The objective of this project is to longitudinally assess discharge readiness and quality of life for high-risk infants with severe bronchopulmonary dysplasia and families.

Abstract:

Program & Methodology: Extremely premature infants who develop severe bronchopulmonary dysplasia (BPD) frequently require complex medical care and prolonged neonatal intensive care unit (NICU) stays. Consistent NICU provider teams and parental engagement are seen as key elements to optimizing their ongoing care. To best address these needs, our Level IV NICU created the multidisciplinary Supporting Preemie Respiratory Outcomes (SPROUT) clinical team in 2021. However, despite the perceived benefits of this model of coordinated care, little is known about the short and long-term outcomes of this population. The objective of this project is to longitudinally assess discharge readiness and quality of life for these high-risk infants and families. This prospective cohort study, beginning in 2022, focuses on premature infants cared for on the SPROUT clinical team. Criteria for the SPROUT team includes infants born at <29 weeks requiring invasive mechanical ventilation or non-invasive bilevel positive pressure support at 4-6 weeks of age. We assessed demographic and clinical data and utilized parental self-reported surveys administered during and after birth hospitalization through 36 months corrected gestational age (cGA).

Table 1. Cohort characteristics

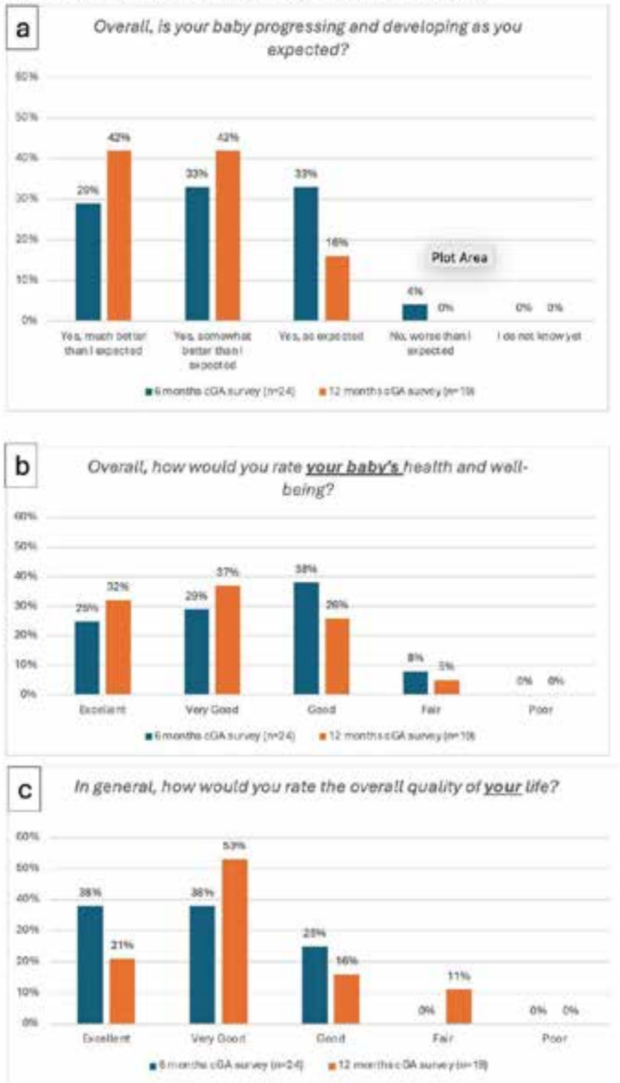
	SPROUT Infants (n = 34)
Gestational Age (weeks), median [IQR]	25 [24, 26]
County Designation (n = 29)	
Urban	26 (87%)
Rural	4 (13%)
Distance from Home to NICU	
<50 miles	26 (76%)
50-100 miles	3 (9%)
>100 miles	5 (15%)
Infant Race	
White	31 (91%)
Black or African American	6 (18%)
Asian	1 (3%)
American Indian or Alaska Native	2 (6%)
Native Hawaiian or other Pacific Islander	0
Other	3 (9%)
Infant Ethnicity	
Hispanic	11 (32%)
Not Hispanic	23 (68%)
Infant Insurance	
Private	19 (56%)
Public	31 (91%)
Health insurance purchased on own	3 (9%)
Military/Tricare	0
None	0
Other	2 (6%)
Maternal Education	
Completed HS/GED	9 (26%)
Some college	6 (18%)
College degree	15 (44%)
Beyond college	4 (12%)
Parental Employment	
Full-time	21 (62%)
Part-time	2 (6%)
2+ part-time jobs	1 (3%)
Unemployed, looking for work	3 (9%)
Unemployed, not looking for work	7 (21%)
Unpaid days off, median [IQR]	16 [0, 56]
Paid days off, median [IQR]	25 [0, 55]
Type of leave available	
Parental leave	14 (41%)
Short-term disability	9 (26%)
Vacation	12 (35%)
Other	9 (26%)
Household Income	
<$10,000	4 (12%)
$10,000-$49,999	7 (21%)
$50,000-$99,999	15 (45%)
$100,000 or more	8 (24%)
Clinical Outcomes	
Length of Stay (days) at Level IV NICU, median [IQR]	154 [117, 201]
Disposition	
Inter-Hospital Transfer	2 (7%)
Intra-Hospital Transfer	11 (39%)
Home/Medical Foster Care	15 (54%)
Gastrostomy tube	31 (91%)
Respiratory support at discharge/transfer	
LFNC continuous	9 (26%)
LFNC day, PPV night	9 (26%)
Trach/Vent	16 (48%)

Table 2. Domains from FIPRE survey at NICU discharge (n=34).

	Mean (SD)	**% scores <75**	**Areas in each domain**
NICU experience	91 (11)	24%	- *Felt things were explained in an understandable way* - *Staff responded to baby's needs* - *Included in baby's care* - *Able to reach doctor for questions*
Infant Well-Being	78 (19)	44%	- *Feels positive about infant's well-being* - *Infant receiving attention needed* - *Parent not concerned about baby*
Parental Well-Being	62 (18)	76%	- *Feels positive about own well-being* - *Confident/emotionally ready to care for infant* - *Does not feel overwhelmed*
Parental Comfort	56 (18)	74%	*- Little/no anxiety re: infant sleeping, eating, development* *- No issues with medical equipment* *- Minimal concerns about ongoing medical needs*

Prior to NICU discharge, enrolled parents received the Fragile Infant Parental Readiness Evaluation (FIPRE), a validated quality measure of parent outcomes and perceptions of NICU-discharge readiness. Subsequent surveys included the Fragile Infant Transition Summary (FITS), measuring parental self-confidence, coping and anxiety (referred to as parental comfort). Scores on these scales are converted to a standard 0-to-100 metric, with higher scores being more favorable, and scores <75 representing unfavorable outcomes. Mean scores were calculated for each category of the survey. Enrollment in the study and completion of surveys is ongoing.

Figure 1. Responses at 6 and 12mo cGA for each survey question (a, b, c)



Results: To date, 34 families have enrolled and completed the FIPRE survey, with 24 families completing the 6 month cGA survey, and 19 completing the 12 month cGA survey. Demographic and clinical characteristics are summarized in Table 1. Average gestational age at birth was 25 weeks. Median length of stay was 153 days. All infants required some form of respiratory support at time of discharge ranging from continuous low flow nasal cannula (LFNC, 26%), to daytime LFNC and nighttime positive pressure ventilation (26%), to chronic mechanical ventilation via tracheostomy (48%). Parents indicated overall positive NICU experiences and felt supported while in the NICU with a mean score of 91 (Table 2). Mean score for parental feelings of infant well-being was 78 (44% scored below 75). Parental well-being (mean 62, 76% scored below 75) and parental comfort (mean 56, 74% scored below 75) scores were relatively low (Table 2) at time of NICU discharge. After discharge, parental feelings regarding infant's development and infant's quality of life (QOL) increased from 6 to 12 months cGA (Figure 1a and 1b, respectively). In contrast, self-reported parental QOL decreased, with 7% less reporting "excellent" and 11% more reporting "fair" QOL at 12 months cGA compared to 6 months cGA (Figure 1c).

Conclusions: The SPROUT team cares for medically fragile infants with a high incidence of medical technology dependence. Despite the medical complexity of these infants, families indicated positive experiences in the NICU and overall readiness for discharge. After discharge, parental assessment of their infants' development and QOL improved over time. However, parental reports of their own comfort and well-being were low at time of NICU discharge. Additionally, over time, parental quality of life scores decreased. The contrast of improving assessments of infant QOL with worsening parental assessment of their own wellbeing highlights an essential need for programs targeting parental support and preparation for the transition home.

Learning Objectives:

The objective of this project is to longitudinally assess discharge readiness and quality of life for high-risk infants with severe bronchopulmonary dysplasia and families.

Gravens 2025-36

Title: NICU Family Support

Authors: Valicitie Porrata

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Problem Statement:

1. Providing emotional and relational support to NICU parents and Families
2. It is important as it provides comfort, companionship, guidance and support during their time in the NICU.

Abstract:

The Valley Hospital Neonatal Intensive Care Unit Family Support Program has provided comfort, support and improvements in patient care by providing a family-centered approach to enhance the standard of care for infants and families. The program improves patient care by ensuring that communication is open and direct (face-to-face) with our families. We facilitate family meetings with the care team, provide educational materials and resources and work closely with the Developmental Care Team within our unit. Our program brings comfort to families by providing care before, during and after their admission into the NICU. We begin connecting with families as early as antepartum and remain in contact well beyond discharge. We provide sibling support. In addition, we provide bereavement support.

Learning Objectives:

1. What services/support can be provided
2. What does a parent need during their time in the NICU
3. How are these services delivered

Gravens 2025-37

Title: The physics of bottle systems: All bottle systems are not created equal

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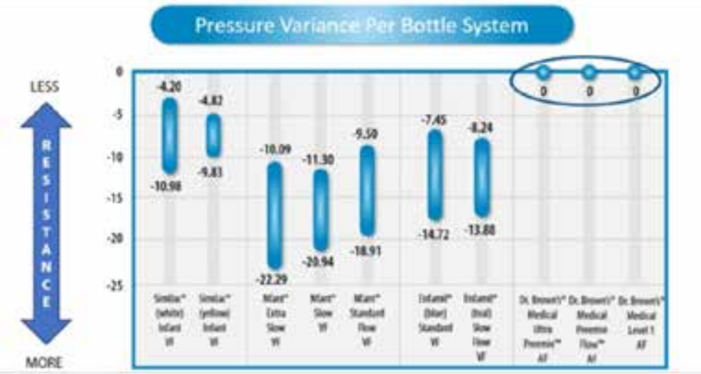
Problem Statement: While it is universally recognized that breastfeeding is the most preferred method of infant feeding, many NICU infants continue to feed from bottles during their hospitalization. Research over the past 10 years remains focused on nipple flow rates with minimal information on the physics of bottle feeding and how to best support infants. As studies by Lau (2000) and Fucile (2009) have speculated, the presence of sub-atmospheric pressure in a bottle system may have negative effects on an infant's feeding and may validate an infant will expend more energy making each feeding experience less efficient.

The intention of this internal study is to establish if and how much negative pressure (sub-atmospheric pressure) exists in "typical bottle-nipple units" (units) used to feed hospitalized infants (premature, late-preterm and/or medically compromised infants) when suction for liquid extraction is applied to the unit.

Abstract:

The method used in this study was designed to test typical bottle-nipple units under standardized and controlled conditions to compare the amount of sub- atmospheric pressure in each unit during the extraction of 60 mls of formula using a breast pump.1. On the bottom or side of each bottle vessel (Volu-Feed®, Dr. Brown's® Accu-Feed, Dr. Brown's® 2 oz and Dr. Brown's® 4 oz) a hole was bored, and a brass compression connector fitting was secured in each hole.2. Tubing from an M2 Series SMART Manometer, Model M200-C10015 made by Meriam Process Technologies was attached to the exterior connector on the fitting to record the pressure inside the bottle vessel during liquid extraction. Each unit (Table 1 below) was attached to the breast shield of a breast pump. A layer of plastic paraffin film followed by a silicone-based polymer was used to create a seal. The unit was held at a 30° angle with a mechanical arm (to assure consistency when holding each bottle-nipple unit during the testing). The stimulation-phase suction pattern with a suction pressure of 180 mmHg was used for all testing. A pressure manometer with 180 mmHg indicated with a red marking was secured to assure 180 mmHg was applied during each extraction. • The pressure inside the bottle system was consistently measured by the SMART manometer during the extraction of 60 ccs of Similac Advance Stage 1 (20 cal/oz) ready-to-feed formula (Abbott Laboratories, Abbott Park, IL). 1 • A consistent pressure of 180 mmHg was applied via the Medela breast pump until all the liquid was extracted from 5 different bottle-nipple units within the same bottle-nipple unit combination. • To assure consistency during the assembly of each bottle-nipple unit, 15 in/lb of torque was applied to each collar. Pressure recording was documented in writing every 5 ccs of formula extracted as well as each test was video-recorded to confirm measurements obtained. • Similac Advance Ready-To-Use formula (Abbott Laboratories, Abbott Park, IL) was used as the liquid for all testing. The formula was changed after 1 hour of exposure to prevent increased viscosity as a result of denaturation of proteins from prolonged exposure to air. The manufacturer recommends using formula within 1 hour of opening or mixing. In addition, using the ready-to-feed formula reduced the potential for variability in milk thickness due to differences in formula preparation over time. All formula was disposed after 1 hour of opening and new formula was used to assure testing consistency.1 Measurement method similar to methods used in the 2015 Pados article on nipple flow rates.



Conclusions: Dr. Brown's® bottle system (unit) with the internal vent system consistently measured Zero (0) sub-atmospheric pressure during the extracting of 60 mLs of formula as measured according to the stated methodology. Units widely used in hospitals exhibit the presence of sub-atmospheric (negative) pressure during the extraction of formula (while suction is applied). It is speculated the increase in the amount of resistance in each unit presumably increases the amount of energy an infant exerts while feeding.

Implications for practice: 1. During bottle feeding in the NICU, the bottle-nipple units and how they function should be considered.2. Should a system with Zero-Resistance™ be considered when feeding infants in the NICU? With this report implicating the presence of sub- atmospheric pressure in a "typical bottle-nipple unit" while an infant is feeding, as Lau postulates, an infant could be expending more energy during a feed resulting in less efficient feeds.

References:

1. *Fucile S, Gisel E, Schanler RJ et al. A Controlled-flow vacuum-free bottle system enhances preterm infants' nutritive sucking skills. Dysphagia. 2009;24:145-151.*
2. *Lau C, Fucile S, Schanler RJ. A self-paced oral feeding system that enhances preterm infants' oral feeding skills. J Neonatal Nurs. 2015 Jun 1;21(3):121-126. doi: 10.1016/j.jnn.2014.08.004.*

Learning Objectives:

1. List at least one negative effect in the literature of negative pressure in bottle systems.
2. Describe the concept of Zero-Resistance in a bottle system and the potential in oral feeding.

Gravens 2025-38

Title: Implementation of the Hunger Vital Sign Tool to Assess Food Insecurity

Authors: Sheri L. Anderson and Janice L. Wilson, DNP, CRNP, NNP-BC, C-ELBW, FAANP

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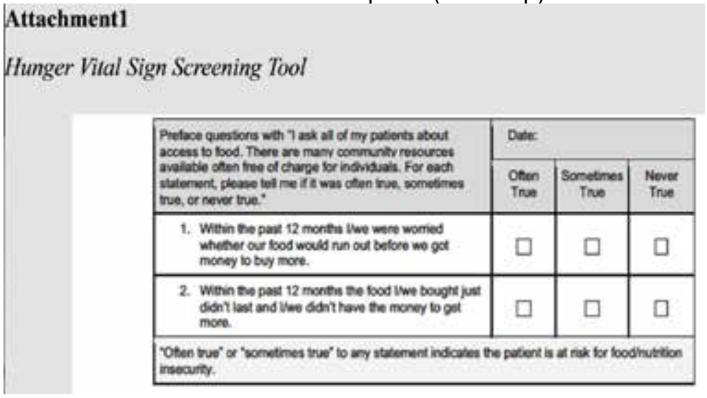
Problem Statement: Resource insecurity stresses the parent-infant dyad and compromises nutritional status in breastfeeding mothers of hospitalized infants. On a Neonatal Intensive Care Unit (NICU) in an urban area with high prevalence of food scarcity, families are not screened for food insecurity (FI). Incorporating a standardized screening process can identify up to 59% of unmet family needs and enhance family-centered care.

Abstract:

Problem: Resource insecurity stresses the parent-infant dyad and compromises nutritional status in breastfeeding mothers of hospitalized infants. On a Neonatal Intensive Care Unit (NICU) in an urban area with high prevalence of food scarcity, families are not screened for food insecurity (FI). Incorporating a standardized screening process can identify up to 59% of unmet family needs and enhance family-centered care.

Purpose: The purpose of this quality improvement (QI) project was to identify NICU families at risk for FI by implementing an evidence-based, standardized screening tool. Methods: A QI project collaboration with unit social workers was carried out over 15 weeks in the fall 2024 and is currently ongoing until December 2024. The Hunger Vital Sign screening tool for identifying household FI was incorporated into the initial unit social work (SW) assessment. Assessment and monitoring were carried out via weekly unit data audit of the number of families screened, identified at-risk, and provided resources. Of the available evidence, several studies showed consistent screening can effectively identify FI (Lee et al., 2021; Markowitz et al., 2022; Parker et al., 2021). It is important to note that higher level evidence is limited in the neonatal population due to ethical constraints. Additionally, this QI practice change was further evaluated in the context of the geographic location. This hospital is in an area with FI rates above the national average, and the cost of intervention was weighed against the potential benefit to patient families given the likely prevalence in this specific patient population. The primary structure and outcome goal of the proposed project practice change was to modify the existing SW initial intake assessment to include the Hunger Vital Sign tool (Attachment1) to identify families at risk of FI. No license or permission is required for use. This tool, taken from the extensive U.S. Household Food Security Score, has a sensitivity of 97% and specificity of 83%. Any NICU family answering either screening question as "Often" or "Sometimes" were considered at-risk for FI, per tool instructions. There were no exclusion criteria for screening. Project data was collected via weekly chart review by the Project Lead based on SW intake notes in the electronic health record (EHR). Data was entered in the Research Electronic Data Capture (REDCap) tool hosted at



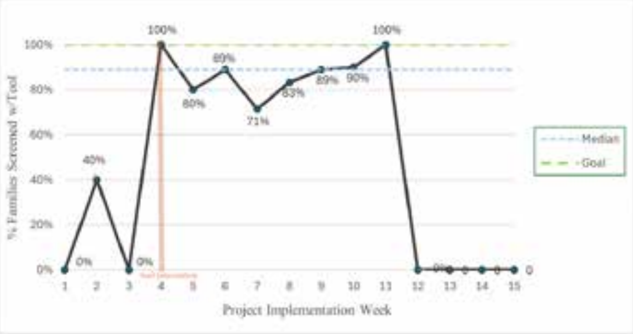
Attachment1

Hunger Vital Sign Screening Tool

Preface questions with "I ask all of my patients about access to food. There are many community resources available often free of charge for individuals. For each statement, please tell me if it was often true, sometimes true, or never true."	Date:		
	Often True	Sometimes True	Never True
1. Within the past 12 months I/we were worried whether our food would run out before we got money to buy more.	☐	☐	☐
2. Within the past 12 months the food I/we bought just didn't last and I/we didn't have the money to get more.	☐	☐	☐
"Often true" or "sometimes true" to any statement indicates the patient is at risk for food/nutrition insecurity.			

Attachment2

Project Progression of Family Screening for FI



Note. This figure demonstrates the weekly progress of project implementation showing the number of families screened for FI versus the total number of newly admitted families. The project goal is 100% screening.

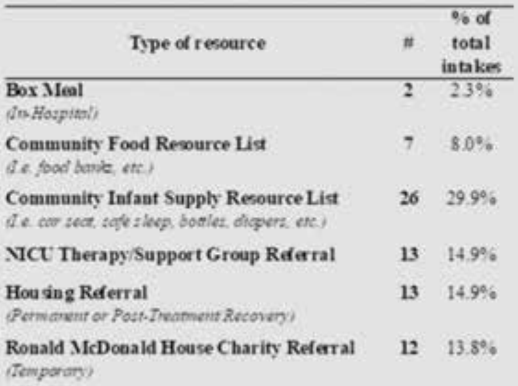
Attachment3

Families Identified At-Risk for FI

Note. This figure demonstrates how many families were identified as "at-risk" for FI versus the total number of families screened.

Attachment4

Table of Resources Provided to Families



Type of resource	#	% of total intakes
Box Meal *(In-Hospital)*	2	2.3%
Community Food Resource List *(i.e. food banks, etc.)*	7	8.0%
Community Infant Supply Resource List *(i.e. car seat, safe sleep, bottles, diapers, etc.)*	26	29.9%
NICU Therapy/Support Group Referral	13	14.9%
Housing Referral *(Permanent or Post-Treatment Recovery)*	13	14.9%
Ronald McDonald House Charity Referral *(Temporary)*	12	13.8%

University of Maryland Baltimore School of Medicine. EHRs were accessed in compliance with facility regulations and protocols. No identifying participant information was extracted or utilized during project data audits. Project data was directly input into the secure, HIPAA-compliant REDCap database for research studies. There is no conflict of interest to disclose. Project lead is HIPAA and CITI compliant. Non-human Subject's Research determination from the Human Research Protections Office (HRPO) of the UMSOM Institutional Review Board (IRB) was approved prior to project implementation.

Results: At the time of abstract submission, the average weekly unit census was 45 patients with an average of eight new admission intakes per week. The screening tool was used on 86% of newly admitted NICU families since August 26, 2024 (N = 67) and revealed 9.0% (n = 6) were at-risk for FI and were provided additional resources. Quantitative results during the project period show 2.3% (n = 2) of NICU families required immediate food resources during the hospitalization and 8.0% (n = 7) received community food resource referral. The primary outcome measure was the number of families screened weekly with the FI tool during SW intake assessment, represented by a percentage of (number of families screened)/(total number of families admitted to NICU), shown as the run chart (Attachment2). The bar graph visualizes the relative proportion of families screened and identified "at-risk" compared with the weekly number of newly admitted families (Attachment3). The secondary outcome measures of: 1) the number of meals provided to families as the immediate intervention and 2) the number of families provided with community food resource referral (i.e. food banks, food pantries, etc.) are included in a table with other types of resources provided (Attachment4).

Conclusions: Several barriers to implementation occurred throughout the project period. Initially, data collection was delayed due to suspension of EHR. Facility policies led to the disabling of the Project Lead's EHR access with access reactivation not occurring until week three. Partial data was able to be collected ex post facto and is reflected as such in the results. Additionally, staff turnover within the core Project Team created a delay in the revision of the SW intake assessment and did not occur until week four of project implementation. This is reflected in the early project implementation weeks on the run chart of percentage of families screened (Attachment2). Finally, the lack of uniformity in tool implementation amongst covering social workers from outside departments has affected screening rates. While analyzing data variability of performance, a pattern revealed that weekend social workers covering the NICU were not documenting with the updated intake assessment. Aligning intake assessments across the broader Maternal Child Health SW Department remained a challenge for the duration of the project despite consistent communication and a continuous feedback loop. Patterns of variability in the data reflect these unanticipated situational contextual factors. This QI project validates the use of a standardized screening tool to assess FI in NICU families. Project results contribute to the existing body of knowledge on resource insecurities affecting NICU families. Ongoing research should further explore how these resource insecurities impact NICU infants and seek to determine best practices to support our families.

References:

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Learning Objectives:

1. Describe the impacts of resource insecurity and unmet basic needs on NICU families.

2. Illustrate the role of interdisciplinary collaboration in providing holistic care for the needs of families.

3. List at least two resources to help with food insecurity.

Gravens 2025-39

Title: Implementing A Music Therapy Program to Support Nurturing Encounters in the NICU

Authors: Teresa Ianni

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Teresa Ianni

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Problem Statement: Music Therapy in the Neonatal Intensive Care Unit (NICU) is a non-pharmacological, non-invasive and empirically supported intervention. Music Therapy is not widely offered in Canadian NICU's as it is not considered an essential intervention, rather a complementary therapy.

Scientific question:

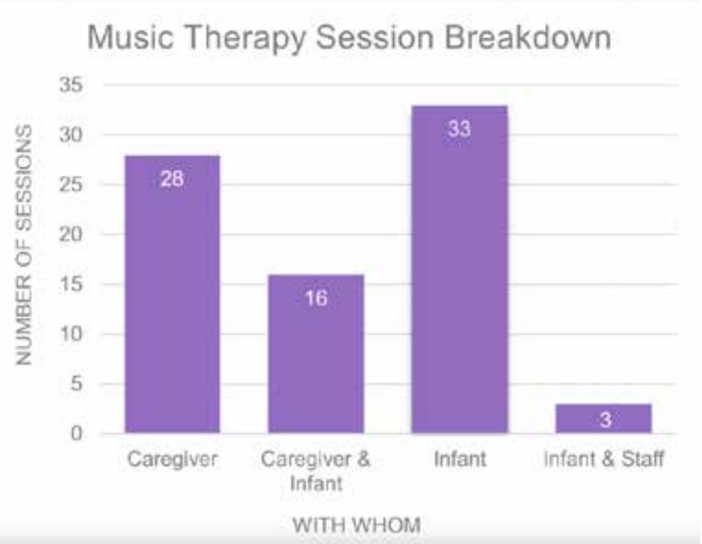
How do we shift NICU culture and perspectives, to recognize Music Therapy as a supportive and essential intervention? This is important as music therapy can optimize and enhance nurturing encounters, which are essential to neurodevelopmental outcomes for NICU patients.

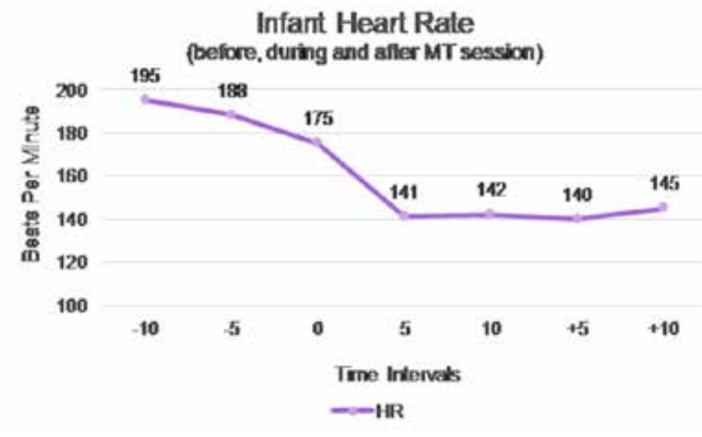
Abstract:

Background: The Sunnybrook NICU has established a strong unit culture in promoting and enhancing nurturing encounters. It includes creating a space that is developmentally appropriate and encourages positive interactions between the world and the infant and supports developmentally supportive care. Since October 2022, the implementation of a Music Therapy Program in the Sunnybrook NICU has contributed to providing age-appropriate neurological and sensory stimulation to hospitalized infants by reducing stress response, providing opportunities for positive social contact and by offering a form of environmental enrichment (Anderson & Patel, 2018). This intentional use of music has had positive effects on infants and their caregivers, as it provides unique and creative nurturing experiences. It is an important intervention when provided in an established NICU environment that values nurturing and developmentally supportive care.

Methods: A quality improvement project was carried out from October 2022-April 2023, entitled "Implementing a Music Therapy program in the Sunnybrook NICU." The aims and objectives of this project were to increase auditory and sensory stimulation and to reduce caregiver self-reported and perceived stress. Parental self-reported stress was measured using a standardized questionnaire pre and post music therapy session (Perceived Stress Scale; Cohen et al. 1983), and qualitative data was gathered in dialogue with caregivers. Neonatal physiological responses during music therapy sessions were captured via heart rate (HR), respiration rate (RR) and oxygen (O2) saturation from the infant's chart in 5 min intervals (10 minutes pre-session, during the session and 10 minutes post session), and trends were analyzed based on music therapy intervention used. Additionally, qualitative data was gathered on staff's perception of the intervention.

Impact: The quality improvement project provided music therapy support to infants born ≥ 32 weeks' gestation and their caregivers a total of 80 times (figure1). Interventions included the evidence-based use of gentle instruments to emulate heartbeat and womb sounds as well as the use of carefully selected or parent co-created lullabies. During music therapy sessions it was evident that there was a direct impact on the physiological response of infants. Fluctuation in infant's heart rates, respiratory rates and O2 saturations were observed in all instances, which indicated an appropriate response to the music and intervention presented. For example, music therapy was offered to an infant who had a medical procedure approximately 30 minutes prior. His nurse requested music therapy to support self-regulation as his heart-rate had been elevated since the procedure (trending around 200 bpm). Specific music therapy techniques were used to support this infant, and by the end of the intervention, his heart rate returned to baseline (figure 2), fell asleep and remained sleeping until his next handling time. After music therapy sessions, caregivers reported an overall decrease in their perception of stress and were appreciative of the supportive care provided to them. Music therapy was also able to support families where outcomes were unfavorable. Legacy work, including heartbeat recordings were used to support families during difficult transitions. In March of 2024, the Sunnybrook NICU implemented a pilot project, one day per week, to incorporate music therapy as a standard of care. The addition, of a dedicated Certified Music Therapist (MTA) to NICU has received positive feedback from families, caregivers, clinicians and medical staff. Since its implementation, the MTA has supported over 160 growing infants and their families as they cope and navigate through their unique situations. Staff feedback since the implementation has been positive and are supportive for this service to continue and grow in our unit. A registered nurse stated, "it is such an amazing addition to the care we can provide to decrease stress and anxiety for the families and bring joy to the





unit and nurses."

Conclusion: In the Sunnybrook NICU, music therapy was successfully integrated into our team culture as a supportive intervention for infants and their caregivers. It has been perceived as an effective tool to help reduce stress as they navigate through their NICU journeys and may have positive, long-lasting effects on their outcomes. The availability of a dedicated MTA needs to be evaluated to ensure that the needs of infants and their caregivers are met as the demands increase when the program continues to succeed. We envision that the success of such program for this unique patient population will position Sunnybrook as a leader in the use of music therapy as an essential treatment in the care of women and babies in Canada.

Learning Objectives:

1. Why Music Therapy is important for infants undergoing care in the NICU.
2. How to integrate music therapy to an NICU that does not have an established program.

Gravens 2025-40

Title: NICU Passport

Authors: Tiffany Hahn BSN, RNC-NIC; Victoria Savoie-Dillon BSN, RN;LeeAnn Sansuchat PT, DPT

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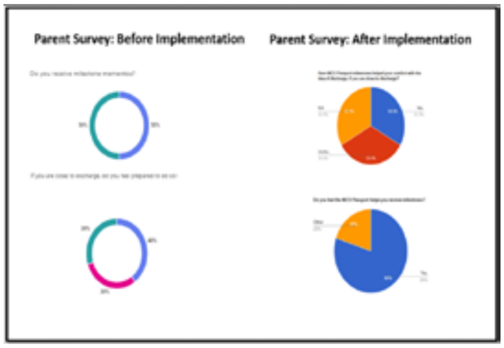
Problem Statement: The Neonatal Network at Nationwide Children's Hospital consist of four Neonatal Intensive Care Units (NICUs) located on Main Campus, and partnerships with delivery hospitals around Central Ohio. As a network, the NICUs were finding parental education and teach back was not being completed until close to or on the day of discharge. This created issues for staff and parents alike going over an extensive amount of information in an overwhelming environment.

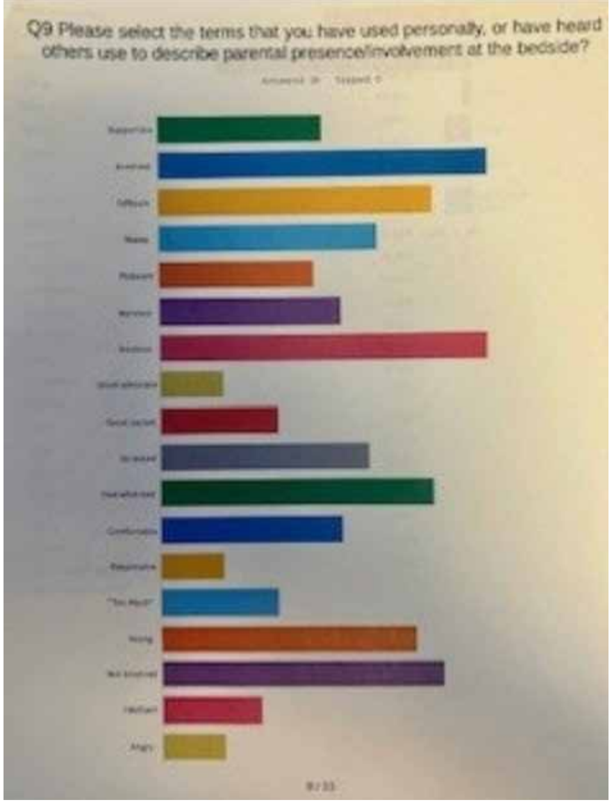
Increased support for family-integrated care was identified as a developmental goal for the C4C NICU in 2023 at Nationwide Children's Hospital, an initiative driven by robust evidence supporting family-integrated care in the NICU environment. We hypothesized that a focus on family- integrated care on our unit would increase parental involvement and readiness for discharge.

We found repeated studies showing significant medical improvements, better progression, improved feeding and breastfeeding outcomes and decreased caregiver anxiety and depression with the implementation of family-integrated care.

Abstract:

In March 2024, the Newborn Intensive Care Units (NICU) Passports program was released. The NICU Passport program is an interactive milestone memento that supports the implementation of family-integrated care that encourages caregiver participation in daily care. Through milestone stickers, photos, and handwritten notes, NICU Passports allow caregivers to have a journal of their NICU stay in a personalized way they have not been able to do before. To obtain a baseline perception of family-integrated care in our unit, qualitative surveys were sent to staff, and an interview-style survey was conducted with caregivers and families.38 staff surveys revealed conflicting perceptions of family-integrated care between dayshift and nightshift. Dayshift staff comments included "happy," "happy to help" and "like to be involved," as well as "difficult" and "frustrating." Nightshift staff comments included "nervous," "hard" and "uncomfortable". After further investigation,





nightshift staff cited overnight barriers to family-integrated care that included the limited amount of space at the bedside, parents, as well as staff, not knowing what the overnight expectations of parent involvement were or if they would participate at all in patient care overnight, and the difficulty of balancing sleep schedules. 17 caregiver survey responses regarding family-integrated care showed that only 44% of caregivers received milestone mementos throughout their NICU journey. Caregivers expressed wanting to receive involvement expectations of caring for their baby and wanting to participate within their comfort level while being taught what to do at each developmental stage. This research sparked discussion about how to help families become more comfortable in caring for their babies in a way that was fun and memorable for family and staff alike. NICU Passport development was a multidisciplinary collaboration between nurses, therapists, parent advisors, lactation consultants, marketing, and creative services. Nationwide Children's Hospital Neonatal Network staff provided input on the design and recommended milestone stickers for each unit. This collaboration allowed for inclusive representation of diagnoses and treatments seen throughout the Neonatal Network. NICU Passports went live in all four main campus NICUs at Nationwide Children's Hospital on March 1, 2024. 10 Caregivers were surveyed on C4C at the beginning of Passports' implementation regarding how they perceived their involvement in their child's care, receipt of milestone mementos, and preparedness for discharge. Seven caregivers were surveyed on C4C after implementing NICU Passports, and results showed that 80% said they received milestone mementos and 33% said they were more comfortable with the idea of discharge. This data reflects the positive impact the implementation of family-integrated care has on the success of families in the NICU environment. During our implementation process, language was identified as a barrier to the success of this project. To ensure health equity for all families in the NICU, NICU Passports are in the process of being translated into additional languages.

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Learning Objectives:

How implementation of NICU Passports increased mile-stone mementos supporting parental involvement.

How implementation of NICU Passports improved parental readiness for discharge.

Gravens 2025-41

Title: Implementation of Infant & Family Centered Developmental Care Standards in a BPD Program

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Problem Statement: Bronchopulmonary Dysplasia (BPD) is the most common pulmonary complication of preterm infants. This disorder often prolongs infants' needs for supplemental oxygen or mechanical ventilation, resulting in longer neonatal intensive care unit (NICUs) stays. A diagnosis of BPD also puts infants at risk of significant neurodevelopmental impairments that may persist into adulthood. The Infant and Family Centered Developmental Care Standards (IFCDC) provide evidence-based standards and competencies for collaborative team management of infants and their families through the continuum of care, from hospital to home. To support neurodevelopment and infant mental health, it is essential that the IFCDC evidence-based standards and competencies are considered and implemented by teams caring for infants and families in BPD programs.

In September of 2020, the Neonatal Intensive Care Unit at Lurie Children's Hospital of Chicago created a bronchopulmonary dysplasia (BPD) program. The patients that qualify for this program include infants born at less than 34 weeks gestation with severe BPD, defined as requiring significant respiratory support at 36 weeks post-menstrual age. The programs average census ranges from 11-15 infants, with many of the patients in this program require positive pressure or mechanical ventilation for several months. Developmental care principles and many developmental care practices were initially embedded in the program, including weekly developmental rounds with the multidisciplinary BPD team, extensive involvement of rehabilitative therapists and developmental specialists, and care coordination.

The purpose of this quality improvement report is to: 1) describe the use of the IFCDC standards and competencies to perform a gap analysis IFCDC for a BPD program, and 2) describe program improvements made to address gaps in IFCDC.

Abstract:

Methods: Over the past two years, members of the multidisciplinary BPD team conducted a gap analysis of IFCDC for the BPD program. This assessment utilized the IFCDC Principles Concept Model that includes individualized care, neuroprotection of developing brain, family involvement, infant mental health, and environmental protection supports our mission behind this program. Documents detailing considerations for the implementation of each of the six standards for IFCDC were also employed in the gap analysis. Where the team identified gaps, program improvements were planned and implemented using a systems' thinking in complex adaptive systems approach.

Impact and results: Although many existing practices supported the implementation of the IFCDC standards and competences in our BPD program, gaps were identified for each standard. For example, we identified a need to better support families in engaging in playful (arousal) activities that support development and strengthen parental confidence in interacting with their infants. Using a systems' thinking approach to implement change, the team successfully implemented a process for developing individualized developmental play plans in collaboration with families and a weekly NICU playgroup for BPD infants and families. Examples of the positive impacts these and other IFCDC practice changes resulting from our gap analysis include improved parental understanding their infant's behavioral communication, more comprehensive support for BPD parents, and increased family confidence in managing their infants' positioning. In this presentation, we will describe improvements made in the implementation of IFCDC in a BPD program relative to each standard, using exemplar case studies to describe results and impacts.

Conclusions: The IFCDC standards are essential to the planning and implementing IFCDC for the BPD population in NICUs. Through ongoing gap analysis using these standards, our NICU has successfully implemented many improvements to the IFCDC received by our BPD patients and families, resulting in positive outcomes.

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Learning Objectives:

1. Describe application of the six domains of Infant and Family-Centered Developmental Care Standards to a comprehensive NICU BPD program.
2. Identify competencies required to implement Infant and Family-Centered Developmental Care Standards with chronically ventilated patients.

Gravens 2025-42

Title: Examining the Single-family Room: Disruptive and Supportive Design for Family-centered Clustered Care in the NICU

Authors: Herminia Machry, PhD, EDAC; Marzia Chowdhury, PhD Candidate; Laurie Hay, BSN, RN, RNC-NIC, CBC; Lorena Muzel Gomes, B.Arch

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Problem Statement: In the neonatal intensive care unit (NICU), family-centered clustered care can be complex, unsafe, and inefficient, presenting flow disruptions that can lead to risks of infection, dislodgement of life support equipment, and improper swaddling. Recognizing the trend in designing NICUs with single-family rooms (SFRs), and the impact of the built environment on flow disruptions in healthcare settings, we examined how interior design factors can impact flow disruptions, contamination risks, and environmental hazards in the context of clustered care behaviors involving family and staff in the SFR, exploring design opportunities to prevent adverse events in family-centered infant care.

Abstract:

Background: In the neonatal intensive care unit (NICU), spaces and design features play an important role in the development of infants (Shepley, 2014), also impacting family engagement in infant care (Machry et al., 2023). Since the 1990s, several NICUs have adopted Single-Family Rooms (SFRs) to improve infant development and family-centered care, and while evidence favors the SFR in comparison to open bays due to improved infection control and family involvement in care (Jones et al., 2022), there is a need to further explore the varied sizes and spatial configurations of SFRs as to how they can support 'work-as-done' behaviors in the NICU, such as clustered care. Family-centered clustered care involves staff and family members collaboratively providing care for infants in a clustered manner, during specific time intervals, to control infant handling and sleep (Avaze & Babaei, 2023). However, clustered care can be complex, unsafe, and inefficient, presenting flow disruptions that can lead to risks of infection (Deshommes et al., 2021), life-support dislodgement (Feldman-Winter & Goldsmith, 2016), and improper swaddling (Baley, 2015). Evidence shows how flow disruptions related to the built environment can contribute to infection control in highly complex healthcare environments (Joseph et al., 2018). Furthermore, studies suggest that the built environment in ICU settings affect infection prevention behaviors such as handwashing and touch of contaminated surfaces (Verderber et al.,2021; Machry et al., 2021).

Purpose: We conducted a study to investigate how interior design factors in SFRs can impact flow disruptions, contamination risks, and environmental hazards in the context of family-centered clustered care behaviors in the NICU.

Methodology: Using a qualitative approach, we conducted the study in three phases between June 2023 and April 2024, exploring environments and flow disruptions at NICUs embodying the SFR model. The first study phase involved two focus groups conducted virtually, each involving four NICU staff experienced with SFR workflows. One group was from a level III NICU in Indiana, and the other group was from a level IV NICU in Florida. Phase two focused on interviews and field observations at a level III NICU in Kansas City, MO, where we interviewed 14 staff and 7 families to understand their experience with disruptions, hazards, and inefficiencies during family-centered clustered care tasks in the SFR such as infant holding, cleaning, and feeding. We also shadowed nurses and observed 13 clustered care events involving family and staff in the SFR, recording the number of people involved as well as their movement across the room during tasks. The final study phase involved physical mock-up simulations of potential design solutions for the SFR in the context of family-centered clustered care, as part of a graduate course. Students developed and evaluated design prototype ideas with the participation of nurses and experts in healthcare design. All data collected was thematically and graphically analyzed.

Results: We identified 14 flow disruptions affected by the SFR built environment, which were categorized into six types (contamination risks, injury risks, care disruption, care demonstration disruption, and care engagement disruption) and into high and low severity levels. We uncovered environmental issues related to clutter, crowding, clean-dirty separation, and cord management in the SFR, identifying five main SFR design factors impacting flow disruptions during family centered clustered care: room layout; sink, surfaces and storage layout; room transition clearances; size of family-dedicated storage and surfaces; wall and ceiling utilization; and ergonomic design of furniture/equipment such as infant bed, family chair and side table, and cord management hooks.

Conclusions & Impact: Our study shows how the interior design of SFRs can be a resource to improve safety and efficiency in family-centered clustered care workflows. Also, our research shows SFRs of different sizes and configurations accommodating various occupancies (multiple infants, staff and family members in the room) and care complexities (different levels of infant care tasks and equipment needs), ultimately leading to important discussions and reflections around the current and future states of SFR design in terms of room size, shape, layout, ergonomics, and flexibility.

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Learning Objectives:

1. Understand the complexity of single-family rooms as a 'work-as-done' system during family-centered clustered care in Neonatal Intensive Care Units (NICUs).
2. Identify flow disruptions in the context of family-centered clustered care in the NICU, as to how they are affected by the interior design of single-family rooms.

NICU Key Outcomes Measures

3. Identify design opportunities in single-family rooms to reduce flow disruptions in clustered care involving family-staff collaboration in the NICU.

Gravens 2025-43

Title: Once Upon a Design: Sharing Stories from HSHS St. John NICU's Post Occupancy Evaluation to Promote Safe Spaces

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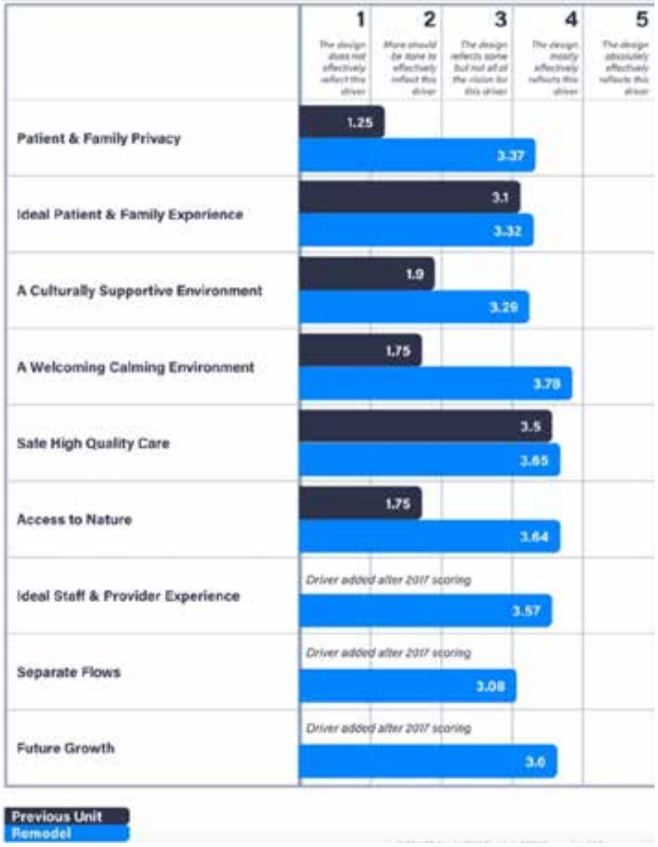
Problem Statement: Prior to its renovation, HSHS St. John's NICU space was insufficiently designed to provide for their particular challenges: a mix of different patient types, including a large percentage of infants who are wards of the state, impacting length of stay and developmental milestones; inefficient operational workflows leading to staff burnout; and inadequate space to support clinical care and manage clutter, contributing to stress among staff and family. HSHS St. John's and the design team hypothesized programmatic strategies such as providing a mix of patient rooms, a milk room, and a family lounge with sleep rooms, and design strategies like access to natural light, intuitive wayfinding, and separate clinical flows would improve patient outcomes, provide greater flexibility, and increase staff and family satisfaction.

Abstract:

Methodology: Four years after project completion, a post-occupancy evaluation (POE) was conducted at HSHS St. John's Hospital NICU to evaluate the success of the project. Criteria derived from the Center for Health Care Design's Clinical Design Post-Occupancy Evaluation Toolkit and Design Drivers were set at the start of the project. The POE process involved interviews with leadership, a staff survey, a visual audit of the space, and a comparative review of performance data, including patient volumes, length-of-stay, and cost savings. Specific attention was paid to the milk room, couplet care rooms, private and semi-private patient rooms, and family amenity spaces, which were new to the NICU, as well as care team stations, NICU pods, and the overall unit flow, functionality and feel.

Results: The intervention achieved success across all the metrics studied but also revealed opportunities for improvement in future NICU design efforts. Key success outcomes include a 40% increase in capacity; a 16% reduction in length of stay; an approximate $1,163 reduction in cost of care per day (over $3.2 million annually); 1.75 additional hours per day for patient care for nurses due to the Milk Room; patient satisfaction scores within the 90th percentile; and flexibility to accommodate up to six sets of multiples at once. These outcomes demonstrate a correlation between the renovation and meaningful improvements in the performance of HSHS St. John's NICU. Opportunities for improvement were found at every scale of the design. At the programming level, there is not yet a provider workforce trained to staff couplet care rooms. However, these rooms have proven valuable to the unit as highly adaptable spaces. Family members use the overnight sleeping rooms less often than expected due to their lack of soundproofing, preferring to stay at the Ronald McDonald house on campus. Technology advancements were found to become outdated faster than the design could accommodate, suggesting a need for further research into designing for technological upgrades. Throughout the unit, it was evident that small design choices, like the height of outlets at nurse's alcoves, significantly impacted staff workflow, emphasizing the need for meticulous attention to detail. Overall, the POE findings emphasized the importance of introducing flexibility into NICU spaces to serve their diverse requirements.



Conclusion: These key outcomes can be correlated to the programmatic and design strategies successfully implemented, along with important lessons learned.

- Safe, high-quality care is facilitated by a mixture of patient rooms with identical headwalls to achieve flexibility and standardization. The hybrid pod rooms provide efficient nursing support for patients without visitors, while private patient rooms encourage intimate familial caregiving and/or space for higher acuity intervention, which contributes to a reduced length of stay and lower cost of care per day. Couplet care rooms may be difficult to staff but, when designed with identical headwalls, provide essential flexibility. They may be used to provide couplet care, or to accommodate an influx of sets of multiples or other patient surge, or to provide palliative care.

- Including a milk room in-unit moved milk and formula mixing out of the patient room and into a specialized, controlled and sanitary environment, which reduced feeding errors and gave nurses additional hours of time for patient care.

- Alarm fatigue persists and may require a deliberate collaborative solution, such as visual cues outside of patient rooms to reduce audible alarms. · Staff and provider experience is enhanced by introducing a higher percentage of clinical support space and storage, which can help create "space for everything" and increase staff efficiency. Attention to details at the smallest scale of design can help minimize visual and operational stressors among staff, helping to reduce fatigue and burnout.

- Provider and family experience alike is improved by designing patient rooms with large windows and frosted glass doors, which carry natural lights throughout the unit. Other biophilic design elements, such as natural-look materials, imagery, and color, further improve feelings of comfort and wellbeing in the NICU.

- Patient and family experience is greatly improved by increasing sound insulation to promote better sleep and rest amongst patients and families; color-coding areas and creating a circular path, which improves wayfinding; and introducing private room types, which are more comfortable environments for caretakers to engage in kangaroo care and other forms of nurturing.

The HSHS St. John's NICU redesign POE provides important insights into the relationship between NICU design and outcomes. Providing a variety of patient room types with standardized headwalls offers flexibility that is crucial to achieving safe spaces tailored to different, specific patient populations. An evidence-based design strategy that encompasses the environment of care delivers benefits for patients, family, staff, and the bottom line. By sharing different programmatic and design strategies and their impacts on patient outcomes, satisfaction scores, and costs of care, these findings can help advance NICU design.

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Learning Objectives:

1. Understand the benefits of a mix of room types for improving patient outcomes.

2. Learn about design strategies for providing flexibility to accommodate sets of multiples, surge events and pandemics.

3. Understand the added value to staff and providers of design

considerations such as natural light, a designated milk room, ample storage space, and others.

Gravens 2025-45

Title: Comparing Caregiver Report to In-Person Developmental Assessments of Preterm Infants at 24 and 36 months of Age

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Problem Statement: Creating a safe space for NICU parents to come to, where they receive connection with other parents, support for self-care and education on relevant topics for being in the NICU. This is accomplished by inviting them to a weekly group to participate in discussion with others.

Abstract:

Background: Parents of infants admitted to the Neonatal Intensive Care Unit (NICU) are at increased risk for developing stress disorders (e.g., adjustment disorders, post-traumatic stress disorder) along with perinatal mood and anxiety disorders (PMADs) (1). With the increasing incidence of PMADs and trauma-related disorders of parents with infants in the NICU, supporting caregiver coping warrants special clinical attention from mental health professionals. A comprehensive family-centered care program includes mental health support as one of its six components (2).

Problem statement: We are a 24-bed Community Level III NICU with approximately 4900 deliveries and 500 NICU admissions per year. We formed a comprehensive family-centered care program (FCCP) that supports families from antepartum to NICU to discharge. As a part of the FCCP, we had a family partnership council consisting of former NICU families providing feedback on infant care delivery to improve family-centered care practices. In 2023, we heard from our families about the lack of mental health professionals' support in our NICU and how it adversely affected them while they were in the NICU and struggled to find support even afterward. Table 1 shows their voices describing the need for mental health professional support.

Methods/Materials/Data: We shared these testimonials with the leadership team and communicated with the hospital mental health professionals team, which is called the Health Creation Project. The overarching goal of the Health Creation Project (HCP) is to support the community partners and the mental health needs of the individuals they service through the assessment, development, and delivery of programs that promote resiliency and the creation of overall life satisfaction and fulfillment. The ECH NICU team collaborated with HCP to bring in support for the families and a program funded by the ECH Foundation team. We decided to start with a group session instead of individual sessions due to staff shortage in May 2024. Group was designed to create a space for NICU parents to meet each other and share their experiences in a structured way, avoiding having to narrate their traumatic story. Curriculum was abstracted from Dr.Shaw's NICU group curriculum (refe), in order to tailor it to the population and design of El Camino Health's NICU (figure 1). [b] The curriculum was built for a 6 week rotation and the goal is to rotate the curriculum in perpetuity. Data was collected via sign-up sheets maintained by the clinician running the group, and feedback forms submitted by parents who attended the group.

Session 6, Handout 7

Things to Consider for Home

It can be a relief to be away from the doctors, nurses, and monitors, but it can also be a source of stress. On one hand, you have time together in the privacy of your home. On the other hand, some parents will have anxiety about not having the professional care as readily available, and not having the monitors as warning signals.

Like other big life changes, there will be an adjustment period, which may last 1 to 2 months. Your baby will be changing a lot and you will be getting used to each other at home as you develop routines together.

Having mixed feelings about this transition to home is normal.

- What has it been like for you, having the baby at home or thinking about having the baby at home?
- What are some of the thoughts and feelings you are having?

THINGS TO KEEP IN MIND

- **You do know your baby very well** and you can trust your ability to notice physical and developmental changes that you may want to discuss with the pediatrician.
- **It is important that you plan time for yourself to rest**: babies can sense when their parents are stressed. It is OKAY for you to take time for yourself, and to have help taking care of your baby so that you can take care of yourself.
- **Preterm infants develop in the same fashion that full term babies do, perhaps just at a slower rate.** It is important to use their Corrected Age when thinking about their developmental milestones.
- **It can be stressful knowing that preterm infants may develop more slowly than full term babies**, or may have difficulties with their development. Not knowing for sure how your baby will develop in the future can be unsettling. Therefore, just being with your baby NOW – observing, interacting and loving – is the most important thing you can do. You will also have the help of your pediatrician and the High Risk Infant Follow-up (HRIF) Clinic (if your baby was referred to this clinic) to monitor your baby's progress over time.
- **Keep in mind that it may take time for your baby to breast feed well if he/she has mostly been getting bottle fed at the hospital.** Consider talking to your pediatrician about getting a lactation consultation if you have any questions or concerns about breast feeding.

REMINDER: All babies born under 32 weeks, and those with certain other medical conditions, are seen in the HRIF Clinic at roughly 4 months Corrected Age.

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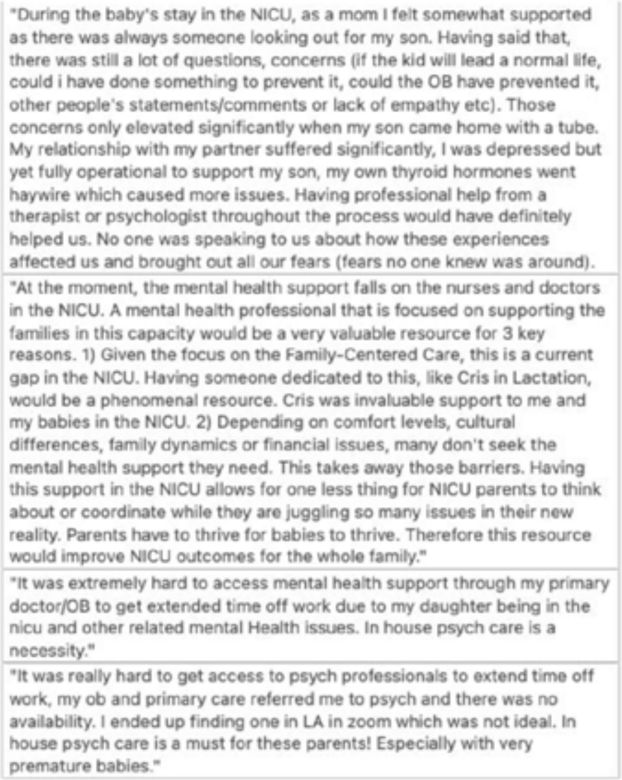

"During the baby's stay in the NICU, as a mom I felt somewhat supported as there was always someone looking out for my son. Having said that, there was still a lot of questions, concerns (if the kid will lead a normal life, could i have done something to prevent it, could the OB have prevented it, other people's statements/comments or lack of empathy etc). Those concerns only elevated significantly when my son came home with a tube. My relationship with my partner suffered significantly, I was depressed but yet fully operational to support my son, my own thyroid hormones went haywire which caused more issues. Having professional help from a therapist or psychologist throughout the process would have definitely helped us. No one was speaking to us about how these experiences affected us and brought out all our fears (fears no one knew was around).
"At the moment, the mental health support falls on the nurses and doctors in the NICU. A mental health professional that is focused on supporting the families in this capacity would be a very valuable resource for 3 key reasons. 1) Given the focus on the Family-Centered Care, this is a current gap in the NICU. Having someone dedicated to this, like Cris in Lactation, would be a phenomenal resource. Cris was invaluable support to me and my babies in the NICU. 2) Depending on comfort levels, cultural differences, family dynamics or financial issues, many don't seek the mental health support they need. This takes away those barriers. Having this support in the NICU allows for one less thing for NICU parents to think about or coordinate while they are juggling so many issues in their new reality. Parents have to thrive for babies to thrive. Therefore this resource would improve NICU outcomes for the whole family."
"It was extremely hard to access mental health support through my primary doctor/OB to get extended time off work due to my daughter being in the nicu and other related mental Health issues. In house psych care is a necessity."
"It was really hard to get access to psych professionals to extend time off work, my ob and primary care referred me to psych and there was no availability. I ended up finding one in LA in zoom which was not ideal. In house psych care is a must for these parents! Especially with very premature babies."

Results: As of this abstract, this program supported 75 NICU parents and 22 feedback sheets were collected. Feedback questions were to understand the experiences of the participants and feedback for the facilitator. Qualitative data was obtained for the feedback, and quantitative data is maintained for attendance. Materials were developed by modifying Shaw's group curriculum to accommodate for the population, the medical necessity of the unit and the average length of stay for families. Feedback forms were offered to all parents, but were not mandated. A chart containing the quantitative data that captures the responses of parents is attached. A Supportive education group was received positively by parents in a 6 month period. Even though an average of 20% of the families attended the group, they rated some learning in every group and had positive or neutral feedback to give. The impact of a group is that parents have a safe space to share some education or experience with other parents and learn selfcare.

Name of baby	days in nicu	gestational age	Family atttendees	What did you find helpful/learned	what can we do differently
1	6	35-4	SC	Self care	maybe some educational material
2	5	36-2	2	meeting other parents	
3	42	35	mother	hearing diff experiences from other parents helps me know im not alone	how can we get through the day by day better, what happens after graduation
4	10	32	mom and dad	we are not alone, selfcare	e/t went well, no change needed
4	19	31-2	mom	That the feeling of sharing with others may not be a responsibility	e/t is great
3	4	34	CE and JB	listening and sharing similar feelings with others	not sure yet
5	5	34-3	MR and DD	Time for selfcare, we are not alone	
6	8	38-3	SV and KC	selfcare, experiences from others going through the same emotions	have doctors be part of this session
3	52	35 weeks	AA	Just getting experiences and aspects of what brought them here today	
7	n/a	n/a	KB	Entire conversation was very useful, the conversation helped understand the emotions and the need to not to question them	

Challenges: Though the group session benefited some families, we had a low participation rate because parents don't want to leave their baby's space, and it would have been better if parents could have interacted with a trauma therapist at the bedside while they were holding their babies.

Next Steps: Continue with the group. Begin 1:1 therapy for the families.

Learning Objectives:

Understand 3 elements used in each group to create and maintain structure

Learn at least 3 challenges in building the group and maintaining it
Understand 3 learnings from a Level 3 NICU Mental Health Support program.

Gravens 2025-46

Title: Introducing Psychological Support for Neonatal Fellows to Improve Trainee Mental Health

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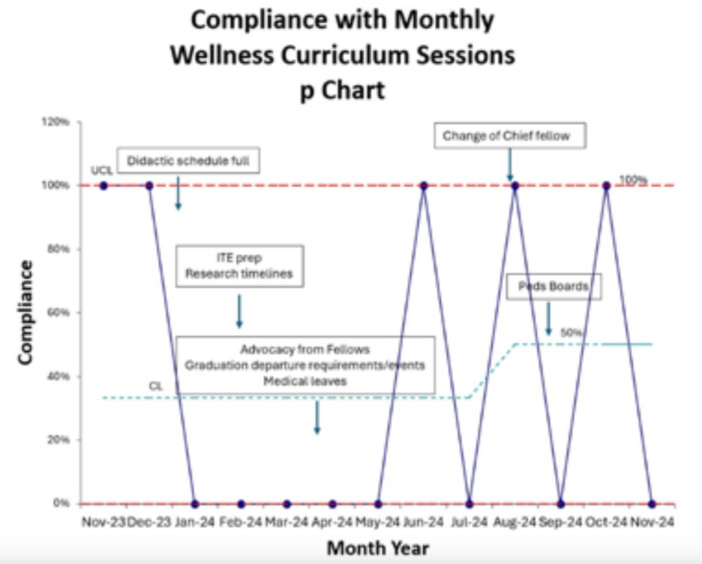
Problem Statement: Neonatal Intensive Care Unit (NICU) trainees experience high intensity situations under suboptimal physiologic and psychologic conditions that can lead to burnout and/or secondary traumatic stress. The mental health of NICU fellows can have significant impact on their well-being and the quality of patient care they provide. The overall goal of this project is to improve Neonatal Fellow mental health and well-being in a level 3 NICU by using Trauma Informed care (TIC) principles to identify needs that may warrant connection to further resources.

Abstract:

Methods: Key stake holders were identified: the ACGME director, the fellowship program director, the associate program director, the chief fellow, the psychologist, the fellow cohort, division chief, lead NNP, and the program coordinator. We aimed to develop a wellness curriculum and standardize the frequency of sessions, duration of sessions, attendance of sessions, confidentiality, location and topics. Key drivers rooted in the 6 principles of TIC became the foundation of the topics explored during the Wellness Sessions. These six principles / primary are 1. Safety, 2. Trustworthiness and Transparency, 3. Peer Support, 4. Collaboration and Mutuality, 5, Empowerment, voice, and choice, 6. Cultural sensitivities. These promoted the following standardized topics: Crucial conversations with mentors, Performance anxiety, Debrief challenging cases, debrief death, Navigating personal relationships (motherhood, significant other, daughter/son), Work life balance, Individualizing wellness, Cognitive behavioral strategy for stress management. A force field diagram was the QI tool used to mediate conversations to gain approval for this Wellness curriculum pilot. Driving forces in support of this pilot were having a dedicated NICU psychologist, ACGME recommendation for embedded Wellness training, fellow interest, previous match history, program evaluation demonstrating a gap for wellness training and existing private fellow office space. Restraining forces included scheduling time away from board preparation didactics, patient care and research duties, 360 degree buy in, post-call protected time, literacy of NICU psychologist role, and human bias to new process. Our outcome measure is compliance with monthly meetings characterized by completed monthly sessions from November 2023 to April 2024. The process measure is compliance with attendance for fellows that desired to attend the wellness session and not encounter barriers.

Results: In the initial 6 months implementation period from November 2023 to April 2024 there was 30% compliance with monthly meetings. PDSA cycles revealed the challenges to completing a session. These included the available protected didactic times were filled with other lectures and case conferences, preparation for In-training-exams (ITE's), research timelines, graduating fellow interviews, schedule gaps for anticipated and unanticipated medical leaves, and fellow graduation exit procedures. Compliance for attendance of the fellows conflicted with patient care duties and lack of commitment to protected time away from the NICU. Qualitative feedback from fellows was in support of establishing the permanence of this wellness curriculum and they specifically appreciated the topics and the time to pause and reflect on their experiences. Fellows' feedback included: "mental health sessions are equally as important as the pathophysiology lectures," the curriculum prioritizes "resetting the mindset more positively" and "improve work-related satisfaction." This feedback, the start of the new chief fellow term, and persistent advocacy to establish this wellness curriculum enabled this pilot to continue for an additional 6 months. The frequency of sessions has increased in collaboration with program director approving bimonthly sessions.



Conclusions: Implementation of a fellow wellness program was met with initial resistance, but over time has proven beneficial in fellow satisfaction and performance leading to increased support from key stakeholders, increased frequency of scheduled sessions and reduction in barriers to allow for fellow attendance. Future direction is to incorporate fellow wellness curriculum into monthly didactic schedule and standardize a curriculum to be replicated.

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Learning Objectives:

We aim to develop a standardized confidential Fellowship Wellness Curriculum led by the NICU psychologist exclusive to fellows only and achieve the following measures within 6 months:

1. 100% compliance with monthly sessions.
2. 100 % compliance with fellow attendance for those fellows who desire to attend.

The secondary aim of this project is to increase awareness of trauma exposures that are inherent to critical care graduate training.

Gravens 2025-47

Title: Implementation of Discharge Path Tool to Achieve Discharge Readiness in NICU families

Authors: Sherri Spaw BSN RN IBCLC; Heather BSN Buboltz BSN RN; Susan Angelos BSN RN; Diane Delgado Allen OTR/L, NTMTC, CNT; Julie Carmichael DNP; Mary M. Collins BSN RN CCM; Taylor Deall MD; Robyn Eaton APRN MSN; Marie Gergel MSN RNC IBCLC; Corrianne Lambert Lustman RD; Samantha Nave BSN RN; Tasnia Osmani MD; Ana Sanchez LCSW; Suzanne S. Schneider MS CCC/SLP CNT; Ashley Walters BSN RN BC-CMGT; Miriam Sara Koshy BSN RN; Patoula Panagos-Billiris, MD; Lacy Chavis PsyD

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Problem Statement: The aim of this quality improvement project is to implement a Discharge Path Tool for parents to feel empowered in the care of their infants during their NICU journey towards discharge and by June 2025 achieve the outcome measure of 50 % compliance of the families using the tool.

Abstract:

Methods: Our NICU is participating in the Florida Perinatal Quality Collaborative promoting safe discharge. An interdisciplinary team that included bedside nurses, social worker, case managers, speech therapists, occupational therapists, physical therapists, dieticians, lactation consultants, NICU psychologist, NICU nurse educator, Neonatal NP's, NICU fellows, neonatologists, and parent from family advisory council was formed to evaluate our discharge process. We used the QI tool, a fishbone diagram, to identify the barriers for a safe and efficient discharge. Communication with the families and empowering the families to participate in the infants' care was identified as a major contributor and key driver for a safe and efficient discharge. Each discipline drafted a workflow of their involvement throughout the stages of an infant's NICU hospitalization. Together we synthesized a tool that integrated the infant's milestones as they progressed through their hospitalization and the involvement of each of the interdisciplinary team. This tool was tested by families and staff using PDSA cycles. After finalizing feedback from parents, this tool has been printed in both English and Spanish to bridge the gap of healthcare disparities in our community. A process was created to ensure that all families will have access to this tool.

Results: This tool has begun implementation November 2024 and compliance data is pending. PDSA cycles provided qualitative feedback that continued to shape the tool. Qualitative feedback included: Prior to the tool "we didn't know what comes next", the tool "helped me know what to ask", with the tool "I know the right plan now", "The tool is a keepsake", "I cherish the boxes for firsts." We have demonstrated that our nurses document discharge teaching in a standardized process; we anticipate that as a continuation to DC teaching the nurses will find value in documenting use of this DC path tool versus a perceived added task completion.

Conclusion: This tool has reframed the parent experience to celebrate milestones, achievements and empower families to regain back their newborn experiences many feel were "robbed of." It provides parents with transparency and builds trust with the NICU team. Families now have enhanced insight to ask meaningful questions surrounding the care of the infant and where they are in their journey to home. With this tool families are better able to understand the natural progression of a NICU hospitalization stay while also personalizing the journey based on family values.

Learning Objectives:

1. Know DC planning is a process that requires families to participate in their infant's care and should be tailored to their and their infant's needs.
2. List the criteria that define discharge readiness to promote consistent messaging with families surrounding discharge.

Gravens 2025-48

Title: Implementation of Emotional Readiness Tool to Achieve Discharge Readiness in NICU families

Authors: Taylor Wiseman Deall, Tasnia Osmani, Lacy Chavis, Diane Delgado Allen, Suzanne Schneider, Julie Carmichael, Ana Sanchez, Corrianne Lambert, Miriam Koshy[2] Robyn Eaton, Heather Buboltz, Marie Gergel, Samantha Nave, Sherri Shaw, Maria Collins, Ashley Walters, Susan Angelos, Patoula Panagos-Billiris

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Problem Statement: Ensuring discharge readiness in the NICU improves health outcomes for neonates and decreases medical costs by mitigating unnecessary medical visits after discharge. Discharge readiness is determined by clinical staff but another very important aspect is parent's perception of preparedness. Smith et al 2009 showed that families were more likely to achieve discharge readiness when they felt very confident with their infant's breathing, heart rate, health and maturity. This led to the addition of an Emotional Readiness checklist within our discharge criteria checklist.

Abstract:

Methods: As participants in the Florida Perinatal Quality Collaborative (FPQC) our NICU is improving the discharge process for NICU families. The FPQC recommended primary aims are 1. Families demonstrating technical readiness for care of a infant and 2. Families demonstrating Emotional readiness surrounding caring for their infant at home. An interdisciplinary team that included bedside nurses, social worker, case managers, speech therapists, occupational therapists, physical therapists, dieticians, lactation consultants, NICU psychologist, NICU nurse educator, Neonatal NP's, NICU fellows, neonatologists, and parent from family advisory council was formed to evaluate our discharge process. Using a fishbone diagram, we identified all potential barriers and promoters that would enable our team to implement this Emotional Readiness Tool. It was evident to our team that we could not complete the secondary aim of the FPQC recommendation for the Emotional Readiness Questions without developing an accompanying algorithm to support the frontline and empower families. We recognized that, in order to implement these questions, we would have to build in an algorithm to validate nursing concerns for parent responses that did not demonstrate emotional readiness. We categorized potential parental barriers to achieving confidence into three key drivers for Emotional Readiness: 1. Additional Education, 2. Additional Hands-on Practice, and 3. Additional resources. We created a pathway in the EMR to guide bedside nurses by prompting these key drivers and then notifying the proper clinicians to assist families.

Results: Our NICU has succeeded in improving documentation of discharge education of technical skills for families to care for their newborns beyond the NICU. With our participation in the FPQC, we improved our compliance with documenting technical readiness from 29% to 54 %. The outcome measure is compliance with the Emotional Readiness tool. The process measure is compliance with notifying the appropriate clinicians to connect families to the key drivers of Emotional Readiness. The balancing measure is delayed discharge due to the Emotional Readiness tool. PDSA cycles led to the addition of a scale and point assignment to the Emotional Readiness Questions. We are able to illustrate the QI tools that led to the synthesis of this tool. Implementation of this Emotional Readiness tool which includes our algorithm is going live November 15th.

Conclusion: In conclusion, we are advocating that emotional readiness is a key facilitator to a safe discharge and has not been recognized in a standardized process until now. Implementation of this tool empowers the parents to safely share their perception of readiness which will help guide the NICU team with barriers that may not have previously been identified.

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Learning Objectives:

The primary aim is to implement this Emotional Readiness tool and achieve 50% compliance for NICU discharges within 6 months from November 2024 through April 2025.

The secondary aim is to connect all families that do not have reported Emotional Readiness to the appropriate resources prior to discharge.

Gravens 2025-49

Title: Empowering Families for Better Outcomes: A Statewide QI Initiative to Improve NICU Discharge Readiness

Authors: Patoula Panagos-Billiris MD; Susan Bowles, DNP, APRN-CNS, RNC- NIC; Vargabi Ghei MD; Lelis Vernon S.Q.I.L; Linda Detman PhD; Shelby Davenport MPH, CPH, CHES; Estefanny Reyes Martinez, MPH, CPH; Alexa Mutchler; Lori Reeves MPH; Estefania Rubio MD, MPH

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Problem Statement: Transitioning from the neonatal intensive care unit (NICU) to home can be overwhelming for families. Social, environmental, economic, and mental health challenges also impact NICU discharge readiness. A lack of parental emotional comfort and confidence can inhibit learning and contribute to poor infant outcomes and increased healthcare utilization after discharge. Quality discharge preparation ensures that families feel ready to continue their infant's care at home. Comprehensive neonatal intensive care includes multidisciplinary, family-centered transition, and discharge guidelines to optimize readiness and outcomes. Primary Aim: Achieve a 20% increase in discharge readiness for NICU infants by parental technical readiness by staff assessment and emotional readiness score by parent questionnaire. Secondary Aim: Increase by 20% the completion of a discharge process tool upon discharge home.

Abstract:

Methods: An advisory Committee met virtually comprised of a multidisciplinary group of clinicians, clinical leaders, community representatives, and family advocates. Key Drivers for promoting a safe discharge were developed: 1. Family Engagement & Preparedness, 2. Addressing Health-Related Social Needs, 3. Transfer and Coordination of Care. Potentially better practices were identified for each primary driver. These potentially better practices, supporting literature, and resources were inserted into a virtual Toolkit. A statewide webinar was hosted to gain interest. Hospital commitments were completed. In September 2023, FPQC launched the Homeward Bound Quality Improvement Initiative in Orlando Florida, with participation from 49 NICUs. During this meeting included This meeting included family insights on NICU discharge, a keynote presentation of the updated guidelines, and a review of the QI patient bundle.

Results: Currently, 68% of Florida NICUs are participating in the Homeward Bound initiative, with strong engagement reflected by 94% hospital attendance at virtual monthly coaching calls and 88% of hospitals sharing trial tests of potentially better practices during quarterly updates. More than 120 attendees, representing 98% of participating NICUs, have joined key in-person meetings. From Q1 2023 to Q3 2024, hospitals have made substantial progress in our key aims: parental technical readiness checklist completion increased from 49% to 82%, and discharge planning tool completion rose from 56% to 75%. Respectful Care training participation and commitment to these practices increased from 25% to 58% for nurses and from 9% to 44% for physicians. The most recent in-person meeting highlighted the importance of this training, offering hospitals additional resources and emphasizing its relevance in the NICU. Additionally, use of the HRSN Assessment Tool improved from 51% to 78%, caregiver screening rates rose from 60% to 80%, and referrals to community services increased from 87% to 98%. Throughout the initiative, over 90% of caregivers reported feeling well-prepared and emotionally ready to take their infant home at discharge.

Conclusion: The FPQC Homeward Bound Project has shown that DC preparedness is an interdisciplinary responsibility to endorse DC readiness. This QI project emphasizes that although all 3 are interrelated, the primary driver Health-Related Social Needs directly impacts the success of the other primary drivers Family Engagement and Transfer and Coordination of Care. Comprehensive discharge preparation for is invaluable for our vulnerable NICU families.

Learning Objectives:

1. Identify effective strategies from the Homeward Bound initiative, focusing on improving caregiver technical and emotional readiness and utilizing discharge tools.
2. Describe how Respectful Care training and HRSN assessments can be implemented to enhance caregiver support.

Gravens 2025-50

Title: Factors Contributing to Stress in NICU Infants and Their Mothers

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Problem Statement: NICU infants and their parents experience daily stressors that are cumulative in nature. Sources of NICU-related stress include pain and distress related to care and procedures, environmental stressors, parental separation, and parental role alteration. These stressor exposures can overwhelm infants and parents, leading to negative short- and long-term consequences, including adverse infant neurodevelopmental outcomes and issues with parent mental health. Although a growing body of research supports the intergenerational transmission of stress from parent to infant, stress exposures of NICU infants and their mothers are typically considered independently. The Neonatal Stress Embedding Model described by Nist et al. (2019) posits that infant stressor exposures interact with the prenatal environment and maternal interaction to influence the biological embedding of stress in NICU infants. Similarly, stress in NICU mothers may be affected by their environment, interactions with the infant, and NICU-related stressor exposures. The purpose of this study was to explore relationships between infant and maternal factors, including the prenatal/maternal environment, and stress-related outcomes in NICU infants and their mothers.

Abstract:

Methods: Study hypotheses were addressed via a descriptive study, using an existing dataset to conduct a secondary analysis. This quantitative dataset included infant (gestational age, Neonatal medical index scores), maternal (education, number of siblings), and prenatal-environmental social (Social Vulnerability Index (SVI) theme scores) variables for 78 families with an infant that received care in a tertiary level NICU in the Midwestern United States. Of the 78 infants, 41 were term and 37 were preterm infants born at > 28 weeks gestation. Median length of infants' NICU stay was 33 days. Infant stress was measured using resting salivary cortisol levels collected in the morning at NICU admission and discharge. For infants not discharged at or before 33 days of life, a resting salivary cortisol was collected at one month of age. Stress in mothers was measured via self-report using the Parental Stressor Scale: Neonatal Intensive Care Unit (PSS: NICU) at NICU admission and discharge. Selection of individual infant, maternal and prenatal-environmental social factors was based on univariate regression results. Separate hierarchical linear regression analyses were conducted to identify factors that explain the most variance in infant stress and mothers' stress.

Impact and Results: In this study, infant stress at NICU discharge

was best explained by a model including infant salivary cortisol at NICU admission, cumulative parent presence over the first four weeks of life, mother's total score on the PSS: NICU at discharge, and Social Vulnerability Index theme scores reflecting minority status, housing and transportation, and socioeconomic status (R2=0.31, F=3.28, p=.01). The addition of mother's stress at discharge and Social Vulnerability Index theme scores increased the variance in infant stress explained by the model by 19%. Mothers' stress at NICU discharge was best explained by their self-reported stress using the PSS: NICU at NICU admission (R2=0.64, F=109.68, p<.001). Although univariate regression indicated that infant variables and SVI scores were significantly associated with maternal stress, and hierarchical regression models including these variables were significant, infant variables and SVI theme scores increased the variance in maternal stress explained by only 3%.

Conclusions: Results of the study support the Neonatal Stress Embedding Model described by Nist, et al. (2019) in that infant HPA axis functioning at NICU discharge was explained by the prenatal environment (Social Vulnerabilities of mother), maternal interaction (parent presence and maternal stress in the NICU), and infant stressor exposures. Clinical implications of these results include providing NICU family supports that limit separation, mitigate maternal stress and address their social vulnerabilities. Research implications include considering the prenatal environment and the interaction of maternal variables with infant NICU-related stressor exposures when measuring infant stress-related outcomes.

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Learning Objectives:

1. Describe relationships between infant and maternal factors, including the prenatal-maternal environment, and stress-related outcomes in NICU infants and their mothers.
2. Discuss clinical and research implications of research examining relationships between infant and maternal factors impacting stress-related outcomes in NICU infants and their mothers.

Gravens 2025-51

Title: Implementation of a Multidisciplinary Individualized Neurodevelopmental Program for Infants with Prolonged NICU Hospitalization - The SPROUT Program

Authors: Alicia Loncar, Victoria De La Garza, Holly Paulos, Monica Olsen, Sydney Cameron, Ashley Lucke[5]

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Problem Statement: Infants in a level 4 neonatal intensive care unit (NICU) are at increased risk for poor neurodevelopmental outcomes due to a combination of prematurity, complex illness, prolonged hospital stay and separation from parents. Parents report significant concerns and worry about the long-term neurodevelopmental outcomes of their baby. Despite this, daily NICU rounds are frequently consumed by medical decision making and little time is available to focus on the neurodevelopmental components of care such as progress with physical therapy, music/language exposure, sibling bonding and parental mental health among others. Many infants in level 4 NICUs remain inpatient for weeks to months, with the risk of worsening delays in neurologic development due to their chronic hospitalization and prolonged abnormal environment. The Dell Children's Neonatal Neurodevelopmental Care Team created a program in 2021 emphasizing Sensory exposure, Playtime, Reading, Out of bed activities, Utilizing therapies and Time for rest (SPROUT Program) in infants greater than 44 weeks postmenstrual age. We aim to describe our process for designing, implementing and tracking the metrics of this program in a high acuity, surgical level 4 NICU of both inborn and outborn patients.

Abstract:

Methods: During monthly team meetings and daily bedside rounds the need was identified to optimize timing of therapy interventions, activity influenced care times, parent bonding and restful sleep in patients beyond 44 weeks postmenstrual age with anticipated prolonged hospital stay. A multidisciplinary neurodevelopmental care team was assembled including neonatologists, nurse practitioners, NICU nurses, respiratory therapists, speech and feeding therapists, physical therapists, music therapists, art therapists, child life specialists, perinatal psychologists, neonatal nurse navigators, social workers, case managers, unit educators and patient families. Individual parent and staff focus group interviews were conducted to identify perceived barriers to neurodevelopmentally appropriate care, interruptions in therapy services and failures in sleep protection. Utilizing online graphic design programs, individual patient daily schedules were created with input from parents, primary nursing and respiratory care staff and therapists. Schedules were prominently displayed in each single patient room for all staff to easily visualize and comply with for consistent, neurodevelopmentally protective care.

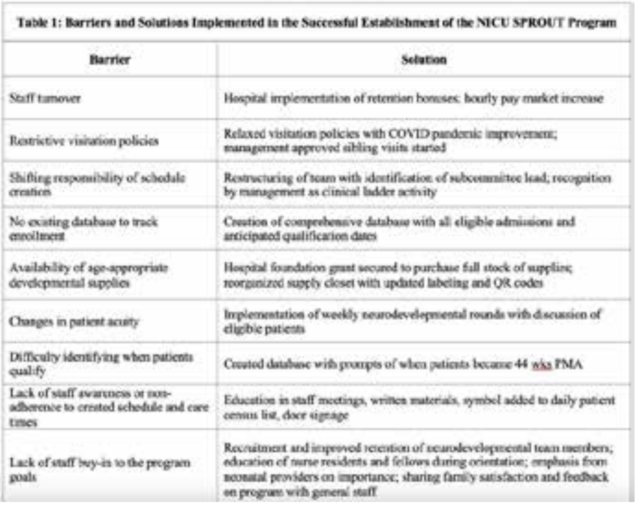

Table 1: Barriers and Solutions Implemented in the Successful Establishment of the NICU SPROUT Program

Barrier	Solution
Staff turnover	Hospital implementation of retention bonuses: hourly pay market increase
Restrictive visitation policies	Relaxed visitation policies with COVID pandemic improvement; management approved sibling visits started
Shifting responsibility of schedule creation	Restructuring of team with identification of subcommittee lead; recognition by management as clinical ladder activity
No existing database to track enrollment	Creation of comprehensive database with all eligible admissions and anticipated qualification dates
Availability of age-appropriate developmental supplies	Hospital foundation grant secured to purchase full stock of supplies; reorganized supply closet with updated labeling and QR codes
Changes in patient acuity	Implementation of weekly neurodevelopmental rounds with discussion of eligible patients
Difficulty identifying when patients qualify	Created database with prompts of when patients became 44 wks PMA
Lack of staff awareness or non-adherence to created schedule and care times	Education in staff meetings, written materials, symbol added to daily patient census list, door signage
Lack of staff buy-in to the program goals	Recruitment and improved retention of neurodevelopmental team members; education of nurse residents and fellows during orientation; emphasis from neonatal providers on importance; sharing family satisfaction and feedback on program with general staff

Results: The SPROUT program was established in October 2021 by a multidisciplinary team. Barriers to successful implementation

Figure 1: Sample SPROUT Program Schedule from 2021


Ansel's Schedule

8 AM Wake up & 1st hands on!
8:30 AM Play time with Child life
9 AM Nap time
10:30 AM Playtime & Therapy
11 AM 2nd hands on!
11:30 PM Nap time
2 PM 3rd hands on!
2:30PM Playtime with mom & dad
3 PM Nap time & snuggles
5 PM 4th hands on!
5:30 PM Nap time
8 PM Last Hands on, Bath & Bedtime routine!

Figure 2: Sample SPROUT Program Schedule from 2022


Wells' Schedule

- 09:00 AM Wake up & 1st hands on!
- 9:30 AM Play time or Therapy with PT
- 10:00AM Nap time
- 12:00 PM 2nd hands on
- 12:30 PM Therapy or Child Life Time
- 01:00 PM Nap time
- 03:00 PM 3rd hands on!
- 04:00 PM OOB in my tumble form or Mamaroo. Put up my B&W cards if awake!
- 05:00 PM Nap Time
- 06:00 PM 4rd hands on! & Chat with Dad!
- 07:00 PM Nap Time
- 09:00 PM Last hands on, Bath & Bedtime!

Special Visits

- PT visits me 3x a week
- CL visits me 2x a week
- MT visits me 1x a week
- My mom visits daily from 9 AM -7 PM

Special Notes

- I have Sternal Precautions to until the end of May. Please avoid tummy time until then.

Figure 3: Sample SPROUT Program Schedule from 2024


NOLAN'S SCHEDULE

Daily Schedule:

- 7 am: Blinds open!
- 8 am: Care time, morning labs, Xray
- 9 am: Play time! Therapy if awake
- 10 am: Quiet time, nap time *sound machine max 15 mins*
- 12 pm: Care time
- 1 pm: Mamaroo time, awake time!
- 2 pm: Nap time
- 4 pm: Care time
- 5pm: Reading time, music therapy
- 8 pm: Bath time, daily weight, measurements
- 9 pm - 7 am: Lights out! Bedtime

Therapy Goals:

- Physical Therapy 3-5 times per week

My Favorite Things:

- I love my mom and dad
- Being Held
- Being talked to

Special Visitors

- Alicia, RN
- Kim, RN
- Speech Therapy
- Occupational Therapy

were identified and solutions employed (See Table 1). Barriers included staff turnover, restrictive visitation policies, shifting responsibility of schedule creation, no existing database to track enrollment, availability of age-appropriate developmental supplies, changes in patient acuity, difficulty identifying when patients qualify, lack of staff awareness and non-adherence, lack of staff buy-in to the program goals. A combination of hospital, NICU, neurodevelopmental team and individual solutions were employed to overcome these barriers. 6 infants were enrolled with individualized schedule creation in 2021 and 15 infants in 2022. Data for 2023 is not available due staff turnover and no existing database until April 2024 when the program was revised and rebranded into the SPROUT program. Since database creation, 12 patients have been enrolled of 16 eligible (75%). The average birth gestational age of enrollees was 31.8 weeks and average post menstrual age at the time of enrollment was 49.9 weeks. Sample SPROUT enrollee schedules from 2021, 2022 and 2024 are displayed in Figure 1, 2 and 3 respectively.

Conclusions: Our NICU Neurodevelopmental Care Team successfully designed and implemented the SPROUT Program in a level 4 surgical NICU at Dell Children's Medical Center at the University of Texas at Austin. Multiple barriers were identified as the program's implementation occurred and the team employed numerous solutions to overcome them and ensure the successful continuation of the program. Establishment of a SPROUT program database was instrumental in tracking enrollment, identifying eligible patients and reporting program metrics. Future directions for this program include increasing enrollment percentages, incorporation of photo and video guidance of activities into the schedules for new staff and families, collaboration with the NICU Follow Up clinic and developmental outcomes testing, and quantitative parent assessments of SPROUT program impact.

Learning Objectives:

1. Identify key stakeholders in designing a neurodevelopmental care team in a surgical level 4 neonatal intensive care unit.
2. Apply tools to support developmental milestones and construct individualized daily schedules for infants with complex care needs currently hospitalized in the NICU setting.
3. Identify methods to overcome barriers of program implementation

Gravens 2025-52

Title: Weekly Multidisciplinary Rounds to Guide an Intensive Inpatient Neonatal Neurodevelopmental Program

Authors: Holly Paulos, Melissa Jecker, Alicia Loncar, Kathleen Stanton, Ashley Lucke[5]

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Problem Statement: Infants in a level 4 neonatal intensive care unit are at increased risk for poor neurodevelopmental outcomes due to a combination of prematurity, complex illness, prolonged hospital stay and separation from parents. Parents report significant concerns and worry about the long term neurodevelopmental outcome of their baby. Despite this, daily NICU rounds are frequently consumed by medical decision making and little time is available to focus on the neurodevelopmental components of care such as progress with therapy, music/language exposure, sibling bonding and parental mental health among others. The Dell Children's Medical Center of the University of Texas at Austin Neonatal Neurodevelopmental Care Team seeks to bridge this gap in care for high-risk infants by measuring the impact of weekly bedside multidisciplinary Neurodevelopmental Rounds (NDR) which develop individualized care plans to optimize developmental outcomes and overcome barriers related to inconsistent care practices.

Abstract:

Methods: We established a multidisciplinary neurodevelopmental care team composed of neonatologists, nurse practitioners, NICU nurses, respiratory therapists, speech and feeding therapists, physical therapists, music therapists, art therapists, child life specialists, perinatal psychologists, neonatal nurse navigators, social workers, case managers, unit educators and patient families. Weekly team meetings began in October 2023. All admitted infants with an anticipated 2 week length of stay or more were eligible for evaluation. Detailed assessments of each infant's neurodevelopmental environment and interventions implemented were gathered from chart review, parent interviews and bedside assessments. Quantitative data was gathered in the following areas: safe sleep practices, auditory (hearing) evaluation, therapy engagement (speech, physical, art, music, occupational), infant positioning, SENSE assessments, volunteer visitation, utilization of age-appropriate supplies and toys, cycled lighting, parent interactions/holding, parental mental health support, Hand2Hold engagement, child life support and SPROUT program enrollment. Qualitative data was collected in a weekly report detailing the discussion and feedback from the neurodevelopmental team, bedside staff and parents. Parent scores for "age appropriate activities" from the hospital Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey were also tracked throughout this period. Results: 192 patients of 454 (42%) total NICU admission were evaluated. 501 individual neurodevelopmental interventions were completed (average of 2.6 interventions per patient) from October 2023 through September 2024. All total types of interventions are shown in Figure 1 with those specific to family centered care shown in Figure 2, environmental care in Figure 3 and changes in therapist frequency in Figure 4. Qualitative parent interviews were conducted and demonstrated patterns of parent appreciation for education and focus on their infant's neurodevelopmental care, perception of improved infant sleep quality, regularity and optimization of therapy services.

Figure 1 - All Interventions Implemented from Neurodevelopmental Rounds in NICU Patients from October 2023 to September 2024

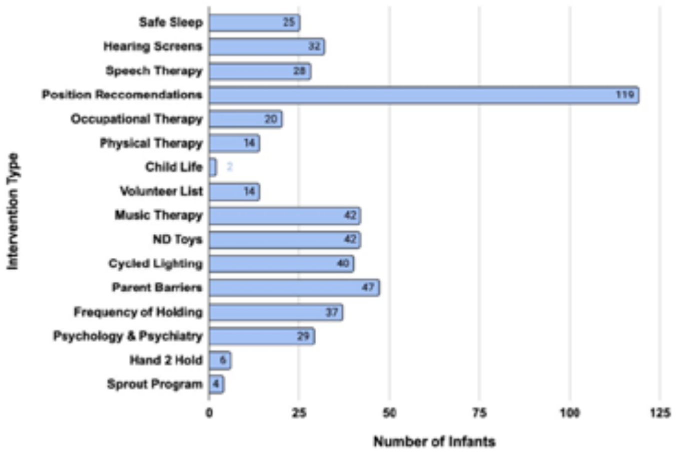


Figure 2: Family Centered Information Implemented from Neurodevelopmental Rounds in NICU Patients from Oct 2023 to Sept 2024

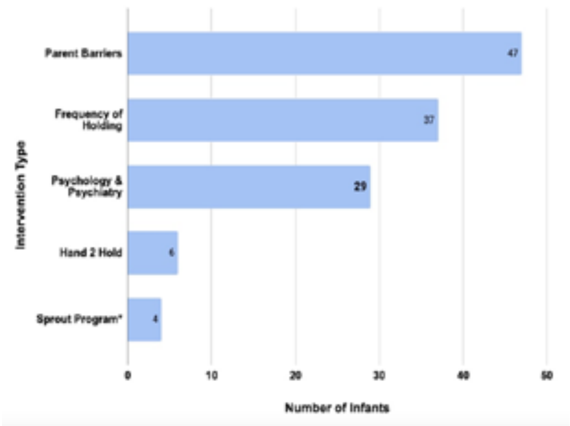


Figure 3: Environmental Interventions Implemented by Neurodevelopmental Rounds in NICU Patients Oct 2023 to Sept 2024

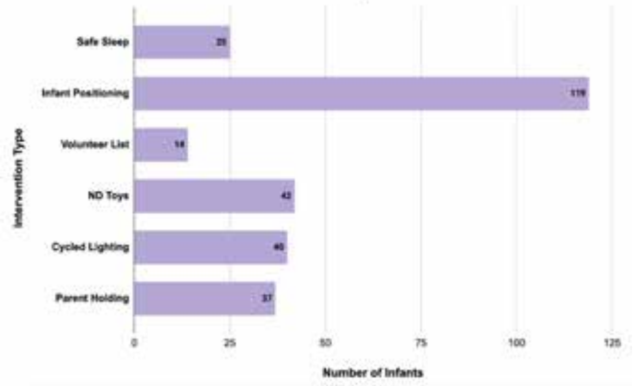
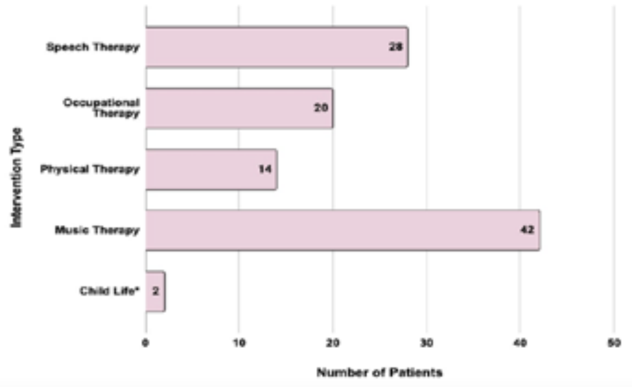


Figure 4: Increased Therapy Involvement Secondary to Neurodevelopmental Rounds in NICU Patients from October 2023 to September 2024



Conclusions: We successfully established a multidisciplinary neurodevelopmental care team within our level 4 surgical NICU at Dell Children's Medical Center at the University of Texas at Austin. Through implementation of weekly multidisciplinary ND rounds, focused assessments and individualized patient interventions can be made to optimize the neurodevelopmental environment and integrate neuroprotective practices into the routine care of a level 4 surgical NICU. Neurodevelopmental rounds also establish a dedicated forum to address challenges and provide education for both families and staff on the effective application of developmental care strategies. Future directions of this work will be to incorporate gross motor assessments (GMA) and Hammersmith Infant Neurological Examinations (HINE) into patient assessments as well as correlation of our interventions with NICU Follow Up clinic Bayley Scales of Infant Development (BSID-IV) testing. Additionally, we aim to have patient family representation within our team with quantitative measures of impact from the parent perspective.

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Learning Objectives:

1. Recognize the components and key stakeholders in establishing a multidisciplinary neonatal neurodevelopmental care team.

2. Identify specific components of inpatient neonatal care which can be incorporated into a weekly rounding rubric.

Gravens 2025-53

Title: To explore the experience of parents of micro premature babies participating in the infant massage programs in the Neonatal Intensive Care Units (NICU)

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Problem Statement: Qualitative Research study Hypothesis: Parents of Micro-premature babies < or equal to 25 weeks will experience feelings of empowerment, decreased stress and anxiety and the parent infant dyad will improve after the positive effects on the parents and the baby after being taught massage while in the NICU 2) Question: What are the experiences of parents of micro premature babies less than or equal to 25 completed weeks gestation after they reach stability after at least 34 weeks CGA, who consent to be enrolled in a massage program to integrate massage therapy as part of the parental care they provide their babies in the NICU?

Abstract:

Parents of micro premature babies in the Neonatal Intensive Care Unit (NICU)are in a stressful situation during their baby's neonatal hospitalization. This stressful period of time may have a negative effect on parental attachment and bonding. Neonatal massage has many benefits for both the baby and the parents. Evidence in the literature supports teaching massage to parents in the NICU since it may decrease anxiety, depression, promote attachment, increase parent satisfaction, and improve the parent/infant dyad. However, previous studies include parents of babies greater than 27 weeks gestation. Sunnybrook has a unique opportunity to evaluate the effect of training parents of babies less than 25 completed weeks gestation. An evidenced based, gestational age-appropriate massage program was developed to teach parents to massage their babies after 34 weeks gestation. This study aims to explore the experiential impact of parents in learning massage to better understand their perspective and in order to improve and adapt the program for broader implementation.

Research Question: What are the experiences of parents of micro premature babies less than or equal to 25 completed weeks gestation who consent to be enrolled in a massage program to integrate massage therapy as part of the parental care they provide their babies in the NICU? The primary objective of this study is to explore the experience of parents participating in a massage program on the parents of micro-premature babies less than or equal to 25 completed weeks gestation in the NICU. The secondary objective will be to understand the acceptability, facilitators, and barriers among parents to their involvement in the massage program to improve and adapt the program for broader implementation. Sample size justification: The study will utilize purposeful sampling, using a criterion selection to recruit predefined eligible parents. When examining a determined period of time (2021) to account for the number of babies born under 25 completed weeks gestation at Sunnybrook NICU, it is estimated that 30-40 parents will be eligible for the study. We will aim to complete 10-20 interviews. We will initiate analysis while recruitment is open and modify the interview guide to capture any emerging issues that arise. 20 parent couples approached.

Design: Qualitative REB approval 2021Interviews were conducted via zoom with parents to elicit their views on the program & inform recommendations for improvement. SETTING Level 3 NICU, Sunnybrook Health Sciences Centre (SHSC). STUDY POPULATION; Parents of a micro-preemie ≤ 25 weeks gestation (N=34) who participated in the SHSC NICU massage program & English-speaking. Data Collection: An email was sent to parents of micro-premature babies less than or equal to 25 completed weeks gestation, After they have received two weeks of massage training on their baby as well as parents who have participated and completed massage program since January 2022 and have been discharged home. They will be informed of the qualitative research study and asked if they would complete a questionnaire. There is no randomization. The research assistant will obtain the consent. DATA ANALYSIS: Interviews were transcribed verbatim, Conventional content analysis, Transcripts manually reviewed by three members of the research team to generate codes which were sorted into categories & clusters. Content analysis focused on description & interpretation of data.

Results: •25 families were approached, N=34•20 families participated•20 mothers completed interviews•19 fathers consented (14 completed interviews)•21 babies (one set of twins). Results: Participants of the massage program reported positive experiences with: •Program content, resources, relationship with trainers. •Participants reported satisfaction with: •Massage outcomes with physiological and psychological benefits for the baby, parent, and the baby-parent relationship MOTIVATION as a FACILITATOR. •Most parents were motivated to participate in the massage program for the common GI benefits (e.g., constipation relief). •Parents reported positive reinforcement from their baby's positive responses (enjoyment) of the massage, which further facilitated their motivation to continue massage. POSITIVE PHYSIOLOGICAL BENEFITS •Nearly all parents reported the abdominal massage has improved their baby's constipation. •Other physiological benefits included increased feeding and sleep time. •Parents noticed that babies who were less constipated would have more hunger cues. EMPOWERMENT & BONDING: •A common psychological outcome was the baby's enjoyment of the massage. •Parents reported their babies were observed smiling, giggling or laughing in response to the massage. •Additional time

Demographics Table: Neonatal Massage Research Project

Parent Variables	Mean/ Percent
Mothers (N=20)	
Fathers (N=14)	
Mothers age (N=20)	33 yrs
Fathers age (N=13)	34 yrs
Mother w another child* (N=20)	30%
Fathers w another child* (N=12)	53 %
Mother 1st baby (N=20)	70%
Father 1st baby (N=12)	50%
Mothers with previous loss (N=20)	45%**

* [illegible]
** [illegible]

Variables	Mean
Gestational age at birth (N=31)	24+2
Male (N=11)	
Female (N=10)	
Birth weight (N=21)	622 grams
Weight of baby discharge (N=20)	3700 grams
Gestational age discharge (N=20)	42 weeks
HC at birth (cm) (N=20)	21 cm
HC at discharge (cm) (N=20)	35 cm
DOL at discharge (N=20)	130 days

spent with their babies in the NICU facilitated a bonding opportunity between parent and baby. •Nearly all parents report an improved understanding of their baby's cues & relationship with their baby. Positive Psychological Benefits:•Observing the benefits of massage have positively influenced most parents. ••Parents reported feeling:• Less stressed & anxious• More empowered •Had increased confidence in their parenting skills. CONTRIBUTING' TO THEIR MEDICAL CARE: •Parents report recognizing when their baby was ready for a massage based on body language/ cues & responded accordingly. •Parents report they have developed a new skill that they enjoy while providing value. •Many have incorporated massage as a part of their routine at discharge & continued for months or years post discharge. RECOGNITION OF DIVERSE PARENT BACKGROUNDS: •Multiracial, multifaith, multilingual and multicultural ••Dolls represented Asian, Black, South Asian, Indian and White families •Study criteria required English speaking participants •Massage nurses are multicultural, multiracial, multifaith & multilingual •If possible they were matched with families to be able to relate and converse in their language. BARRIERS: •Limited access to trainers •Parent work schedules, one parent having more confidence than the other, other NICU activities taking priority (e.g. breastfeeding) •Medical conditions of the baby required modified massage including massaging around medical devices. NEXT STEPS-Build Capacity: •↑Staff training 86 •Update & refresh staff training every 3-6 months. Sustainability Plan: •Business case for two more nurses to be funded for NTMNC to monitor & enroll babies as part of standard of care. Create Resources: •Make video & QR code for families to have a home resource •Translate material into other languages. Spread Awareness •Parents are advised to be proactive & ask for the massage nurse to monitor them until they are independent. Expand Evidence •Continue to review data & publish an article on all the findings

Learning Objectives:

After attending our presentation the learner will

1. Increase their knowledge re: benefits of teaching massage to parents of micro-premature babies in the NICU
2. Able to list three benefits of massage for the parents
3. Able to list three benefits of massage for the baby

Gravens 2025-54

Title: Words Matter: Creating Inclusive Spaces in the NICU

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Problem Statement: Words have power! Words conjure up imagery! Words prompt the creation of fallacies and stories. "Language is as vital to the physician's art as the stethoscope or scalpel" - Jerome Groopman. Communication and use of the spoken word is an emerging area of research and awareness in the NICU setting - from daily bedside interactions to structured conversations like family meetings. Research tells us that "although a large majority of the parents were satisfied with their communication with doctors and nurses, only about half of the parents felt the nurses and doctors understood their emotional situation very well." (Wigert 2013). Labrie 2021 have shared that casual, informal day-to-day communication with staff is just as important as structured transfer of information. "At the same time, seemingly 'small' communication issues - misunderstandings, jokes, inadequate timing of information - carry a strong negative weight. Also, tone-of-voice matters a lot to parents in the interaction with medical professionals". This session will explore the power of language in shaping the NICU experience. It will shed light on the cultural, racial, and situational biases that color our communication practices in the NICU setting and begin the journey toward meeting families where they are at, through mindful communication and person-centered language…one word at a time.

Abstract:

"she failed the car seat test"; "He's just lazy"; "She tried to go see the light today"; "you're not gonna wanna see the eye exam"… Sound familiar? These phrases are all too common in our NICUs and may even elicit responses from care team members that make it seem ok. Words have power! Words conjure up imagery! Words prompt the creation of fallacies and stories. "Language is as vital to the physician's art as the stethoscope or scalpel" - Jerome Groopman. Communication and the use of the spoken word is an emerging area of research and awareness in the NICU setting. Research tells us that "Although a large majority of the parents were satisfied with their communication with doctors and nurses, only about half of the parents felt the nurses and doctors understood their emotional situation very well." (Wigert 2013). Labrie 2021 have shared that casual, informal day-to-day communication with staff is just as important as structured transfer of information. "At the same time, seemingly 'small' communication issues - misunderstandings, jokes, inadequate timing of information - carry a strong negative weight. Also, tone-of-voice matters a lot to parents in the interaction with medical professionals." Relational frame theory teaches us that the brain is driven to create meaning and relationships between words. In the "emotional cauldron" that is the NICU, choosing how we frame our words and phrases can drastically change a parent's perspective of the situation and thus elicit trauma responses that may be detrimental to the emotional well-being and stability of the family unit. Parent-provider communication is a crucial determinant of parental well-being and satisfaction with care, during and following infant hospitalization in the NICU (Labrie 2021). This session will explore the power of language in shaping the NICU experience. It will shed light on the cultural, racial, and situational biases that color our communication practices in the NICU setting and begin the journey toward meeting families where they are at, through mindful communication and person-centered language…one word at a time.

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Learning Objectives:

1. Identify 2 ways in which word choices impact stigma and trauma responses
2. Identify at least one phrase used in your NICU that has the potential to negatively impact a family's trust
3. Identify 2 ways you can create change in your unit to promote culturally sensitive, bias-free verbal communication

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