

Poster Abstracts Presented at the Spring 2023 Advanced Practice Neonatal Nurses Conference April 26–29, 2023

These are the abstracts for the **poster presentations** from the Spring 2023 Advanced Practice Neonatal Nurses Conference. They represent a broad range of neonatal issues. By sharing this information, we hope to increase awareness of research and innovative programs within the neonatal health care community and to support evidence-based nursing practice. Some abstracts have been edited for publication.

Protecting the Newborn: Post-Vaccination Covid Antibodies in Lactating Women

Gwen Allen, BSN student, Certified Lactation Counselor

Natalia Colon, BSN student, Certified Lactation Counselor

Julie A. Baker-Townsend, DNP, WHNP-BC, FNP-BC

UNIVERSITY OF NORTH FLORIDA

FLEMING ISLAND, FL

Background: The CDC recommends the COVID-19 vaccination to everyone over six months of age, including women who are pregnant or breastfeeding. Neonates younger than six months are at an increased risk for a COVID-19 infection.

Purpose: The purpose of this literature review was to determine if COVID-19 antibodies are present in breast milk after COVID-19 vaccination.

Conceptual framework: The Johns Hopkins Evidence-Based Practice model was chosen as the framework due to its ability to work with interprofessional teams, including nutrition and infectious disease.

Methods: Search terms included “breast milk”, “human milk”, “mother’s milk”, “COVID-19 vaccine”, and “COVID-19 antibodies”. Articles in the English language, with full-text available, and peer-reviewed within the last five years were included. 110 articles were reviewed from a comprehensive search of the Cochrane, CINAHL, and PubMed databases.

Results: Three systematic reviews and one cohort study were selected. Evidence of passive immunity to SARS-CoV-2 via breast milk was seen in all women after vaccination with positive antibodies for IgM, IgA, and IgG in their breast milk.

Discussion: Breast milk from women vaccinated against COVID-19 showed high positivity rates of COVID-19 antibodies, which may protect breastfed neonates against COVID-19 until vaccination is recommended.

Geographic Disparities in Neonatal Outcomes: A Driver Diagram for Improvement

Teresa B. Bailey, DNP, APRN, NNP-BC, CNE

THE UNIVERSITY OF TEXAS AT AUSTIN,

PEDIATRIX MEDICAL GROUP

CEDAR CREEK, TX

Background: Recent studies demonstrate disparities in neonatal outcomes related to race, geography, and access to care. Regionalization of care has increased geographic distance between these neonates and their communities, as well as disparities in access to care for vulnerable populations. Literature describes disparities in outcomes of primary care patients related to restrictive regulations of Advanced Practice Registered Nurses (APRNs). However, the impact of restrictive state and institutional regulation of Neonatal Nurse Practitioners (NNPs) on patient outcomes is not understood.

Problem: This presentation will discuss the drivers of these disparities from the perspective of APRN practice.

Methods: This project cross-references a comprehensive literature review of disparities and inequities in neonatal intensive care with data on APRN practice authority restrictions, NNP and acute care APRN workforces, and regional neonatal outcomes.

Results: The literature and data review results will create a driver diagram that can inform areas of focus for research and quality improvement efforts.

Implications for practice: Literature discussing disparities and inequities in neonatal care is well established. However, a shift in focus to applying the available literature in improving practice and care for our most vulnerable neonatal patients is needed.

Leveraging a Dedicated NICU PICC Team to Achieve and Sustain a Zero CLABSI Rate

Susan M. Bedwell, DNP, APRN, CCNS-N

Billie Castrop, ADN, RN, CCRN-NIC

Cassie Riley, ADN, RN

OKLAHOMA CHILDREN'S HOSPITAL/ OU COLLEGE OF NURSING
OKLAHOMA CITY, OK

Prior to 2009, nurses trained in peripherally inserted central line catheter (PICC) placement were often pulled out of patient care to insert lines. All bedside nurses were expected to perform PICC line maintenance including dressing and cap changes. The central line-associated bloodstream infection (CLABSI) rate in 2009 was more than twice the National Healthcare Safety Network average at 2.42 per 1000 line days, representing 23 events in 9500 line days.

The clinical nurse specialist (CNS) guided the unit from on-demand PICC placement to dedicated PICC hours. A team of 7 to 10 PICC-certified nurses split their work time between patient care and dedicated PICC days. The team is responsible for placing and adjusting PICC lines, changing central line dressings, replacing cap locks, and performing central line blood draws. With the CNS, they drive quality projects for the prevention of CLABSIs, develop policies, educate staff, teach medical fellows proper PICC line techniques, and develop and introduce new practices to improve patient safety and outcomes. Their informal leadership among the NICU staff allows for rapid-cycle quality improvement and the adoption of evidence-based practices resulting in an immediate impact on patient outcomes. Because of their dedication and expertise, our NICU has sustained a zero CLABSI rate for seven consecutive years.

The Association Between Uncertainty, Hope, Nursing Support and Paternal Bonding with Preterm Infants

Nisreen Alnuaimi, PhD, RN

Lisa Bratzke, PhD, RN

UNIVERSITY OF WISCONSIN MADISON
MADISON, WI

Statement of the problem: Preterm infants are at a greater risk of abuse, but bonding with the infant is a protective factor. Nevertheless, suboptimal bonding is a concerning issue for fathers. It will continue to be a challenge to maximize bonding without understanding associated factors.

Conceptual framework: Transition to parenthood and hope theories were utilized to derive a guiding framework.

Literature review: After birth, fathers' thoughts of uncertainty about their infants' health outcomes can limit their ability to bond with their infants. However, emerging evidence suggested that hopefulness and nursing support can strengthen bonding. There are no previous research studies that have examined the association between these factors for fathers.

Methodology: A cross-sectional design using a consecutive convenience sample was utilized to recruit fathers who met preidentified inclusion criteria. Data were collected using online questionnaires.

Data analysis and interpretation: Most of the participants ($n=329$) were 24–34 years old (63.5%), white (81.5%) and male (99.4%) with a bachelor's degree (53.8%). Their infants were born between 28 and 32 weeks' gestation (47.1%) with a birth weight (BW) between 1000 and 1500 grams (48.6%). Fathers' age, income, and BW significantly predicted bonding ($p < .05$). Controlling for these variables, uncertainty ($p = .003$), hope, and nursing support ($p < .001$) significantly predicted bonding.

Home is Where My Heart Is: A Cardiac NICU Nurse-Led Parent Education for Single Ventricle Inter-Stage Monitoring

Marigin De Belen, BSN, RN, RNC-NIC

Rosa Sullivan, BSN, RN, RNC-NIC

Danielle Segarra, MSN, PNP, RN

Maria Cristina Brooks, MN, RN, RNC-NIC

MORGAN STANLEY CHILDREN'S HOSPITAL OF NEW YORK PRESBYTERIAN
NEW YORK, NY

Bedside clinicians are responsible for discharge planning, a very important task for a patient's hospital stay. Parents' understanding of the complexity of their babies and the care they should provide at home is paramount in the success of single ventricle (SV) inter-stage survival. Literature shows that inter-stage death after single ventricle Norwood surgery has been historically as high as 16%, with recent data reporting persistent high rates at 10–25%.

We realized that our current discharge process was lacking active parent participation, timely discharge education, standard bilingual materials and resources, and consistent discharge guidelines to be followed by our interdisciplinary team. A survey sent to SV parents focusing on discharge planning revealed dissatisfaction and ample room for improvement. We thus started this nurse-led project, "Home is

Where My Heart Is". The core of this project is family education from admission until discharge utilizing a heart map and personalized discharge binders with standard information for the care of their SV baby.

Surveys sent to parents after discharge showed improved levels of satisfaction and levels of confidence in the care for their complex baby, proving that a structured process for parent education from admission until discharge by bedside clinicians is effective and valuable.

Training Nursing Staff for a Unique Neonatal Cardiac Intensive Care Program

Maria Cristina Brooks, MN, RN, RNC-NIC

MORGAN STANLEY CHILDREN'S HOSPITAL OF NEW YORK PRESBYTERIAN
NEW YORK, NY

A dedicated neonatal cardiac intensive care program is not common. In the 1990s, our hospital started providing postoperative care to neonates who underwent cardiac surgical interventions in the Level 4 NICU instead of the Pediatric Cardiac ICU. Training for bedside clinicians was experiential, building on knowledge of neonatal physiology. A retrospective review of 1238 subjects who underwent cardiac surgical interventions from 2006 to 2016 showed one of the lowest mortality and morbidity rates for preterm infants, affirming the success of the care model in the recent era.

In 2017, a separate cardiac NICU opened, onboarding several NICU- and PICU-trained nurses to the unique program. A learning needs assessment administered nine months after opening showed overall lack of confidence in caring for the patient population with emphasis on neonatal cardiac physiology, direct admissions after delivery, bedside emergencies, and ECMO. To address learning needs, interdisciplinary educational activities were organized, including competency days, simulations, process meetings, hot and cold debriefs, and just-in-time training.

In 2022, nurses who have been in the unit since 2017 have exhibited and expressed confidence in their practice, are able to teach new nurses, and initiate or participate in performance improvement projects.

Normothermia Improved with Delivery Room and Admission Practices

Ja-Yee Chu, DNP, RN, CNS, CCRN-K, C-NNIC

KAISER PERMANENTE FOUNDATION HOSPITAL
LOS ANGELES MEDICAL CENTER
SIMI VALLEY, CA

Normothermia is a predictor of neonatal morbidity and mortality. Quality and process improvement initiatives in the delivery room and admission workflows improve the first temperature taken one hour after NICU admission. From 2019 to 2021, the Regional Southern California NICU leaders began assessing normothermia for infants admitted to the NICU who were less than 32 weeks' gestation. Normothermic temperatures were defined as those between 36.5 and 37.5 degrees Celsius. At this facility, 79.5% of first temperatures at admission were within this range. The purpose of this quality improvement project was to create, implement, and maintain a delivery room resuscitation bundle to ensure each patient admitted to the NICU was normothermic. The goal is for 90% of all first NICU admission temperatures to be normothermic. Understanding the unit culture and dynamics between labor and delivery to the NICU was the first important step in the process. Development of evidence-based practice interventions and improved workflows led to improvements in overall normothermic results. Over two years, there has been overall improvements in first admission temperatures in the NICU. Normothermia has been achieved in 85.5% of NICU admissions of infants less than 32 weeks' gestation.

Baby Wearing as Non-Pharmacological Treatment in the Neonatal Abstinence Syndrome Infant

Tori N. Brunett, MSN, RNC-NIC

SHARP MARY BIRCH HOSPITAL FOR WOMEN AND NEWBORN'S
SAN DIEGO, CA

Problem statement: The literature demonstrates that Neonatal Abstinence Syndrome (NAS) infants benefit from non-pharmacologic interventions resulting in decreased length of stay (LOS). Standardized nursing care guidelines addressing non-pharmacologic needs of the NAS infant in the neonatal intensive care unit (NICU) were lacking.

PICO question: In NAS infants being treated in the NICU, does the implementation of one hour per day of a baby-wearing intervention decrease overall LOS as compared with usual practice without baby wearing three months post-implementation?

Clinical practice innovation: One-on-one education was provided to NICU nurses about the project. Infant carriers were distributed to each NAS infant to allow for one hour of daily baby wearing by the nurse, volunteer, or parent. Holding time was documented in the medical record.

Results: Baseline data revealed NAS infants admitted to the NICU had an average LOS of 28 days. Three months post-intervention, the average LOS decreased to 18.4 days. Survey results demonstrated 95% of staff members who participated identified baby wearing as safe, 71% as feasible, and 90% as effective in calming infants.

Conclusion: Baby wearing promotes non-pharmacologic treatment and reduced length of stay for NAS infants. Sustaining baby wearing in the NICU requires continued support from stakeholders and standardization in unit guidelines of care.

Effects of Preeclampsia on the Fetus and Newborn

Marla K. Conley, APRN, MSN, NNP

CoCA, LLC
LEXINGTON, KY

Preeclampsia accounts for roughly 15% of preterm births and 16% of all maternal deaths. A multidisciplinary collaborative approach between maternal-fetal medicine and neonatology is necessary to balance maternal and fetal risks. Research and evidence-based practice for this at-risk group of newborns has moved beyond immediate care and into areas focused on long-term outcomes. Impacts of this serious pregnancy complication include increased long-term disease states (epilepsy, hypertension, coronary artery disease, metabolic disorders), economic and emotional issues, and quality of life concerns. Close follow up with primary care physicians will need tailoring to meet the healthcare needs of impacted families.

Parechovirus Meningitis in the NICU: A Diagnostic Dilemma

Lisa Dailey, NNP-BC, DNP

Abbygaël Brodbeck, BSN, RN, RNC-NIC
ASCENSION HEALTH CARE
WEYAUWEGA, WI

Parechovirus presents as a "flu" sickness in children, with gastrointestinal and respiratory symptoms, fever, and a rash. While children are usually mildly sick, the virus overwhelms an infant's immune system, crosses the blood-brain barrier, and can result in meningitis.

This case study presents a premature infant who had a significant clinical deterioration just prior to expected discharge. The infant abruptly stopped bottle feeding, became hypotensive, had multiple bradycardia episodes, and was hypothermic with a rectal temperature of 34.4 C. The infant's blood cultures, blood counts, respiratory panels, and congenital infection labs all had negative results. On the second day of acute illness, cerebrospinal fluid was drawn via lumbar puncture. This lab was positive for parechovirus meningitis after the infant's clinical condition improved.

Congenital hepatomegaly and conjugated hyperbilirubinemia of the infant clouded the clinical determination of the diagnosis. The infant was supported through the illness by reinitiating oxygen therapy and parenteral nutrition. Broad-spectrum antibiotics were used prior to learning that the culprit was viral. Magnetic resonance imaging results found eight locations in the brain, which was concerning for possible periventricular leukomalacia. The infant recovered from the infection but will need outpatient follow-up to monitor for the sequelae associated with neonatal meningitis.

Utilization of the Nurse Champion Model to Improve Nurse-driven Change: Developmental Positioning in the NICU

Holly N. Eatmon, MSN, RNC-NIC

FIRSTHEALTH MOORE REGIONAL HOSPITAL
PINEHURST, NC

This quality improvement project represents the advantageous use of the Nurse Champion Model to improve nurse-driven practice change. While the project demonstrates the model's use and reproducibility in any specialty, the exemplar centers on standardization of developmental positioning in a level III NICU in Pinehurst, North Carolina. Developmental positioning was selected, as reliance on inherited nursing knowledge as the primary practice influence is not aligned with evidence-based practice. A six-member nurse champion team collaborated and followed model guidelines to review literature, appraise findings, and implore practice improvement. Three areas were targeted for change: new hires, current staff nurses, and future implications. A ten-question survey, used to measure two outcomes, acquired a 64% response rate and is reflective of staff enthusiasm to participate in future nurse champion initiatives. A third outcome measured documentation compliance with the targeted practice changes. EMR data reflected an 86.87% compliance rate and revealed that the practice change initiative was most utilized on the targeted population: infants less than 35 weeks' gestation (57.19%). Secondary outcomes include a \$10,000 grant fulfillment to supply positioning aids, nursing excellence recognition by the organization, and staff attitudes regarding the nurse champion model and its impact on positive patient outcomes.

Family Centered Care: Analysis of a Parent Based Approach to Diaper Dermatitis

Media Esser, PhD, NNP-BC, APNP, CWCN

Sara Anderson, NNP-BC, APNP, CWCN, IBCLC, CCRN
BELLIN HEALTH
CECIL, WI

Skincare is an important component of parenting and an area often easily performed by parents. A consistent approach to diaper dermatitis (DD) was implemented October 2022 in a level II neonatal intensive care unit (NICU) using a nursing driven approach. The purpose of this session is to continue to evolve the level of care within the NICU based on data related to parental involvement in skin

care, specifically as it relates to the prevalence of DD. A synthesis of retrospective data collected from the electronic health record was performed to provide the basis for further development of family integrated care (FI-Care) as it relates to DD care. A preliminary analysis indicates the lack of engagement of parents in DD care may result in a higher DD prevalence. Ongoing audits of parent involvement in skincare may be beneficial in decreasing the prevalence of DD. The identification of areas for improvement in parent involvement should expand to other areas of neonatal care to continue improvement in parent bonding and the health of neonates.

Improving Communication in NICU Post-Operative Handover

Kristen Farnsworth, NNP-BC

PHOENIX CHILDREN'S HOSPITAL
PHOENIX, AZ

Communication errors are a common cause of preventable medical errors, with many of these occurring during patient handovers. Standardization of handovers can improve team communication and patient safety during this critical transition period. The project aim is to improve communication in postoperative handovers occurring in the Phoenix Children's Hospital level IV NICU by increasing percentage of completed handover items to >75% by July 2022. Following the education and implementation of handoff, the baseline average percentage of completed handover items reviewed during the postoperative handover for the anesthesia, surgical, and NICU teams were 75%, 49%, and 70%, respectively. Results found the completion of the post-operative handover for NICU and surgical teams remained below the target of 75%. The data was limited by the small number of audits in the study period, which was likely affected by staffing shortages and high patient census. Future goals include decreasing the time for the post-operative handover process and increasing direct surgical team member communication during the handover.

Human Milk Fortification: Impact of a New Fortifier on Growth Velocity and Tolerance

Jennifer Fowler, MS, RDN, LDN

Disclosure: This author is on the Speaker's Bureau for Mead Johnson Nutrition.

Jennifer Dombrowski, MSN, NNP-BC

Olivia Davis, PA-C

Kirsten Frank, RD, LDN, CNSC, IBCLC

Disclosure: This author is on the Speaker's Bureau for Mead Johnson Nutrition.

Adrian Florens, MD

Disclosure: This author is on the Speaker's Bureau for Mead Johnson Nutrition.

Fernando Moya, MD

Disclosure: This author is on the Speaker's Bureau for Mead Johnson Nutrition.

ECU HEALTH MEDICAL CENTER
WASHINGTON, NC

Human milk fortifiers (HMF) are necessary for optimal growth of preterm infants. We evaluated growth and safety of a new non-acidified liquid HMF (NALHMF) in preterm infants receiving fortified human milk.

We conducted a multicenter, retrospective comparison of 539 infants receiving NALHMF compared to an acidified liquid HMF (ALHMF) at three NICUs. Anthropometrics, growth, tolerance, daily nutrition intake, serum chemistries, and morbidity/mortality data were collected and compared using parametric or non-parametric statistics.

Baseline demographics did not differ between the NALHMF and ALHMF groups (median birthweight 1070 vs. 1105 grams, median gestational age 28+5/7 vs. 29+1/7 weeks). Donor milk was used in over 60% of infants receiving either fortifier, and 91% and 60% of infants were receiving study fortifiers at two and four weeks, respectively. Growth velocity (g/kg/d, exponential method) was higher in the NALHMF group after two (13.1 vs. 11.7, P= 0.007) and four weeks (16.5 vs. 15.1, P= 0.001) from starting fortification, respectively. Feeding intolerance, proven sepsis, and necrotizing enterocolitis were uncommon and did not differ among groups. There were no differences in length of stay or anthropometric measures at discharge. These data suggest that the new NALHMF is safe, well-tolerated and a good alternative to the ALHMF.

Creation of a NICU ECMO Nursing Team

Rachel Hall, BSN, RNC-NIC

CHILDREN'S HOSPITAL COLORADO
DENVER, CO

In a large Level IV NICU, current processes resulted in a large number of RNs caring for ECMO patients, making it difficult to assess and maintain RN ECMO competency and contributing to decreased caregiver satisfaction. To develop a process that would allow for more frequent opportunities for nurses to care for these patients, provide continuing education, and improve consistency in nursing care, an ECMO bedside nursing team was developed. An initial NICU-specific ECMO education session was provided and quarterly education was implemented. Surveys were sent to NICU ECMO team members and ECMO specialists prior to implementation, at six months and one year.

As a result of these interventions, RN confidence in care of ECMO patients increased by 20% at six months and 14% at one year. ECMO specialists' satisfaction with bedside ECMO nursing care in the NICU increased by 33% and 28% respectively. Prior to implementation the rate of different RNs per ECMO shift was 0.58 and post-implementation decreased to 0.50. Thus, developing specialty teams within larger NICUs when there are limited patient care opportunities increases confidence and competence in caring for these patients. Additionally, limiting team size allows for continued education opportunities and improved consistency in care.

Decreasing Unplanned Extubations in a Level IV NICU

Sara Hanlon, BSN, RNC-NIC

Valeri Batara Aymami, MSN, RN, CNS, CPN, PCNS-BS,

Jillayne Debus, BSN, RNC-NIC

CHILDREN'S HOSPITAL COLORADO
DENVER, CO

An unplanned extubation (UE) is a serious safety event that a multidisciplinary NICU team can work to prevent. Children's Hospital Colorado (CHCO) experienced a higher rate of UEs than other institutions in the Solutions for Patient Safety network. In 2020, CHCO NICU experienced 15 UEs, and in 2021, 32 UEs. To improve patient outcomes, CHCO created a taskforce to develop a multi-step approach to standardize holding, increase education regarding proper endotracheal tube taping, and improve communication amongst the multidisciplinary team. The goal of this taskforce was to decrease CHCO NICU's UE rate by 20% to drop our rate of 0.62/100 ventilator days to 0.55/100 ventilator days by the end of 2022.

To achieve this, we made this a unit goal for our annual evaluation cycle, while increasing awareness of the issue. Multidisciplinary rounding was completed by patient safety specialists, clinical practice specialists, and respiratory therapy (RT) leads to assess challenges and provide one-on-one education. Standard airway cards were made and placed in each patient room. Lastly, a parent holding readiness checklist was created to increase communication between the parents, RT, and RNs. Through these interventions, we exceeded our goal and decreased our UE rate to 0.49/100 ventilator days over 12 months.

Fight the Burnout: Phase Two of a Nurse Wellness Bundle

Megan T. Weisbart, MSN, RNC-NIC, CNL, PHN

UCLA HEALTH
RIVERSIDE, CA

Background: The Intensive Care Unit (ICU) environment contributes to nurse burnout, resulting in worse patient outcomes and higher turnover and organizational cost. Meaningful recognition, nurturing of interpersonal connections, and mindfulness-based interventions are associated with decreased burnout.

Purpose: To decrease neonatal ICU (NICU) nurse burnout with a wellness bundle (WB) that fosters meaningful recognition, interpersonal connections, and includes mindfulness-based interventions.

Methods: The Professional Quality of Life Scale Version 5 (ProQOL5) was used to measure burnout before WB implementation, after six months, and will be given yearly for three years.

Results: The baseline mean burnout score of 14 NICU nurses was 20.71 (low). The baseline range was 13–28 (11 nurses experiencing low burnout, three experiencing moderate burnout, and zero experiencing high burnout). The mean burnout score of 39 NICU nurses six months post-implementation was 22.28 (low). The range was 14–31 (22 nurses experiencing low burnout, 17 experiencing moderate burnout, and zero experiencing high burnout).

Conclusions: A WB was implemented to improve workplace relationships and decrease burnout. Participation bias and low baseline response rate may have affected the data reliability and necessitate another comparative measure of burnout in one year.

Use of Tissue Adhesive to Reduce NICU PICC Dressing Changes

Tamara Cason, RN, ALS, C-NPT

Peggy A. Holub, MSN, RNC-NIC, CNS, WTA-C

RADY CHILDREN'S HOSPITAL SAN DIEGO
SAN DIEGO, CA

The purpose of this quality improvement project was to evaluate the impact of an evidenced based medical tissue adhesive on insertion site bleeding and unplanned dressing changes following neonatal PICC insertion in patients.

Neonatal patients are at an increased risk for infection. In our NICU, 44% of patients experienced post-insertion PICC bleeding in the first 24 hours, requiring unscheduled dressing changes and increasing the risk of catheter-related infections. Medical tissue adhesive secures the IV catheter and seals the insertion site, which reduces bleeding, reduces dressing disruption and line migration.

The NICU vascular access RNs who are a part of the NICU transport team were trained on the use and application of medical tissue adhesive from the product manufacturer. The product was then utilized on all PICC insertions. The team assessed each PICC line every day and utilized a data collection form.

There was a 75% reduction in unplanned dressing changes due to bleeding on all patients and a 67% reduction in patients <36 weeks. The reduction in unplanned dressing changes improved the care provided to these vulnerable patients by reducing skin tears from unnecessary adhesive removal.

Clinical Nurse-led ACAs to Inform CLABSI Improvements

Emily Jensen, BSN, RNC-NIC

CHILDREN'S HOSPITAL COLORADO
AURORA, CO

Central line-associated bloodstream infections (CLABSIs) in neonates are a preventable infection that have a mortality rate between 4% and 20% and are associated with added healthcare expenditures. Whenever a CLABSI occurs, an apparent cause analysis (ACA) should be conducted to identify potential sources of the infection and provide ways to mitigate future infections within the population. Commonly, non-bedside personnel (e.g., clinical nurse specialists) conduct the ACA due to their proximity to those within the hospital who can implement the changes proposed. However, within the neonatal intensive care unit (NICU) at Children's Hospital Colorado (CHCO), nurses lead ACA investigations. Having bedside personnel conduct ACAs for CLABSIs provides several advantages, including having a more complete understanding of the patient's flow of care, understanding how policy changes would translate to real-world care, and becoming a peer-level source of information to other nurses on the unit regarding central line care. Upon completion of this presentation, audience members will understand the advantages of having bedside personnel conduct ACAs, see how the flow of such an investigation occurs within CHCO, and learn how to implement such a change in their own units.

Improving Enteral Feeding Practices and Human Milk Consumption in Multiple NICUs: a Quality Improvement Project

Sheralyn Kaprolet, RN, MSN, NNP-BC

PHOENIX CHILDREN'S MEDICAL GROUP
CHANDLER, AZ

Optimal nutrition is essential to overcome common disease processes in preterm and high-risk term neonates. Simple interventions such as prioritizing human milk over formula feeds and following a standardized feeding protocol are established practices for improving outcomes and reducing necrotizing enterocolitis (NEC). The Phoenix Children's Hospital Division of Neonatology introduced a standardized feeding protocol at three affiliated NICUs. Feeding protocol compliance was measured in non-surgical infants as 10% in one year. A secondary objective was to increase human milk consumption by >10% in one year. Balancing measure included NEC rate. Feeding protocol compliance improved by 10% in infants <37 weeks. There was a trend towards increasing human milk use for initiating feeds. Overall hospital NEC rate decreased from 4.9% in 2020 to 2.5% in 2021.

Enterovirus in the Newborn: A Case Study

Giovana King, DNP, MSN, APRN, NNP-BC

Adrienne Cohen, DO

Matt Douglass, DO

Tracy Karp, APRN, NNP-BC

PRIMARY CHILDREN'S HOSPITAL
SALT LAKE CITY, UT

Baby girl C. was born at 36 6/7 weeks' gestation via caesarean section due to fetal intolerance to labor. Maternal histories were unremarkable, and she was not ill at the time of delivery. She received positive-pressure ventilation at birth and was then placed on CPAP, but due to continued respiratory distress, she was intubated on day of life 2 and placed on high-frequency oscillatory ventilation. On day of life 6 she developed fevers and a rash; infectious work-up was done and viral studies were sent. She continued to deteriorate and developed disseminated intravascular coagulation and acute liver failure. All bacterial cultures were negative, but the infant was positive for enterovirus. The infant was transferred to our level IV NICU on day of life 9 due to worsening clinical status and profound coagulopathy. A screening head ultrasound showed a large hemorrhage near the brainstem, and a CT scan showed significant mass effect on the brainstem. Due to the catastrophic bleed with likely global ischemic injury, the family decided to transition to comfort measures. The infant died on day of life 13.

The mainstay of treatment for patients with enteroviral infection is supportive care with mechanical ventilation and ECMO as indicated, and transfusion support of blood products. There are currently no approved antiviral therapies for enterovirus infection.

Excelling at Curricular Mapping: Neonatal post-Baccalaureate to DNP as an Example

Annette Carley, DNP, NNP-BC, PPCNP-BC

Amy L. Renfro, MSN, RN, NNP-BC

UCSF SCHOOL OF NURSING
SAN FRANCISCO, CA

The Essentials: Core Competencies for Professional Nursing Education (2021 Essentials), released in 2021, challenged educators to reevaluate advanced practice curricula. Ten domain foci replaced the original eight competency areas. This project aimed to align a proposed post-Baccalaureate-to-Doctor of Nursing Practice (PB-DNP) curriculum with the 2021 *Essentials*, reveal gaps, and propose recommendations as needed.

We first looked at our existing post-master's DNP curriculum. An Excel spreadsheet mapped DNP course objectives and activities for each of the 2021 domains and competencies. Some gaps were revealed, notably in areas related to direct practice.

The School of Nursing plans to develop a PB-DNP program that will integrate specialty preparation currently at the master's level, for roles such as nurse practitioner, clinical nurse specialist, and certified nurse midwife. We expanded the mapping project to evaluate how well these existing specialties met the 2021 *Essentials*. The neonatal specialty was an early program of interest.

The expanded mapping revealed improvement in some earlier gaps, including those aligned with direct practice. Gaps persisted in meeting some domains, such as personal and professional development, that will be addressed with new/modified coursework. This project data is currently being used to guide curricular development for the remaining specialties.

Implementing a Modified DIVA Algorithm in the NICU to Optimize IV Insertion Competency

Amy L. Renfro, MSN, RN, NNP-BC

Annette Carley, DNP, NNP-BC, PPCNP-BC

UCSF SCHOOL OF NURSING
SAN FRANCISCO, CA

Despite being one of the most common invasive procedures in the NICU, literature review reveals that first-attempt IV success rates are only 45%, with some patients requiring up to 10 attempts. In other populations, including pediatrics, use of a Difficult IV Access (DIVA) score has shown to decrease number of IV attempts.

This quality improvement project aims to implement a modified DIVA algorithm in the NICU setting, for evaluating vessel quality, designating the most appropriate provider to attempt insertion, and escalating the procedure to another provider and/or utilizing advanced techniques. Pre-implementation analysis includes a review of number of insertion attempts per patient IV encounter and a survey of nurses' perceptions of their insertion competency. Implementation will include didactic and simulation training in use of the DIVA algorithm prior to IV insertions. Outcomes will be evaluated by review of insertion attempts per patient IV encounter, and reevaluation of nurses' perception of competency, over the three-month implementation period.

Minimizing neonatal IV attempts is expected to decrease adverse neonatal outcomes and enhance family satisfaction. However, the scope of this innovative project asserts that establishment of a protocol for obtaining IV access will address a common challenge in neonatal nursing practice.

South Korea NICU Nurses' Knowledge, Attitude and the Stress of EOL Care

Seung Jin Lee

SEOUL NATIONAL UNIVERSITY BUNDANG HOSPITAL
NEW YORK, NY

There has been development of the concept of hospice and palliative care in pediatric and prenatal and neonatal in the United States and Europe since the 1980s. However, in Korea, the Act on Decisions on Life-Sustaining Treatment was enacted in 2016 and two hospitals implemented a pilot project for pediatric palliative care in 2018. Therefore, the understanding and practice of neonatal palliative care in NICU is very insufficient.

The purpose of this study is to investigate the knowledge, attitude, and the stress of end-of-life care of South Korean nurses in the NICU and analyzes the correlation between the three variables. It was conducted for 111 nurses working or who have worked within a year in neonatal intensive care units at seven tertiary hospitals at level III NICUs in South Korea.

Based on the research results, education programs such as job training for nurses in the neonatal intensive care unit should be activated to foster knowledge and form a positive attitude. Moreover, neonatal palliative care protocols, which are still insufficient in the domestic situation, are needed to provide professional and systematic support to parents and families experiencing neonatal palliative care and death.

A Novel Method to Sanitize Breast Pump Equipment in the Neonatal Intensive Care Unit

Susan Marron, IBCLC

Lauren Straczynski, MSN, RNC-NIC, ACCNS-P
NEMOURS CHILDREN'S HEALTH- DELAWARE
WILMINGTON, DE

Problem: Mothers pumping human milk for their hospitalized infant in the Neonatal Intensive Care Unit (NICU) do so with an electric breast pump 8–10 times a day. Multiple pump parts require cleaning between each use and pump as a whole requires daily sanitation. Enhancing the current sanitation method, providing a simpler yet equally effective result, may improve maternal satisfaction, making breastfeeding more successful.

Literature review: Limited data exists regarding current sanitation practices other than the Centers for Disease Control (CDC) recommendations to sanitize.

Methodology: A multi-phased pilot study was conducted in our quaternary care NICU to test the Q. Basin, a novel design developed to ensure thorough washing of breast pump parts, drying on a clean surface, and safe steam sanitization compared to the standard steam bag. Mothers concurrently evaluated their satisfaction via surveys in a separate study phase comparing the Q. Basin and the steam bag.

Data interpretation: The novel Q. Basin was the preferred breast pump part sanitation method over the steam bag. It demonstrated a quicker, faster, and more environmentally friendly breast pump part sanitation method. Additional safety and materials studies are required before using the Q. Basin in the clinical environment.

Improving Safe Sleep Practices in the Special Care and Newborn Nurseries

Rowena L. Milburn, DNP, MSN, RNC-LRN

SIBLEY MEMORIAL HOSPITAL/JOHNS HOPKINS MEDICINE
WASHINGTON, DC

Safe sleep practices are not consistently observed by nursing staff in the Special Care and Newborn nurseries. Unsafe sleep practices may lead to neonatal injuries and/or death. In the United States annually, there are about 3,500 sleep-related infant deaths, including sudden infant death syndrome (SIDS), ill-defined deaths, and accidental suffocation and strangulation in bed. The American Academy of Pediatrics encourages healthcare providers to model safe sleep practices in the hospital to help promote safe sleep after discharge.

The clinical nursing team from the Special Care and Newborn nurseries created an action plan to address safe sleep practices. Baseline data for current compliance with safe sleep practices were collected during the first quarter of the 2023 fiscal year (FY23 Q1). The audit results showed a 20% pass rate in the Special Care Nursery, and a 74% pass rate in the Newborn Nursery. Safe sleep education is being disseminated to nursing staff during FY23 Q2 before resuming audits in FY23 Q3. The goal is to achieve at least a 75% pass rate by FY23 Q4. Nurses do retain the knowledge from safe sleep education but compliance falls short over time. The evidence indicates that direct measures such as safe sleep audits and in-person teaching reinforce safe sleep practices.

Educating Maternal Child Nurses on the Purpose and Benefits of Donor Breast Milk

Michelle N. Moya-Hordynski DNP, MSN-Ed, BSN CLC

EISENHOWER MEDICAL CENTER
RANCHO MIRAGE, CA

This evidence-based project examines how educating maternal child nurses on the purpose and benefits of donor breast milk promotes a breastfeeding culture. Project goals are to increase nurses' knowledge, maternal breastfeeding rates and use of donor breast milk. The World Health Organization concludes that donor breast milk is the gold standard for bridging breastfeeding challenges, while citing benefits of exclusive breastfeeding for mother and baby. Therefore, providing information about the use of donor breast milk to provide best feeding practices for their patients may improve patient outcomes while changing the knowledge, beliefs, and attitudes for donated milk. Project implementation included knowledge dissemination to all nurses through on-site educational sessions, daily informational emails, and discussions at perinatal meetings. The nurses demonstrated a statistically significant increase in their knowledge of donor breast milk (P value <.03). The rates of using exclusive breast milk increased from 53.9% to a sustained post project rate of 65.4%. The use of donor breast milk increased from a baseline of 10% to a rate of 24%. This project demonstrated that maternal-child nurses have some knowledge to practice supporting gaps in exclusive breastfeeding rates; engaging nurses into their practice can change a culture.

Read to Me: A Parent/Infant program in the Neonatal Intensive Care Unit (NICU)

Chandler J. Murphy, RN, BSN, RNC-NIC

UCI HEALTH
IRVINE, CA

Research shows language exposure is essential for normal speech and development. Premature babies often have delays in receptive and expressive language and lower IQs. The goal of the Parent/Infant Read to Me program is to encourage parent bonding and infant development by reading to their baby in the NICU. This quality improvement project was conducted in a 30-bed level III urban academic hospital. Beginning April 1, 2019, a two-question survey was given to parents. Parents were asked how often they read to their infant in the NICU and barriers were identified. A parent education handout, book(s) in multiple languages, and a bedside book log were given to families during admission starting November 1, 2019. Additionally, a bimonthly book log audit was done to collect data on how many books were read to babies per the daily census.

Results from the initial parent survey revealed 36% of parents read to their babies in the NICU. One month after the initiation of the Read to Me program 92% of parents read to their babies, an increase of 150%. The book log audit results demonstrated an increase of 41% from baseline data of parents documenting each book read.

NICU Bedside Admission Huddles (BAHs) for Families in a Level IV NICU

Sally A. Muskett, DNP, NNP-BC, APRN-CNP, C-NNIC, C-ELBW

CINCINNATI CHILDRENS HOSPITAL MEDICAL CENTER (CCHMC)
CINCINNATI, OH

Background: Effective communication between medical providers and the families within the Neonatal Intensive Care Unit (NICU) is essential to building trust and fostering support. Care conferences bring team members and families together to address key issues that may concern the patient's clinical status and/or the family's emotional state. Bedside admission huddles (BAHs) are care conferences within the first two weeks in the NICU to address the medical objectives and family expectations of hospitalization to ensure a unified message.

Objective: Increase the percentage of NICU patients' families receiving a BAH after admission to the NICU.

Methods: BAHs were implemented in the 80-bed level IV NICU at Cincinnati Children's Hospital and Medical Center between May 2021 and December 2022. Provider scripts and parent prompts were developed as aids to assist in the implementation and success of the care conferences. The target population expanded systematically throughout the study.

Results: Before implementing BAHs, the unit averaged 8% of patients' families had a care conference within the first two weeks of admission. By December 2022, 23% of the NICU population had received BAHs.

Conclusions: Parent surveys reflected increased satisfaction with communication from the care team.

Customized Silicone Dressing Under Non-invasive Ventilation and Skin Bundle to Reduce Pressure Injuries

Amanda J. O'Neil MSN, APRN, NNP-BC

Sarah Dorr CPNP-CWOCN

Bette Schumacher MS RN CNS

SANFORD HEALTH
SIOUX FALLS, SD

Background: In a 68-bed level IV NICU in the upper Midwest, an increased incidence of hospital-acquired pressure injuries (HAPIs) of 0.25 per 1000 patient days from non-invasive ventilation (NIV) devices was noted over one year. The aim of this quality improvement project was to decrease HAPIs from NIV by 10%. In addition, NIV failure was followed by monitoring the percentage of ventilated patients.

Methods: The Plan-Do-Study-Act cycle was the framework and plans were created from a literature review.

Interventions: The intervention included placing a customized silicone foam dressing under NIV. The silicone dressings were cut in specific shapes dependent on the size of the mask or prongs. In addition, with support of a multidisciplinary team a NIV skincare bundle was implemented, with weekly bedside rounding by the NICU skin team.

Results: HAPI rates were tracked over three years post-interventions. The incidence of HAPIs declined by 20% from 0.25 per 1000 patient days to 0.05 per 1000 patient days. The percentage of patients on ventilators overall did not change.

Conclusions: Customized silicone dressings under NIV, NIV skincare bundle, weekly rounding, and multidisciplinary team support may decrease HAPIs in neonates without CPAP failure.

Creation and Implementation of a NICU-Specific Post-Surgical Pain Management Guideline

Sarah Palau, NNP-BC

Andrea Marazziti, NNP-BC

CHILDREN'S HOSPITAL COLORADO
DENVER, CO

The presence of postoperative pain in the neonatal population is well documented. Noting a significant variance in practice amongst providers as well as inconsistent response and tolerance to treatments in the neonate, a multidisciplinary team was formed with the goal of standardizing pharmacologic postoperative pain management. Surgical procedures performed at Children's Hospital Colorado (CHCO) were categorized into one of three colored categories grouped by surgical difficulty and expected postoperative pain management.

Associated pharmacologic recommendations for a 72-hour period were provided for each category. Rollout strategy included detailed multi-level education, survey standardization, and biweekly multidisciplinary meetings. The pain management tool was evaluated pre-rollout and at three, six, and 12 months using patient pain scores on a validated pain scoring tool and Registered Nurse (RN) and family satisfaction with survey assessment. Revision was necessary when the guideline was utilized in conjunction with epidural and caudal blocks.

At three months post-intervention, there was an improvement in RN satisfaction from 26% to 86% with a positive family satisfaction score of 94%. Both of these results were sustained at one year. Prior to rollout there was no standardization in pain management, and following implementation adherence to the guideline was 82%.

Skin-to-Skin Contact: Bringing Our Babies and Their Families Together

Mackenzie Ramos, BSN, RNC-NIC

UCI HEALTH
IRVINE, CA

Research has shown that there are numerous benefits from skin-to-skin contact (STSC), both during and after the contact and for both the infant and the parent that is holding. The goal of this quality improvement project was to increase STSC rates in our NICU. Prior to implementing interventions, baseline data was collected using chart audits and weekly STSC reports and a staff survey was conducted to evaluate barriers to offering STSC. Chart reviews identified that babies at higher risk for little/no STSC were typically born late preterm/term, delivered via caesarean section, and born to non-English-speaking families.

To increase STSC rates, especially in the population that was identified to be most at risk for little/no STSC, changes were made at the bedside as well as in the computerized charting program. Bedside changes included providing a multilingual STSC educational handout on admission and using pictorial reminders of STSC when possible. A banner reminder was added to the charting system to alert staff if an eligible patient had not yet received STSC. Data was collected for four months post-implementation and showed improvement in all three measurable outcomes.

[A Case Study for Long Gap Esophageal Atresia](#)

Jason Richardson, BSN, RN, RNC-NIC

JOHNS HOPKINS ALL CHILDREN'S HOSPITAL
SAINT PETERSBURG, FL

Both surgical and bedside care of an infant with long gap esophageal atresia (LGEA) can directly affect immediate and long-term outcomes and morbidity. Understanding the anatomy, surgical requirements, and options will give the bedside nurse a better opportunity to care for the infant and educate the parents about each stage of care from birth to discharge and beyond. LGEA simply means that the distance between the proximal and distal ends of the interrupted esophagus is greater than 3 cm or 2 to 3 vertebral bodies. This presents a surgical difficulty because primary anastomosis is not possible. Esophageal atresia can be accompanied by a tracheoesophageal fistula (TEF), but LGEA is seen more often with no TEF. There are fewer associated anomalies with true LGEA. There is some controversy around the best surgical approach for repair. This case study was thoracoscopic internal esophageal traction or Foker process. All surgical options will be briefly discussed, but primary focus will be on the Foker process. After the presentation of this case study, a better knowledge of anatomy, direct bedside care before and after surgery, all possible surgical and long-term complications and long-term follow-up should be gained.

[Reaching a Level of Comfort with Comfort Care in the NICU](#)

Elisheva Rosner, MSN, RN, RNC-NIC, CPN

Francesca Leo, MSN, RN, RNC-NIC, C-ONQS, IBCLC

MORGAN STANLEY CHILDREN'S HOSPITAL OF NEW YORK PRESBYTERIAN
NEW YORK, NY

Due to high levels of care provided to critically ill infants, there is a low mortality rate in the NICU. Infants born with a prenatally diagnosed life-limiting genetic or complex condition are referred to the Neonatal Comfort Care Program which offers counseling from point of contact through birth and beyond. They offer a comfortable and loving environment for the baby, help the family navigate practical and emotional burdens, and offer care that is in line with the family's views and beliefs. Due to the infrequency of comfort care infants being born, NICU nurses are not comfortable in providing bereavement care. To bridge the gap, a hospital policy was implemented to guide the admission process and medical care. A tip sheet was given to NICU nurses to explain comfort care principles, pain management, phone numbers, and nursing guidelines. Nurse champions were given extra education, and a three-day conference was offered for in-depth education. Lastly, a bereavement cart was created containing supplies for memory making and postmortem care; it is now available for end-of-life situations. This podium presentation describes the comfort care program and recent nursing enhancements and reinforcements to increase the confidence of nurse-provided care.

[Neonatal Toxic Stress and Long-Term Neurodevelopmental Outcomes In Premature Infants](#)

Rachelle Sey, PhD, CNS, RNC-NIC

SHARP MARY BIRCH HOSPITAL FOR WOMEN & NEWBORNS
SAN DIEGO, CA

Background: Evidence continues to suggest the presence of complex biologic connections between the social environment, neurologic development, and long-term health. Premature infants spend many months in the Neonatal Intensive Care Unit (NICU), often separated from their parent(s), and are exposed to multiple significant stressors increasing their risk for adverse neurodevelopmental outcomes.

Methodology: Using Mefford's Theory of Health Promotion for Preterm Infants, a retrospective cohort study was conducted to examine the relationship among sociodemographic factors, exposure to stressors in the NICU environment, stress modifiers/buffers, neonatal morbidities at discharge, and two-year neurodevelopmental outcomes in infants born less than 32 weeks' gestation cared for in a large, urban, tertiary NICU.

Findings: Multivariable regression models explained 23.7% of the variance in Bayley III cognitive composite scores and 26.1% of the variance in Bayley III language composite scores. Findings suggested sociodemographic factors influenced long-term neurodevelopment at two years of age; parent presence in the NICU was an important predictor for cognitive outcomes at two years of age.

Implications: Identification of modifying factors influencing negative effects of prolonged stress in preterm neonates may lead to identification of interventions to alter the trajectory of long-term neurodevelopment for infants discharged from the NICU.

Use of In Situ Simulation & Debriefing in the NICU Cultivates Teamwork and Communication

Donna Jacobson, BSN, RN, ALS

Rachelle Sey, PhD, CNS, RNC-NIC

Becky Oberg, MSN-Ed, RNC-NIC, ALS

SHARP MARY BIRCH HOSPITAL FOR WOMEN & NEWBORNS
SAN DIEGO, CA

Background: Neonatal resuscitation is one of the most critical events in neonatal medicine requiring high levels of individual skill and team performance. According to The Joint Commission (TJC), ineffective communication played a role in nearly 75% of reported cases of neonatal mortality or severe morbidity.

Innovation: The Neonatal Intensive Care Unit (NICU) recognized the opportunity to revise the current mock code process focused primarily on skills "practice" involving only nurses. This process neglected to integrate knowledge, attitudes, accountability, and teamwork. The NICU implemented innovative interdisciplinary simulations with the use of video recording to improve teamwork, communication, and collaboration. Strategies focused on early recognition of changing patient conditions while concentrating on teamwork and communication. The global aim of the project was to implement monthly multidisciplinary simulation/debriefing events for all shifts to increase self-reports of improved self-confidence in resuscitation skills, identification of changing patient conditions, and teamwork/communication.

Results: Results from the staff surveys indicated sustained improvement in communication over time during critical events. Staff also expressed that in situ simulation & debriefing provides an optimal learning environment. All respondents answered favorably over time with either agree or strongly agree to the survey questions demonstrating effectiveness of this innovative safety and quality initiative.

Nursing Care Challenges for Initiation of Exclusive Breastfeeding among Hispanic Mothers Close to Mexican Border

Neda Shamsalizadeh, PhD

SAN DIEGO STATE UNIVERSITY
SAN DIEGO, CA

The World Health Organization recommends exclusive breastfeeding for the first six months of infant life. Although Hispanic mothers are more likely to initiate exclusive breastfeeding, they are less likely to continue exclusive breastfeeding and more likely to initiate bottle feeding within the first two days after giving birth. Duration of breastfeeding depends on many factors such as latching issues, mothers' concerns about infants' nutrition and weight gain, lack of family support and absence of supportive work policies such as parental leave. The aim of this study was to explore nursing care challenges for exclusive breastfeeding among Hispanic mothers.

Method: A qualitative study was conducted. Nurses who were eligible for the study were recruited.

Results: Themes related to nursing care challenges for initiation of exclusive breastfeeding among Hispanic mothers close to the Mexican border will be presented. Several factors that postpone skin-to-skin contact and initiation of exclusive breastfeeding during the first hour after birth can impact continuation of exclusive breastfeeding.

Conclusion: Mothers' and/or infants' health issues after birth can create challenges for initiation of exclusive breastfeeding. Engaging nurses in finding strategies that are regionally and culturally practical is significant for achieving mother and infant optimal health.

Utilizing Simulation to Advance Patient Safety and Quality of Care in the NICU

Chad D. Sikora, MSN, NNP-BC, CPHQ

RILEY HOSPITAL FOR CHILDREN - IUHP
CARMEL, IN

Background: Emergent events often occur acutely with low frequency. Clinicians are expected to respond quickly with high efficiency and skill to minimize harm to the patient. Clinical preparedness with expert knowledge and skill is vitally important to prevent harm and improve outcomes.

Aim: To design targeted simulation utilizing clinical code debrief and quality review with identification of patient safety threats. Targeted simulation will reduce patient safety threats.

Method: Code events were reviewed monthly by an interdisciplinary code review team. Patient safety threats were identified for each case. Based on the leading safety threats clinical simulation scenarios were developed to address these threats.

Results: Since implementing targeted simulation we have shown a 75% reduction in patient safety threats. Simulation has given clinicians the ability to improve their knowledge, skills, and attitudes during emergent events to reduce patient safety threats and improve outcomes.

Conclusion: Simulation is a tool that allows clinicians to practice emergent situations where targeted objectives can be used to improve clinical preparedness to emergent events. This has resulted in improving the safety of our patients and quality of care in the NICU.

Evaluation of Selective Serotonin Reuptake Inhibitors and Their Contribution to Neonatal Respiratory Distress

Amy M. Speirs, MSN, NNP-BC

Brittany Davis, MD, NCMP

UCLA HEALTH
LOS ANGELES, CA

Introduction: Selective serotonin reuptake inhibitor (SSRI) use is common in pregnancy; however, there is relatively little data regarding neonatal respiratory distress after birth. It is therefore difficult to standardize dosing prenatally. The objective of this review was to further evaluate which SSRIs in our patient populations contributed the most to neonatal respiratory distress at the time of delivery.

Methods: The medical records of 39 women were reviewed, as was the course of their neonates to identify variables including neonatal respiratory distress, resuscitation requirements, and NICU admission. Inclusion criteria included either maternal depression or an SSRI listed on the chart.

Results: The most common SSRIs used in pregnancy were fluoxetine and sertraline. Of the neonates who required more advanced resuscitation by the NICU team, 42.8% were exposed to fluoxetine. Furthermore, of the 42.8%, 50% required admission to the NICU for respiratory distress. 25.6% of 1-minute Apgar scores were 7 or less.

Conclusions: Neonatal effects of SSRIs can lead to lower initial Apgar scores, respiratory distress, and NICU admission. This pilot serves to further determine which SSRIs cause the least amount of respiratory distress. With further investigation, we can stratify the likelihood of NICU intervention at birth.

Reduction of Medical Adhesive Related Skin Injuries in the Neonatal Intensive Care Unit

Sarah A. Wooley, BSN, RN

CREIGHTON UNIVERSITY
WAHIWA, HI

Background: Infant skin is physiologically unique, increasing its vulnerability to medical adhesive-related skin injury (MARSIs) which increases risk of infection, transepidermal water loss, and impaired thermoregulation and immune function.

Problem: MARSIs were occurring at an alarming rate in our neonatal unit.

Purpose: To reduce MARSIs by implementing a new skin care protocol including the use of the Neonatal Skin Condition Score (NSCS) for consistent assessment.

Setting: A 25-bed neonatal intensive care unit (NICU) in the state of Texas.

Methodology: Data was collected for 60 days prior to implementing the new skin care protocol. Staff was educated on the changes: bathing on Sunday and Wednesday, applying alcohol-free silicone liquid skin barrier to skin prior to adhesives, and use of the NSCS scoring system. Post-implementation data was collected for 30 days and compared to the previous scores.

Results: MARSIs decreased from 83% to 26% among admitted infants. NSCS improved from 4.2 to 3.6.

Implications for practice: Minor practice changes made significant improvement in skin condition.

Implications for research: More research is needed to determine which types of adhesives are safest for neonates.

Conclusion: These findings support the goal of this quality improvement initiative of reducing MARSIs in this Texas NICU.

Tackling SSRIs Head On: Positive Interventions for Positive Outcomes

Jacquelyn M. Wallis, BSN, RN, RNC-NIC, C-ELBW

Jessica Hampf, RN, BSN, RNC-NIC, C-ELBW

INOVA L J MURPHY CHILDREN'S HOSPITAL
FAIRFAX, VA

In 2021, Inova Fairfax Medical Campus (IFMC) implemented a research-based study of Eat, Sleep, Console (ESC) for NAS infants. IFMC in the Inova system delivers 10,000+ infants a year, providing a large baseline for measuring outcomes.

With the success of ESC, Inova sought to carry out this program system-wide. During the rollout, project leaders determined that although the drug epidemic continues to rise nationally, the number of opioid-dependent infants coming through the Inova system was well below the national average. To alleviate the need to continually re-train nurses in the ESC process, Inova implemented a pilot project to now include infants withdrawing because of SSRI exposure.

SSRI withdrawal symptoms largely mimic those of opioid/illicit drug withdrawal, albeit to a lesser degree. An irritable infant can quickly erode the coping skills of someone already emotionally in need, and nurses are in an ideal position to help these families. With mental health being at the forefront of current public health issues, leveraging the concepts of ESC to include SSRIs provides an opening in an area where nurses can directly and positively impact families, remove the stigma around depression, and start a dialog on mental health.

Improvements in Resuscitation Following the Development of a Multidisciplinary CODE Review Team in a Level IV NICU

Aurora L. Walters, BSN, RNC-NIC
Angie Alcock, RN, BSN, RNC-NIC, CN IV, RN
Rebecca Shay, MD, MAS
Elizabeth S. Schierholz, PhD, NNP-BC
CHILDREN'S HOSPITAL COLORADO
DENVER, CO

A multidisciplinary code review team led by bedside nurses was created in 2018 in our 82-bed academic Level IV NICU. The goals of the team are to increase standardized resuscitation care and improve both process and outcomes related to neonatal resuscitation. The team comprises nurses, neonatologists, a neonatal nurse practitioner, a respiratory therapist, and a NICU pharmacist. Code event data is collected from the code documentation record, scanned into the electronic medical record, and entered into the online database RedCap. The team reviews this code data monthly. Evidence-based standards of care and process improvements have been achieved through collaboration of team members, objective auditing tools and effective dissemination. Areas of significant change include improved code documentation, increased code event debriefing, increased intubation success, and the creation of standardized guidelines for intubation premedication, low dose epinephrine, and post-resuscitation care. The specific work of this team has been emulated in other units throughout the hospital and has been acknowledged by the CHNC (Children's Hospital Neonatal Consortium) and the VON (Vermont Oxford Network) collaborative.

Using Ultrasound as PICC Insertion Guidance for NICU Patients

Rui Wang, BSN, RNC-NIC
Kimberly Kristoff, BSN, RN, CBC
CHILDREN'S HOSPITAL OF PHILADELPHIA
PHILADELPHIA, PA

The Children's Hospital of Philadelphia NIICU (Newborn and Infant Intensive Care Unit) is a busy level 4 unit. Most patients are critically ill, requiring peripherally inserted central catheters (PICC) to deliver medications and parenteral nutrition. Successfully and quickly getting PICCs at bedside solely relying on transilluminator was a challenge due to the severity of illness and various sizes of patients (400g to 8kg).

Three NIICU ultrasound-proficient attending physicians started training the NIICU PICC nursing team with the ultrasound-guided PICC insertion (UGPI) technique in early 2018. Completion of ultrasound training required attending one ultrasound training class and successfully placing 3 PICCs, later increased to 10 PICCs/PIVs in January 2019, using ultrasound with an ultrasound trainer.

By the end of 2019, 4 out of 12 NIICU PICC team members were ultrasound certified. By December 2022, 10 out of 11 members were certified. Successful PICC insertion rates by first provider are improved and larger PICCs are being placed at bedside instead of having to travel to interventional radiology. NIICU PICC team members are more proficient using UGPI. They play a major role in improving patient safety by obtaining vascular access or lab samples for difficult access patients more successfully and efficiently.

Development of a Neo-Telemedicine Program in a Level 1 Nursery

Suzie Harness, MSN, NNP-BC
OHIO HEALTH
DUBLIN, OH

Level one nursery staffed by pediatricians and neonatal nurse practitioners struggle to maintain competency in low-volume but potential high-risk deliveries as well as complying with hospital and state guidelines. A program was developed to add a layer of neonatal expertise with the use of advanced technology. Neo-Telemedicine visually links patients and bedside staff with a neonatologist aiming to optimize consistency of care, improving outcomes, decreasing number of newborns requiring transport, as well as decreasing time for expert eyes on newborn. A SWOT analysis was done prior to implementation, as well as identifying hospital and state guidelines and regulations. Simulation, role playing, peer coaching, and tracking use was done for months before the program was launched. Protocol/guidelines were updated with practice activations, along with team and administrative debriefing after each learning opportunity. Over a two-year period, 55% of the activations did not require the newborn to be transferred to a higher level of care and neonatologist eyes on the newborn averaged 30 minutes compared to three hours with transfer in randomized chart audit pre-telemedicine. A qualitative, descriptive and quantitative design was used to evaluate staff confidence and communication as well as neonatal outcomes.

Placenta Phlebotomy: Procedural and Process Challenges with Multi-Center Quality Improvement Project

Angela T. Vaughn, APRN, NNP-BC

Stacy Rosebrook

PEDIATRIX MEDICAL GROUP OF FORT WORTH/MEDNAX
FORT WORTH, TX

Background: A placental phlebotomy procedure was implemented as a pilot in a single center neonatal intensive care unit (NICU) to collect admission laboratory for premature infants. The aim of the standardized protocol included making informed treatment decisions, eliminating procedural pain, and reducing iatrogenic blood loss in this vulnerable population. The placental phlebotomy protocol was then expanded to four affiliated NICUs, broadened to include all neonates admitted to the NICU, and added other laboratory studies. When placental phlebotomy was introduced to various NICU settings unexpected challenges surfaced with stakeholder buy-in and operational processes, prompting alterations with introduction and education.

Purpose: Discuss project implementation and efficacious rollout in multiple diverse NICU settings.

Design: Advance practice and registered nurses collaborated with laboratory personnel utilizing the Plan-Do-Study-Act cycle for ongoing reassessment and evaluation of the standardized placental phlebotomy process and adapted changes as warranted.

Results: Successfully implementing a placental phlebotomy protocol relied on adaptations in education and process rollout based on individual unit needs.

Implications: Reoccurring evaluation of the standardized processes for placental phlebotomy education and specimen collection techniques supports quality improvement endeavors and facilitates advancements in patient care delivery systems.

Bubbling through the Years: The safe and effective use of Bubble CPAP in a Level IV Neonatal ICU

Sylvia Villaraza-Morales, MSN RNC-NIC

Yvette Bautista, MSN RNC-NIC

Reema Kocherry, MSN RNC-NIC WHNP-BC

Sobha Jacob, MSN RNC-NIC

Maria Gina N. Masong, BSN RNC-NIC

7T NICU MSCHONY NEW YORK PRESBYTERIAN HOSPITAL
NEW YORK, NY

Nasal continuous airway pressure (CPAP) is a widely accepted method of respiratory support for very low birth weight infants. CPAP reduces the risk of invasive intubation, ventilation, apnea of prematurity and post-extubation atelectasis. Early CPAP initiation reduces the incidence of chronic lung disease and the need of supplemental oxygen requirement after discharge. Bubble CPAP represents the simplest form of CPAP that may present physiologic advantage over other CPAP systems due to effective lung volume recruitment and efficient gas exchange. The practice of initiating nasal prong CPAP in all spontaneously breathing infants at Columbia University (Morgan Stanley Children's Hospital of New York MSCHONY) has resulted in very low rates of chronic lung disease for decades. Success rates of nCPAP, particularly bubble nCPAP, are highly variable and are attributable on how well it is utilized. Strategies utilized to prevent CPAP failure such as the correct use of nCPAP devices, attention to detail, and experience of the bedside caregiver during delivery of CPAP are key to its successful and effective use. Our study aim is to compare nursing strategies and management on the safe and effective use of nasal bubble CPAP in our center to other level three and four NICU.

Airway Safety: A Journey to Decreasing Unplanned Extubations in A Level IV NICU

Sobha Jacob, MSN RNC-NIC

Sylvia V. Villaraza-Morales, MSN RNC-NIC

Maria Gina Masong BSN RNC-NIC

7T NICU MSCHONY NEW YORK PRESBYTERIAN HOSPITAL
NEW YORK, NY

Background: Unplanned extubations (UE) are common clinical problems which can cause cardiorespiratory depression and trauma to upper airway with mechanically ventilated patients in the NICU. It can happen to both premature neonates and infants capable of purposeful movement. In 2022, MSCHONY UE incidence increased to 0.79 UE/100 ventilator days from 2021 which was 0.42 UE/100 ventilator days.

Aim: We aim to decrease the rate of UE in the NICU from 0.79 UE/ 100 vent days to < 0.5 UE /100 vent days and sustain improvement over a 12-month period. The QI project is to educate the NICU staff on the use of the bedside tool "CHAMP" (Checklist, Hold/Transport, Assessment, Maintenance and Protection/Safety) on all intubated neonates in the NICU.

Methods: A quality improvement method was used for this project, and based on survey results a NICU Airway Safety Education tool (CHAMP) was implemented. Staff education on the new guideline was shared with entire NICU multidisciplinary team.

Results/Discussion: 75% of the nurses after the post survey stated they were receptive to the CHAMP education. Usage of the CHAMP checklist at the bedside of each intubated neonate was noted during daily audits on all intubated neonates. Education and awareness have improved among providers, nursing and respiratory staff in relation to UE and maintenance of ETTs.

Podium Abstracts Presented at the Spring 2023 Advanced Practice Neonatal Nurses Conference

April 26-29, 2023

These are the abstracts for the **podium presentations** from the Spring 2023 Advanced Practice Neonatal Nurses Conference. They represent a broad range of neonatal issues. By sharing this information, we hope to increase awareness of research and innovative programs within the neonatal health care community and to support evidence-based nursing practice. Some abstracts have been edited for publication.

Implementation of Early Skin-to-Skin to Improve Patient Outcomes and Parent Engagement

Breann Adelman, BSN, RN, C-ELBW

Elsa Stout, MSN, RNC-NIC

Rachelle Sey, PhD, CNS, RNC-NIC

SHARP MARY BIRCH HOSPITAL FOR WOMEN & NEWBORNS
SAN DIEGO, CA

Background: Research demonstrates holding preterm infants skin-to-skin (STS) improves weight gain, breastfeeding, vital sign stability, and parental bonding while decreasing infection, parental stress, and overall length of stay. Using a family integrated care model in the NICU encourages a neuroprotective approach while promoting parent engagement. The purpose of this performance improvement project was to decrease the average number of days from birth to first STS in infants born less than 29 weeks' gestation from a baseline of 14.2 to 7 days of life.

Innovation: A multidisciplinary team collaborated to identify barriers to early STS, including practice variability, lack of a well-defined protocol, and perceived time constraints. The team implemented strategic interventions including clear inclusion criteria, a checklist, parent handout, education module, instructional videos, identification of champions, and staff recognition.

Results: A significant improvement was noted in mean days for STS from baseline of 14.2 days to 5 days. Data was stratified by ethnicity to identify potential gaps.

Conclusion: Despite being plagued by a global pandemic resulting in constant change to clinical protocols and visitation guidelines, the NICU optimized strategies incorporating parents in the care of their infant while demonstrating improvement in parent engagement and early STS.

Pandemic Pandemonium: The Implications of Visitation Restrictions Through the Lived Experiences of NICU Parents

Nicole E. Nyberg, MSN, APRN, NNP-BC

NOVANT HEALTHCARE
CHARLOTTE, NC

The progressive movement of family-integrated care previously established has regressed since the COVID-19 pandemic. Through the lived experiences of NICU parents during the pandemic, our study confirms that parents were negatively affected by the global restrictive visitation policies.

The methodology used to research our problem was completed through a literature review and a 24-question online survey. Qualitative and quantitative data were obtained from 287 NICU parents. Demographically, our study participants were from 10 different countries.

Our results confirmed the visitation restrictions implemented during the pandemic added additional stress for the parents, exacerbated their trauma, affected their mental health, negatively affected the time they were able to spend with their baby and bond as a family.

In conclusion, research has demonstrated that early and consistent parental engagement in the NICU positively influences the long-term trajectory of the infant and family. Family caregivers are critical to successful patient outcomes. Once parents are considered respected care partners, it minimizes parental stress, promotes familial bonding, increases parental confidence, and creates a thriving environment for the infant and parents while in the NICU and post-discharge. Parents must be embraced as essential care partners and a zero-separation policy must be followed with the next pandemic.

Baby-Wearing in the NICU

Lisa Grisham, MS, NNP-BC

Joelyn A. Maurer, BSN, RNC-NIC

BANNER UNIVERSITY MEDICAL CENTER TUCSON; UNIVERSITY OF ARIZONA, COLLEGE OF NURSING
TUCSON, AZ

Baby-wearing (BW) is using a cloth or carrier to secure an infant to the torso of the person performing the carrying to keep the infant close and comfortable while allowing the baby-wearer to have their hands free. BW has many positive benefits, including reduced crying, decreased repetitive maternal negative thinking, decreased postpartum depression, improved attachment, increased breastfeeding, and increased engagement in caregiving activities for fathers. Physical benefits include reduced incidence of hip dysplasia and positional plagiocephaly.

The Neonatal Intensive Care Unit (NICU) at Banner Children's Medical Center – Tucson implemented a BW program as part of a research study for infants with neonatal abstinence syndrome (NAS). Through this program, parents and bedside caregivers were trained to BW, capitalizing on benefits to both the wearer and the infant, without any adverse events. The BW program was expanded to include medically stable infants at 35 weeks' gestation. Infection Prevention and Risk Management were key stakeholders involved during the development of the BW policy.

This presentation will review the successful implementation of BW in one NICU and provide learners with an outline of bringing BW to their NICU.

Implementing a Standardized Process for NICU Providers Utilizing Z-Scores to Diagnose and Treat Malnutrition

Angela Vaughn, DNP, APRN, NNP-BC

Yvonne Helland, MSN, APRN, NNP-BC

Emily Latiolais, DNP, APRN, NNP-BC

Jessica Wright, APRN

TEXAS HEALTH HARRIS FORT WORTH
FORT WORTH, TX

Background: Evaluating neonatal nutrition includes serial review of weight changes, head circumference, length, and laboratory values. Neonatal malnutrition contributes to morbidities including bronchopulmonary dysplasia and poor developmental outcomes. Various severities of malnutrition are often unrecognized in the neonatal intensive care unit. A multidisciplinary team of physicians, registered dietitians and researchers developed a national consensus of identification and diagnosis of mild, moderate, and severe malnutrition in the neonatal patient population based on a z-score evaluation of present weight compared to birthweight.

Purpose: This quality improvement project aims to improve identification, diagnosis, and nutrition interventions for infants diagnosed with malnutrition in the neonatal intensive care unit.

Design: A composition of physicians, advanced practice nurses, registered dietitians developed and implemented a guideline addressing diagnosis and identification of malnutrition in multiple level II – level IV neonatal intensive care units utilizing the Plan-Do-Study-Act cycle.

Results: Evaluation determining improvement in provider identification, diagnosis and nutrition interventions in the neonatal intensive care unit is ongoing.

Implications: Adding z-score criteria to nutrition evaluation will improve identification and diagnosis of malnutrition leading to improved overall nutrition and outcomes.

Procalcitonin Continues to Guide and Improve Identification for Late Onset Sepsis in Infants

Jennifer Killebrew, DNP, APRN, NNP, RN

ASCENSION
AUSTIN, TX

Background: Procalcitonin (PCT) has become more widespread among the infant population when evaluating for late-onset sepsis (LOS) in conjunction with other sepsis labs. In 2018, select central Texas neonatal intensive care units (NICUs) implemented a guideline using procalcitonin levels to guide antibiotic therapy with late onset sepsis. The current cut-off level is thought to be too conservative based on the latest research and monitoring of the guideline.

Purpose: To revise current guidelines based on a retrospective chart review and a receiver operating characteristic curve (ROC).

Methods: A retrospective chart review was done over a period of 4 years from 2018 to 2022. Positive blood and urine cultures results were analyzed with procalcitonin levels drawn in the same sepsis workup. A receiver operating characteristic curve, ROC, was done to guide a new cut-off level and evaluate positive and negative predictive values.

Results: A total of 58 infants were observed. The results of the ROC curve suggest changing the current cut-off level of procalcitonin to 0.25 ng/mL to 0.5 ng/mL. The positive predictive value (PPV) for blood culture is 82.4%. The PPV for urine cultures is 83.3%. The negative predictive value for blood and urine cultures (NPV) is 86.2%.

Oral Immune Therapy and the Impact to the Newborn Microbiome

Amanda Williams, MSN, APRN, CNS, ACCNS-N, RNC-NIC, C-ELBW, C-NNIC

Rita Wadhvani, RN, MSN, ACNP, CNS, RNC-NIC

Disclosure: *This author is the owner/CEO of iBiome Healthcare.*

CEDARS-SINAI MEDICAL CENTER
LOS ANGELES, CA

The value of colostrum has been well established, and oral care with colostrum has become a standard of care in the NICU. We have evolved to understand that colostrum via the oral mucosal lining provides immunogenic properties; prompting us to refer to it as oral immune therapy (OIT). Considering that, one must ask, how does OIT influence the developing newborn microbiome?

The microbiome refers to a collection of genetic material (microbiota, bacteria, fungi, protozoa, and viruses) that exist on and inside the body. During the first 100 days of life, the newborn microbiome is vulnerable to internal and external influences. The mouth has its own microbiome that necessitates the introduction of normal healthy microbes present in colostrum and not attempted scrubbing or sterilization.

We aim to connect the dots on how NICU nursing care using OIT impacts the newborn microbiome. We will identify physiology that associates this valuable practice to the newborn immune system; leading you to identify what we are learning to be the best methods of administration. The importance of OIT will be presented to provide the attendees with a broader understanding of the developing newborn microbiome.