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Articles

Seven Core Measures of Neuroprotective Family-Centered Developmental Care: Creating an Infrastructure for Implementation

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ABSTRACT

The Neonatal Integrative Developmental Care Model utilizes neuroprotective interventions as strategies to support optimal synaptic neural connections, promote normal development and prevent disabilities. Seven neuroprotective core measures for family-centered developmental care of the premature neonate are depicted on petals of a lotus as the Healing Environment, Partnering with Families, Positioning & Handling, Safeguarding Sleep, Minimizing Stress & Pain, Protecting Skin, and Optimizing Nutrition. The overlapping petals of the model demonstrate the integrative nature of developmental care. The Developmental Care Committee in our hospital created an infrastructure around the Neonatal Integrative Developmental Care Model by forming a Steering Committee to oversee seven Neuroprotective Core Measure Committees. The following article describes the organization of this model along with each Core Measure Committee's goals, interventions, and results during their first year.

Background

There is ample evidence that family-centered developmental care in the NICU results in improved neonatal and neurodevelopmental outcomes, increased family satisfaction and even enhanced employee satisfaction once the culture change has been accomplished.[1–4] However, implementing the known principles of family-centered developmental care into the NICU and creating the needed culture changes have often been fraught with internal and external challenges.

Several models of implementing developmental care have been trialed around the world with varying degrees of success. In our NICU, a Developmental Care Committee has had several cycles of existence over the last 25 years with little long-term impact on the culture of the unit in relationship to either family-centered or developmental care. After learning of the Philip's Neonatal Integrative Developmental Care Model: Seven Neuroprotective Core Measures of Family-Centered Developmental Care,[5] the current Developmental Committee decided to trial this model in our NICU to see if it would be effective as a tool to encourage nurse engagement in the process of implementing family-centered developmental care principles into the culture of our NICU.

Setting

Our NICU is an 84-bed, Level 4 unit within a large teaching Children's Hospital and Medical Center in Southern California. Due to an active Maternal Fetal Medicine program which cares for mothers with high risk pregnancies, about half of the 1300 admissions a year in our NICU are in-born and the other half are transported from outlying hospitals in our wide-spread region. The NICU has an open-bay layout with most rooms holding 6–8 beds each. No single-family rooms are available.

In the spring of 2014, we began a new focus on neuroprotection in our NICU by creating a Neuro NICU team, a collaborative partnership between Child Neurology and Neonatology. The Neuro NICU team rounds daily on babies at high risk for brain injury. When planning for the Neuro NICU, we recognized that although neuro-monitoring and imaging would be needed for a subset of babies admitted to the NICU, every baby deserved neuroprotective care throughout their hospitalization due to rapid brain growth and neurologic development occurring during the early neonatal period. In addition to babies with existing brain injury and those at high risk due to seizures or meningitis, we acknowledged that premature babies are also at risk for brain injury and developmental delays and included them in our surveillance during Neuro NICU rounds for screening and periodic monitoring.

While Neuro NICU rounds occur once daily and at-risk babies might receive neuro-monitoring for discrete periods of time, the need for neuroprotective care is ongoing and dynamic. The earlier in gestation a baby is born, the more vulnerable is its fragile brain and the more critical it is to provide effective and consistent neuroprotective care from the moment of birth in order to protect and support optimal brain development. This awareness inspired our commitment to include neuroprotective care as an integral component of the Neuro NICU program.

One of the barriers in implementing developmental care is that the definition of "developmental care" is often unclear and, therefore, developmental care practices are frequently perceived as optional. Because of our Neuro NICU, there is a new respect for neuroprotection of all babies in our NICU. Because developmental care is primarily about neuroprotection (although it affects many other aspects of infant

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development), we changed the term "Developmental Care" to "Neuroprotective Care" in all our communications.

Description

While practice changes can be arbitrarily imposed by administration, sustained cultural change rarely occurs in this manner. In order to establish neuroprotective family-centered developmental care as the norm in our unit, we recognized that those it affected (NICU staff) must be intimately involved in the process. The first step was to find a champion who was willing and qualified to spearhead the change process. A neonatal nurse with leadership experience and a passion for developmental care was recruited to be the Neuroprotective Care Program Coordinator and given one day a week by nursing administration to focus on education and coordination of the program.

The Neonatal Integrative Developmental Care Model was introduced to the nursing staff through an online "Article of the Month." NICU staff were invited to join one of seven volunteer committees focused on the Seven Neuroprotective Core Measures of Family Centered Developmental Care: (1) Healing Environment, (2) Partnering with Families, (3) Positioning and Handling, (4) Safeguarding Sleep, (5) Minimizing Stress and Pain, (6) Protecting Skin, and (7) Optimizing Nutrition. Committee members included NICU nurses and therapists from Occupational Therapy (OT), Physical Therapy (PT), and Respiratory Therapy (RT)], as well as physicians. Initial goals of each committee were to learn more about their Neuroprotective Core Measure (CM), then select interventions with measureable outcomes and create adult-learning based tools to educate staff about providing neuroprotective care practices in the NICU related to their CM of focus. Participating staffs were given two hours of clock-in time per month to spend on program development and meeting attendance. No other external funding was provided.

A Neuroprotective Care Steering Committee was formed that includes the Neuroprotective Care Coordinator, chairpersons of each of the seven committees, NICU nursing administration, and a supportive neonatologist. The Steering Committee meets monthly to set goals, prioritize and coordinate change practices, and ensure oversight of materials.

A Leadership Team includes the Neuroprotective Care Coordinator, Clinical Educators, Director of Patient Care, Clinical Nurse Specialist, and a neonatologist with developmental care training and interests. All educational materials are vetted by the Leadership Team to ensure accuracy of medical information, quality of presentation, and coordination of education within NICU goals.

A Neuroprotective Care Program meeting, held every two months, is open to all NICU staff. In addition to offering educational opportunities, it is a forum for sharing goals and accomplishments of the various committees with those not yet involved. Guest speakers have included a physician from the High Risk Developmental Follow-up Clinic who provided information about criteria for follow up and stories about NICU graduates seen in clinic, a parent of a premature infant, now 9 years old, who shared her NICU experience, and a psychologist who discussed the issue of compassion fatigue in healthcare providers. A portion of this meeting is also devoted to our Primary Care Nursing Program and is led by the Primary Care Coordinator. Each meeting ends with a time for staff to share work experiences, any concerns, and ideas for creative solutions.

As Neuroprotective Core Measure Committees began to develop ideas for interventions, it was discovered that many topics of interest overlapped between two or more of the Core Measures. For example, a quiet, healing environment (CM 1) is neuroprotective not only to babies, but is also calming for parents (CM 2), and less stressful for staff. Supportive positioning and gentle handling (CM 3) helps to reduce stress and pain (CM 5), which helps to safeguard sleep (CM 4). Skin-to-skin holding provides an healing environment (CM 1), empowers parents (CM2), is the most optimal place for babies to be positioned (CM 3), promotes deep sleep (CM 4), reduces stress and pain (CM 5), helps to protect skin (CM 6), and increases breast milk and breastfeeding (CM 7). The Steering Committee decided that overlap was inevitable and encouraged collaboration.

Each Core Measure Committee created measureable neuroprotective outcome goals and educational modalities, which included handouts, posters, intra-hospital Web-based education with pre/post tests, and hands-on skills demonstrations. The Steering Committee and Leadership Team monitored these educational materials. Evaluations were developed to determine the success of the intervention with pre/post audits of care practices. At the end of each quarter, a recognition ceremony was held at the Neuroprotective Care Meeting to present certificates of acknowledge and achievement to each committee member who participated in the educational activities for the previous quarter. Participation and leadership are linked to career advancement pathways.

In our first year, four Neuroprotective Action Teams were created in order to provide an opportunity for each Neuroprotective Core Measure Committee to introduce the topic of interest related to their Core Measure in an organized fashion without initiating change too quickly for staff to assimilate. The Steering Committee chose the Positioning and Handling Committee (CM 3) to be the first Action Team. The Minimizing Stress & Pain Committee (CM 5) joined with the Safeguarding Sleep Committee (CM 4) to create the second Action Team. The third Action Team paired the Healing Environment (CM 1) and Protecting Skin Committees (CM 6), and the fourth Action Team included Partnering with Families (CM 2) and Optimizing Nutrition (CM 7) Committees. Each Action Team was given three months to implement their educational and practice-change goals. With four Action Teams in motion, this meant that something new was being introduced each quarter of the year.

2014 Neuroprotective Education and Practice Changes

Following is a summary of the 2014 goals, interventions, and results for each Neuroprotective Core Measure Committee.

Neuroprotective Core Measure 1—Healing Environment

Goal: Reduce the high levels of stress described by NICU nurses the hour before and during shift change.

Intervention: Trial the effect of carefully modulated (<55 dB), psycho-acoustically designed, soothing music played for 20 min prior to shift change. Three rooms each containing eight babies with similar levels of acuity were chosen. In the first room the music had vocals, in the second room the music was instrumental, and in the third room no music was played (control).

Results: In the rooms where soft music was played, surveyed nurses indicated a 44% reduction in perceived stress level compared to an 8% reduction in rooms where no music was played. Vital signs (HR, RR, O_2 saturations) of babies were monitored and showed no adverse effect. The nurses reported a preference for the instrumental music and a majority (68%) reported that the music enhanced their work. None of the nurses reported that the music interfered with their tasks.

Neuroprotective Core Measure 2—Partnering With Families

Goal 1: Promote family participation in developing NICU policies and practices.

Intervention: Form a family advocacy council.

Results: A group of NICU parents and 2 NICU staff liaisons met for the first time in our NICU's 20-year history and chose the name "Family Advocates for Compassion, Enrichment, and Sensitivity" (F.A.C.E.S.), elected officers and developed a mission statement.

Planned Activities: F.A.C.E.S. will create guidelines for participation of parents, families, and support systems in the NICU. This group will also identify educational and support needs of families in partnership with NICU staff.