ORAL ABSTRACT: CLINICAL APPLICATION/INNOVATION

Brain Protection Team: Implementing a Developmental Care Program for a Cardiac & Surgical NICU

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Background: While advancements in medical and surgical care have decreased mortality rates amongst infants with congenital heart conditions or non-cardiac conditions requiring surgery in the neonatal period, there is increasing awareness of the adverse neurodevelopmental outcomes facing these infants. [1,2] It can be challenging to balance the neonates' complex surgical and medical needs with their equally important neurodevelopmental and social-emotional needs. Developmental care in a cardiac and surgical neonatal intensive care unit (NICU) requires a unique and thoughtful approach due to the highly technological, fast-paced, dynamic and intense environment. Individualized developmentally supportive care practices within the context of the infants' medical needs have been utilized to minimize the impact of the NICU environment on infants and families, mitigate adverse effects on parent-infant relationships, and improve neurodevelopmental outcomes. [3-7] A need was identified to address the limited developmental care practices within our 18 bed rapid-turnover, outborn surgical NICU that cares for term and preterm infants requiring cardiac care, surgical interventions, and complex medical management with subspecialty consultations.

Objectives: The purpose of this presentation is to outline: (a) the initial implementation of a developmental care program within a surgical NICU, (b) the initiatives adopted by the developmental care team, (c) barriers, (d) evaluation of the initiative and future direction of the developmental care program.

Approach: In September 2015, the Brain Protection Team (BPT) was developed to address the need for consistent, individualized and adaptable developmental care practices within an outborn surgical NICU. This multidisciplinary developmental care program includes: Registered Nurses (RN), Registered Respiratory Therapists (RRT), Neonatologists, an Infant Mental Health Psychiatrist, a Clinical Nurse Specialist and two NIDCAP certified Neonatal Nurse Practitioners (NNP). In the second year, the team expanded to include an Occupational Therapist, Physical Therapist and a Child Life Specialist although, it is still unclear how to best integrate expertise. Input from parents is sought from the Neonatal Family Advisory Care Team.

Prior to implementation, we discussed neurodevelopmental outcomes and developmental care at the annual meeting of our Western Canada Complex Therapies Follow Up Program. The audience included pediatric developmental and intensive care physicians, surgeons and consultants. A literature review was completed to compile evidence for developmental care in a surgical NICU and we spoke with other centers who had reported implementing developmental care in their surgical NICUs. An informational "kick-off" was held to provide information and engage staff in questions and conversation. To tailor our approach for our specific neonatal population and unit constraints, we surveyed our NICU staff to gain an idea of perspectives of the use of developmental care on the unit, barriers, and opinions in order to understand current practice and unit culture.

Monthly BPT rounds were created to generate discussion and to promote a change in culture and practice. This involved a small core group of the BPT team meeting the bedside staff, infant and family to discuss unique aspects of developmental care, answer questions and provide guidance for the entire medical and parent team. Following rounds, posters were created to highlight and celebrate key developmental care practices being used, education points and discussion points along with supporting evidence.

Using the data from the survey and the literature review, the BPT team focused on the following initiatives: (a) reciprocal scent cloths, (b) skin-to-skin care and responsive touch, (c) visual and auditory stimulation, (d) oral stimulation, (e) infant cues, (f) identifying states and protecting sleep, and (g) increased use of bedside whiteboards. Initiatives were accompanied by journal articles, discussion on rounds, and reinforcement at BPT meetings and educational sessions. A journal club was created to discuss current evidence for developmental care and its applicability to practice but, attendance was poor. Instead, an online communication forum was used to post articles and generate discussion. A case-based developmental care session was incorporated into mandatory yearly staff education.

NIDCAP observations and care plans were made for some infants identified by staff as needing consistent care plans. These were done sporadically due to limited resources. Additionally, the infants often have short stays and move between the NICU and the pediatric intensive care or pediatric units, making the development of care plans difficult. The infant's condition also changes quickly post-operatively, and a care plan often becomes out of date before it can be updated by the NIDCAP certified NNPs. Developmental care suggestions, often drafted by the nurses and parents, now accompany the baby to the pediatric floors when available.

A follow-up staff survey was provided approximately one year post-implementation using a revised version of the original survey. The survey captured staff perceptions of improvements in care with developmental care strategies and access to resources since implementation of the BPT team, as well as identified challenging areas still requiring further efforts. Over 95% of staff expressed understanding the need for developmental care. While 75% of staff felt it was very or extremely important to incorporate developmental care into daily practice, persistent barriers to its success were reported including the physical environment of the unit, acuity of the infant, ongoing procedures, and busy assignments or low staffing levels. The NFI Profile of the Nursery Environment and of Care Components Tool indicated improvements in the physical environment such as attempts to shield infants from light and noise, provide visual stimulation and improved

supports for self-regulation however it was very difficult to evaluate the use of responsive developmental care strategies in daily care. Over the past year during BPT monthly rounds, we noted an improvement in parental presence and more infants were being held by parents and staff. Only 8.3% of survey respondents felt BPT rounds were stressful and not educational. Further work will need to be done to identify ongoing barriers to culture change, provide continuing education and support for the medical team to provide this care and to evaluate retention and promotion of the BPT initiatives.

Summary: Implementation of the program required a flexible and responsive approach to meet the needs of staff, infants, and families. Evaluation continues to be a challenge due to a lack of sufficient resources, manpower, and comprehensive assessment tools; yet, evaluation of the developmental program is recognized by the BPT team as imperative to keep the program relevant and applicable, and to support continual improvement.

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