The Importance of Developmentally-Appropriate Positioning in the Neonate Population

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Learning Need

- This research project focuses on the clinical significance and educational components of developmentally-appropriate positioning and its impact on neonate well-being.
- Care providers and parents at Stamford Hospital could benefit from education on the importance of maintaining the neonate in a position akin to the intrauterine environment until, at minimum, the time frame that would have marked full-term gestation.
- Many hospitals are just now spearheading policies and procedures regarding neonatal developmental care.

Rationale

- Evidence-based research has shown that this critical intervention allows for optimal growth, neural development, weight gain, normothermia, maintenance of proper muscle tone, and reduces the duration of NICU stays overall (Lucas, 2015).

- Assessment for learning need on the unit:
  - Witnessed an overall inconsistent delivery and integration of proper positioning while being in Stamford's NICU.
  - Preceptor voiced proper positioning as a learning need of the unit.

Significance to Patient Care

- Positioning simulates intrauterine environment, which is important for continued growth and development of the preterm or acutely ill neonate.
- Staff-directed educational components will provide necessary insight as to why developmental care is appropriate and should be carried out with each patient encounter.
- Parent-directed educational components will help explain physiological processes and necessary steps of neonatal development as they pertain to proper positioning.
- Developmentally appropriate care reduces hospital stay time, infant stress, and other potential negative developmental repercussions.

Project Development

- Conversed with my preceptor and the unit nurse manager to identify a learning need on the unit.
- Assessed other NICU nurses' approaches to care to identify if they implemented methods of developmentally appropriate care.
  - If not, I asked them about their feelings and knowledge base associated with developmentally appropriate care.
- Researched and appraised current evidence-based literature on the subject of developmental care specific to the NICU population.
- Developed two infographics – one for staff education and one for parent education, as well as a 3D printed model of a fetus to use as a teaching tool.
  - All were created to help explain the rationale behind developmentally appropriate positioning tactics.

Benefits of Project

- Both the educational infographics and the 3D model can be used to provide teaching and insight regarding developmentally appropriate positioning of neonates.
- The scope of this project is applicable to both the provider approach, as well as the parental approach.
- The project's use of multiple mediums can appeal to various types of learners – visual, reading/writing, and kinesthetic. This helps to ensure that the majority can understand the content.

Literature Review

- If kept in the supine position, premature infants are at risk for various musculoskeletal, neuromotor, and other growth complications (Masri et al., 2018).
- On average, the NICU nurse repositions the neonate about 8 times, which if not provided proper positioning education, can result in misalignment causing pain and the disruption of sleep cycles (Masri et al., 2018).
- The confines of the intrauterine space promotes neural development, which is lost when an infant is born prematurely. Recreating the intrauterine environment by means of using snuggle up positioning allows for optimal growth and neural development (Sathish et al., 2017).
- Currently, many NICUs across the country lack consistency in selecting and implementing the use of supportive positioning devices (Sathish et al., 2017).
- Immediately after preterm birth, prone position within a positioning aid is best for the infant until he/she is more stable. Prone positioning helps with breathing movements by supporting the rib cage, reducing reflux, increasing quiet sleep time, and helping the infant to gain weight faster (Lucas, 2015).
- Stress-related behaviors were decreased overall when infants were placed in prone position as compared to supine (Silva et al., 2018).
- Infants born before 37 weeks are at risk for developing neuromuscular complications, in addition to muscle tone and bone development deformations (El Sayed Abusaad et al., 2017).
- Within a week of introducing snuggle up positioning, as well as other well-known positioning methods, about three-quarters of preterm infants' pain was decreased during routine care (El Sayed Abusaad et al., 2017).

THE BENEFITS OF PROPER POSITIONING FOR YOUR NEONATE

WHO?

Your baby was born before 37 weeks, which is considered pre-term. Your baby requires special care to support his/her growth and development[1].

WHAT?

Special positioning devices will mimic the environment of the uterus, which will facilitate optimal growth, both physically and within the baby's brain, spinal cord, and musculature[2].

WHY?

- Eases the baby's transition from a quiet, calm uterine environment to the stimulated outside world[3].
- Allows the baby to grow within a boundary, as if he/she is in the uterus. Positioning tools are self-soothing to the baby[4].
- Helps the baby's lungs expand properly and helps the baby to gain weight faster[5].
- Helps the baby learn how to keep his/her head straight and helps to regulate body temperature[6].
- Decreases overall time spent in the hospital[7].

WHEN?

Special positioning is important during his/her first few weeks of life.
We will rotate his/her position every couple of hours, just like he/she would do in utero[8].

HOW?

We will 'nest' your baby using a positioning device best-suited for your baby. Your baby will be put into different positions – back lying, stomach lying, and side lying[9].

NURSES' GUIDE TO DEVELOPMENTALLY APPROPRIATE POSITIONING OF THE NEONATE

Side Lying Indications:

- Introduced once stable.
- Naturally roll out of this position, add rolled towel to support back.
- Self-soothing, allows baby to get hands to mouth[1].

- Reduces reflux.
- Facilitates faster weight gain.
- More quiet sleep.
- Gravity pushes knees out, helps to expand rib cage.
- Best position until stable[2].

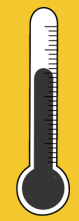
Prone Indications:

WHY?

- Eases the baby's transition from a quiet, calm uterine environment to the stimulated outside world[3].
- Allows the baby to grow in a flexed and midline position, like in utero. Positioning tools are self-soothing to the baby[4].
- Helps the baby's lungs expand properly and helps the baby to gain weight faster[5].
- Helps the baby learn how to keep his/her head straight and helps to regulate body temperature[6].
- Decreases overall time spent in the NICU[7].

Supine Indications:

- Introduced close to discharge, once stable.
- Best during wake periods.
- Keep head and body midline and symmetrical[8].



- Favor parental involvement.
- Gradually decrease boundaries as baby nears term.
- Positioning equipment cleaned q 48 hrs unless visibly soiled, liner changed daily[9].

Other Considerations:

Challenges and Lessons Learned

- Steep learning curve with learning how to use a 3D printer and associated computer programs, much of which was trial-and-error.
  - Multiple failed attempts to print the fetus.
  - Difficulty finding a CT scan or MRI imaging of a fetus around the desired estimated gestational age.
  - Losing access to Bannow and needing to gain access from DPS.
  - **Solution:** Having patience, knowing when to ask for help, referring to expert videos on how to use the 3d printer and computer programs.
- Challenges with deciding which intervention under the large umbrella term of developmentally appropriate care would be most meaningful to focus on for the purposes of this project.
  - **Solution:** Talking with my preceptor and nurse manager, observing other nurses' care on the unit, referring to relevant literature.

Attempt #1: The printer did not print past the first layer.

Effects on Professional Practice

- I eventually would like to work in the NICU setting, so I will bring the knowledge and skills gained from this project with me.
- As a future NICU nurse, I will try to implement developmental positioning if the hospital I work for does not utilize this technique.
- I have a newfound respect for the importance of implementing "small" interventions, like proper positioning, and the profound impact these interventions can have on patient outcomes.

References

- El Sayed Abusaad, F., El Aziz El Sayed Abd El Aziz, R., & Abd Elsallam Nasef, N. (2017). The effectiveness of developmentally supportive positioning on preterm infants' pain response at neonatal intensive care units. *American Journal of Nursing Science, 6*(1), 63-71. https://doi.org/10.11648/j.ajns.20170601.18.
- Lucas, N. (2015). Developmental care in the neonatal unit. *Sri Lanka Journal of Child Health, 44*(1), 45-52. https://doi.org/10.4038/sljch.v44i1.796.
- Masri, S., Ibrahim, P., Badin, D., Khalil, S., & Charafeddine, L. (2018). Structured educational intervention leads to better infant positioning in the NICU. *Neonatal Network, 37*(2), 70-77. https://doi.org/10.1891/0730-0832.37.2.70.
- Sathish, Y., Lewis, L. E., Noronha, J. A., George, A., Snayak, B., Pai, M. S., Bhat, R., & Purkayastha, J. (2017). Clinical outcomes of snuggle up position using positioning aids for preterm (27-32 weeks) infants. *Iranian Journal of Neonatology, 8*(1), 1-6. https://doi.org/10.22038/ijn.2016.7709.
- Silva, N., Linhares, M., & Gaspardo, C. (2018). Developmental care approaches for mitigating stress in preterm neonates in the neonatal intensive care unit: A systematic review. *Psychology & Neuroscience, 11*(2), 117-131. https://doi.org/10.1037/pne0000119.