Developmental Positioning in the NICU

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The patient population in the Neonatal Intensive Care Unit varies from the very premature infant to the critically ill term infant. There are many other reasons to be in the NICU but the most common reason is prematurity. Of all the births each year, about 11% are premature and gestations as young as 23-24 weeks are surviving. The estimated daily cost of NICU care is $2,000.00. The premature infant can stay for two to three months so the cost can be staggering. An NICU environment that promotes developmental care can decrease the premature infant’s length of stay, decrease the total cost and improve patient outcomes. (Altimier, Eichel, Warner, Tedeschi, & Brown, 2004) Developmental care has been around as long as nursing. The premature infant’s body isn’t capable of adapting to the environment so it has to be done for him. Nursing needs to create an environment for him that will promote well being. Some of the earliest guidelines for developmental care in the NICU came in 1982 from the work of Heidelise Als and her synactive theory. She talks about signs of stress as hypotonia, flailing, finger splaying and stiffening of extremities. She suggested minimal stimulation, clustering care and proper positioning and alignment. She developed API – Assessment of preterm infant’s behavior and NIDCAP-Newborn individualized developmental care and assessment program. (Als, 1982)

Infants born around 24 weeks are not just tiny versions of a term baby. Their bodies are not finished maturing. They have incomplete development of muscle tissue and flexor tone, and bone development of the skull and spine. This development is not complete until 40 weeks gestation. Because of this, the premature infant is at risk for extremity malalignments, skull deformities, and gross motor delays. (Sweeney & Gutierrez, 2002) It is really important to help
this vulnerable population to have improved functional outcomes. One of the best ways to insure this is by correct therapeutic positioning while in the NICU.

When the fetus is in the womb, there are boundaries that keep him in a flexed and midline position. They can stretch and move around but when they stop, they return to this original position. Keeping them in this flexed position after they are born helps them to become as stable as they were in utero. The stable premature infant is less stressed, he is able to self-regulate his movements better and he can optimize his neurobehavioral status. To maintain this stability, the nurse has to help him by providing boundaries and proper positioning within these boundaries. (Hunter, 2004)

Without boundaries, the preterm infant is usually lying with their trunk and extremities lying flat on the bed. His shoulders will be retracted and his legs will be in a frog-leg position. His hips will be abducted and rotated externally. His ankles and feet will be turned out. They do not flex or relax without the boundaries of the uterus. If left unsupported, the preterm infant will become more stressed and unstable. There will be musculoskeletal deformities and restraints if left in this unsupported position. (Garner & Lubchenco, 1998) When the infant is flat on his bad with his legs extended he experiences more startle behaviors and sleep disturbances and more energy and calories are expended. He may arch off the bed and prolonged arching can cause abnormal curvature of his spine. Nursing intervention is needed to help this infant. The nurse needs to provide boundaries with the use of positioning aids. There are many products on the market that provide boundaries and some are SnuggleUps, Bendy Bumpers, Baby Bendys, Wedgies, Froggies, and Gel pillows. If the NICU does not have these purchased items, making a deep nest with blanket rolls can be utilized. If the infant is older, swaddling works really well. With the infant on his back, his legs should be flexed up towards chest and knees adducted. His
shoulders should be rounded forward and elbows flexed with hands near face. His head should be midline with a gel pillow under his head and shoulders. When the infant is critically ill, he spends a lot of time on his back due to many medical procedures needing to be performed. He does not oxygenate as well when supine but sometimes it is unavoidable. If he is on his side, there should be a roll behind his back. His top hip and shoulder should be slightly forward with arms and legs bent with infant “hugging a rolled cloth or beanie”. If he is positioned prone, he should have a gel pillow or folded cloth under his body from nipple line to pelvis that allows his arms and legs to hang down and stop the flattening of the shoulders and hips. He should have his knees bent with his feet tucked under with his hips higher than his back. His head should alternate to right and left to avoid misshaping of his skull. This flattening on the sides of the skull is known as scaphocephaly. The prone positioning allows for better oxygenation, more prolonged sleep, and improved digestion. When an infant is positioned properly, the dystonic phase is shortened, it facilitates the hands to midline movements, helps with head control, helps promote balance in flexors and extensors to improve posture, decreases stress, promotes normal development, prevents abnormal development and enhances motor skills. (Garner & Lubchenco, 1998) Infants that do not experience this nursing intervention of positioning may have difficulty crawling and walking, have a misshapen head, and be unable to bring his arms to midline or fingers or toys to his mouth, shoulder instability and poor head control. We used to say that Premies “walk like ducks” and have “toaster heads”. Both of these titles might be avoided with proper positioning. There are times that even with proper positioning there are still some developmental delays due to the extreme prematurity of the infant and his critical state.

All NICUs should have a developmental committee that makes sure all staff are well trained in developmental care and insures that the needed positioning aids are available. The
nurses are the ones that provide hands on care to the premature infant and are the major providers of the proper handling and positioning of this patient. Most units also have physical therapists that assess the needs of each premature infant and help the nurse formulate the proper care plan for him. They institute massage therapy as well to help relax the infant’s muscles and aid in calming. One of the most important components of developmental care is the parents of the infant. Parents often feel left out of the care of their child. When mom was pregnant she probably dreamed of feeding and diapering her baby but her dreams were altered when she had her baby too early. We try to let them do as much as possible so they feel like we haven’t taken their baby away from them. They can’t put in the IVs or change surgical dressings but they can touch and position their baby. They can learn to massage. It is important to involve the parents in developmental care because it does not end when the infant is discharged. Parents will be asked to continue with this care when their baby is at home with them.

Most NICUs have follow up programs for their graduates. One such program has been implemented at the facility where I work. This program is called the PREMIEre program and it follows our babies at one month, three months, six months, twelve months and eighteen months corrected gestational age. They also see these babies at twenty-four, thirty and thirty-six months chronological age. This program started in 1979 and has about 800 patient visits each year. The program also sees about 70-80 new patients each year. The infants are evaluated using the Bayley Scales of Infant and Toddler Development as part of their assessment. (Bayley, 2005) This tool measures the developmental functioning of each child. The tool assesses cognitive and language responses and motor functioning. It can point out areas of delay and interventions are implemented. The outcome of these interventions is assessed over the next visits. One drawback is that the results can often be subjective based on who does the evaluation. This tool
does not diagnose but merely indicates areas where intervention may be needed.

(http://www.universityhealthsystem.com/neonatal-intensive-care-unit/premiere-program/)

According to Carolyn McLerran, who has worked with the PREMIEre program for years, that they are seeing improved functional outcomes since developmental care has been stressed in our NICU. Typically, the premature infant has increased tone in his extremities but she reports that they are seeing less of this and when they do, most of the increased tone is gone by one year of age. They are also seeing improvement in head shape. There are fewer incidents of “toaster heads” or heads that are flat on the sides. She feels that our care has made a big difference. (C. McLerran, personal communication, August, 7, 2012.)

Development care-in particular positioning-has helped with premature infant outcomes but there are still some infants who experience severe delays. At times, the critical state of the infant does not permit the best developmental positioning. The nurse will do her best but may be limited in what she can do. Even when the infant can tolerate handling, some nurses do not practice correct positioning. Positioning aids are often found in the drawers rather than in use. More attention to this intervention is needed. It is an uncomplicated practice that has great impact. But it has to be done and done consistently. Nurses, therapists and parents can form a team to give these infants the best possible outcome. Nurses have to be persistent in their positioning, not just when they feel like it. Many of our patients are transfers so parent visitation is limited. This decreases one component of the treatment plan-less parental massage and holding. Our therapists also work in other areas of the hospital so their time with our infants is limited. The premature infant needs all of these caregivers working together for the greatest impact on his functional health.
As Neonatal Intensive Care nurses continue to practice with very vulnerable premature infants, they have to take care of every aspect of their care. First and foremost, they need to attend to the medical needs of the infants. These babies can be critically ill and have many problems going on at the same time. The nurse wants to provide the best quality of care and the safest care for these patients. Besides giving blood products, giving medications, starting lines, maintaining temperature, providing nutrition and maintaining adequate respiratory status, the nurse needs to take the time to correctly handle and position her patient. The nurse is not only responsible for this critical care but also responsible “for the person that infant is to become” (Klein, Bloom, & Callahan, p. S4). We are sending more premature infants home than ever before but it is very important to be sending them home with a great quality of life.
References


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