Using Evidence-Based Practice: A Review of Developmental Positioning and Containment Practices of Premature Neonates in the NICU
Tammy J. Anderson, RNC - NIC, PHN, MSN
CHOC Children’s, Orange, CA

Issue #1
Prematurity and Perinatal Mortality
- March of Dimes (2008) reports that every year more than half a million babies are born prematurely (before 37 weeks gestation) in the United States.
- Preterm birth rate has jumped by 20 percent since 1990 and costs the nation more than $26 billion every year (Institute of Medicine, 2008).

Issue #2
Providing a Developmentally Supportive Environment
- The goal of the NICU is to provide a developmentally supportive environment for optimal growth which includes reduced noise levels, decreasing bright lights & light cycling, and clustering cares to allow for optimal sleep periods and positioning for optimal neuromuscular development and pain reduction (Sizun & Westrup, 2003).

Issue #3
Pain Management
- Recent studies show that NICU infants are not medicated prior to procedures for which adults are routinely medicated (Rouzan, 2001).
- Pain management differences also exist between neonatal and pediatric patients. For example, "66% of pediatric intensive care unit patients... [compared to] 26% of NICU patients are likely to receive analgesia (Rouzan, 2001, p.59).
- Another study demonstrated that neonates ‘from 109 NICU’s in the United States and 14 NICU’s in Canada that underwent a variety of painful procedures did not receive pharmaceutical treatment or comfort measures’ (Stevens, 2000, p.834).
- Unmedicated pain in NICU infants results in short and long-term complications. In the compromised NICU patient, pain inhibits the body’s ability to fight infection, resulting in longer and more expensive hospital stays. Research shows that the infant’s neurological ability to create long-term memories is well developed (Furdon, 1998).

PICO Question
In the premature patient population, does implementation of developmental positioning and containment practice guidelines, optimize neuromuscular development and assist in pain management?

Synthesis of Evidence
Database searches for this review included CI-NAHL, PubMed and OVID, reviewed by Joanna Briggs Institute, American Academy of Pediatrics, National Clearinghouse a standard search strategy was used and combined with the following MeSH search terms: Posture, Positioning, Neuromuscular Development, Positioning, Development and Pain Reduction; Neonate; Premature; body positioning, kanganoo care, skin-to-skin, Premature Infant.
- 36 randomized controlled trials involving four major groups of developmental care interventions, 19 subgroups and multiple clinical outcomes
- 2 Meta-analyses for each intervention where the major groups of developmental care interventions, 19 subgroups and multiple clinical outcomes were used within comparable time points
- 16 trials were identified
- 2 Meta-analyses for each intervention where the same outcome measures and/or instruments were used within comparable time points
- 9 Randomized cross-over controlled trials

Summary of Evidence
Developmental/Therapeutic positioning can positively affect the current medical stability of the premature neonate and assist in developmental milestones within the first 5 years of life (Hallsworth, et al., 1995; Young et al., 1996).

Organizational Priority
Aims of supporting positioning/developmental positioning are:
- Stimulate active flexion of the trunk and limbs
- Achieve more rounded heads and active head rotation
- Enhance balance between extension and flexion
- Promote more symmetrical postures
- Enhance mid-line orientation, which contributes to eye, hand and mouth control
- Prevent deformities
- Decrease pain from endotracheal suctioning and heat sticks
- Enhance comfort and reduce stress (Hallsworth, 1995; Young, 1996)

Next Steps
- Develop Educational Program for the Nursing Staff
- Develop and Developmental Monitoring Tool
- Comparison Study of the Pre and Post-education with the nurses adaptation/use of developmental positioning in their practice as compared to the NICU Neonatal Outcome of Mortality and Morbidity

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References available upon request from tandon@choc.org

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