NNICU/Level II Nursery
Process Standards – The Zaky®

Review responsibility: NNICU Director, Assistant Director, and Educator
Approved: NNICU Medical Director:
Effective date:
Last reviewed date:
Team members performing: RN (including transport RN)
Standard applicable to: NNICU/Level II Nursery
Physician Order required: no

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### PURPOSE

The Zaky is a device readily available in the market that mimics the shape, weight, warmth and keeps the scented odor of the infants' mother. It should be scented for a minimum of one hour with direct skin to skin contact free of perfumes, lotions or chemicals. It can be scented anywhere on the mother and should be placed flat with direct skin to skin contact. On the mother it may be placed between the breasts, against the back of the neck. It may be left on the infant and changed with infant bathing, isolette change or when soiled. Once removed it will be placed in MCCG the laundry in the white washing bag it was placed in prior to implementing therapy to prevent it from being harmed by other products in the wash. Clean Zakys will be stored in the unit near the clean bed covers, blankets and infant clothing.

To outline the results of our nursing research conducted in the Neonatal Intensive Care Unit 2009-2010 entitled Give Them a Hand to develop their brain: The Effect of a Maternal Simulated Intervention on Physiologic and Developmental Behaviors of 24-34 Week Gestation Infants In a Level III Neonatal Intensive Care Unit as it relates specifically to the use of The Zaky.

It is not the intention of this policy to outline all developmental strategies the support the growing preterm infant.

### POLICY

Neurodevelopmental care is a broad term used for nursing practices, physical environmental elements and family involvement philosophies that may favorably impact the neurodevelopment of the premature newborn. It includes promotion of positioning strategies, gentle touch, modulation of light and sound exposure, increased parental involvement as well as an emphasis
on the need to preserve sleep. There has been a recognized need to systematically address these issues. The decision to implement these practices is based upon evidence derived from a rapidly evolving body of scientific knowledge. This is found not only in the medical and nursing literature but also in the fields of neuroscience, neurobiology, neurophysiology, developmental psychology and developmental psychobiology.

The somatesthetic (touch) system includes several types of sensory input including touch, pressure, and pain among others. The neural pathways for movement and position stimuli are intact as early as 23-24 weeks gestation. These systems have early endogenous stimuli for axon growth and targeting. They also set the patterns for the connections that ultimately lead to the cortex. The in-utero environment of the fetus provides somatesthetic, kinesthetic (movement) and proprioceptive (position) feedback. Swaddling and containment of the infant with general flexion of the extremities and trunk use a general approximation of the effect. Swaddling has a long history basis in practice. It is a means to promote sleep with decreased awakenings during quiet sleep and longer periods of REM sleep. It also appears to improve self regulation, diminished stress response and a decrease in arousal level, including decreased crying, and may promote neuromuscular development in the preterm infant.

EXPOSURE TO MOTHER'S SCENT
Four major anatomic areas are responsible for human smell: the olfactory system, the vomeronasal organ, the trigeminal nerve and the terminal nerve. They all interact to provide varying sensitivities to chemostimulants. The vomeronasal organ is designed to function primarily in late fetal life, and may lose function prior to birth, as it is not detected in adults. The olfactory system is clearly functional by 28 weeks gestation, with the trigeminal nerve and vomeronasal organ effective prior to 24 to 25 weeks. The newborn infant has an inherent preference for amniotic fluid odors, breast milk and their own mothers’ odor signature. Within days after birth, olfactory preferences seem to be reinforced by exogenous cues associated with the mother's unique body odor and breast milk characteristics, which may be translated into improved non-nutritive sucking. These familiar odors also seem to have an adjunctive calming or soothing effect compared to non-familiar odors or no odors during venipuncture or heel lancing procedures, with the stress of maternal separation or as a soothing tool. The ultimate goal of intervention strategies in the NICU is to facilitate and promote infant growth and development. In the NICU caregivers achieve this goal by altering the environmental and care giving stressors that interfere with physiologic stability; promoting individual neurobehavioral organization and maturation by identifying and facilitating stable behaviors and reducing stressful behaviors, conserving energy, teaching parents to interpret infant behavior, and promoting infant-parent interaction and care giving. Establishing biorhythmic balance and physiologic homeostasis is necessary for survival and is enhanced by a sensitive, responsive NICU environment. An unresponsive environment may be so stressful to the preterm infant that apnea, bradycardia, and other physiologic instabilities may severely compromise and prolong recovery.

Hospitalized infants, especially those with prolonged stays, may exhibit classic signs of institutionalized infants or infants suffering from maternal deprivation. Our goal is to prevent this
maladaptive behavior by altering the NICU to be more developmentally appropriate and responsive for infants. Normalizing the environment begins with an assessment of the stimulation to which the individual infant is exposed. The goal of minimal stimulation is to deliver quality therapeutic and supportive care in the least stressful manner. This will reduce the neonate’s energy expenditure, preventing the breakdown of the neonate’s natural defenses to achieve as normal a neurological outcome as possible. The results of our research “Give Them a Hand” are promising in that use of the maternal simulated intervention (Zaky) demonstrated a positive outcome in the population studied. Organized physiologic indicators were improved in the scented Zaky group as evidenced by cardiorespiratory stability, color, less apnea and bradycardia and feeding tolerance. Organized behavior indicators were smooth, synchronous movements, good tone, flexed extremities, well defined sleep and wake states, exhibiting self quieting behaviors, and attentive behaviors. Additionally, the finding of no apnea and bradycardia in our maternally scented experimental group has the potential to augment current care. Using the maternally scented Zaky for positioning may be a low cost intervention that can be easily implemented as a standard part of care for the premature infant in the NICU. Findings from this study support the need for additional research.

ASSESSMENT
Assessments related to the use of The Zaky include: correct infant positioning, visibility of the temperature probe, inspection of the product for soiling or need for replacement, availability of the mother for maternal scenting and attention to infant behaviors.

INTERVENTION
There are many available strategies for the NICU nurse to evaluate when selecting interventions and devices to augment and support the growing preterm infant. The optimal environment for the developing fetal brain is the womb and the NICU environment is less favorable and often hostile. Use of The Zaky when weighing potential risk against benefit has some additional justification for use from our research. It is our responsibility to ensure that our existing environment is at the least non disruptive, and optimally supportive for normal brain development. It is in this context that our unit provides this intervention as a general recommendation.

REPORTABLE CONDITIONS
- Notify physician if stress signals are not relieved by interventions.
- Discuss need for developmental team evaluation and support of the plan of care.

TEACHING
1. Provide the parent(s) with an explanation of:
• Developmental care based on the infants gestational age
• Positioning and maternal scenting of Zakys and NNICU process

2. Explain the effects of stimulation and NNICU stress on the infant.

3. Assist parents in the recognition of behavior cues.

4. Assure parents that their participation in the infant’s care is very important and beneficial to their infant.

DOCUMENTATION
Document in the progress record of the nurse’s notes the:
  a. Parental education
  b. Zaky use and maternal scenting
  c. Infants response or behavioral cues

REFERENCES/ REGULATORY STANDARDS
4. Claudia M, Gerard C, Harris K, Bradley T, Thach B. Spontaneous arousals in supine infants while swaddled and unwswaddled during rapid eye movement and quiet sleep. Pediatrics 2002; 110: e70 (Available at:
11. Fearon I, Kisilevsky BS, Hains SM, Muir DW, Trammer J. Swaddling after heel lance: age-