Nurture One™: A Sensory Developmental Approach to the care of the new born infant.

Prior to birth the foetus is in a warm, snug, dark environment where basic requirements are automatically met. After birth demands are suddenly made on the neonate to breathe, regulate body temperature, move against the effects of gravity, adjust to bright light and unmuffled noise, cope with invasive or painful procedures as well as frequent sleep deprivation. The preterm infant's immature central nervous system is competent to cope with intrauterine life, but not sufficiently developed to adjust to and organise the overwhelming sensory stimuli and demands of the Neonatal Intensive Care Unit (Als 1985, 1986). A Sensory Developmental approach has been developed to address the needs of these infants.

It has been established that there is a significant discrepancy between sensory development stimulation of the foetus in utero and that of the premature infant in the NICU (White-Traut, 1993) After conception, the foetus is exposed to constant vestibular, tactile, Proprioceptive, olfactory and gustatory sensory stimulation (White-Traut, 1993). There is minimal auditory and visual input. In utero, maternal movements, diurnal cycles, amniotic fluid creates gentle oscillating movements providing vestibular stimulation. The environment is smooth, wet and it is usually safe and comfortable providing tactile and proprioceptive input. The foetus is constantly exposed to the mother's smells and taste thus providing olfactory and gustatory stimulation. The visual and auditory input, in utero is minimal. The environment is dark; occasionally the foetus is exposed to a very dim red spectrum light. The foetus is exposed to the maternal biologic sounds and muffled environmental noises. The above sensory input is received until the foetus is full-term. However, if the foetus is born prematurely and is in the NICU, the tactile, vestibular, proprioceptive, olfactory, and gustatory input is significantly reduced while the auditory and visual input is continuous resulting in the premature infant receiving over stimulation within these two areas. Often the neonate is also exposed to painful and invasive procedures, the environment is cool and dry and there is the predominance of medial touching versus social touching. The neonate lies flat and horizontal. In the NICU there are often extreme loud, harsh mechanical noises that are frequently constant. There are often fluorescent lights. The inappropriate stimulation within these units is thought to be detrimental for the young baby's development (White-Traut, 1993; Faure, Richardson, 2002 and Pratt and Allen, 1989).

Holditch-Davies (1992) suggested that continual overwhelming stimuli created by the NICU environment as well as care giving practices, stress the highly sensitive pre-term infants already vulnerable disorganised Central Nervous System. There has also been a significant amount of sensory processing disorders found in infants born prematurely (Wiener et at, 1996). Up to 35% of pre-term infants show developmental delay, medical, behavioural or learning problems by the time they reach school going age (Holditch-Davies, 1992).

The aim of Nurture One™ is to create both an ideal sensory developmental environment and appropriate care-giving practices. This will enhance neonatal development, reduce unnecessary stress on the fragile central nervous system, and promote maternal self-confidence, bonding and lactation.

Sensory developmental care is an approach that ensures that the neonate is exposed to ideal sensory stimulation. This includes an individualised assessment of each neonate, an assessment of the environment, handling and positioning techniques and the use of the Nurture One™ Nesting Cushion. The nesting cushion provides a multi-sensory environment for the young premature neonate within the NICU. These nesting cushions can be placed inside the incubators, providing the young baby with an ideal tactile and proprioceptive rich environment as the cushion moulds around the baby. Thus the neonate is exposed to consistent proprioceptive input that allows them to feel safe and secure. The cushion also does not prevent the baby from movement and thus does not impede vestibular

stimulation and motor development. It also allows the neonate to assume an appropriate and therapeutic position. As the immature infant is characterised by hypotonia or reduced muscle tone, they tend to automatically assume a relatively extended posture that with the added effects of gravity, leads to the development of a predominance of extensor tone. This in turn often places the neonate at the high risk of developing abnormal tone patterns. The persistence of abnormal postures or patterns can interfere with later development of normal head control, oculomotor skills, eye-hand coordination, mobility, interpersonal interaction, sitting and standing (Pratt and Allen, 1989). It is essential therefore to interrupt abnormal posture patterns through correct positioning which in turn will facilitate the development of flexor tone. It should also be noted that the correct positioning of the neonate has an organising effect on the behaviour of the infant (Pratt and Allen, 1989). This cushion is also an ideal nursing cushion, allowing the mother and neonate to assume a comfortable position for feeding and allowing for a smooth transition from breast to incubator and visa versa. Correct Kangeroo care is also encouraged. Kangaroo care allows secure skin-to-skin contact thus providing appropriate tactile and proprioceptive input. This skin-to-skin contact regulates the neonate's body temperature as the mothers body functions as an incubator. Kangaroo care ensures constant warmth and a consistent temperature for the neonate at the same time allowing the parent to move and thus providing gentle vestibular stimulation. This position encourages the lactation process and exposes the neonate to the mothers' smell, providing appropriate olfactory stimulation. In kangaroo care, appropriate visual and auditory stimulation is provided. The heartbeat of the mother, her regular breathing together with her voice is a common sound that the foetus in utero is exposed to. The mother will also tend to protect her young baby from extremely loud and consistent noise. The visual stimulation is controlled by the mother, as she will protect her young baby from bright, harsh lights usually by a receiving blanket or the shirt that she is wearing.

By educating and facilitating the caregiver's approach to handling, a sensory developmental approach can be achieved. The young baby can be placed in a suitable position within a kangaroo top and in various positions on the cushion to ensure appropriate motor development. The manner and handling techniques facilitated will reduce the stress imposed on the young baby when being moved for whatever reason. These handling and positioning techniques will help the caregiver develop his or her confidence in handling his or her very young baby, which in turn will encourage bonding.

Although this approach has been targeted at the premature neonate, the full term newborn also benefits from this approach. It tends to allow those babies who have difficulty in organising the sensory stimuli, become more contained and settled. It also appears to ensure a more confident approach from the caregivers.

References:

Faure, M. & Richardson, A. Baby Sense. First Edition, South Africa. Metz Press. 2002.

Holditch-Davis, D. 1992. Prematurely Born Children at Three of Age: Influence of Maternal Attitudes about Parenting on the Utilization of Intervention Services. Neonatal Network: 11 (6). 100.

Pratt, P.N. & Allen, A.S. Occupational Therapy for Children. Second Edition, United States of America. Mosby. 1989.

Wiener, A.S., Long, T., De Gangi, G. & Battailie, B. 1996. Sensory Processing of Infants Born Prematurely or with Regulatory Disorders. Physical and Occupational Therapy in Pediatrics; 16(4), 1- 16.

White-Traut R.C., Nelson, M.C, Burns. K & Cunningham, N. 1993. Environment influences on the Developing Premature Infant: Theoretical Issues and Application- to Practice. Journal of Obstetrics and Gynaecology in Neonatal Nursing. 23(5), June, 393 - 401.