Developmental Care and Kangaroo Mother Care

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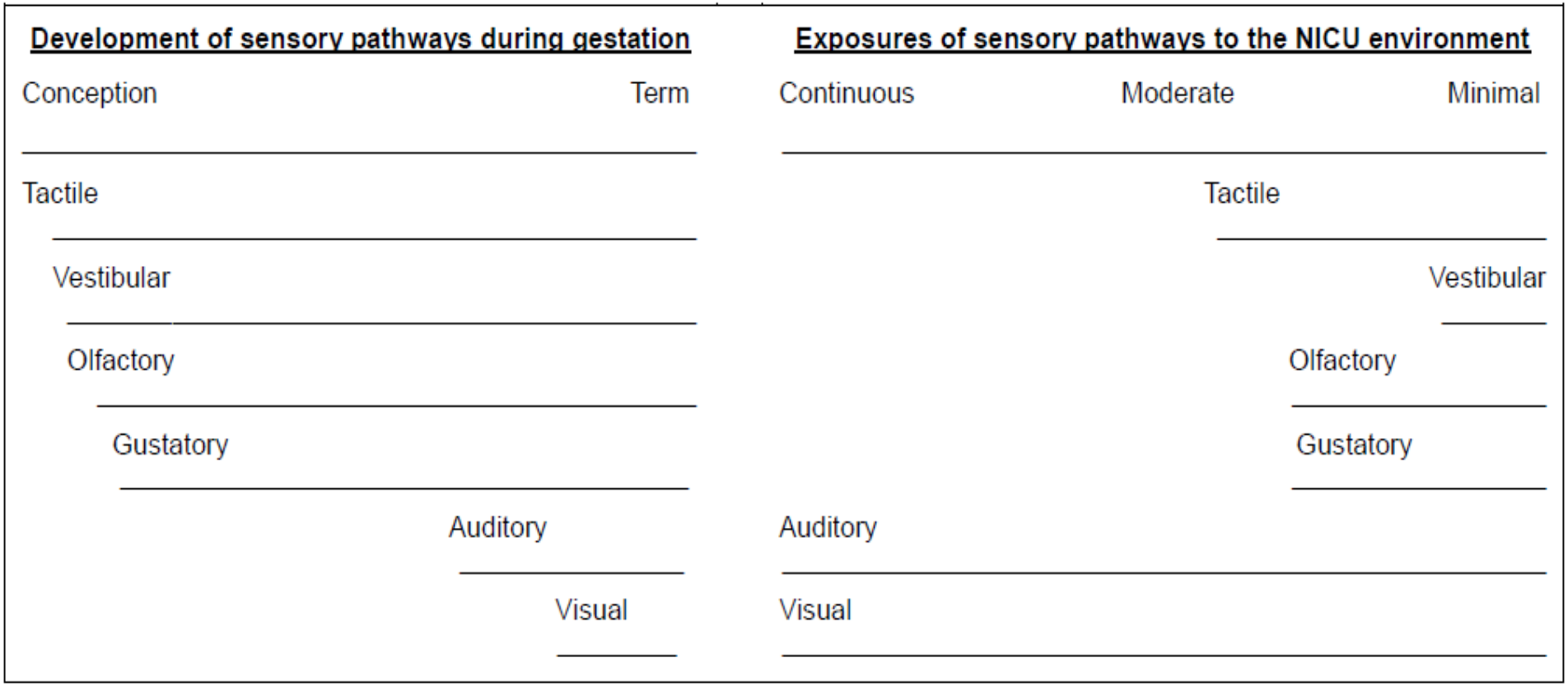
Introduction

- Improving Survival of Premature and LBW infants
- More attention
  - Long term outcomes
  - Quality of Life for babies
  - Supporting families

Premature Infants

- Immature Brain- Developing rapidly
- Intensive Care
  - Intensive sensory input
  - Repeated painful procedures
  - Prolonged Illness
- Adversely affect maturation and organisation of vision, hearing, sleeping pattern, growth

Sensory Pathway: In utero vs NICU



Family

- Anxiety, guilt, helplessness and depression
- Disruptions in assuming the parental role and a diminished quality of parent-infant interactions
- Premature infants at risk for further cognitive, emotional, behavioural, and developmental problems

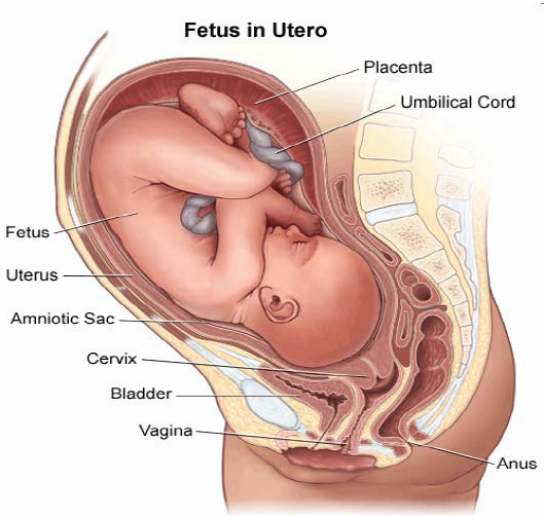
Developmental Care

- Interventions designed to minimise the stress of the neonatal environment and to support the behavioural organisation of each individual infant.
- Aim to enhance physiological stability, protect sleep rhythms and promote growth and maturation.

Developmental Care

- Positioning
- Noise
- Light
- Skin to Skin Contact
  - Containment holding
  - Kangaroo Care

Position in Utero vs NICU



Musculoskeletal consequences and functional limitations from lower extremity malalignment in neonates

Malalignment	Musculoskeletal consequence	Functional limitations
Hyper-extended neck and retracted shoulders	• Shortened neck extensor muscles and excessive cervical lordosis • Shortened scapular adductor muscles	• Interferes with development of head centring and midline in supine • Interferes with development of graded head control in prone and sitting • Difficulty organising posture in supine • Difficulty bringing hands to the midline
'Frog' legs	• Shortened hip abductor muscles • Shortened iliotibial band • Increased external tibial tortion	• Interferes with movement transitions out of prone and sitting positions • Interferes with crawling • Prolonged wide-based gait with out-toeing
Reverted feet	• Muscles turning the foot inward are overstretched • Foot alignment is changed due to muscle imbalance	• Pronated foot position in standing • Excessively pronated foot position delays development of a heel-toe gait

Positioning in the NICU

***ENCOURAGE*:** flexed position with support from blankets/ boundaries, rotate baby in different positions to promote head shaping, gross motor strengthening, self -calming, and ability to participate in fine motor and developmental activities

Supervised Tummy Time

Side Lying

Back

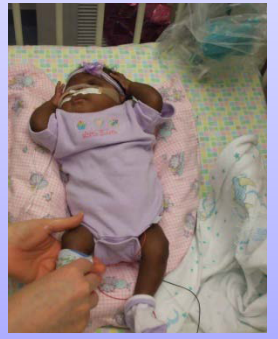
***AVOID*:** positioning without support/boundaries which can result in asymmetrical postures, skull deformations, delayed fine and gross motor development

"W" Position of Arms

"M" Position of Legs

No Boundaries

Preferential Head Turning



Boundaries Too Small

D. Powers & E. Williamson 2008

Noise

- Development of cochlea and peripheral sensory end organs complete development by 24 weeks gestation.
- In utero–Rhythmic and continuous noise. Low frequency. ~55 to 85dB.
- In NICU –60-90dB, peaks to 120dB. Normal conversation ~ 55dB.

Noise

Examples of noise levels in NICU

- 70dB = Vacuum cleaner = Bubbling in ventilator tubing
- 80dB = Telephone ringing = Tapping incubator with fingers
- 100dB = Lawn Mower = Closing solid plastic porthole

Sight/Light

- Preterm infants are not adapted to cope with bright light and therefore the developmental expectation is for darkness.
- Eyelids are thin and pupil constriction does not begin until 30-32 weeks gestation so the very preterm infant has weak defences against bright light.
- Sight is not functional until 40 weeks gestation.

Sight/Light

- Pupil dilation for ROP exam leaves the retina highly vulnerable to light input for up to 4 hours regardless of gestation
- Important to have day/night differentiation for establishment of melatonin production
- Term infants need light to promote development of the visual cortex.

Containment Holding

This baby is looking slightly stressed after he has just been moved. He looks a little startled and his hand and fingers are outstretched

The baby's mother helps him contain his body with her hands. The baby's body starts to relax

His face relaxes too

Containment Holding

He puts his hands up to his face and towards his mouth to calm himself

The baby feels secure and goes off to sleep

Bliss (2006)

Kangaroo Care

KMC as Developmental Care

- Improved autonomic (cardiorespiratory) stability
- Motor regulation- upright position, which allows for better pulmonary function.(Becker etal 1993).
- Provides appropriate containment, similar to the contained position of the foetus in utero, which keeps the infant in a flexed position and reduces random motor activity (Taquino and Blackburn, 1994)
- Increased time spent in quiet regular sleep (Swinth 1996)

Family Centred Care

- Philosophy of care that helps families whose baby is in hospital to cope with the stress, anxiety and altered parenting roles that accompany their baby's condition.
- It puts the physical, psychological and social needs of both baby and their family at the heart of all care given

POPPY

- Parents of Premature Babies Project
- 3 year project in UK centres on parent's experiences of having a preterm baby
- Results
  - Mothers felt separated
  - More physical/emotional support
  - Leaflets and education
  - Regular updates from medical/nursing team
  - Parent circles/ support groups

Positive Touch

"MY SPACE" NICU Environment

Show, share and support

Getting to know each other

Postiive Paernting

Summary

- Early intervention strategies are critical to ameliorating the negative effects of prematurity on parenting, mother-infant interactions, and child outcomes
- Need for supportive developmental care including KMC
  - Guidelines
  - Training