Developmental care during Respiratory Support of Infants

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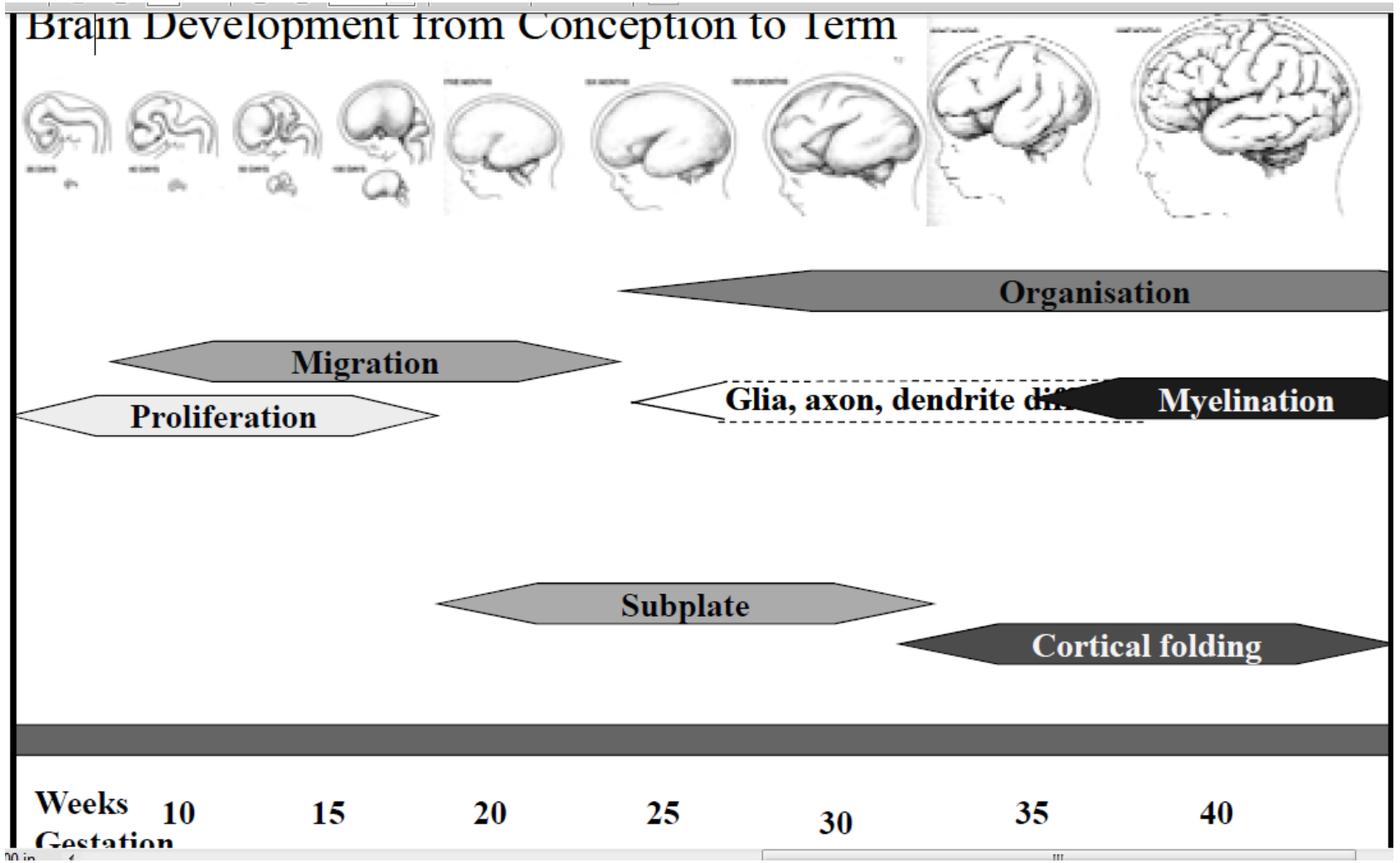
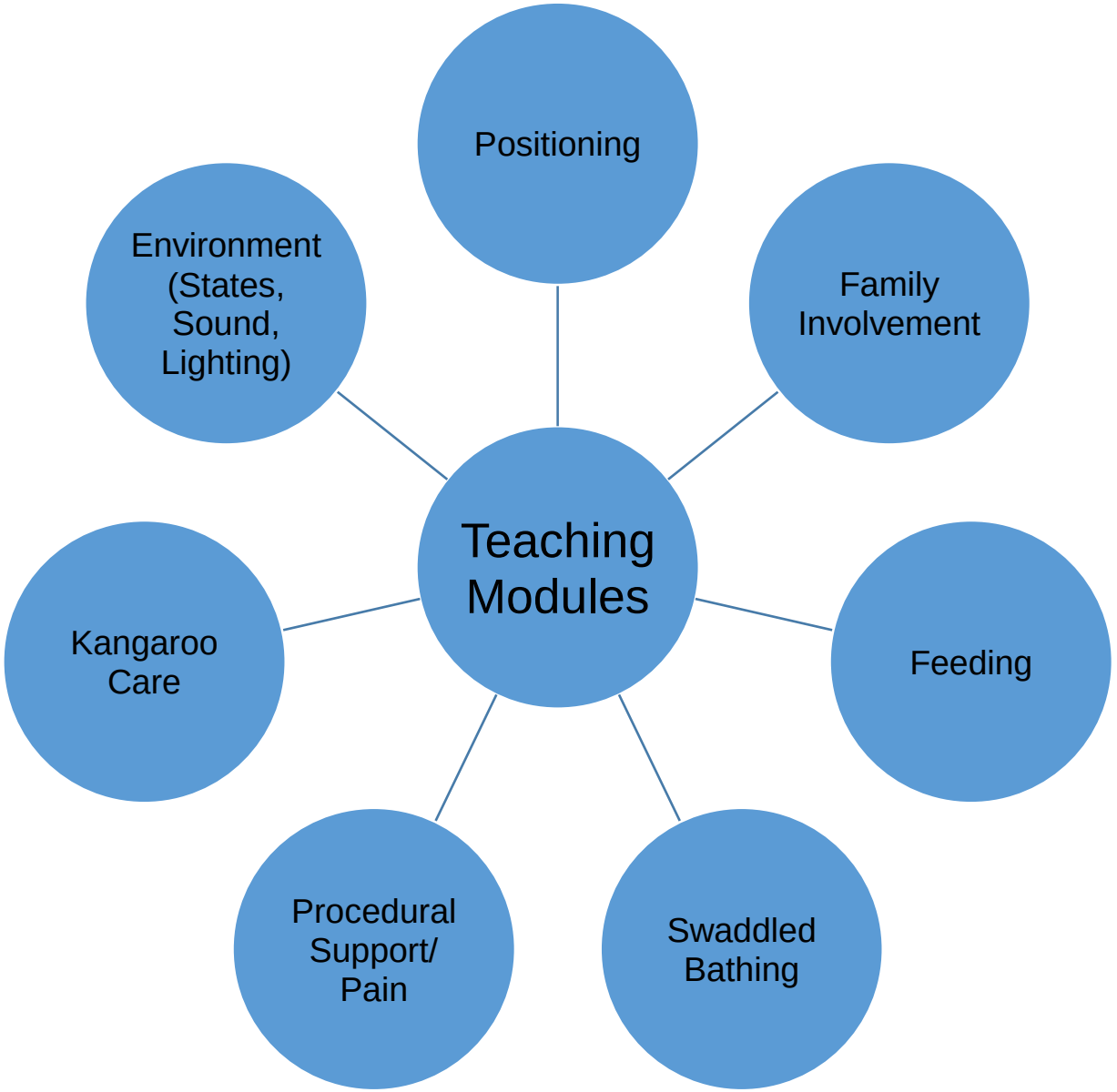
N I D C A P

- Newborn
- Individualized
- Developmental
- Care and
- Assessment
- Program

Brain Development




Positioning
Environment (States, Sound, Lighting)
Family Involvement
Teaching Modules
Kangaroo Care
Feeding
Procedural Support/ Pain
Swaddled Bathing

Synactive theory

- The infants functioning is seen in a model of continuous intra organism ,subsystem interaction and the organism
- continuous interaction with the environment
- This view of development is called synactive theory.
- An inability to cope with environmental stimuli causes dysfunctional autonomic, state, and motor responses

Synactive theory

- The NICU environment is known to be bright, noisy, and over stimulating to premature or sick infants who may not have the capacity to cope.

- An inability to cope with environmental stimuli causes dysfunctional autonomic, state, and motor responses.

- The ability to cope with stimuli such as light, noise, touch, and pain is inversely proportional to gestation age, with very preterm infants lacking the self-regulatory mechanisms to promote stability

So what to do?

- A comprehensive plan of care for VLBW infants should include
- strategies to promote:
- uninterrupted sleep
- reduce stressful procedures
- and promote self-regulation through supportive positioning
- encouraging nonnutritive sucking
- hand-to-mouth behaviors

Care of infant without Developmental consideration

Respiratory Support with Developmental consideration

Pain Assessment

- Pain is often referred to by some clinicians as the “fifth vital sign

- Exposure to painful procedures in otherwise healthy term infants has been shown to result in short-term hyperalgesia

- Repeated exposure to stress and pain in the neonatal period has been shown to have long-term detrimental effects
  - reduction in brain white matter
  - decreased growth in the parietal and temporal lobes
  - impaired brain organization.

repeated early pain exposures in premature infants

- poorer cognitive and motor function at 8 and 18 months' corrected age

- altered cortical brain-wave patterns in the resting brain at school age

PAIN MANAGEMENT

- Decrease the number of stressful procedures
- Skin-to-skin care, facilitated tucking, and swaddling
- Dipping a pacifier in sucrose was also shown to significantly reduce pain responses in premature infants.
- Use of opiates for ventilated infants during routine caregiving procedures has been reported to improve oxygenation and blood pressure stability
- There was insufficient evidence to recommend routine use of opioids in neonates receiving mechanical ventilation because pain scores did not decrease with treatment and morphine did not reduce adverse effects

PAIN MANAGEMENT

- Offering a pacifier and providing containment using swaddling or nesting techniques can be beneficial in both promoting comfort and improving respiratory support.

- Abrupt discontinuation of opioids should be avoided and these infants weaned in a slow and planned manner.

- Monitoring for signs of abstinence should also be part of the weaning plan.

- Signs of NAS including irritability, tachypnea, jitteriness, increased tone, vomiting, diarrhea, sneezing, hiccoughs, and skin abrasions may be seen when narcotics are weaned rapidly

Lateral flexed position with support of nest

Suctioning

- Cone and colleagues compared routine suctioning with a two-person procedure:
- They found that the use of four hands for suctioning resulted:
  - in an increase in oxygen saturation during the observation
  - infants displayed more stress and defensive behaviors after routine one-person suctioning compared to four-handed suctioning.

Positioning

- Supporting the infant's body position can also reduce the stressful effects of procedures and other interventions

- Placing an infant on assisted ventilation in the prone position;
  - increases oxygenation
  - improves sleep
  - reduces stress compared to the supine position possibly by increasing lung volumes and residual capacities

- Repositioning is essential for a number of reasons, including neurodevelopmental outcomes, and is recommended every 4 to 6 hours

- Prone positioning may also be beneficial in infants receiving NICPAP because lying prone seems to aid in keeping the infant's mouth in a closed position, decreases abdominal distension, and also keeps the infant calmer

Strategies to Minimize Stress and Overstimulation

- Swaddle or provide boundaries to promote flex position.
- Place prone with arms and knees flexed or side-lying with hands in midline.
- Move the infant slowly during position changes and contain limbs to avoid startle response.
- Avoid hyperextending neck or arms.
- Coordinate care activities to reduce handling and sleep disruptions.

The Primary Curve: C shape

Strategies to Minimize Stress and Overstimulation

- Provide care during times when the infant is awake rather than according to a fixed schedule.
- Prior to handling, bring the infant to a quiet alert stage by talking in a soft voice and touching the infant gently.
- Reduce environmental noise in the unit.
- Implement periods of “quiet time” on each shift with lights dim and noise minimized.
- Cover the incubator to reduce exposure to bright lights.
- If medically stable, dress and bundle the infant

Skin-to-Skin Holding

- Short-term benefits include stabilizing heart rate, oxygen saturation, and breathing patterns
- Improved sleep–wake cycles increased growth rate
- Decreased response to pain improved breast-feeding duration
- Greater maternal attachment.
- Short-term benefits may have a positive effect on neurodevelopmental outcomes by affecting brain development at critical periods.
- Kangaroo care in the NICU has been identified as significant in reducing parental stress and facilitating parent–infant bonding.

Good Support by Nursing Staff