

### Objectives

- Recall the development of the fetal and neonatal central nervous system and recognize the impact of preterm delivery upon normal neurodevelopment
- Describe normal neonatal sensory and neurobehavioral development and outline the multiple assessment scales used to evaluate the development processes
- Contrast signs of stability with those of disorganization and stress as might be displayed in the NICU-based infant
- Define the development of sleeping and waking states and explain the effects of physiologic parameters and caregiving interventions upon infant states

### Content Outline

1. Overview of Fetal and Neonatal Central Nervous System Development
  - 1.1 Neurodevelopmental limitations and related clinical manifestations in the very low birthweight infant
2. Neonatal Sensory Development
3. Neonatal Neurobehavioral Development
  - 3.1 Assessment of neurobehavioral development in NICU and infancy
    - 3.1.1 Brazelton Neonatal Behavioral Assessment (NBAS)
    - 3.1.2 Assessment of Preterm Infant Behavior (APIB)
    - 3.1.3 Neonatal Individualized Development Care and Assessment Program (NIDCAP)
    - 3.1.4 NICU Network Neurobehavioral Scale (NNNSTM)
    - 3.1.5 Neurobehavioral Assessment of the Preterm Infant (NAPI)
    - 3.1.6 Family Infant Relationship Support Training (FIRST)
4. Comparison of Signs of Stability Versus Disorganization/Stress in NICU-based Infants
5. Sleep-Wake States and State Scoring Systems
  - 5.1 Description of individual states
  - 5.2 State scoring systems
    - 5.2.1 Brazelton's
    - 5.2.2 Thoman's
    - 5.2.3 Als'
    - 5.2.4 Anderson's
  - 5.3 Development of sleep/wake states
    - 5.3.1 Effect of physiologic parameters on state
      - 5.3.1.1 Perinatal illness
      - 5.3.1.2 Central nervous system
      - 5.3.1.3 Circulatory system
      - 5.3.1.4 Respiration
    - 5.3.2 Effect of caregiving interventions on state
      - 5.3.2.1 Routine NICU care
      - 5.3.2.2 Painful procedures
      - 5.3.2.3 Social interaction
      - 5.3.2.4 Infant stimulation

### Reading Material Resources

This self assessment module is based on the resources listed below.

The reading materials are in the form of a PDF file and can be accessed from the online testing center once the module is purchased.

Chapter 23: Neurobehavioral Development , Comprehensive Neonatal Care: An Interdisciplinary Approach, Kenner, et al., Saunders, 2007, pages 448-479.