

## Preterm Infants – Respirations & Oxygenation

### Objectives

- Recall the physiology related to neonatal respiratory control and consider its application to causes of apnea in preterm infants
- List both accepted and controversial approaches to the treatment of apnea as presented including factors that complicate clear recommendations for treatment plans especially at very early gestational stages
- Discuss the evidence from randomized controlled trials and the corresponding meta-analyses that support the use of room air for resuscitation of term infants and consideration of higher targeted Sp<sub>o</sub><sub>2</sub> ranges in extremely preterm infants
- Summarize the specific evidence-based findings regarding outcomes described for Sp<sub>o</sub><sub>2</sub> levels in the range of 91% to 95%

### Content Outline

1. The Role of Respiratory Control and Apnea in Preterm Infants
  - 1.1 Overview of central respiratory control
  - 1.2 Chemosensitivity – central and peripheral
  - 1.3 Impact of inflammatory mechanisms
  - 1.4 Clinically challenging aspects of neonatal apnea
  - 1.5 Associations between apnea of prematurity & morbidities
    - 1.5.1 Intermittent hypoxia
    - 1.5.2 Bradycardia
    - 1.5.3 Neonatal outcomes
    - 1.5.4 Long-term outcomes
  - 1.6 Accepted therapies
  - 1.7 Controversial approaches
2. Targeting For Appropriate Oxygenation in Extremely Preterm Infants
  - 2.1 Physiologic impact of immaturity on disorders of prematurity
  - 2.2 Observational studies focused on infant outcomes with targeted Sp<sub>o</sub><sub>2</sub>
  - 2.3 First trial of Sp<sub>o</sub><sub>2</sub> targeting initiated shortly after birth (SUPPORT)
  - 2.4 Summary findings of meta-analyses of five Sp<sub>o</sub><sub>2</sub> targeting trials
  - 2.5 Variations in achieved oxygen saturations in randomized controlled trials
  - 2.6 Guidelines for clinical practice

### Reading Material Resources

#### Module WB2251: Preterm Infants – Respirations & Oxygenation

is based on the resources listed below. A copy of each resource is included with the module.

Chapter 13 Respiratory Control and Apnea in Premature Infants, Shah VP, et al., in *The Newborn Lung: Neonatology Questions and Controversies*, Third Edition, (2019), Elsevier, 239-249

Chapter 15 Optimal Oxygenation in Extremely Preterm Infants, Carlo WA and Askie LM in *The Newborn Lung: Neonatology Questions and Controversies*, Third Edition, (2019), Elsevier, 261-267