Objectives

- Recognize the impact of gestational age on the developmental stages and accompanying functionality of the pulmonary system with implications for normal and abnormal transition after birth.
- Describe the components evaluated in determining blood gas status and acid-base equilibrium and the interactions that occur in situations of normal and abnormal function.
- Outline the process used to assess the respiratory system and detail the findings in common disorders of the respiratory system as well as the clinical approaches used in management.
- Identify emerging technologies to treat neonatal respiratory disorders.
- Recall the physiology and related pathophysiology of the developing respiratory system especially as it relates to neonatal hypoxemia.

Content Outline

1. Overview of Embryologic Development of the Lung & Newborn Pulmonary Physiology
   1.1 Onset of breathing
   1.2 Blood gas analysis
   1.3 Acid-base balance

2. Assessment of Neonatal Respiratory Distress
   2.1 History & physical assessment
   2.2 Radiologic & laboratory findings

3. Common Neonatal Respiratory Disorders
   3.1 Respiratory distress syndrome (RDS)
   3.2 Air leaks
   3.3 Transient tachypnea of the newborn (TTN)
   3.4 Pneumonias
   3.5 Persistent pulmonary hypertension of the newborn (PPHN)
   3.6 Meconium aspiration syndrome (MAS)
   3.7 Pulmonary Hemorrhage
   3.8 Pleural effusions
   3.9 Apnea

4. Congenital Anomalies Affecting Neonatal Respiratory Function
   4.1 Congenital diaphragmatic hernia (CDH)
   4.2 Congenital heart disease (CHD)
   4.3 Choanal atresia
   4.4 Thoracic cysts & tumors

5. Management of Infants with Respiratory Disorders

6. Neonatal Hypoxemia

7. Conventional Management of Neonatal Hypoxemia

8. Exogenous Surfactant Therapy

continued on next page
Objectives continued

- Describe the action, indications, administration techniques and precautions related to surfactant use including the supportive care required

- Contrast the various methods of providing ventilatory or respiratory support for the infant with pulmonary system disorders and identify the nursing care associated with each modality

- Compare the advanced methods of addressing intractable hypoxemia, specifically inhaled nitric oxide (INO), extracorporeal membrane oxygenation (ECMO) and liquid ventilation

- Recognize pharmacologic agents that have been utilized for the treatment of respiratory disorders

Content Outline continued

9. Conventional Ventilatory Support
   9.1 Continuous positive airway pressure (CPAP)
   9.2 Pressure ventilators
   9.3 Volume ventilators

10. High-Frequency Ventilation, Related Complications & Care Requirements
    10.1 Types
        10.1.1 High-frequency flow interrupter (HFFI)
        10.1.2 High-frequency jet ventilator (HFJV)
        10.1.3 High-frequency oscillatory ventilator (HFOV)

11. Inhaled Nitric Oxide (INO), Related Complications & Care Requirements

12. Extracorporeal Membrane Oxygenation (ECMO), Related Complications & Care Requirements

13. Liquid Ventilation
    13.1 Tidal Liquid Ventilation (TLV)
    13.2 Partial Liquid Ventilation (PLV)

14. Pharmacologic Therapies

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.