

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

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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

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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.

Chapters 1 & 2: Respiratory System & Emerging Technologies for the Management of Respiratory Disorders, Comprehensive Neonatal Care: An Interdisciplinary Approach, Kenner, et al., Saunders, 2007, pages 1-31.