Exploring the Physiologic Aspects of Neonatal Transition at Birth

Objectives

- Outline the key physiologic changes that occur in the neonate in preparation for birth as well as the adaptation expected immediately after birth accompanied by the ongoing maturational processes for essential organ systems
- Relate failures or disruptions in physiologic processes during transition that lead to disorders of the respiratory, cardiovascular, endocrine, metabolic, renal, and hematologic systems
- Summarize the critical physiologic events associated with cardiopulmonary transition at birth and describe the resuscitative interventions required when transition does not proceed as anticipated

Content Outline

1. Review of Neonatal Physiology By Systems During Early Transition
   - 1.1 Respiratory system and related fetal lung development
   - 1.2 Clearance of fetal lung fluid at birth
     - 1.2.1 Support of transitional airway
   - 1.3 Cardiovascular adaptation and failure of expected adaptations
   - 1.4 Endocrine system role in birth-related maturation and transition
   - 1.5 Sources of and approaches to metabolic needs before and after birth
   - 1.6 Transitions of renal and fluid balance
   - 1.7 Hematologic aspects of fetal and neonatal transitional processes
2. The Physiology of Neonatal Resuscitation
   - 2.1 Overview of fetal cardiopulmonary circulation
   - 2.2 Anticipated transition in cardiopulmonary dynamics at birth
   - 2.3 Discussion of deferred cord clamping
   - 2.4 Physiology of ventilatory transition
     - 2.4.1 Equipment and interventions for providing ventilatory support
   - 2.5 Recommendations for use of oxygen during neonatal resuscitation
   - 2.6 Decisions and techniques related to the provision of chest compressions
   - 2.7 Indications for epinephrine use including preparation and administration
   - 2.8 Approach to resuscitation of preterm neonates

Reading Material Resources- Page 2

Reading Material Resources

Module WB2560 Exploring the Physiologic Aspects of Neonatal Transition at Birth is based on the resources listed below. A copy of each resource is included with the module.

Adaptation for life after birth: a review of neonatal physiology, Anthony R and McKinlay C JD, *Anaesthesia and Intensive Care Medicine* 24:1 (2022), 10-19

Physiology of neonatal resuscitation: Giant strides with small breaths, Sankaran et al., *Seminars in Perinatology* 46 (2022), 1-12