Neonatal Adaptation to Extrauterine Life

Objectives

- Summarize the physiologic changes that must take place in the respiratory, cardiovascular, gastrointestinal and nervous systems in order for successful adaptation to extrauterine life to occur.
- Explain the importance of thermoregulation and its related physiologic components in the process of transitioning to extrauterine survival.
- Outline the pathophysiology that results in the development of persistent pulmonary hypertension of the newborn (PPHN) when normal transitional events fail to occur.
- Describe the application of the triage concept to the assessment and care of the transitioning newborn including the key elements of a triage program established in a nursery setting.

Content Outline

1. Adaptation for Life: A Review of Neonatal Physiology
   1.1 Overview of the fetal respiratory system: Effects of initial breaths after birth
   1.2 Description of neonatal lung mechanics: Control of ventilation
   1.3 Overview of fetal circulation: Shunt closure and transition to neonatal circulation
   1.4 Neonatal cardiac function
   1.5 Early neonatal hematologic aspects
      1.5.1 Fetal and adult hemoglobin
      1.5.2 Clotting factors
   1.6 Neonatal thermoregulation
      1.6.1 Mechanisms of heat loss and thermogenesis
      1.6.2 Thermoneutral environment
   1.7 Early neonatal hepatic and renal system function
   1.8 Initial fluid and nutritional aspects
   1.9 Function of the nervous system at birth: neonatal nociception

2. Cardiovascular System Adaptation at Birth
   2.1 Overview of the fetal cardiovascular system
   2.2 Process for normal physiological adaptation of the term newborn at birth
   2.3 Persistent Pulmonary Hypertension of the Newborn (PPHN) as a consequence of physiological maladaptation at birth: PPHN management strategies

3. Triage, Not Just for the Emergency Department
   3.1 Overview of NICU triage concept and neonatal populations at risk
   3.2 Level of care provided and experience data of an example unit
   3.3 Physical layout and description of staffing for a triage unit
   3.4 Guidelines for triage unit admission and discharge
   3.5 Family support in the neonatal triage process
   3.6 Financial aspects of neonatal triage

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Reading Material Resources

This self assessment module is based on the resources listed below. A copy of each article is included with the module.

