Persistent Pulmonary Hypertension of the Newborn (PPHN)

Jennifer McDaniel, BS, RRT-NPS
Introduction

- PPHN is also known as persistent fetal circulation (PFC)
- Most common in term and postterm infants
- Associated with asphyxia, meconium aspirations syndrome, sepsis, congenital diaphragmatic hernia, pulmonary hypoplasia, congenital heart disease, premature closure of ductus arteriosus, pneumonia, and RDS
Diagnosis

• **Hyperoxia test**
  - Administer high FiO₂ (usually 1.0)
  - Check PaO₂
    - If <100, R→L shunt (PPHN or cyanotic heart disease)
    - If >100, pulmonary pathophysiology most likely
Diagnosis

• Pre- and post-ductal sampling
  – Obtain an umbilical artery sample (post) at same time as drawing a right radial (pre)
  – Check PaO$_2$s

• If difference $> 15-20$ mm Hg indicates R→L shunt through PDA
Fetal Circulation
Diagnosis

• Hyperoxia-hyperventilation test
  – Demonstrate PaO₂ < 50 mm Hg with FiO₂ of 1.0
  – Hyperventilate to PaCO₂ of 20 to 25 mm Hg
  – If PaO₂ ↑ > 100 mm Hg = PPHN

• Echocardiogram
Treatment

- Hyperventilation
- Pharmacologic agents
  - Tolazoline
  - Nitroprusside
  - Dopamine
  - Isoproterenol
  - Prostaglandins $E_1$ and $I_2$
  - NO
- Extracorporeal Membrane Oxygenation (ECMO)