

# Emergency and Critical Care



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## Acute Respiratory: Respiratory Failure

# Objectives

- Review components of arterial blood gas (ABG)
- Describe respiratory failure
- Describe noninvasive and invasive mechanical ventilation
- Discuss management of the patient receiving ventilation
- Describe interventions to reduce the risk of ventilator associated pneumonia
- Describe Acute Respiratory Distress Syndrome (ARDS)
- Discuss management of the patient with ARDS

# Key Terms

Using the prescribed texts and assigned reading, define the following terms:

- Acidemia
- Alkalemia
- pH
- PaCO<sub>2</sub>
- PaO<sub>2</sub>
- HCO<sub>3</sub><sup>-</sup>
- Compensation
- SaO<sub>2</sub>
- Hypoxia
- Hypoxemia
- Hypercarbia

# Key Terms

- Respiratory Failure
- Ventilation/Perfusion Mismatch
- Shunting
- Hypoxemia
- Hypercapnia
- ARDS
- Mechanical Ventilation
- Noninvasive positive pressure ventilation (NPPV)
- Ventilator associated pneumonia

# Effective Respirations

- Central nervous system
- Pulmonary system
- Heart and vascular system

Failure of one or more system



Respiratory failure



# Respiratory Failure

- Respiratory system unable to supply necessary oxygen
  - Maintain metabolism
  - Effectively eliminate carbon dioxide
- Acute respiratory failure
  - $\text{PaO}_2 < 50 \text{ mmHg}$
  - OR**
  - $\text{PaCO}_2 > 50 \text{ mmHg}$
  - AND**
  - Clinical symptoms

# Clinical Symptoms of Respiratory Failure



- Increased fatigue



- Increased shortness of breath



- Decreased oxygen saturation

Use

- Use of accessory muscles

Changes

- Changes in mental status

Changes

- Changes in breathing pattern

# Management of Respiratory Failure

- Maintain oxygenation
- Reverse bronchospasm
- Treat Cause
- Provide ventilatory assistance
  - Noninvasive positive pressure ventilation
  - Intubate and mechanical ventilation