

COMMON CLINICAL DIAGNOSES AND CONDITIONS**RESPIRATORY FAILURE****INTRODUCTION**

Respiratory failure is defined by the inability to provide adequate gas exchange, resulting in ineffective alveolar ventilation and/or oxygenation. The respiratory system includes the upper and lower airways, central and peripheral control mechanisms, nerves and muscles. The differential diagnosis for respiratory failure in children is extensive; failure may stem from any portion of the respiratory system. Children with respiratory conditions are frequently hospitalized and may deteriorate, requiring initiation of rapid response teams or transfer to the critical care unit. Pediatric hospitalists frequently encounter children with conditions affecting the respiratory system, and should be able to recognize and treat those who progress to respiratory failure.

KNOWLEDGE

Pediatric hospitalists should be able to:

- Describe the basic components of the respiratory system, including the upper and lower airways, the central and peripheral regulation systems, peripheral nerves, accessory muscles and diaphragm.
- Discuss the basic principles of respiratory physiology such as the alveolar gas equation, minute ventilation, ventilation-perfusion mismatch, alveolar-arterial gradient, and others.
- Explain the role of the diaphragm and chest wall compliance in development of respiratory failure.
- List causes of poor respiratory muscle function, attending to age, neuromuscular disorders, central nervous system dysfunction, nerve injury, and others.
- Review the anatomy of the upper airway and discuss why progression to respiratory failure can be rapid in young children.
- Describe the differential diagnosis of respiratory distress for children of varying chronological and developmental ages.
- State risk factors and diagnostic categories at higher risk for respiratory failure, attending to acute exposures or events and underlying co-morbidities.
- Summarize the modalities commonly available to support the airway and breathing in children with worsening respiratory distress, such as nasopharyngeal or oropharyngeal airways, bag-valve-mask ventilation, and endotracheal intubation.
- Describe complications due to endotracheal intubation, and state strategies to reduce these risks.
- Summarize evaluation, monitoring, and treatment options for patients with worsening respiratory status including mental status assessment, capnography, medications, respiratory support and others.
- Describe the signs and symptoms of impending respiratory failure and list criteria for transfer to an intensive care unit.

SKILLS

Pediatric hospitalists should be able to:

- Recognize early warning signs of acute respiratory distress and institute corrective actions to avert further deterioration.
- Efficiently stabilize the airway, using effective non-invasive and invasive airway management techniques in collaboration with other services as appropriate.
- Identify patients with risk factors for progression to respiratory failure and assure proper monitoring and patient placement.
- Recognize signs of impending respiratory failure and transfer patients to a critical care unit in an efficient and safe manner.
- Appropriately order, and interpret oxygenation and ventilation testing results.
- Order appropriate monitoring and correctly interpret monitor data.
- Correctly diagnose and initiate medical management for systemic causes of respiratory failure.
- Demonstrate proficiency in basic management of patients with chronic respiratory support needs.
- Identify patients requiring subspecialty care and obtain timely consults.

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ATTITUDES

Pediatric hospitalists should be able to:

- Collaborate with patients, the family/caregiver, hospital staff, and subspecialists to ensure coordinated hospital care for children with conditions at risk for respiratory failure.
- Provide consultation for healthcare providers in community ambulatory or inpatient settings to ensure proper patient placement and transport of patients to higher acuity settings as needed.

SYSTEMS ORGANIZATION AND IMPROVEMENT

In order to improve efficiency and quality within their organizations, pediatric hospitalists should:

- Work with hospital administration, hospital staff, subspecialists, and others to develop, implement, and assess outcomes of intervention strategies (rapid response, early warning) for hospitalized patients with deterioration in respiratory status in order to prevent adverse outcomes.
- Lead, coordinate or participate in creating educational programs for the family/caregiver, hospital staff, and other healthcare providers regarding recognition of signs and symptoms of respiratory distress in children, particularly those at higher risk for respiratory failure.

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