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Pediatric Respiratory Emergencies
Objectives

• Differentiate between the categories of respiratory dysfunction
• Describe the assessment of a child with respiratory compromise
• Determine the treatment priorities for pediatric patients with respiratory emergencies
9-month-old infant

You are dispatched to the scene of a 9-month-old infant with difficulty breathing and fever.

What important information must you gather from the history and assessment?
Key Respiratory History

- Previous history of similar events
- Current medications
- History of recent fever
- Onset
- History of injury
Initial Assessment: Pediatric Assessment Triangle (PAT)

Assess for:

– Abnormal appearance
– Abnormal work of breathing
  • Abnormal positioning
  • Abnormal airway sounds
  • Retractions
  • Nasal flaring
– Abnormal color
Initial Assessment: ABCDE’s

Assess for:

- Airway patency
- Respiratory rate
- Air movement/chest rise
- Breath sounds
- Oxygen saturation
9-month-old infant

**Appearance**
Alert, looking around, crying

**Circulation to Skin**
Normal color

**Work of Breathing**
Retractions, nasal flaring
Initial Assessment

- Airway - Open
- Breathing - RR 80 breaths/min, wheezing with good air movement, SaO₂ 90%
- Circulation - HR 180 beats/min; skin warm and normal color; CRT normal

*How sick is this infant?*
• Moderate to severe respiratory distress

What are the categories of respiratory dysfunction?
Categories of Respiratory Dysfunction

- **Respiratory distress**: Increased work of breathing to maintain adequate oxygenation, ventilation
- **Respiratory failure**: Compensatory mechanisms fail, inadequate oxygenation and/or ventilation
- **Respiratory arrest**: Absence of breathing
Causes of Respiratory Dysfunction

<table>
<thead>
<tr>
<th>Anatomic Problem</th>
<th>Physical Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Upper airway obstruction</td>
<td>• Stridor</td>
</tr>
<tr>
<td>• Lower airway obstruction</td>
<td>• Wheezing</td>
</tr>
<tr>
<td>• Disease/fluid of the lungs (alveoli)</td>
<td>• Crackles</td>
</tr>
</tbody>
</table>
Which common diseases cause lower airway obstruction in infants and children?
Diseases Causing Lower Airway Obstruction

- **Asthma:**
  Inflammatory reaction of small airways
  - Bronchoconstriction, edema, increased mucus

- **Foreign body aspiration:**
  Mechanical obstruction of bronchi
  - Sudden choking, coughing, wheezing

- **Bronchiolitis:**
  Infection of bronchioles
  - Bronchoconstriction, edema, increased mucus

*Why is this child wheezing?*
• History of fever, wheezing and development of respiratory distress over 2 days suggest lower airway obstruction (bronchiolitis)

• Begin treatment on scene

What are your treatment and transport priorities for this patient?
Treatment Priorities

- Leave patient in a position of comfort
- Provide oxygen as tolerated
- Transport
How can you distinguish respiratory distress from respiratory failure in a patient with lower airway obstruction?
Respiratory Failure

- Abnormal appearance
- Respiratory rate extremely high or low
- Tachycardia or bradycardia
• Infant transported with blow-by oxygen
• Nebulized albuterol given by ALS providers
• Condition improved on arrival in the emergency department
4-year-old child

- You are dispatched to the scene of a 4-year-old child with trouble breathing.
- Mother states that he was playing with a small superball prior to collapsing.
4-year-old child

Appearance
Unresponsive, poor muscle tone

Work of Breathing
Stridor, severe retractions

Circulation to Skin
Pale skin color
Initial Assessment

- Airway - Obstructed
- Breathing - RR 12 breaths/min, decreased breath sounds, little or no chest rise, unable to speak or cry
- Circulation - HR 100 beats/min and dropping; pulses present; BP deferred
- Disability - AVPU=U
- Exposure - No sign of trauma
How sick is this child?

What is the cause of this child’s respiratory dysfunction?
• Critical patient in respiratory failure from upper airway obstruction due to foreign body aspiration

What are your treatment and transport priorities?
Treatment Priorities

• Open mouth, remove foreign body if visible
• Attempt BVM ventilation, if no chest rise, perform 5 abdominal thrusts
• Repeat assessment and treatment
• Transport or ALS intercept
Case Progression

- Abdominal thrusts fail to dislodge foreign body
- ALS providers remove superball with pediatric Magill forceps
- Patient requires BVM ventilation for 3-4 minutes
- Patient alert and active on arrival to the emergency department
Conclusion

• The degree of respiratory dysfunction drives treatment priorities.

• Identification of the cause of the dysfunction may be determined from the history and physical examination and can dictate specific treatment.

• Always begin with BLS airway/breathing management.
Conclusion

• Consider ALS interventions if the child does not improve rapidly with BLS.
• Reassess and be prepared to modify the treatment plan during transport.