

Project: Ghana Emergency Medicine Collaborative

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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

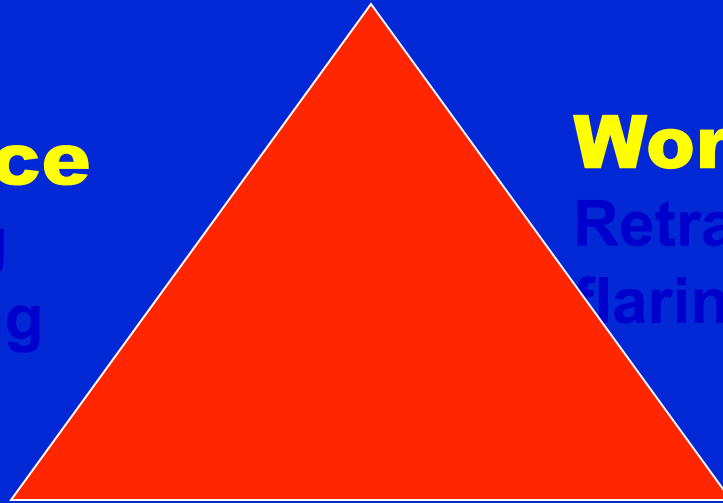
Alert, looking
around, crying

Work of Breathing

Retractions, nasal
flaring

Circulation to Skin

Normal color



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

Anatomic Problem

- Upper airway obstruction
- Lower airway obstruction
- Disease/fluid of the lungs (alveoli)

Physical Sign

- Stridor
- Wheezing
- Crackles

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.