

Key Anatomical Differences

The pediatric population cannot be viewed as “tiny adults”. To start with, their airway diameter is both smaller, and the length of their airway is shorter. They have a large head, in proportion to their body, and a larger tongue in proportion to their oropharynx. Infants are obligate nose breathers, so nasogastric tubes or nasal secretions can obstruct their airway. The larynx is more anterior than in adults, and the epiglottis is U-shaped and more anterior to their airway. The pediatric population has a funnel shaped trachea with the narrowest part of their airway being at the level of the cricoid cartilage. There are many more differences that we can review, but let’s stick to those regarding their airway.

Physical Assessment

Your physical assessment starts as soon as you lay eyes on the pediatric patient. You can gather data from across the room – their appearance, including level of consciousness and positioning, breathing, and circulatory status – give you clues to the severity of the patient’s condition. Hypoxia should be considered a cause of any change in mental status. Look for nasal flaring or grunting as a sign of increased work of breathing. Tripod positioning keeps their airway open by allowing the tongue to fall forward. If you notice drooling that is inappropriate for their age group, there could be an airway obstruction. Listen carefully to your patient. Is there audible stridor? Do they have other adventitious lung sounds indicative of pneumonia or reactive airway disease? Your late signs with pediatric hypoxia are cyanosis and bradycardia. These two symptoms in the pediatric patient can indicate impending arrest.

NCME Up-2-Date

Seasonal Pediatric Respiratory Emergencies

November 2017

Introduction:

With our first snowfall already passed, fall in Colorado has arrived and winter will be just around the corner. With this change in seasons, we will inevitably start seeing more and more pediatric respiratory illnesses. Hopefully you have not forgotten about stridor and its causes, or the treatment to bacterial tracheitis. Perhaps you have? Let’s review what makes the pediatric airway different from adults, and discuss a few of the most common upper respiratory emergencies in pediatrics that we might see this winter, along with how to treat them in transport.



North Colorado Med Evac Partners



Organizations



Preferred Providers



Accreditation



North Colorado Medical Center

1801 16th St | Greeley, CO 80631 | 1-800-AIR-HELP.

www.northcoloradomedevac.com

Common Upper Respiratory Emergencies

Let's start with Croup. Typically occurring in fall and winter, viral croup is a very common upper airway infection in pediatrics aged 6 months to 3 years. The classic "barking seal" cough with croup worsens at night and can upset parents who have never encountered this before. Other symptoms occur gradually including a low grade fever and nasal congestion. In severe cases a partial obstruction in the upper airway can produce stridor. Symptoms can persist for three to seven days. Treatment is usually symptom dependent, and can include exposure too cool humidified air, humidified oxygen, oral steroids, and nebulized epinephrine.

Another upper airway infection often seen this time of year is Epiglottitis. Frequently caused by the H. Influenzae B virus, Epiglottitis occurs primarily in the 2-6 year old age range. Symptoms are acute, and include a high fever, sore throat, dysphagia, muffled voice, stridor, drooling. The occurrence of epiglottitis has decreased with the flu vaccine, but still remains an airway emergency. A lateral neck xray can show epiglottic swelling. These pediatric patients must be kept as calm as possible, and not separated from caregivers. An ideal course of treatment would dictate securing the airway in a controlled setting, such as an OR with anesthesia present. Invasive procedures, IV, and antibiotics should follow securing the airway.

One last upper airway infection of clinical concern is Bacterial Tracheitis. Tracheitis is most commonly caused by bacteria, but viral cases with no known pathogen are increasing. Children ages 3-8 are at risk, as well as younger children with narrower airways. Symptoms of bacterial tracheitis are similar to those of croup – high fever, stridor, sore throat, hoarse voice, and respiratory distress. An AP neck xray can also show a "steeple sign," common in croup as well, demonstrating a tapering of the trachea. The course of treatment for these patients is to secure a definitive airway, frequent suctioning, IV antibiotic, and for severe cases – bronchoscopic debridement.

Safe Transport

Not all of these patients will require air medical transport throughout the course of their treatment. However, some will present at outlying rural hospitals, or urgent cares, and the severity of their symptoms may necessitate transport to a pediatric specialty hospital for definitive care. So how do we maintain these patients during transport?

North Colorado Med Evac Partners



Organizations



Preferred Providers



Accreditation



North Colorado Medical Center

1801 16th St | Greeley, CO 80631 | 1-800-AIR-HELP.

www.northcoloradomedevac.com

Start with securing the airway. Not every pediatric respiratory patient needs endotracheal intubation, but we must be prepared for respiratory failure in these patients. Especially in bacterial tracheitis and epiglottitis, the airway must be secured before invasive procedures, even including IV's and throat swabs. As previously mentioned, an OR suite is the most controlled environment for this. In the field, be prepared for a needle or surgical cricothyrotomy depending on age. How we position these patients is also important. If they are intubated, then raise the head of the bed to at least 30 degrees. If not, raise the head of the bed to the highest angle comfortable. Frequent suctioning of these patients will be crucial, especially nasal suctioning of the infant population. Humidified oxygen, whenever possible, should be used on these patients in the highest appropriate concentration. Initiate IV fluids when appropriate, as prolonged periods of tachypnea and tachycardia can cause fluid loss. Be sure the appropriate medications have been initiated, or be ready to administer them. This can include antibiotics, corticosteroids, antipyretics, and racemic epinephrine. If you are at any time uncomfortable or unsure of where the care of this patient population should be directed, do not hesitate to call medical direction or the physician at the receiving facility.

References

- Emergency Nursing Pediatric Course, Provider Manual. Third Edition, revised.
- Bacterial Tracheitis in a 9 Month Old, Journal of Emergency Nursing Online. Volume 41, Issue 2, Mar 2015
- Causes of Acute Respiratory Distress in Children, UpToDate official reprint, 2017

North Colorado Med Evac Partners



Organizations



Preferred Providers

Accreditation



North Colorado Medical Center

1801 16th St | Greeley, CO 80631 | 1-800-AIR-HELP.

www.northcoloradomedevac.com