Continuing Medical Education - News & Information

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Inside this issue:
(bold = new content)

Journal CME Newsletter

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9 Metrotech Center 4th fl
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718-999-2671

swansoc@fdny.nyc.gov

From the Editor

New Mandatory REMAC Credentialing Fee

A new $25 fee has been instituted by NYC REMAC for all new or recertifying paramedic credentials. On successfully completing a REMAC exam, candidates will receive a temporary letter verifying certification. They will soon after be mailed a memo directly from NYC REMSCO requiring a completed application, proof of NY State paramedic certification, and credentialing fee by money order only. On receipt, a permanent NYC REMAC certification card7 will be issued.

Please direct inquires on this process to NYC REMSCO at 212-870-2301

Important Change to Protocol Updates

A new protocol update schedule has been adopted for both the field and the certification process. Rollouts now take place only once per year. The final version will be published January 1, beginning a three month training period. The new protocols are then implemented for all agencies on April 1.

During January, February and March, only the *prior* version is in effect, not the new April protocol changes. Only on April 1 will the new version be available for use in the field and on certification exams.

Exceptions make take place when it is urgent that a specific life-saving treatment be available right away. In such a case, the change would be implemented on a selected date for both the field and REMAC exams.

Always see **nycremsco.org** for the current approved protocols.

REMEMBER: the protocols on the street are the protocols on the exam!

Effective April 1, 2010, NYC REMAC protocol revisions are to be implemented by paramedics updated by their Medical Director.

Per REMAC, ambulance services in NYC are responsible to provide copies of the protocols to their personnel. REMAC Advisories and Protocols are available to all at www.nycremsco.org

After April 1, only the April 2010 protocols may be used in the field and on NYC REMAC exams.

Questions may be referred to the REMAC Liaison at swansoc@fdny.nyc.gov or 718-999-2671.

Outline of April 2010 NYC REMAC protocol changes

see REMAC Advisory 2010-01 at nycremsco.org:

General Operating Procedures

- Oxygen Admin: removes respiratory rate as criterion for ventilation; removes mouth-to-mouth & mouth-to-nose ventilation
- Prehospital sedation: adds etomidate for cardioversion and pacing
- Communication with Medical Control: removes 20 minute on-scene time limit

BLS Protocols

- 401 Resp Distress: removes respiratory rate as criterion for ventilation; removes mouth-to-mouth & mouth-to-nose ventilation
- 407 Wheezing: adds epinephrine under Standing Orders with repeat Medical Control Option
- 410 Anaphylaxis: changes initial epinephrine dose to Standing Orders
- 421 Head & Spine Injuries: clarifies criteria for immobilization
- 423 Chest Injuries: removes bulky dressings for flail segments
- 425 Bone & Joint Injuries: note to request ALS for pain management; clarifies traction splint for closed injuries
- 428 Burns: note to request ALS for pain management; clarifies bandaging by BSA
- 430 EDP: note to request ALS for sedation
- 431 Heat-related Emergencies: removes saline PO

ALS Protocols

- 500-A Smoke Inhalation & 500-B Cyanide Exposure: clarifies sodium thiosulfate preparation
- 502 Obstructed Airway: removes needle cricothyroidotomy; adds procedure for right-mainstem bronchus displacement
- 503 Non-traumatic Arrest: removes reference to paddles
- 503-A V-fib/V-tach: changes joule setting
- 503-B PEA/Asystole: adds dextrose administration
- 504 Suspected MI: adds prompt OLMC contact; changes transport prior to IV admin
- 505-A, B & C Dysrhythmias: removes biphasic
- 505-D Brady Dysrhythmias: removes epi drip
- 506 APE: changes furosemide to Medical Control Option
- 510 Anaphylaxis: removes epi drip
- 521 Head Injuries: clarifies use of hyperventilation
- 540 Severe Pre-Eclampsia/Eclampsia: renames protocol; removes treatment for post-partum hemorrhage
- 551 Peds Obstructed Airway: removes needle cricothyroidotomy; adds procedure for right-mainstem bronchus displacement
- 554 Peds Asthma: clarifies ipratropium use
- 555 Peds Anaphylaxis: removes epi drip

Appendices

Appendix N Needle Cricothyroidotomy: deleted

REMAC Exam Study Tips

REMAC candidates have difficulty with:
* Epinephrine use for peds patients
* 12-lead EKG interpretation
* ventilation rates for peds & neonates

REMAC Written exams are approximately:

15% Protocol GOP	40% Adult Med. Emerg.
10% BLS	10% Adult Trauma
10% Adult Arrest	15% Pediatrics

Certification & CME Information

- *Of the 36 hours of Physician Directed Call Review CME required for REMAC Refresher recertification, at least 18 hours must be ACR/PCR Review (which may include QA/QI Review). The remaining 18 hours may include ED Teaching Rounds and OLMC Rotation.*
- **Failure to maintain a valid NYS EMT-P card will invalidate your REMAC certification.**
- **By the day of their refresher exam all candidates must present a letter from their Medical Director verifying fulfillment of CME requirements. Failure to do so will prevent recertification.**
- **FDNY paramedics, see your ALS coordinator or Division Medical Director for CME letters.**
- **CME letters must indicate the proper number of hours, per REMAC Advisory # 2000-03:**
  - 36 hours - Physician Directed Call Review
    - *ACR Review, QA/I Session* (**minimum 18 hours of ACR/QA review**)
    - *Emergency Department Teaching Rounds, OLMC Rotation*
  - 36 hours - Alternative Source CME - **Maximum of 12 hours per venue**
    - *Online CME*
    - *Lectures / Symposiums / Conferences*
    - *Journal CME*
    - *Clinical rotations*
    - *Associated Certifications: BCLS / ACLS / PALS / NALS / PHTLS*

REMAC Refresher Written examinations are held monthly, and may be attended up to 6 months before your expiration date. See the exam calendar at the end of this Journal. To register, call the Registration Hotline @ 718-999-7074 by the last day of the month prior to your exam.

REMAC Quarterly Written and Oral examinations are held every January, April, July & October. Registration is limited to the first 50 applicants. See the exam calendar at the end of this journal.

REMAC CME and Protocol information is available, and suggestions or questions about the newsletter are welcome. Call 718-999-2671 or email swansoc@fdny.nyc.gov

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REMSCO: www.NYCREMSCO.org
NYS/DOH: www.Health.State.NY.US

Online CME: www.EMS-CE.com www.MedicEd.com www.EMCert.com www.WebCME.com www.EMINET.com

FDNY ALS Division Coordinators

- **Citywide ALS 718-999-1738**
  Lt. Joseph Pataky
- **Division 1 212-964-4518**
  Andrea Katsanakos
- **Division 2 718-829-6069**
  John Langley
- **Division 3 718-968-9750**
  Gary Simmonds
- **Division 4 718-281-3392**
  Mike Romps
- **Division 5 718-979-7175**
  Justine Abruzzo
- **Bureau of Training 718-281-8325**
  Hector Arroyo
- **EMS Pharmacy 718-571-7620**
  Cindy Corcoran

FDNY EMS -Division Medical Directors

- **Dr. Dario Gonzalez 718-281-8473**
  Field Response Divisions 1 & 2
  USAR/FEMA/OEM/HAZMAT Director
- **Dr. John Freese 718-281-3861**
  On-line Medical Control Director
  Director of Prehospital Research
- **Dr. Glenn Asaeda 718-999-2666**
  Field Response Divisions 3, 4 & 5
  USAR/ FEMA/OEM/HAZMAT Assoc. Director
  REMSCO/REMAC Coordinator
- **Dr. Doug Isaacs 718-281-8428**
  Medical Director of EMS Training
- **Dr. Bradley Kaufman 718-999-1872**
  System-wide Quality Assurance Director
  Medical Director of Emergency Dispatch and Pre-Arraignment Screening Unit

EMS Fellows

- **Dr. Angus Jameson 718-999-0351**
- **Dr. Jessica Van Voorhees 718-999-0364**

FDNY OLMC Physicians and ID Numbers

Acosta, Juan	**80286**	**Huie, Frederick**	**80300**
Alexandrou, Nikolaos	**80282**	**Isaacs, Doug**	**80299**
Asaeda, Glenn	**80276**	**Jacobowitz, Susan**	**80297**
Barbara, Paul	**80306**	**Kaufman, Bradley**	**80289**
Ben-Eli, David	**80298**	**Lombardi, Gary**	**80225**
Cordi, Heidi	**80279**	**McIntosh, Barbara**	**80246**
Cox, Lincoln	**80305**	**Munjal, Kevin**	**80308**
Freese, John	**80293**	**Pascual, Jay**	**80287**
Giordano, Lorraine	**80243**	**Safford, Mark**	**80307**
Gonzalez, Dario	**80256**	**Schenker, Josef**	**80296**
Hansard, Paul	**80226**	**Schoenwetter, David**	**80304**
Hegde, Hradaya	**80262**	**Schneitzer, Leila**	**80241**
Hew, Phillip	**80267**	**Silverman, Lewis**	**80249**
		Soloff, Lewis	**80302**

October 2010 Journal CME Article

PEDIATRIC RESPIRATORY DISEASE AND AIRWAY MANAGEMENT

INTRODUCTION

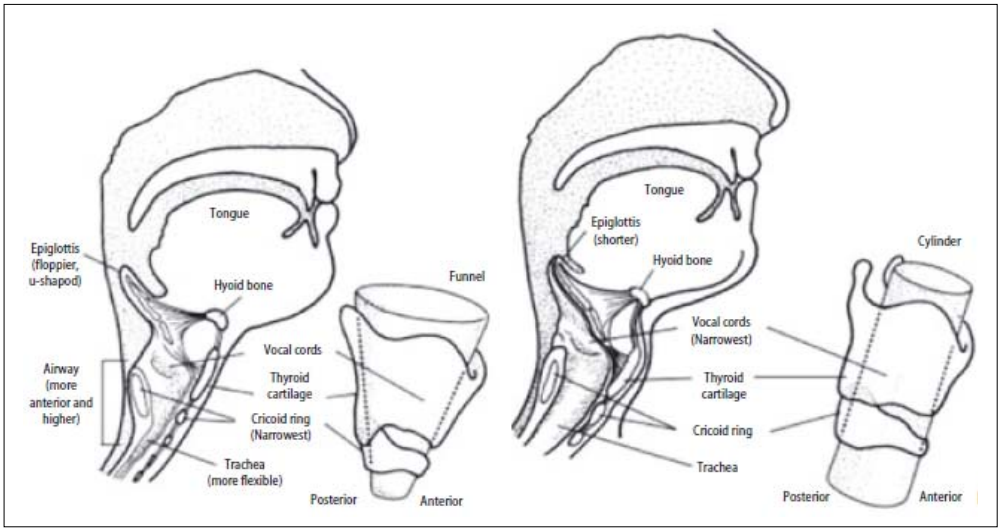
Last month's journal article focused on pediatric assessment. This month we will continue our theme of pediatric emergency care by reviewing pediatric airway anatomy, common causes of pediatric respiratory distress and their specific treatments, and general management of pediatric respiratory complaints. Although pediatric patients account for only 15% of the call volume in NYC, pediatric respiratory disorders are a common complaint encountered by the pre-hospital provider. In the last 12 months there were over 15,000 pediatric respiratory calls in NYC. While the majority of pediatric respiratory calls are not life threatening, in rare cases, children may present with severe respiratory distress, and even respiratory arrest. Pediatric cardiac arrest is most often precipitated by respiratory arrest.

PEDIATRIC AIRWAY ANATOMY

Pediatric airway anatomy differs from the adult anatomy in several ways. It also changes with age. Because of this, airway management is more complex in children. Knowledge of these differences will facilitate the provider's understanding of pediatric respiratory diseases and allow effective pediatric airway management.

The first difference is the size of the head, specifically the occiput relative to the rest of the body, and particularly relative to the chest circumference. In younger children where the head circumference is larger than the chest circumference, the natural position while laying on a flat surface is with neck flexion. This results in airway obstruction if there is a loss of muscle tone. Because of this, patients who are unresponsive, or in whom we are undertaking airway maneuvers, must be placed in the "sniffing" position.

The second difference is the compliancy of the airways. In young children, the cartilaginous rings of the trachea are softer, and are in fact open at the posterior side. This means that the trachea is not as stiff in children as in adults. Because of this the trachea is more prone to collapse, particularly with hyperextension of the neck. Again, the importance of the "sniffing" position is that it prevents airway obstruction from both flexion and extension.



The third difference is the diameter and location of the laryngeal structures. Infants have superior and anterior larynxes. As the child matures, the larynx gradually changes shape until by about age ten it is in the adult configuration. Additionally,

the narrowest portion of the upper airways in children less than 8 years old is the cricoid cartilage ring, whereas in older children and adults it is the glottic opening at the vocal cords. Because of this, foreign bodies may tend to lodge below the cords in children and above the cords in adults. Further, this is why infraglottic (i.e. below the vocal cords) infections such as croup may produce stridor and respiratory distress in children.

UPPER AIRWAY DISORDERS

Foreign Body Airway Obstruction:

Foreign body airway obstruction (FBAO) is a very common cause of respiratory distress in children 4 and under, particularly those under 12 months to 3 years old. FBAO causes over 3000 deaths each year. The caretakers of the child may be unaware that there was a foreign body and often do not relate a history of foreign body to the EMS provider. Because of this, the most important thing to remember about foreign body airway obstruction is to simply consider it in all cases of pediatric respiratory distress.

Clues that point to FBAO include history of sudden onset respiratory distress, sudden change in work of breathing, and sudden change in noises associated with breathing including stridor and/or wheezing. Often there may be a history of the child being unobserved for a brief period of time preceding this, playing with a small toy or piece of toy, being fed by a sibling, or of eating at the onset. Foods commonly associated with FBAO include hotdogs, grapes, and peanuts. In some cases the respiratory distress may have resolved prior to EMS arrival due to the foreign body either being expelled, or falling into a distal airway where it no longer causes irritation or cough stimulus. It is important to bear this in mind when considering RMA's involving transient pediatric respiratory complaints.

Management of FBOA depends on the child's age, level of consciousness, and whether the obstruction is complete or incomplete. In a conscious patient with and incomplete obstruction (e.g. they are able to cough and/or speak) management consists of supportive care while encouraging the patient to continue to cough. In patients with complete obstruction, or who are unconscious abdominal thrusts (the Heimlich maneuver) are indicated. Remember that infants receive back blows and chest compressions instead of abdominal thrusts because of concern for injuring the relatively larger and unprotected liver of an infant [Protocol 451]. ALS providers may attempt direct laryngoscopy and manual removal of the foreign body using Magill forceps. The most extreme management intervention performed prehospitally is using endotracheal intubation to manually push the FB into a distal airway and ventilate the remaining lung tissue [Protocol 551]. We will review this procedure later. Always remember that blind finger sweeps are contraindicated due to the risk of worsening obstruction by impacting the particle causing complete airway obstruction.

Croup:

Croup is a viral infection of the upper airway at the infraglottic level (i.e. below the vocal cords). It is most common in the winter, may be caused by one of several viruses, and results in swelling of the airway causing a characteristic "barking" cough, respiratory distress, and may even cause obstruction due to severe inflammation. History associated with croup includes 2-3 days of febrile illness, barky or spasmodic cough that is worse at night, hoarseness or change in voice, and respiratory distress evidenced by retractions, nasal flaring. In severe cases stridor may also be present. The inflammation and swelling can progress to complete airway obstruction.

Treatment of croup includes monitoring respiratory status, providing supplemental oxygen as needed, and monitoring for impending respiratory arrest. Additionally it is important to consider alternative causes of the patient's symptoms. Because croup is quite common, parents are often given home instructions by their pediatricians. These may include giving humidified air or alternatively removing the child to the cool moist night air. In addition, nebulized saline is sometimes recommended.

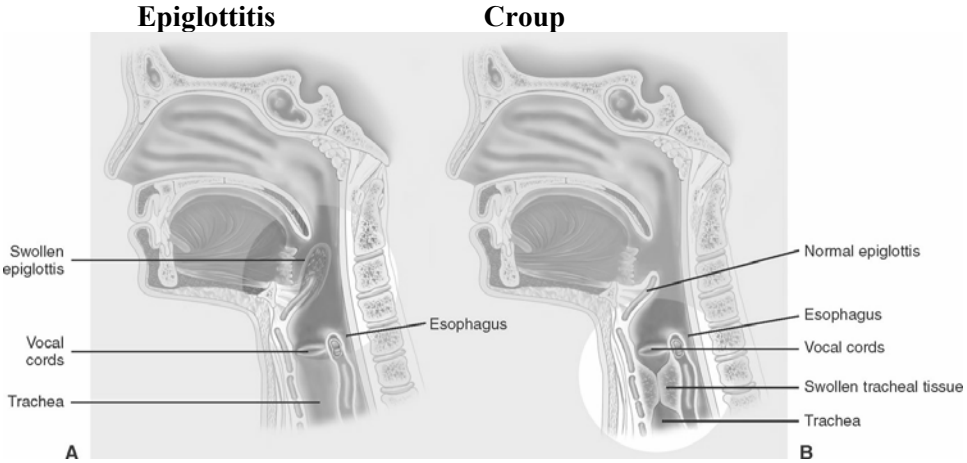


Image from Aehlert

Epiglottitis:

Epiglottitis is a bacterial infection of the upper airway that involves the epiglottis. It is most often caused by staph or strep infections (not the same type of strep that causes strep throat). Its prevalence is decreasing following the introduction of the HiB (Haemophilus Influenza type B) vaccine. Epiglottitis represents a true medical emergency as swelling can rapidly progress to complete upper airway obstruction and due to the location of the inflammation intubation becomes extremely difficult. In these children it is preferred to have the airway managed in the hospital with a surgeon on standby to perform an emergency surgical airway.

History associated with epiglottitis includes rapid symptoms onset and progression. Patients tend to be slightly older, classically ages 3-7. (In fact epiglottitis is increasingly being seen in adolescents and even adults as the pediatric incidence continues to drop after the introduction of the HiB vaccine). Signs and symptoms include a high fever, muffled voice, drooling/refusal to swallow, tripod position with respiratory distress, and no cough.

Specific treatment for epiglottitis is to keep the patient calm and avoid agitation. Let the parent/caretaker hold and comfort the child. Do not insert anything into the mouth to examine the airway as this may precipitate a rapid progression to airway obstruction from worsening swelling. Providing supplemental O2, monitoring respiratory status, and rapid transport are the mainstays of pre-hospital treatment. If respiratory arrest ensues, endotracheal intubation is likely to be impossible and should be avoided. Bag valve mask ventilations should be provided bearing in mind a higher pressure may be needed to adequately ventilate through the obstruction caused by the inflammation. To accomplish this you may need to close the pop-off valve on the BVM [Protocol 452/552].

LOWER AIRWAY DISORDERS

Asthma:

Acute asthma exacerbations are caused by reversible bronchospasm accompanied by increased inflammation, mucus production, and edema of the airways. This causes airway obstruction leading to respiratory distress, air trapping, hypoxia, and eventually respiratory failure. Clinically, asthma may be wheezing-predominant or cough-predominant. Often, there is an identifiable trigger for an asthma attack such as a chemical irritant, environmental allergy, cold air, or even exercise. In children under 2 years old, viral infections are the most common trigger. Children in NYC are at increased risk for asthma with hospitalization rates double the national average. Asthma was the leading cause of hospitalization in children 14 and under in NYC in 2000.

Assessment of the asthma patient should include gathering a history of the patient's asthma including medications, triggers, underlying illnesses, frequency of attacks and home medication use, history of hospitalizations and intubations, and exposure to triggers. Respiratory effort and rate, lung sounds, volume of air movement, oxygen saturation, and mental status are the key components of the physical exam in asthma patients as was discussed last month. Ominous signs include severely decreased breath sounds or a "silent chest", severe retractions, and mental status changes including agitation and lethargy.

The goal of pre-hospital treatment of asthma is to prevent respiratory collapse and relieve respiratory distress by reversing the bronchospasm. Inhaled B-Adrenergic (albuterol) and anti-cholinergic (ipratropium) bronchodilators are the mainstays of treatment. Note that while steroids for inflammation control and magnesium sulfate for direct airway smooth muscle relaxation may be used in adults, these are not included in the pediatric protocol. In severe life-threatening cases, epinephrine may be needed to prevent respiratory collapse (Protocol 554). In the event of respiratory failure, BVM ventilation and/or endotracheal intubation may become necessary. Because the inflammatory component of asthma cannot

be treated prehospitally and often requires several days of steroids to control, patients who experience symptomatic relief after bronchodilator treatment alone should still be transported to the hospital.

Bronchiolitis:

As its name suggests, bronchiolitis is inflammation of the lower airways (bronchioles) caused by a viral infection. Bronchiolitis is very common with yearly epidemics during the winter months. As many as 50% of children may have suffered from bronchiolitis by age one with the peak age in urban areas being 2 months. RSV or Respiratory Syncitial Virus is an important cause of bronchiolitis but several other viruses such as influenza and parainfluenza virus cause a significant number of cases as well. Historically, infants with RSV-caused bronchiolitis were felt to be at increased risk for apnea spells, however currently there is some debate over the true level of risk this entails.

Inflammation of the smaller airways or bronchioles found in bronchiolitis leads to excessive mucus production, and narrowing or obstruction of these airways. Because of this, particularly those patients with underlying asthma may often present with wheezing and respiratory distress. Children with bronchiolitis typically have several days of fever and upper respiratory infection symptoms prior to onset of lower respiratory symptoms. There may be an associated ear infection or pharyngitis, and often there are sick contacts as the viruses that cause bronchiolitis are very contagious. Children with bronchiolitis are often ill for several weeks at a time. This tends to exhaust parents and they are often emotionally drained at the time they seek care.

Physical exam findings consistent with bronchiolitis include fever, runny nose, cough, tachypnea, wheezing, retractions, peripheral cyanosis, diffuse rhonchi, fine crackles, and wheezing on lung exam. In severe cases, breath sounds may be diminished due to air trapping by mucus plugging and decreased air movement. Patients may also show central cyanosis and mental status changes as the respiratory distress worsens and hypoxia develops. It is important to also assess for dehydration in these children who may have been ill for several weeks.

Treatment for these children includes assisting with respiratory function via supplemental oxygen, BVM, and/or ET intubation as necessary. Although bronchodilators such as albuterol are often used when wheezing is encountered clinically, it has limited if any benefit in bronchiolitis. Measures often implemented in the ER include nebulized epinephrine and deep suctioning. Copious nasal secretions seen with bronchiolitis can also be managed with suctioning to relieve respiratory distress in nose-breathing infants. Children with severe bronchiolitis leading to hypoxia, apnea, or ongoing respiratory distress are admitted to the hospital for respiratory monitoring.

Pneumonia:

Pneumonia is a common disease process in both children and adults. Approximately 4% of children under 5 years of age will suffer pneumonia each year. There are several types of pneumonia classified by where the infection settles and what the infectious agent is. Pneumonia may be caused by bacterial, viral, or fungal infections. Additionally, parasites can occasionally cause pneumonia though this is quite rare in the developed world. Unlike bronchiolitis, pneumonia may occur at any time of the year. The causes of pneumonia however do show seasonal variation. Those who are immunocompromised, or who have underlying structural lung disease such as pre-mature infants are at significantly greater risk. Unlike the other respiratory illnesses previously described, children and particularly infants with pneumonia are at risk to progress to a septic shock state in addition to their respiratory symptoms.

History consistent with pneumonia includes upper respiratory illness, several days of fever, general malaise, and possibly sick contacts. Physical exam findings depend on the child's age. In infants, fever, respiratory distress, and septic shock are the most common signs. In older children, fever, tachypnea, abnormal lung sounds, chest pain, and general malaise are common. Some older children will also present with abdominal pain as their chief complaint if the pneumonia is in a lower lobe. It is important to assess for and recognize both compensated and decompensated shock as discussed in last month's journal.

Treatment of pneumonia includes respiratory monitoring, supplemental oxygen, IV fluids as needed, and transport. In infants in septic shock, BVM ventilations, intubation, and CPR may become necessary.

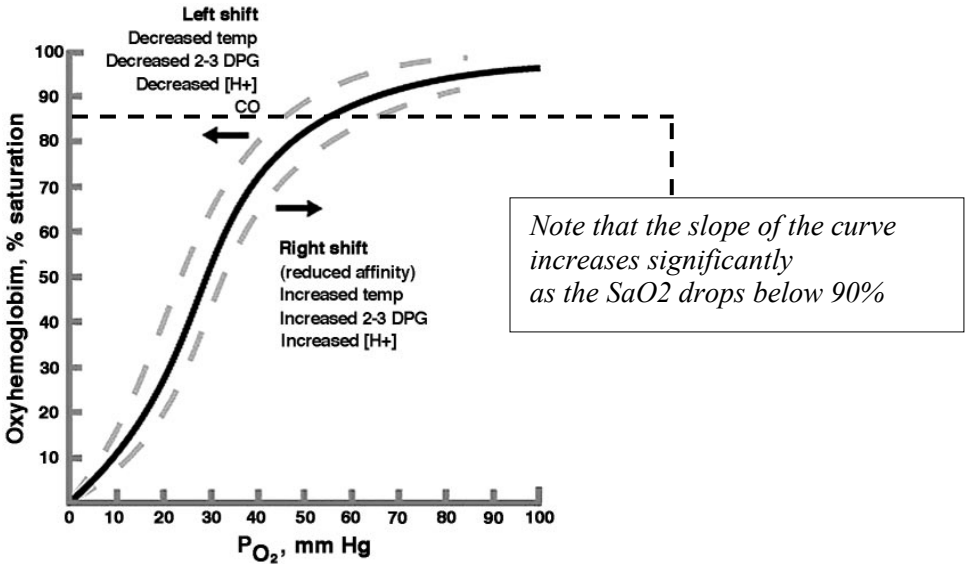
PEDIATRIC AIRWAY MANAGEMENT

General Principles:

Pediatric respiratory assessment was reviewed in last month's journal article. Here we will focus on specific airway management maneuvers, and tools for alleviating respiratory distress. Pediatric respiratory interventions, as with all interventions, begin with BLS procedures. The ability of pre-hospital providers to rapidly identify those patients with severe respiratory disease and initiate immediate transport is paramount. It is important to remember that in conscious infants and children, maintaining emotional comfort may significantly reduce respiratory distress. Allow the parents or caregivers to assist you with your interventions (e.g. holding the child, holding the oxygen mask/nebulizer, etc). Use blow-by methods for delivering oxygen and nebulizer treatments.

Supplemental Oxygen:

Supplemental oxygen is indicated in all patients with respiratory distress, shock, and those with hypoxia demonstrated by clinical findings such as cyanosis and clinical measurements such as pulse oximetry. It is important to remember that children often compensate for their condition for a prolonged period of time and then rapidly decompensate. Providers should be prepared to aggressively intervene in children who appear in significant respiratory distress and at risk for sudden decompensation. Additionally, it is important to understand that once a SaO2 falls to 90%, it will decrease precipitously due the shape of the oxyhemoglobin dissociation curve. Oxygen should be administered by the best tolerated method to maintain adequate SaO2 and control signs and symptoms of respiratory distress. As discussed above this may include enlisting a parent or caregiver to hold an oxygen delivery device such as a facemask near but not necessarily over the child's face.



Nebulizer Treatments:

Nebulized medications such as albuterol and ipratropium bromide are commonly used to treat asthma exacerbations. Many patients may have home nebulizer machines in addition to rescue Metered Dose Inhalers (MDI's) to deliver these medications. Remember to read the label of an inhaler presented to you by a patient or family member as not all MDI's contain bronchodilators. Both albuterol and ipratropium work by dilating the airways and are therefore referred to as bronchodilators. Dosing is straightforward with 2.5mg albuterol in each 3ml unit dose. In children, up to 3 full unit dose albuterol treatments are authorized under standing orders. While the first dose may be initiated on scene, subsequent doses should be administered enroute to the hospital. Ipratropium comes in 2.5ml unit doses and a full unit dose with each albuterol treatment is indicated in children 6 years and over. One half-unit dose with each treatment is indicated with each albuterol dose in children under age 6 [See protocol 554]. As with supplemental oxygen, enlisting a parent or caregiver to assist with holding the nebulizer may increase compliance. Remember that side effects of these medications include palpitations, tachycardia, and tremulousness.

Assisted Ventilation:

Bag Valve Mask Ventilation is perhaps the single most important airway management skill for pre-hospital providers. In many cases it may be life saving. Despite this, providers historically have struggled to effectively perform this intervention. The most significant challenge to effective BVM ventilation is maintaining a good seal. This is even harder in children. The first step is selecting the appropriate size bag and mask. Be sure the mask covers the nose and mouth and does not extend over the eyes. If at all possible two providers should work together with one using the two handed method of maintaining a seal as the single-handed method is significantly more difficult. In both cases the goal should be to lift the jaw into the mask rather than press the mask onto the face. Children are especially prone to airway obstruction if excessive pressure is placed on the face, mandible and soft tissues of the chin. Use of an airway adjunct such as OPA/NPA can also assist by reducing the pressures needed to move air through the passages.

Remember that excessive ventilatory pressure can result in barotrauma and can be devastating to children's lungs. This is particularly true in neonates, especially those who are premature. In the most extreme case this can result in rupture of the

lungs and pneumothorax. Despite this word of caution, there are instances when high pressure BVM is indicated. In children with airway obstruction secondary to epiglottitis, for example, high pressure BVM ventilation is preferred to endotracheal intubation [Protocol 453/552].

Intubation:

Unlike riding a bicycle, endotracheal intubation is a skill that is easily lost if not practiced. Most of us rarely intubate infants and children. It is important therefore to work to maintain readiness to intervene in what will certainly be a stressful and emotional situation. Before discussing the procedure itself, it is important to note that pre-hospital pediatric intubation has not been shown to improve survival over quality BLS airway maneuvers. Because of this, the REMAC protocols contain a caveat that pediatric intubation should be performed only "if less invasive methods of airway management are not effective" [Protocol 550].

The procedure of pediatric endotracheal intubation begins with selection of appropriate size equipment. Pre-hospital providers can use the length based dosing device to determine the appropriate size for intubation equipment. Following equipment preparation, the provider should perform direct laryngoscopy. Note that a Miller type blade is preferred in children due to the larger size of the epiglottis and difficulty retracting it with a Macintosh type blade. Remember that the technique for a Miller blade is different as well. The child's head should be placed in a sniffing position with care taken to avoid hyperextension. After opening the mouth the blade should be inserted deeply starting on the side of the mouth to assist with sweeping the proportionally larger tongue out of the way. The blade should then be retracted until the chords fall into view while still holding the epiglottis up and out of the way. Providers should directly visualize the tube passing the cords. Because of their small size, right main stem bronchus intubations are common in children and care should be taken not to insert the ET tube too far distal to the cords. Tube placement must be confirmed via multiple methods including ET CO2 and auscultation.

There are two situations where endotracheal tubes should be adjusted after insertion and placement verification. The first is meconium aspiration and the second is FBAO with inability to ventilate. In the newborn with respiratory or cardiac arrest and signs of meconium staining, the meconium aspirator should be used along with a slow retraction of a normally placed endotracheal tube to clear the meconium. This procedure may be repeated for a total of three cycles to clear the meconium [Protocol 543]. The second instance where a properly placed endotracheal tube should be moved is in FBAO with inability to ventilate even after endotracheal intubation. In this case, the FB is likely located below the cords but above the carina preventing ventilation. The tip of an endotracheal tube (cuff deflated) may be used to force the FB down to one side (usually the right side) before retracting the tube to normal position. This will allow at least one lung to ventilate and may be sufficient to stabilize the patient's respiratory status temporarily [Protocol 551].

NG/OG Tube Placement:

Nasogastric and orogastric tube placement is indicated in those patients receiving assisted ventilations via endotracheal tube who develop gastric distention [Protocol 543, 550, 552, 553, 555, 559]. In children who develop significant gastric distention the stomach elevates the diaphragm. This reduces the effectiveness of ventilations by decreasing the chest cavity space for lung inflation. The purpose of the NG/OG tube is to relieve this gastric distension by providing a conduit for gases to exit the stomach that is not blocked by the sphincters of the GI system. Remember to choose the appropriate size NG/OG

tube. Use lubrication and gentle pressure to pass the tube. NG/OT tubes should not be placed in conscious patients. Tubes must be confirmed by auscultation of the epigastrum and aspiration of stomach contents.

CONCLUSIONS

Pediatric respiratory emergencies represent a significant number of calls answered by FDNY EMS. Many of these calls are routine and we risk complacency, as they may feel repetitive. However it is important to recognize the potential for rapid deterioration to a life threatening condition in these common calls. Knowledge of the underlying pathophysiology of the more common causes of pediatric respiratory illness will allow the provider to make the most appropriate interventions. The ability to rapidly recall treatment protocols and procedures is essential in these time sensitive situations. Remember that reassurance of both patients and their family members can significantly reduce subjective respiratory distress. Work to make parents and caretakers your allies in caring for your patient. When in doubt remember BLS procedures are lifesaving, and don't forget to consider FBAO.

***Written by*:** **ANGUS JAMESON, M.D.**
EMS FELLOW

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CME JOURNAL 2010_J0 10: PEDIATRIC RESPIRATORY DISEASE & MGMT. QUIZ 7

1. ***You are dispatched to a pediatric diff breather. On arrival you find a 2 year-old sitting in her mother's lap and appearing scared. Her skin is pink. Her respiratory rate is 42 and she has accessory muscle use and nasal flaring. She is able to speak and she is not drooling, but her mother tells you her voice sounds different. Her mother also tells you the patient has no medical problems and has not been sick recently. She noticed that something was wrong after she left her daughter playing on the floor to use the bathroom. What is the most appropriate course of treatment?***
    a. Reassure the mother that nothing her daughter appears OK and suggest an RMA.
    b. Encourage the patient to cough and initiate rapid transport, as this is most likely a foreign body airway obstruction.
    c. Have the parent take the patients temperature to see if she could have croup or epiglottitis.
    d. a and c

2. ***You are caring for a 3 year-old child who you suspect has croup. During episodes of coughing, you think her lips turn a little blue. You try to put a non-rebreathing mask on her but she repeatedly pushes it away. You should:***
    a. Place the patient on a nasal cannula, as it is the best she will tolerate.
    b. Increase the distance between yourself and the patient and ask the patient's mother to hold the mask just in front or to the side of the patient's mouth.
    c. Restrain the child's arms, as she really needs oxygen right now.
    d. Do not make any further attempt to provide the child oxygen as upsetting her will only worsen the situation.

3. ***Which of the following diseases is most associated with occurrence in the winter?***
    a. pneumonia
    b. epiglottitis
    c. asthma
    d. bronchiolitis

4. ***=Which techniques ensure adequate ventilation when using a BVM on a pediatric patient?***
    a. Use two rescuers, one to hold a seal with both hands and the other to squeeze the bag.
    b. Use an oropharyngeal airway to help hold the airways open.
    c. Place the child in a sniffing position.
    d. All of the above.

5. ***In an unconscious infant suffering from a foreign body airway obstruction, which of these treatments are most appropriate?***
    a. abdominal thrusts to expel the material
    b. CPR
    c. blind finger sweep to try to remove the foreign body
    d. a and b
    e. a and c
    f. all of the above

6. ***Asthma exacerbation in a 4 year-old may be treated with which of the following medications?***
    1. albuterol 3ml unit dose, nebulized, up to 3 times
    2. ipratropium bromide, 2.5 ml unit dose, up to 3 times
    3. dexamethasone .25 mg/kg IV/IM x 1
    4. magnesium 25 mg/kg in 100 ml over 10 minutes (max dose 2g)
    5. epinephrine 0.15 mg/kg IM

    a. 1 and 2
    b. 1, 2, 3, and 5
    c. 1, 3, 4, and 5
    d. 1 and 5

7. ***In the pediatric patient who is intubated, following verification of placement of the ET Tube, what maneuver may be required if you are unable to ventilate the patient and you think there may be a foreign body obstruction?***
    a. Suction the secretions in the posterior oropharynx.
    b. Advance the tube in an effort to push a tracheal foreign body into the more distal airway, and then withdraw to original position.
    c. Withdraw the tube to just above the cords.
    d. Advance the tube until you hear bilateral breath sounds.

8. ***You are called to a daycare center to find a 3 year-old that appears inattentive, is sitting in a tripod position and is drooling. When you ask the child his name he answers in a muffled voice. The staff says he was fine when he went home yesterday. What is the most important intervention for this patient?***
    a. immediate supplemental oxygen, then intubate after calling for sedation orders
    b. albuterol and ipratropium nebulizer
    c. calm reassurance, position of comfort, and rapid transport
    d. establish an IV so you have access if the patient progresses to respiratory failure

9. ***Endotracheal intubation and ventilation is the preferred method of artificial respiration in all pediatric patients who are in respiratory failure.***
    a. True
    b. False

10. ***Nasogastric or orogastric tubes are placed prehospitally in order to:***
    a. Prevent endotracheal tubes from displacing into the esophagus by blocking the esophagus.
    b. Prevent aspiration of vomitus following intubation with an uncuffed endotracheal tube.
    c. Provide for gastric lavage as soon as you arrive at the Emergency Department in cases of overdose leading to respiratory failure.
    a. Alleviate the stomach distension that often occurs with BVM ventilation and allow lower pressure after endotracheal intubation.

Journal CME Credit Answer Sheet

Based on the CME article, place your answers to the quiz on this answer sheet.
Respondents with a minimum grade of **80%** will receive **1 hour** of Online/Journal CME.

Please submit this page **only once**, by one of the following methods:

- FAX to 718-999-0119 or
- MAIL to FDNY OMA, 9 MetroTech Center 4th flr, Brooklyn, NY 11201

Contact the Journal CME Coordinator at 718-999-2790:

- three months before REMAC expiration for a report of your CME hours.
- for all other inquiries.

Monthly receipts are not issued. You are strongly advised to keep a copy for your records.

Note: if your information is illegible, incorrect or omitted you **will not** receive CME credit.

check one: ☐ EMT ☐ Paramedic ☐ _____
other

_____
Name

_____
NY State / REMAC # or "n/a" (not applicable)

_____
Work Location

_____
Phone number

_____
Email address

Submit answer sheet by the last day of this month.

October 2010 CME Quiz		
1.		**Required for BLS & ALS providers**
2.		
3.		
4.		
5.		
6.		**Required for ALS providers only**
7.		
8.		
9.		
10.		

Citywide CME – October 2010

Sessions are subject to change without notice. Please confirm through the listed contact.

Boro	Facility	Date	Time	Topic	Location	Host	Contact
BK	Brooklyn Hospital	1st Wed	0800-0900	Nov 1 Lecture	121 Dekalb Ave, Mazer Lecture Room near ED	Dr Lehrfeld	David Lehrfeld MD 503-961-5113
	Kingsbrook	10/21	1530	History of Present Illness	ED Conference Room	Dr Hew	Manny Delgado 718-363-6644
		11/18		TIA and Stroke			
	LICH	11/1	1000-1200	Lecture & Call Review **RSVP →**	Avram Conference Room "G"	Dr Vlasica	Aaron Scharf 718-780-1859
		12/6					
	Lutheran	4th Wed	1730-1930	Call Review **RSVP →**	Call for location →	Dr Chitnis	Dale Garcia 718-630-7230 dgarcia@lmcmc.com
MN	NY Presbyterian	TBA	TBA	TBA: call to inquire →	Stanley Children's Hospital 3959 Broadway	Dr. Schleien	Ana Doulis 212-746-0885 x2
	NYU School of Medicine	TBA	TBA	TBA: call to inquire →	Schwartz Lecture Hall 401 E. 30th Street	TBA	Jessica Kovac 212-263-3293
QN	FDNY-BOT	10/20	1030-1430	Call Review or Lecture	Fort Totten Bldg 325	TBA	swansoc@fdny.nyc.org
		11/17					
	Flushing Hosp	3rd Wed	1330-1530	Call Review	Board Room	Dr Crupi	Mordechai Lax 718-240-5570
	NYH Queens	Thursdays	0800-0900	Call Review/Trauma Rounds	East bldg, courtyard flr	Dr Sample	Mary Ellen Zimmermann RN 718-670-2929
	Mt Sinai Qns	last Tues	1800-2100	Lecture	25-10 30 Ave, conf room	Dr. Dean	Donna Smith-Jordan 718-267-4390
	Parkway Hosp	3rd Wed	1830-2130	Call Review	Board Room, 1st flr		pabruzzino@capitolhealthmgmt.com
	Queens Hosp	2nd Thurs	1615-1815	Call Review	Emergency Dept		718-883-3070
		4th Thurs					
SI	RUMC	10/7	0900	Call Review & CPAP	SIPP auditorium	Dr. Ben-Eli	William Amaniera 718-818-1364
		11/4	1400	Call Review & CPR Update	MLB conference room		

2010-2011 NYC REMAC Examination Schedule

Month	REMAC Refresher Exam (Written only - CME letter required)		REMAC Quarterly Exam - $100 fee (Written & 3 Orals Scenarios)			NYS/DOH Written Exam
	Registration Deadline	Exam Date (on Wednesdays)	Registration Deadline	Written @18:00	Orals @09:00	
October 2010	9/30/10	10/20/10	Thursday 10/7/10	Thursday 10/21/10	Wednesday 10/27/10	
November	10/31/10	11/17/10				11/18/10
December	11/30/10	12/22/10				12/16/10
January 2011	12/31/10	1/19/11	Thursday 1/6/11	Thursday 1/20/11	Thursday 1/27/11	1/20/11
February	1/31/11	2/23/11				
March	2/28/11	3/23/11				3/24/11
April	3/31/11	4/20/11	Thursday 4/7/11	Thursday 4/21/11	Tuesday 4/26/11	
May	4/30/11	5/25/11				5/20/11
June	5/31/11	6/22/11				6/16/11
July	6/30/11	7/20/11	Thursday 7/7/11	Thursday 7/21/11	Thursday 7/28/11	
August	7/31/11	8/24/11				8/18/11
September	8/31/11	9/21/11				

The **REMAC Refresher Written examination** is offered monthly for paramedics who meet CME requirements **and** whose REMAC certifications are either current or expired **less** than 30 days. To enroll, call **718-999-7074** before the register registration deadline above. Candidates may attend an exam no more than 6 months prior to expiration. Refresher exams are held at 07:00 or 18:00 hours at FDNY-EMS Bureau of Training, Fort Totten, Queens.

The **REMAC Quarterly Written & Orals examination** is for initial certification, **or** for inadequate CME, **or** for certifications expired **more** than 30 days. Registrations **must** be postmarked by the deadline above. Email swansoc@fdny.nyc.gov for instructions. You are encouraged to **register at least 30 days** prior to the exam - seating is limited. The exam fee as above is by **money order only**. The Quarterly is held at FDNY-EMS Bureau of Training, Fort Totten, Queens.