



Continuing Medical Education - News & Information

September 2010 - Volume 16, Issue 9

Multi-Agency Edition

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!

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(bold = new content)

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Journal CME Newsletter

Published monthly

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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

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

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

PEDIATRIC FEVER

BACKGROUND

We have discussed this in the past – when compared to the average EMS provider in this country, you care for a higher percentage of pediatric patients than most. EMS textbooks commonly refer to the “fact” that 10% of patients cared for by EMS providers are pediatric patients, and 10% of those are “sick” (by which we mean unstable or critically ill). A quick look through your ePCRs shows that the NYC story is a bit different.

In calendar year 2009, there were 703,878 ePCRs written by BLS and ALS providers. And while other EMS providers may see 10% pediatrics, nearly 13% (89,942/703,878) of the patients to whom you provide care are pediatric patients. You have more pediatric experience than the average EMS provider in the country. But among those pediatric patients, just how many are truly “sick?”

One way to assess the severity of the patients that you treat is to look at the skills and/or medications that are required for their prehospital care. So let’s look at that for pediatric patients last in 2009, treatments consistent with a critically ill / injured child (i.e. CPR, airway management, traction splint, AED use, etc) were performed for only 628 patients. Similarly, among those same 90,000 patients, medications other than those used for mild asthma and diabetic emergencies were only given to 490 patients.

The point is that you, as an FDNY EMS professional, see a fair number of pediatric patients. But most of them are not “sick.” And this makes having the knowledge set to help you identify that “rare” sick child is all the more important.

In last month’s CME article, Dr. Isaacs provided a fantastic review of pediatric assessment. In this month’s article, we will apply the lessons from that article to the assessment of one particular group of pediatric patients. Of the nearly 90,000 infants, children and adolescents that you cared for last year, one of the most common presenting problems was fever (15,531 / 89,942 or 17.3% of all pediatric patients), and so we will focus on this presenting problem with the goal of suggesting ways to distinguish the “sick” from the “not sick.”



INTRODUCTION

As it is among the pediatric patients for whom you are called, fever is a common chief complaint in all of pediatric medicine (20% of all pediatric emergency department visits). And yet the vast majority of children who have a fever are not “sick.” So, after seeing dozens or even hundreds of cases of pediatric fever, it may be tempting to downplay febrile illness as a routine and benign call. However, there are a few important causes of fever that can masquerade as the “common cold” or the “flu.”

Finding the truly “sick” patients can be like finding a needle in a haystack of runny noses, coughs, and body aches. But it is important to recognize when a child’s fever may have a greater chance of being caused by a serious underlying

infection. (Fever in a 2 week-old is not the same as fever in a 2 year-old; the seriousness of fever depends on the age and immunization status of the child.) This recognition can be important for dealing with the immediate consequences of that particular illness, for dealing with the transport of children in whom these illnesses have already been identified, for explaining your concerns to the patient and their family, and particularly for discussions with the parents / guardians when they decide to RMA – something that happens hundreds of times each year.

DEFINITION OF FEVER

When assessing a patient (adult or pediatric) who you have been told has a fever, there are three questions that you should ask the patient or caregiver about the fever: Was it that the patient “felt feverish” or had a recorded temperature? If there was a recorded temperature, how was the temperature taken? And what was the exact number that was recorded?

Patients will often be described as having a fever when, in fact, no one has actually taken their temperature. That said, these subjective or tactile fevers (“he/she felt warm”) are not entirely inaccurate, and they certainly do not require a “medical professional” to assess. Studies have found that, when a parent / caregiver describes a child as having “felt warm” or “felt feverish”, they are right nearly 2/3 of the time. And they are no more or less accurate than medical professionals who assess the same child. So while a subjective or tactile fever is not ideal, it should not be disregarded – the child likely did / does have a fever.

If the child’s temperature was actually documented, it is important to know how it was assessed. Fever is a core temperature greater than 100.4 °F (38 °C), most accurately measured via the rectum. This is important because axillary (armpit), tympanic (ear), and surface (those “dot” skin sensors) temperatures are notoriously unreliable, especially in young children (though we do not intend to add rectal temperature assessment to the protocols!). This means that any of these are useful for demonstrating when a fever is present (temperature >100.4 °F), but only a rectal temperature can reliably demonstrate when a fever is absent.



Finally, it is important to clarify with the parent or caregiver the exact numbers that were recorded then the temperature was assessed. A child’s temperature will often be reported as “a hundred and two”, when the caregiver actually means “100.2” not “102.0.” Sometimes this is obvious (i.e. “a hundred and nine”), but at other times it can mean the difference between having a fever and not having one (“one hundred and three” = 100.3 or 103.0?).

WHEN “FEVER” = “SICK”

As we have already said, and as you have no doubt experienced with your patients and maybe even your own children, most children who have a fever are not “sick.” But there are some situations in which a fever defines a child as sick. And this can be particularly important to remember because some of these children can appear quite well.

The seriousness of fever and the potential for a serious underlying infection depend upon the patient’s age, immunization status, and past medical history, and each of these factors work together. For example, a febrile child who is four years old most likely has a fever because of a viral infection, but an unimmunized four year-old child who is being treated for a childhood cancer or who has HIV / AIDS is susceptible to a number of life-threatening infections.

Age

Children are commonly split into four groups when it comes to the likely causes of a fever: newborns (0-28 days old), young infants (1-3 months old), older infants / toddlers (3-36 months old), and preschool / school age (3-18 years). The likely source for a fever in each of these groups varies, but the group that is at greatest risk for a serious underlying infection is the newborns.

Fever in a newborn baby is taken very seriously, because there is a higher risk of sepsis and death, even if the patient looks relatively well. Febrile infants often exhibit no specific signs or symptoms but rather have nonspecific irritability, poor feeding, or a change in sleep pattern. Not only is their immune system not yet fully functional, but they are exposed to unique potential pathogens at birth and have not yet begun to receive any vaccinations. For this reason, all newborns with a documented fever require hospital evaluation (and admission!).

Similarly, because immunization series have not been completed, young infants (1-3 months old) require evaluation in the emergency department. Although they may not require extensive testing or admission to the hospital, evaluation for potentially life-threatening infections must be done before a viral / less serious cause is presumed. As many as one out of every ten febrile children in this age group will have a serious bacterial illness, and as many as one in four may have a significant infection that, although viral, can lead to significant complications including death.

In older children who have had their immunizations, most fevers are due to viral infections, but a complete physical examination by a physician is still recommended. Thanks in part to successful immunization programs, the risk of a serious bacterial infection as the cause of a fever in this group (> 3 months of age) drops to less than one in five hundred.

Immunizations

Setting aside for a moment the issue of vaccinations and their safety / links to other conditions, the immunization programs in this country have lead to a significant decline in the number of serious viral and bacterial infections in children and the deaths associated with them. Figure 1, provided purely for informational purposes, shows the latest immunization recommendations from the Centers for Disease Control (CDC).

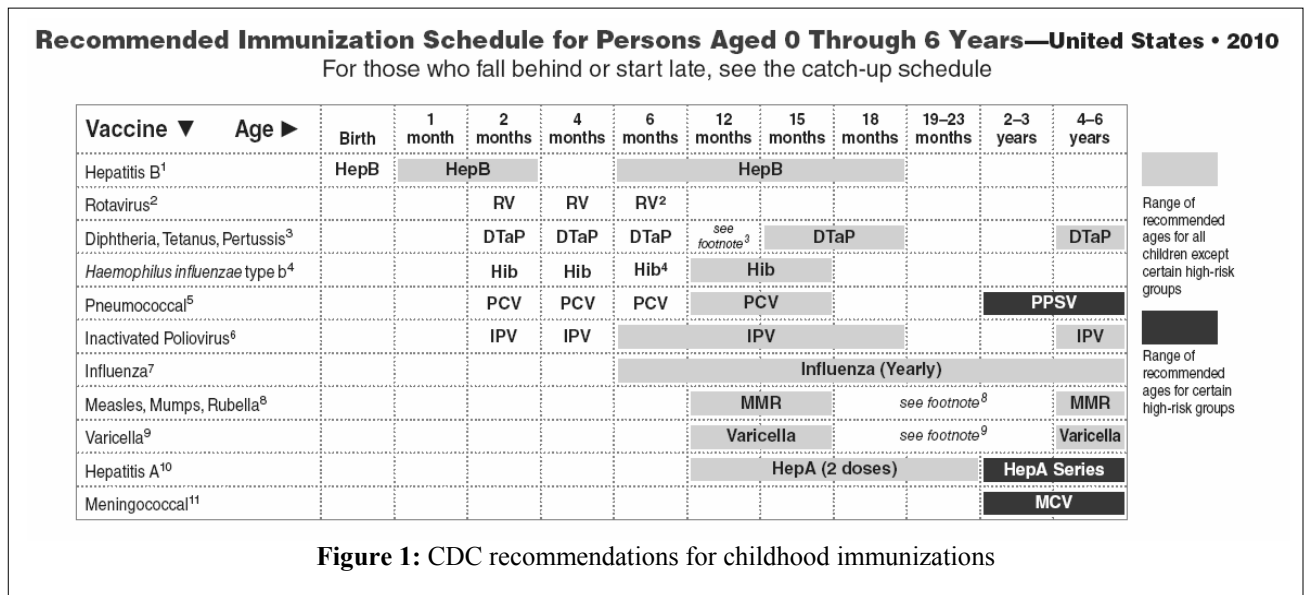


Figure 1: CDC recommendations for childhood immunizations

The important thing to note about this table is that prior to one month of age, the only disease against which immunizations have been started is Hepatitis B. All of the other common and potentially serious bacterial infections against which children should be immunized are not addressed with vaccinations until the second month of life, and they are not completed until the six month of life.

Despite these recommendations, some children do not receive immunizations at the appropriate times because of illness, parental concern for side effects, financial concerns, immigration status, and/or country of residence. In New York City, these are all concerns that must be considered when assessing the febrile child. While we should not put ourselves in a position of discussing the recommendations, we must ask about the status of the patient’s immunizations as a factor to be considered when thinking about the potential for a serious underlying infection. Children who have not received or completed the recommended immunizations are at higher risk for potentially life-threatening infections.

Past Medical History

Though most children are otherwise healthy, questions must be asked about the patient’s past medical history in order to assess the potential severity of the illness that is causing their fever. Children with HIV/AIDS, organ transplant recipients, and pediatric cancer patients (particularly if they are receiving chemotherapy, radiation therapy, or bone marrow transplants) are at higher risk for a serious underlying cause. Similarly, children with sickle cell disease are at higher risk because of the damage to and eventual loss of their spleen that occurs with this disease, putting them at greater risk for certain bacterial infections. The same is true with children whose chronic medical problems may be complicated by the apparent cause of their fever (e.g. asthmatics with respiratory infections, children with “V-P shunts” to treat their central nervous system abnormality who have fever and headache, children with congenital heart disease due to the likelihood of complications or even specific infections within the heart).

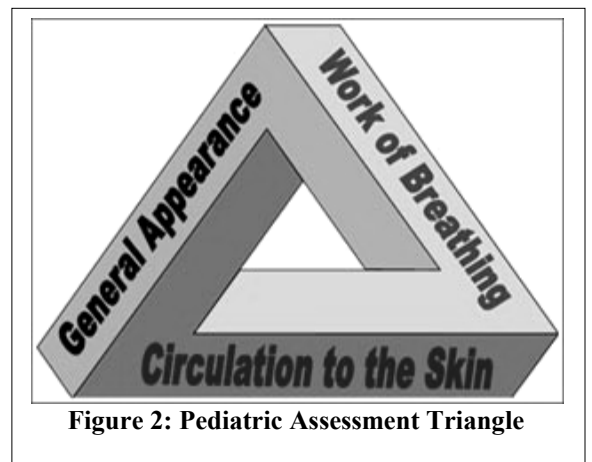
ASSESSMENT OF THE FEBRILE CHILD

The prehospital assessment of a febrile pediatric patient should begin as with any other assessment – a quick evaluation via the Pediatric Assessment Triangle and primary assessment, followed by a more detailed secondary assessment.

Pediatric Assessment Triangle

The appearance of the infant or child, as Dr. Isaacs mentioned in his article, is the most important item to consider when it comes to making a “sick” or “not sick” determination. Pediatric patients who are limp, who do not interact at an age-appropriate level, and in particular an infant or child who is irritable (crying and unable to be consoled / calmed by a provider or parent / guardian) should be considered “sick” and transported immediately.

Because ventilation is one of the mechanisms that the body uses to combat elevated body temperature and to expel the excess carbon



dioxide produced by the increased metabolism within the body, febrile pediatric patients are likely to be slightly tachypneic. But this should not affect their work of breathing.

Increased work of breathing and/or abnormal respiratory sounds suggest a more serious cause for the patient's fever. Stridor may occur with bacterial or viral infections of the upper airway, but stridor in either case is a sign of more serious illness. Grunting, nasal flaring, retractions, and/or head bobbing in infants suggests that the child is "sick" and needs urgent evaluation.

And although a fever will often result in flushed skin, the decreased perfusion and shock that may accompany more serious infections can occur and present as mottling, pallor or cyanosis. Any of these findings is a sign of a serious and advanced underlying infection and indicates the potential for respiratory and/or circulatory collapse.

Initial Assessment

The initial assessment of the febrile pediatric patients is not much different than the initial assessment of any other patient, but there are a few important things to note.

In assessing the patient's airway, a febrile child who presents with stridor and/or drooling (particularly if the child is unimmunized) may have a significant upper airway infection. This is critically important to recognize because attempts to manage the airway of such a patient with endotracheal intubation or an oropharyngeal airway may result in sudden and complete collapse of the airway. These patients should be placed in a position of comfort, provided with humidified oxygen if they are accepting of it or albuterol if there is also wheezing, and transported immediately.

We have already mentioned that febrile pediatric patients may be slightly tachypneic simply as a result of the fever, and infections that involve the respiratory system (whether they are viral or bacterial) may cause additional tachypnea and/or abnormal lung sounds that will be found when assessing the patient's breathing. And since last month's article mentioned that we would discuss abnormal breath sounds in this month's article, let's do that now...

Stridor – Mentioned above, stridor is a typically high-pitched sound, is usually noted on inspiration, and indicates upper airway obstruction. It may be "audible" or heard without the aid of a stethoscope, but when using a stethoscope it can be heard loudest when placing the stethoscope over the larynx or "Adam's apple" (as compared to when listening to lung sounds). In the setting of a fever, the most common cause is a viral infection known as "croup", though it may be heard in other viral infections, in the setting of life-threatening bacterial infections (see above), or even foreign body airway obstruction.

Wheezing – This is the sound created when air moves through smaller airways (bronchioles) that are constricted or partially obstructed. They are more commonly heard on exhalation (expiratory wheezes), but inspiratory wheezes may also occur with more significant small airway obstruction / constriction. In the setting of a fever, wheezing may indicate a pulmonary infection (bacterial or viral) or a worsening / exacerbation of the patient's underlying lung disease (i.e. asthma). In either case, for patients age one and older, albuterol may be administered for the treatment of the patient's wheezing.



Expiratory grunting – This ominous sound, which is lower pitched than stridor and heard on exhalation rather than inhalation (the opposite of stridor) is an attempt by the patient to keep their lungs (alveoli) open by creating a small amount of positive pressure by exhaling against a closed epiglottis or airway that is narrowed by the tongue. Whether the child has a fever or not, grunting is a sign of impending respiratory failure / arrest and you should be prepared to have to assist ventilations / manage the airway.

Inspiratory crackles – Just as in a patient with pulmonary edema, inspiratory “crackles” or rales are fine breath sounds create by the airways (alveoli) popping open with inhalation. (This sound is easily simulated by placing a few hairs between your fingers, placing your fingers next to your ear, and rubbing your fingers together.) In the setting of a fever, pulmonary infections (e.g. bronchitis, pneumonia) may result in fluid accumulation in the alveoli. Because these are different than wheezes, albuterol does not have a role in the treatment of a patient who has inspiratory crackles / rales.

Rhonchi – These are course, low-pitched (even gurgling) sounds that result from fluid in the larger airways. In a febrile child, these abnormal breath sounds may indicate either a viral or bacterial infection and, like crackles, should not be treated with albuterol unless accompanied by wheezing.

Decreased / absent lung sounds – Decreased lung sounds over one area of the chest, in the setting of a fever, indicates that air is either not entering that section of the lung (i.e. it is obstructed / filled with fluid – often this will be heard along with other abnormal lung sounds in the same area) or that the sound created by air entering that part of the lung is not able to be heard because of fluid collected between the lung and the chest wall (an effusion), or it could even be both. In either case, supplemental oxygen should be provided because of the likely impaired oxygenation in the affected area of the lung.

Elevation of body temperature (fever) will cause an increase in heart rate as well. On average, a young child’s heart rate will increase 9-10 beats per minute for every degree that their temperature is elevated above 38oC. In addition, fever results in increased fluid loss from the body (e.g. increased evaporation / sweating, increased respiratory loss due to tachypnea) and may be further complicated by other fluid loss that accompanies the infection (i.e. diarrhea, vomiting).

Although the normal heart rate of even an infant does not exceed 160 beats / min, a child’s heart rate may compensate for fever and fluid loss by increasing to a maximum of (220-age in year) beats / min. This means that an infant’s or even child’s heart rate may easily exceed 180-200 without being due to a dysrhythmia. So in the setting of a fever, ALS treatment for the heart rate (“SVT”) is not needed and may actually harm the patient.

Secondary Assessment

There are few things in the secondary assessment that will alter the care that you provide to a febrile pediatric patient, but there are a few worth noting because of their importance as physical exam findings.

Skin – In a febrile child, moving beyond the pediatric assessment triangle, one important physical examination finding (particularly for an unimmunized child) are



petechia. Petechia are small (1-3mm) deep red or even purple lesions within the skin that do not fade / blanch / go away when you press on the skin with a gloved finger. This skin finding, which almost appears as though the patient has been repeatedly poked with a small needle, is seen in a variety of viral illnesses, but it is also seen with infections by one of the more serious causes of meningitis (*N. meningitidis*) which may be found in as many as 7-11% of patients with fever and petechiae. Because of the concern for your own health, you should check with the physician treating these patients in the emergency department to determine if follow-up, prophylactic treatment, and exposure reporting are necessary for you.

Head – In infants, particularly those that are irritable / inconsolably crying, it is important to gently palpate the fontanelles (“soft spots”) in the skull. Because the anterior fontanelle closure varies from child to child (closure between 4-26 months, most commonly between 7-19 months), you may or may not be able to palpate it in a particular patient. When a child is crying, coughing, or vomiting, the anterior fontanelle will normally bulge. But if this is palpated in an infant who is not doing one of these things, particularly in the setting of a fever, it indicates increased intracranial pressure due to the infection. This should be immediately reported to the hospital and, like petechia, should suggest a need to speak with the treating physician in the emergency department regarding implications for yourself and your partner.

Eyes – It may be tempting to “write off” a red eye with or without some crusting as “pink eye”, but there are certain eye infections that can actually threaten the vision of the patient. Therefore, this always requires further evaluation in the emergency department.

Nose / Ears / Mouth – Although our system does not utilize it, there are areas in the country where EMS providers (paramedics) perform ENT examinations using an otoscope.

Neck – We all know that neck stiffness in the setting of a fever (and headache) can be a sign of meningitis. But keep in mind that infants and toddlers typically do not have this finding, so its absence does not make a serious underlying infection less likely.

Chest – See above for a description of lung and heart findings and their meaning.

Abdomen – Any abdominal pain in the setting of a fever is concerning. And while pain in the right lower quadrant of the abdomen is often associated with appendicitis, many patients will present without this “classic” finding. For this reason, fever with abdominal pain should always be evaluated in the emergency department.

Extremities – See above regarding examination of the skin. In addition, fever with joint pain (one or more) can be a sign of several potentially serious infections and should be further evaluated in the emergency department.

DIAGNOSIS

As Dr. Isaacs mentioned in his article, “Diagnosis is a secondary goal.” In the case of the febrile child, it is not a goal at all. While we need to be concerned about particular serious infections and may even be able to identify them, the actual diagnosis requires examination and testing that we just do not do in the field. But that does not eliminate the need to be

aware of the potential for these serious infections or to advocate for evaluation of the febrile child in the emergency department.

COMPLICATIONS OF A FEVER – EMS IMPLICATIONS

There are few complications of a fever that need to be treated in the prehospital setting, but those that are worth mentioning are described below...

Rigors

Rigors are uncontrolled shaking that occurs in response to a fever. As the body resets its thermostat and tries to raise body temperature in response to the fever, the patient may actually feel cold until their body temperature rises to that new set point. In response the patient may actually begin to shiver, and rigors can be considered an exaggerated form of shivering. It is important to recognize that patients do not lose or have an alteration of consciousness with rigors, something that helps to distinguish them from febrile seizures (see below). Children who are experiencing rigors should be kept warm, even though this may seem counterintuitive in a patient who has a fever.

Febrile Seizures

Febrile seizures are a common complication of fever, occurring at some point in 3-5% of children. They are more common in males (2/3 of cases) and occur most commonly in one year-olds, though they typically occur in children up to five years of age. They are also more common in children who have a family history of febrile seizures or who have had a febrile seizure themselves in the past.

Febrile seizures may be divided into two categories: simple (80%) and complex (20%). Simple febrile seizures are generalized (Grand Mal), last less than fifteen minutes, and occur only once in a 24-hour period. These seizures, because they are self-limited, do not require treatment and have often resolved prior to EMS arrival (if that was the reason for the call). Complex febrile seizures are those that are focal (no loss of consciousness), last longer than 15 min, or happen two or more times in a 24 hour period. Prolonged generalized seizures and recurrent seizures witnessed by EMS providers should be treated as any other on-going seizure with airway maintenance, supplemental oxygen, positioning to prevent injury, and benzodiazepines.

Croup

We discussed croup (otherwise known as laryngotracheobronchitis – inflammation from the larynx to the bronchioles) above, but there is one more point worth mentioning. Croup occurs most often in the late fall, winter, and early spring, and it is most common in the age range from six months to six years. The inflammation that it causes in the airway may result in stridor, wheezing, respiratory distress, and a “barking” or “seal-bark” cough.



Though the mere act of moving the patient to the ambulance (and into the cool night air, since most exacerbations happen at night) may relieve the patient's symptoms, patients with severe respiratory distress may require additional ALS treatment (do not delay transport to call for them!).

In the setting of delayed or prolonged transport of a child that you suspect of having croup and who is in severe respiratory distress (stridor at rest, increased work of breathing, hypoxia, retractions), contacting OLMC for a discretionary order for nebulized epinephrine (but never epinephrine via auto-injector) is appropriate. To do this, mix 0.5mg (0.5cc) of a 1:1,000 solution of epinephrine in 3-5cc of saline and administer via nebulizer – but keep in mind that this can only be done at present as a discretionary order.

CONCLUSION

You and your colleagues transport over 15,000 children every year who have a fever. Fortunately, nearly all of them are not critically ill and most do not require hospital admission. But the ability to recognize those children who are potentially “sick” and to treat the few complications of fever that require prehospital intervention is what provides them with prehospital medical care and not simply a means of getting to the emergency department.

Written by:

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References

- 2010 Child and Adolescent Immunization Schedules – accessed via the CDC website (http://www.cdc.gov/vaccines/recs/schedules/downloads/child/2010/10_0-6yrs-schedule-pr.pdf)
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CME JOURNAL 2010_J09: PEDIATRIC FEVER QUIZ

- 1. Which of the following is the most accurate method of assessing a child's temperature?**
 - a. oral
 - b. tympanic
 - c. skin
 - d. rectal
 - e. tactile

- 2. Which of the following is not true regarding pediatric patients and FDNY EMS?**
 - a. More than 15,000 pediatric patients with a presenting problem of fever were transported in 2009.
 - b. Pediatric patients comprised more than 13% of all patient contacts in 2009.
 - c. The majority of febrile pediatric patients in 2009 were RMA'd.
 - d. Less than 1,000 patients received skills consistent with a critical illness or injury in 2009.
 - e. Less than 1,000 patients received medications consistent with a critical illness in 2009.

3. **Which of the following is true if a parent or caregiver states that a child “felt like they had a fever?”**
- The child is likely to have not had an actual fever.
 - Parents are as good as medical professionals at assessing fever by touching the skin.
 - Tactile assessment of fever is only reliable in older children.
 - Without a recorded numeric temperature, reports of a tactile fever may be disregarded.
 - All of the answers listed here are true.
4. **Which of the following breath sounds is not correctly described?**
- Wheezes – high-pitched, typically inspiratory sounds
 - Rhonchi – low-pitched, almost gurgling sounds caused by fluid in the larger airways
 - Stridor – high-pitched sound heard over the neck more than chest, indicating airway obstruction
 - Rales – popping open of alveoli, sounds like rubbing hairs between your fingers
 - All of the answers listed here are true.
5. **In which of the following groups is a fever always a cause for hospital evaluation (and admission) due to the high likelihood of a serious underlying infection?**
- 0-28 days
 - 1-3 months
 - 3-36 months
 - 3 years – 10 years
 - 10 years – 18 year
6. **When a patient suspected of having croup is in moderate to severe respiratory distress and transport is delayed or prolonged, which of the following may be useful in treating the patient’s respiratory condition?**
- nebulized epinephrine
 - position of comfort
 - cool night air
 - humidified air
 - All of the answers listed here are true.
7. **Which of the following patients should not have endotracheal intubation performed in the event of respiratory distress / arrest for fear of immediate airway loss?**
- 3 year-old male with a “seal-bark” cough
 - 2 year-old male with diffuse expiratory wheezes
 - 10 year-old female who was drooling with stridor
 - 12 year-old male with diminished left-sided breath sounds
 - 13 year-old female with rhonchi and diminished right-sided breath sounds
8. **Benzodiazepines are not appropriate for which of the following types of febrile seizures?**
- Focal seizures
 - Seizures lasting more than 15 minutes.
 - Recurrent seizures.
 - Witnessed, generalized seizures.
 - All of the answers listed here are true.
9. **Which of the following is incorrect about petechia?**
- Typically 1-3mm in size
 - Light pink or brown in color
 - Associated with both viral and bacterial infections
 - Do not blanch / clear with direct pressure
 - Should raise concern for healthcare provider exposure
10. **Which of the following is not correct about the pediatric assessment triangle?**
- Does not require vital signs
 - Includes assessment of general appearance
 - Includes an assessment of lung sounds
 - Includes an assessment of the skin (circulation)
 - Can be performed without touching the patient

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.

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

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Citywide CME – September 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	1 st Wed	0800-0900	Nov 1 Lecture	121 Dekalb Ave, Mazer Lecture Room near ED	Dr Lehrfeld	David Lehrfeld MD 503-961-5113
	Kingsbrook	9/16	1530	Drug Interactions	ED Conference Room	Dr Hew	Manny Delgado 718-363-6644
		10/21		History of Present Illness			
	LICH	9/13	1000-1200	Lecture & Call Review RSVP →	Avram Conference Room "G"	Dr Vlasica	Aaron Scharf 718-780-1859
10/4							
Lutheran	4 th 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	8/25	1030-1430	Call Review or Lecture	Fort Totten Bldg 325	TBA	swansoc@fdny.nyc.org
		9/22					
	Flushing Hosp	3 rd 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	3 rd Wed	1830-2130	Call Review	Board Room, 1st flr		pabruzzo@capitolhealthmgmt.com
Queens Hosp	2 nd Thurs	1615-1815	Call Review	Emergency Dept			718-883-3070
	4 th Thurs						
SI	RUMC	9/8	0900	Call Review & CPAP	SIPP auditorium	Dr. Ben-Eli	William Amaniera 718-818-1364
		10/7	1400	Call Review & CPAP	MLB conference room		

2010 NYC REMAC Examination Schedule

Month	<u>REMAC Refresher Exam</u> (Written only - CME letter required)		<u>REMAC Quarterly Exam - \$100 fee</u> (Written & 3 Orals Scenarios)			NYS/DOH Written Exam
	Registration Deadline	Exam Date (on Wednesdays)	Registration Deadline	Written @18:00	Orals @09:00	
January	12/31/09	1/20/10	Thursday 1/7/10	Thursday 1/21/10	Wednesday 1/27/10	1/21/10
February	1/31/10	2/17/10				
March	2/28/10	3/24/10				3/18/10
April	3/31/10	4/21/10	Thursday 4/8/10	Thursday 4/22/10	Thursday 4/29/10	
May	4/30/10	5/26/10				5/20/10
June	5/31/10	6/23/10				6/17/10
July	6/30/10	7/21/10	Thursday 7/8/10	Thursday 7/22/10	Tuesday 7/27/10	
August	7/31/10	8/25/10				8/19/10
September	8/31/10	9/22/10				
October	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

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.