



Continuing Medical Education - News & Information

February 2010 - Volume 16, Issue 2

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 card 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

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

Online CME: www.EMS-CE.com www.MedicEd.com
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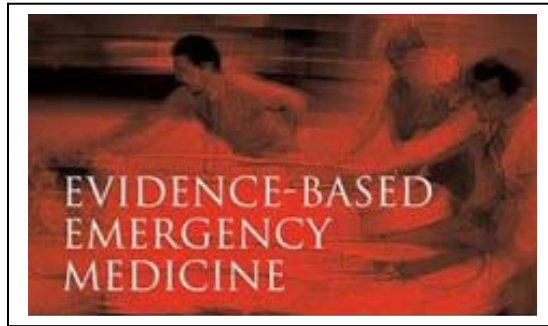
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FDNY OLMC Physicians and ID Numbers

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

Acting on the Evidence



Introduction

Well, it's that time of year again – time for the latest updates to our prehospital protocols. 2009 was a rather unusual year for our protocols. As opposed to the January 1 changes that had been routine in recent years, changes were implemented in both January and July, as you know. And while there were good reasons for both sets of changes, the decision was made by REMAC to avoid this situation in the future and to regulate the implementation of protocol changes within the Region. So, beginning this year, protocol changes will only be implemented on April 1st (yes - April Fool's Day - just to get the jokes out of the way now).

This month's article will review the changes that will take effect on April 1, 2010 and will attempt to provide some explanation for each change (yes, this means a rather long article). As in years past, we will begin by reviewing those changes that are specific to the BLS sections of the General Operating Procedures and BLS protocols before moving on to the ALS-related changes. And also as in year's past, a PowerPoint presentation has been prepared to guide you through these changes in a more interactive way while still providing the information that will be contained in this article. That presentation has been made available to every station and will be available on the REMSCO website (www.nycremsco.org).

In Memoriam – Dr. Gary Lombardi

Before we begin to discuss these changes and the new protocols, it is only appropriate to first pay our respects to Dr. Lombardi – a man whose influence on this EMS system and many present and past providers cannot be overstated. Having begun his medical career in the NYC EMS system as an ambulance driver in 1968, he graduated as a member of NYC's first paramedic class in 1974. He went on to earn his medical degree eight years later and then returned to NYC EMS in 1985. His cardiac arrest research provided the first assessment of cardiac arrest survival in New York City and the foundation upon which we continue to build today. And his weekends at the FDNY's On-Line

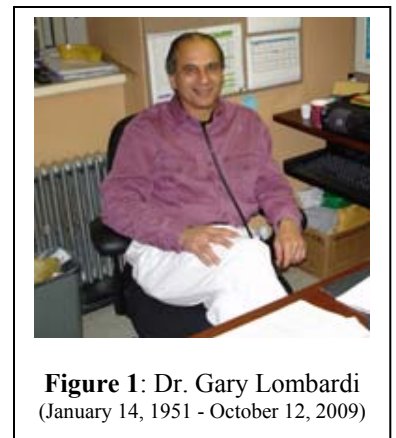


Figure 1: Dr. Gary Lombardi
(January 14, 1951 - October 12, 2009)

Medical Control site, something that he continued until just before his death, kept him involved in this system and allowed him to interact with nearly every provider in this system and countless patients.

He was without question one of the most influential individuals to have ever been involved in this EMS system, and his work will never be forgotten. But more than that, he will be missed. Rest in peace, Gary.

A Decade of Change

There have been a lot of changes to our protocols over the course of this past decade. And while some have complained about these changes and asked that the REMAC “just leave the protocols alone,” (yes, we read your Facebook posts), it is important to realize just what these changes have accomplished and where they have taken our medical care in the past few years.

At the start of this decade, patients were forced to wait while paramedics called for “orders” to treat their pain, their on-going seizures, and/or their burn-related suffering. With few exceptions, patients were transported to the nearest hospital without regard for the capabilities of that facility and its staff to deal with specific conditions (STEMI, stroke, sexual assault, successful resuscitation). Any patient with head or neck injuries required immobilization. Cardiac arrest patients were treated with a focus on ALS care and drug therapy, resulting in a lack of focus on the basics of resuscitation. No WMD protocols existed. BLS providers who found themselves treating a patient in anaphylactic shock had to await the arrival of ALS or simply transport the patient. There were many drugs that were not used in our system (hydroxocobalamin, ipratropium, etomidate, vasopressin). CPAP and alternative airways were not included in our protocols. And the list goes on...

Today, we have improved all of these areas and more. STEMI patients, sexual assault victims, patients with acute strokes, and post-arrest patients are transported to hospitals whose capabilities are best suited to treat their condition. Our cardiac arrest protocols have been optimized to ensure a focus on the basic principles of resuscitation and, as a result, patients are more likely to achieve ROSC today than ever before. BLS care has been expanded to include the administration of albuterol to a wider range of patients, the use of autoinjectors for anaphylaxis and WMD events, expanded defibrillation capabilities through the application of adult AEDs for pediatric patients and infants, the application of selective spinal immobilization, and a number of other improvements related to the care of medical and trauma patients. And ALS care has seen a large number of changes including the administration of benzodiazepines and narcotics under standing orders, waveform capnography monitoring for airway placement and maintenance, the option to administer benzodiazepines for the sedation of agitated / violent patients, the addition of medications such as etomidate and hydroxocobalamin and vasopressin, the use of biphasic defibrillation and alternative advanced airways, mandatory 12-lead EKG capability and transmission, CPAP, and management of severe asthma exacerbations under standing orders.

These changes have been essential to the delivery of the best possible medical care to each of the over one million patients for whom you are called to provide emergency medical care each year. Just as when you seek

medical care for yourself or your family, those patients expect the medical providers to whom they turn to provide the best possible care that is based on the latest medical science.

<u>Year</u>	<u>Emergency Medicine</u>	<u>EMS</u>	<u>Resuscitation</u>
2001	2,221	951	2,393
2002	2,304	998	2,407
2003	2,393	1,122	2,584
2004	2,565	1,160	2,810
2005	2,917	1,284	2,960
2006	3,194	1,393	3,155
2007	3,250	1,368	3,180
2008	3,735	1,487	3,422

Table 1: Number of scientific articles published in each of these three areas, showing the constant increase in medical knowledge related to the care that we provide.

And that is why our protocols have and will continue to change. As the science of medicine finds new, effective treatments for emergency medical conditions, they should be and will be added to our protocols. And as other treatments are found to not be effective, and particularly when their use can be harmful, we will remove them from our protocols or alter their use in a manner that allows us to continue to use them effectively.

Each of these decisions must be based upon a review of the latest medical knowledge, including data from within our own system, a process known as evidence-based medicine. And given the rate at which the body of medical

knowledge is growing (Table 1), our efforts to ensure the best possible prehospital medicine for our patients requires us to keep pace. We would expect no less of someone caring for us or a loved one, and we can expect no less of ourselves, our system, and our protocols.

General Operating Procedures – BLS

There are two changes to note in the General Operating Procedures that relate to BLS care. These include changes to the section pertaining to oxygen administration and the section dealing with the initiation of patient transport.

Treat the Problem, Not the Rate

The decision to assist a patient’s ventilations must be based upon the inability of their own respiratory effort to accomplish either of the two reasons that we all breathe – oxygen and carbon dioxide exchange, or oxygenation and ventilation. Failure of either of these two essential functions, or failure of supplemental oxygen to correct them, should be a factor that causes us to assist the patient via bag-valve-mask.

At some point during our initial EMT training, all of us learned that a respiratory rate of less than eight or greater than twenty-four was an indication for assisted ventilation. And that language could even be found in the Oxygen Administration section of the General Operating Procedures where it stated that, for patients with such respiratory rates, “assisted ventilations may be required.”

But the key word in that sentence is “may.” If you think about most of the patients for whom you have cared whose respiratory rates met these criteria, they did not need any assisted ventilations. In fact, in 2009,

FDNY EMTs and paramedics cared for over 25,000 such patients, and the vast majority did not require BVM ventilation or airway management.

For this reason, the reference to these respiratory rates has been removed from the Oxygen Administration section of the GOPs. And it has been replaced with language that actually addresses the problems for which we would need to consider assisted ventilations. This means that we need to focus our attention, assessments, and decisions to provide BVM ventilation on these items – oxygenation, ventilation, and airway protection.

Oxygenation: Hypoxia is “a deficiency of oxygen reaching the tissues of the body”, while hypoxemia is “inadequate oxygenation of the blood.” In assessing a patient’s oxygenation, we need to look for signs and symptoms of both.

Cyanosis is the most easily recognizable sign of hypoxemia. The lack of oxygen results in the bluish discoloration that is visible in the skin (particularly that of pale or fair-complected individuals), mucous membranes, and nail beds. But even this is not a 100% reliable indicator of the need for assisted ventilation. This is because some patients may be chronically cyanotic (COPD – “blue bloaters”), may have cyanosis due to non-respiratory causes (certain drug overdoses such as “poppers” – amyl nitrite), or may have hypoxia that will improve with just supplemental oxygen therapy.

So what are other signs and symptoms of hypoxia? With or without accompanying cyanosis, hypoxic patients may demonstrate any of the following signs / symptoms: tachycardia, gasping or altered respiratory rate (increased or decreased), altered mental status (confusion, agitation, anxiety, lethargy, coma), seizures, dizziness, headaches, nausea, vomiting, poor judgment, and/or paresthesias.

Ventilation: In addition to bringing oxygen into the body, the movement of air in and out of the lungs with each breath allows the body to remove carbon dioxide by moving it from the bloodstream to the outside air. Within the lung’s small air sacs (“alveoli”), oxygen moves from its area of high concentration (within the inhaled air) to an area of low concentration (the blood). Carbon dioxide, in turn, moves in the opposite direction from its area of high concentration (the blood) to an area of low concentration (the inhaled air, which is then exhaled).

Inadequate ventilation results in an inability of the body to rid itself of the necessary amount of carbon dioxide. Assuming that the patient has sufficient blood flow to bring the blood to the lungs, only two other things determine the ability of the patient to effectively ventilate themselves – respiratory rate and tidal volume (the amount of air that passes in and out of the respiratory system with each breath).

The amount of air that moves in and out of the respiratory tract over sixty seconds is known as the “minute volume” and is a good marker of ventilatory status. And that number is calculated by multiplying the respiratory rate and the tidal volume ($MV = RR \times V_T$). Since most of us breathe twelve times a minute and 500mL (or ½ liter) per breath, the average person needs six liters of minute ventilation to successfully eliminate carbon dioxide from the body. So with that in mind, let’s consider a couple of scenarios and the respiratory status of some patients:

- *Scenario #1: A patient with deep sighing breaths (800-1,000mL / breath) at a rate of ten breaths per minute would have a minute volume of 8-10 liters. Unless signs of hypoxia were present, assisted ventilations would not be needed.*
- *Scenario #2: A patient with shallow respirations (~300ml per breath) at that same rate (ten per minute) would have a minute volume of three liters. Because their minute volume would provide less than half of the ventilation that their body is likely to require, assisted ventilation would likely be needed.*
- *Scenario #3: A patient with those same shallow respirations (~300ml per breath) and rate (ten per minute) who just lost consciousness after severe hyperventilation may require no assisted ventilation – their body is just making up for the fact that they “blew off” too much CO₂, so the low ventilation rate that you are witnessing is all that they require for the moment.*

The point is that, regardless of the patient’s ventilation rate, your assessment of their ventilation status and a decision about their need for assisted ventilation has to take the bigger picture into account. What is their respiratory rate and volume? Is their ventilation sufficient to meet their physiologic needs at the present time? Do they demonstrate other signs of “inadequate” ventilation such as sonorous respirations, altered mental status, etc? Are they also demonstrating signs of hypoxia?

Airway Protection: The final point to address in the assessment of a patient who may need assisted ventilation is the ability to maintain airway protection. Conscious patients are able to protect their airway from foreign bodies, vomitus, and other substances. Even when a small amount of foreign material enters the airway, gag and cough reflexes will help a patient to expel that material in order to prevent obstruction or other harm to the lower airways.

In the unconscious patient, their airway reflexes are most easily assessed by attempting to mildly stimulate the gag reflex. This is an important part of the initial airway assessment because the lack of a gag reflex suggests that the patient is unable to protect their airway. So, if that patient is in need of assisted ventilation, one must be cautious to not cause gastric distension. Forceful ventilation that pushes air into the stomach may stimulate vomiting and, given that the patient cannot protect their airway, may result in aspiration and cause further compromise of oxygenation and ventilation.

Finally, when ALS is present, the lack of airway protection is best addressed by the placement of a definitive airway (endotracheal tube, Combitube, or King Airway). Their presence will also allowed for more controlled ventilation that may be guided by the patient’s pulse oximetry and waveform capnography data.

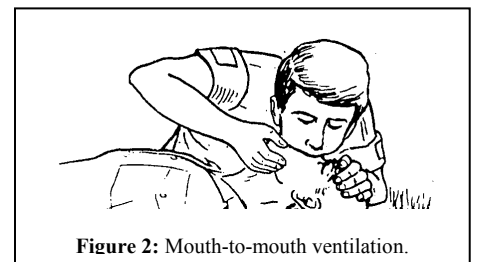


Figure 2: Mouth-to-mouth ventilation.

Acknowledging Required Equipment

The other change to the Oxygen Administration portion of the GOPs is the removal of references to mouth-to-mouth or mouth-to-nose ventilation. Because all ambulances are required to have ventilation equipment

(bag-valve-masks, pocket masks), there is no reason that a provider should have to perform mouth-to-nose or – mouth ventilation.

That said, the skill is also not forbidden by these protocols. So, if there was a situation in which you needed to provide mouth-to-mouth or mouth-to-nose ventilation, the option of perform this potentially life-saving skill still exists.

To Transport or To Wait – That is the Question

The GOPs have always stated that, when “the time of arrival of Advanced Life Support exceeds the time to the hospital, transport from the scene should not be delayed.” But there are certainly times when the care that you will deliver as a BLS provider is more important than expediting transport, and there may be times in the future when allowing ALS providers the time necessary to arrive and evaluate / treat the patient may outweigh the time spent waiting on the scene. For these reasons the words “unless otherwise specified in a particular protocol” have been added to the end of this sentence.

One example of where this is already true is in the management of cardiac arrest. Protocol 404 (Non-Traumatic Cardiac Arrest) states that ALS should be requested but that use of an automated external defibrillator should also be performed prior to transport. This includes the delivery of two minutes of CPR and up to three defibrillatory shocks with two minutes of CPR between each. Clearly this life-saving care takes precedence over transport. And now our GOPs reflect this and allow for such care.

BLS Protocols

401 – Respiratory Distress / Failure

There are three simple changes that were made to this protocol, two of which we have already discussed. First, as explained above, the reference to respiratory rates have been removed. Second, also explained above, mouth-to-mouth and mouth-to-nose ventilation have been removed. Finally, the initial note in this protocol has been modified to include the MOLST (Medical Orders for Life-Sustaining Treatment) orders which may specify that a patient does not wish to receive artificial ventilation.

407 – Wheezing

In 2007, the FDNY changed the dispatch algorithms for the 911 system in a way that resulted in thousands of asthma calls from an ALS response to a BLS response. This was done with the knowledge that the majority of asthma patients do not require ALS care, that BLS providers can successfully and effectively administer nebulized albuterol, and that the patients likely to need only BLS care can be identified via a series of questions at the time of dispatch.

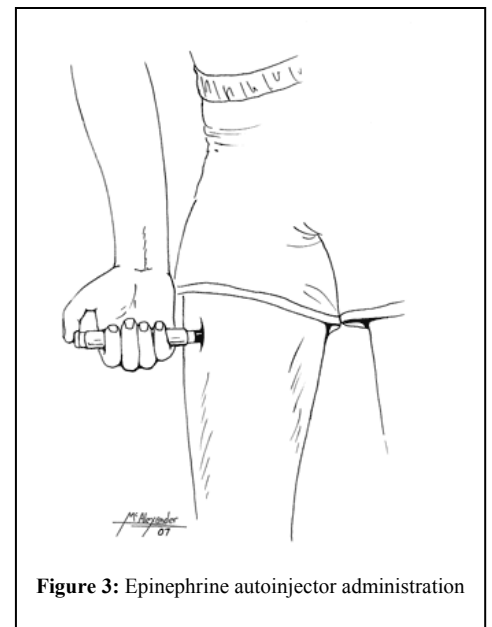


Figure 3: Epinephrine autoinjector administration

This algorithm change has been incredibly effective, providing BLS responses to thousands of asthma patients while only 2-3% of those patients ultimately require subsequent ALS response / care. But among those 2-3% of patients, there remain a handful (1-4 per month) for whom more aggressive and immediate treatment is needed.

Beginning in July 2009, BLS ambulances were required to carry epinephrine autoinjectors for the treatment of anaphylaxis. This was done knowing that, like albuterol administration to asthma patients, BLS providers can safely and effectively administer these autoinjectors to anaphylaxis patients in order to avoid the respiratory failure and arrest that may result if those patients had to wait for an ALS response or to be transported to the hospital. So, if you can provide this treatment for anaphylaxis, why not for the critical asthma patient?

You have all listened to the lung sounds of a critical asthmatic and heard that eerie lack of any lung sounds or air movement. When this degree of bronchospasm occurs, the patient is unable to move enough air (tidal volume) to allow for the delivery of albuterol into the lower airways where it is needed. Epinephrine, as in anaphylaxis, is able to be absorbed into the blood stream and delivered to the lungs even when respirations are this severely impaired. There, through the same mechanism as albuterol (beta receptors), it produces the relaxation of the smooth muscle within the airways (bronchodilation).

Beginning April 1st, when faced with a critical asthmatic (i.e. requires BVM ventilation) who is under the age of thirty-three, one EMT should assemble the necessary airway equipment while the other EMT obtains and administers an epinephrine autoinjector. Administration of the epinephrine should not wait for BVM ventilation to be initiated. In fact, it should be done simultaneously or even before ventilation is begun. If ALS has been requested and is able to arrive before patient transport, notify the paramedics of the epinephrine administration. And ensure that the use of the autoinjector is also properly documented in your ePCR / ACR.

Use of the epinephrine autoinjector under standing orders is safe because there is little risk of causing significant adverse cardiac effects (chest pain, angina, myocardial infarction) in young patients. For older patients, BLS providers would need to contact OLMC for a discretionary order that would allow for the administration of a epinephrine autoinjector. In either case, whether given under standing orders or as a discretionary order, it must be reported to your agency medical director who will in turn need to report it to REMAC as part of a mandatory quality assurance measure.

421 – Head and Spine Injuries

Last year, the use of selective spinal immobilization was added to this protocol. What was not clear from the wording of the protocol was when the patient's symptoms and signs needed to be considered. Because the intent was to provide immobilization for anyone who met any of the listed criteria at the time of your evaluation or at any point since the time of injury, the wording of this protocol was modified to clarify this point. For example, consider "GCS <15." If the patient is conscious and alert at the time of your evaluation (GCS = 15) but lost consciousness at the time the accident / injury, they require immobilization.

423 – Chest Injuries

The use of bulky dressing is no longer recommended for the treatment of suspected flail segments. The thought behind this treatment was that the application of pressure to the affected area would help to stop or reduce the paradoxical movement that was causing hypoventilation within the part of the lung beneath the injury. But in reality, the pain that the patient would experience would cause them to breathe more shallowly, worsening their ventilation more than the injury alone may cause. So, if a patient is hypoventilating as a result of the suspected flail segment, consider the need for positive pressure ventilation. If transport is delayed or prolonged, you should also consider calling for ALS assistance.

425 – Bone and Joint Injuries

Over five years ago, the REMAC approved the use of morphine by ALS providers as a standing order for the management of pain resulting from isolated extremity injuries in adults and children. But most of the calls that involve these types of patients remain BLS call-types in the 911 system. And because our dispatch algorithms are not likely to change these calls to ALS call-types, there are certainly situations in which delayed or prolonged transport may allow for ALS response in order to provide pain management. So a note was added to this protocol as a reminder of this ALS treatment option and to encourage you to call for ALS assistance in such situations (i.e. MVAs with prolonged extrication and an isolated extremity injury; an entrapped extremity such as a construction site or a scene involving machinery where extrication is required; falls with severe pain from a hip injury that prevents patient movement). But remember that transport should not be delayed simply to provide pain management, particularly when the patient's pulses in the affected extremity are lost, and such requests are only appropriate for injury isolated to one extremity.

428 – Burns

More recently, the ALS burn protocol was changed to allow for the administration of pain medication under standing orders for the management of severe pain resulting from burns. So a note similar to the one added to BLS Protocol 425 was also added to this protocol. When transport is delayed or the patient's pain is so severe that it prevents appropriate treatment, consider ALS assistance for the provision of pain management.

The other change to this protocol was the removal of saline-moistened dressings for the treatment of all burns. Instead, because of the risk of causing hypothermia and wound contamination, the use of saline-moistened dressings should be limited to burns that are less than 10% body surface area (BSA). Larger burns are to be treated only with dry, sterile dressings.

430 – Emotionally Disturbed Patients

Similar to Protocols 425 and 428, a note has been added to this protocol to remind BLS providers of the ALS protocol which allows for the administration of sedative agents to severely agitated / violent patients. While this is not necessary or appropriate for most EDPs, patients whose psychosis puts them or you at risk for injury,

or when the police require significant physical restraint to control the patient, a request for ALS assistance would be appropriate.

431 – Heat-Related Emergencies

The recommendation that patients be given normal saline to drink has been removed. As anyone who has ever accidentally swallowed water while swimming in the ocean can tell you, saline solutions are a quick way to induce nausea and vomiting. If water (even bottles of sterile water) are available and the patient is alert, they may be given this to drink.

General Operating Procedures – ALS

Saving More Ink

For the past several years, the GOP section dealing with Interpretation of Protocols has been modified to reflect which protocols apply to pediatrics, adults, or both. But every year, as our protocols become more and more progressive, we had to reword this section. So, in an effort to save ink and constant rewording of this section, it was changed (or simplified) by removing that last paragraph, “Protocols 501 through”

We’ve Outgrown Time Limits

In the “olden days” when standing orders were limited and easily exhausted within a few minutes, there was a perceived need for medical control contact in order to prompt a transport decision and/or obtain further medical orders. Today, with the greatly expanded use of standing orders, this is no longer the case. In fact, if you consider cardiac arrest management, it is often thirty (30) minutes or longer before there is a need for OLMC contact. So the requirement that OLMC be contacted after twenty (20) minutes has been removed.

It’s For More Than Just Intubation

At present, we have the option of using diazepam or midazolam for the sedation of a patient prior to cardioversion. Keeping in mind that you will only be performing cardioversion for the “unstable” (hypotensive) patient, you would ideally be able to use a drug that did not further reduce the patient’s blood pressure. In fact, the ideal drug would be one that lasts for a very brief period of time (just the few minutes that it takes to perform the procedure) and which has little to no effect on blood pressure or myocardial function.

	<u>Diazepam</u>	<u>Midazolam</u>	<u>Etomidate</u>
Heart Rate	- 9 to - 13%	- 14 to + 12%	- 5 to + 10%
Mean Blood Pressure	0 to + 19%	- 12 to + 26%	0 to + 17%
Systemic Vascular Resistance	-22 to + 13%	0 to + 20%	- 10 to + 14%
Stroke Volume	0 to + 8%	- 28 to - 42%	0 to +20%

Table 2: Hemodynamic effects of sedative agents

And this is where etomidate comes into play. It is a sedative agents with a rapid onset (2-3 minutes), rapid offset (8-9 minutes), and that results in no reduction of blood pressure or stroke volume, particularly when compared to midazolam or diazepam (Table 2).

For these reasons, etomidate has been added to the prehospital sedation options in the GOPs. The dose, 0.15mg/kg, is different than the dose used for facilitated intubation.

ALS Protocols

Protocol 500-A and 500-B

There was some uncertainty about how to administer the sodium thiosulfate for the management of potential cyanide toxicity under either the smoke inhalation protocol or cyanide toxicity protocol – infusion, IV push, slow IV push? After a lot of research by Dr. Doug Isaacs and based upon his discussions with world toxicology experts, the decision was made to administer it via IV infusion. To do this, 12.5mg (typically one vial or 50cc) should be mixed in 100cc of D5W. The protocol has been updated to reflect this change and the resulting dosing for pediatric patients is shown in Table 3. And the list of contents for the Cyanide Toxicity Kit has been changed to include the 100cc bag of D5W.

AGE GROUP	HYDROXOCOBALAMIN ¹	SODIUM THIOSULFATE
Infant/Toddler (0-2 years)	¼ bottle	250mg/kg (3cc/kg prepared solution ^A) administered over 10 minutes, IV
Preschool (3-5 years)	½ bottle	
Grade School (6-13 years)	1 bottle	
Adult (≥14 years)	2 bottles (entire kit)	12.5g 150mL of a prepared solution ^B administered over 10 minutes IV

Table 3: Treatment of cyanide toxicity

Protocol 502 – Obstructed Airway

You may recall that, although it was not specifically written out in the protocol, last year’s protocol update described the use of a technique – intentional right mainstem displacement – for the management of an airway foreign body when a patient can be intubated but cannot be ventilated because of that foreign body.

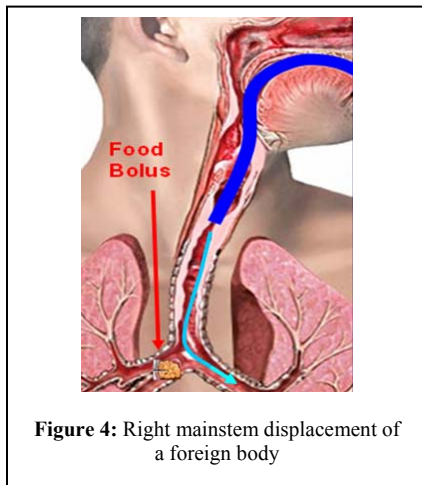
In cases of an obstructed airway when you are able to intubate the patient (100% certain of tube placement between the cords) but unable to ventilate, the obstruction must lie beyond the tip of the endotracheal tube. This also means that the obstruction must lie well below the cricoid membrane (as the tip of a properly placed endotracheal tube will be 3-5cm below the cricoids). So a needle cricothyroidotomy will be of no benefit to the patient. It will only direct the oxygen into the upper trachea, out from between the cords, into the pharynx, and out of the patient. In short, it will be ineffective and the patient will die. The only maneuver that will save the patient’s life is to somehow “open up” part of the lung to allow for ventilation and oxygenation.

To accomplish this, after visual confirmation of tube placement (no ventilation means that there will be no CO2 return to measure), ensure that the cuff is deflated, note the tube depth, and then advance the tube as far as possible. This should displace the foreign body into the right mainstem bronchus.

Then withdraw the endotracheal tube to its original depth, inflate the cuff, and attempt to ventilate the patient. This should allow you to ventilate at least the patient’s left lung.

Though this technique is not without risk of injury to the airway, the alternative is to not oxygenate or ventilate the patient until after their arrival in the emergency department, which will almost universally ensure

their death. So, for the patient, the risk of airway injury seems worth it. And for at least one patient, it has already proven that point.



On April 9, FDNY Paramedics John Louis and David Fein responded to the scene of a three year-old “choking on food.” Before they arrived, the mother stated that the child was “dying...not breathing...” They arrived to find the child in cardiac arrest and asystole. Unable to ventilate the child, they visualized a foreign body in the trachea that was “unable to be grabbed by Magill forceps.” So, the “food bolus was pushed into the right mainstem bronchus” and the resuscitation continued, achieving ROSC upon arrival in the ED 14 minutes after they made patient contact. That child is alive today because of those two paramedics and their use of this technique.

The other change to this protocol was the removal of the needle cricothyroidotomy, a decision that was based upon data from our own system.

The initial description of the needle cricothyroidotomy as a rescue maneuver was first described over 100 years ago, published in early 1909. The dogs used to prove this technique were not ill, were not hypoxic, and were well-ventilated at the time of the procedure, and the conclusion was that a “needle cric” with BVM ventilation could maintain a patient for ~20 minutes by slowing the rate at which they exhaust their “reserves.”

The obvious problem is that the patients for whom you must perform this skill (in addition to not being dogs) are in severe state of respiratory compromise, have been for several minutes as you tried to use other airway maneuvers, and don’t have 20 minutes of “reserve.” They are as sick as they can possibly be.

Perhaps that is why a review of all of the “needle crics” performed by FDNY paramedics in recent years found that their outcomes were universally poor. Those in arrest at the time of the procedure remained in arrest, and those not in arrest quickly progressed to an arrest – none survived. For this reason, and in light of the prolonged scene times associated with the need to perform this procedure, it has been removed from the protocols.

This means that, if you have a patient whom you cannot intubate, cannot place an alternative airway, and cannot effectively ventilate, you must immediately transport the patient. The BVM ventilation that you provide, even if not fully effective, will still provide them with better oxygen delivery and ventilation than a needle cric and will allow you to focus on rapid transport to the ED for placement of a definitive or surgical airway.

Protocol 503 – Non-Traumatic Cardiac Arrest

Since no one uses “quick look paddles” anymore, it just kind of made sense to remove that language from our cardiac arrest protocols.

Protocol 503-A – Ventricular Fibrillation / Pulseless Ventricular Tachycardia

For the longest time, we have used the term “or equivalent biphasic.” But what does that mean? If you were to ask the manufacturers of our ALS monitors, it may mean 150J, 135J, 200J, or some other value. In reality, biphasic defibrillation should be delivered at high energies, just as with a monophasic defibrillator. But because some defibrillators will not allow you to set them as high as 360J, the wording here was changed. It now states that you should defibrillate “using the maximum joule setting possible (may vary depending on the defibrillator in use).”

Protocol 503-B – Asystole / Pulseless Electrical Activity (PEA)

Recently, the use of dextrose was removed from our protocols. The thought at the time was that, even if a patient was hypoglycemic, the administration of epinephrine would mobilize their glycogen stores and increase their blood sugar. And there have even been articles written by some of the world’s experts describing the science behind why hypoglycemia is not a “reversible cause of PEA or asystole.” So, recognizing that cardiac arrest is not the “ultimate altered mental status” (just like it is not the “ultimate anaphylaxis”, the “ultimate CVA”, the “ultimate asthma attack” or any other such idea), D50 was removed from the PEA / asystole protocol.

Nevertheless, for several years after, thousands of cardiac arrest patients received D50 as part of their resuscitation efforts (some of them even as an OLMC order). But because this was being done for refractory PEA / asystole, the issue was not pursued (MCRs, restrictions) because the thought was that “there was no risk of harm to the patient.”

Then, just a few months ago, a 23 year-old male in cardiac arrest who did not respond to any resuscitation efforts was transported to Bellevue Hospital. There he was found to have a blood glucose <35mg/dL. The resuscitation continued, including D50 administration, and the patient survived (albeit with some neurologic damage) despite a resuscitation time >50 minutes.

This prompted us to take a look at our own cardiac arrest data, and what we found was unexpected: Among known diabetics who received D50 as part of their resuscitation, ROSC and sustained ROSC rates were higher than in those patients who did not receive D50. And the even more unexpected finding... the same was true for non-diabetics!

So, the protocol has been changed. If a patient does not respond to the initial resuscitation efforts, D50 should be administered (without checking the blood sugar) for all patients, diabetic or not.

Protocol 504 – Suspected Myocardial Infarction

There were two changes to this protocol, both of which were meant to emphasize the need for very timely care for suspected MI patients. The first change was a note meant to point out the need for early 12-lead acquisition and OLMC contact (before any medical treatment other than BLS care) is initiated.

The second change, which may be a big change in practice for some, was to emphasize the need for rapid transport immediately following OLMC contact. In the vast majority of STEMI patients, there is no need for IV

access. Even if the patient were to suddenly arrest, you have four to eight minutes after you start the resuscitation before you need an IV or IO. So, the protocol was changed to reflect this. Transport first, IV en route.

Now some of you may be thinking that a profoundly hypotensive patient or patient with a dysrhythmia will need IV access. And you are right. But you will also be treating the patient under those protocols (cardiogenic shock or the appropriate dysrhythmia protocol). For all STEMI patients, aspirin and rapid transport are the key elements that will improve the patient's outcome (not nitro, not IV access, not morphine).

For the non-STEMI patient, care should continue under Protocol 504-A, including establishing IV access and administering ALS medications.

Only one word of caution: If the patient's 12-lead EKG demonstrates an inferior wall MI, remember that 40-50% may have right ventricular involvement. And if a right ventricular infarction is also present, their dependence on preload may cause them to become significantly hypotensive, so IV access should be established before administering NTG and/or you should discuss with OLMC (when you call for the STEMI) the decision to withhold NTG.

To determine if a patient with an inferior wall MI, such as this patient, has right ventricular involvement, move the V4-6 leads to the same position but on the right side and repeat the 12-lead. If ST-segment elevations appear in the right-sided leads on the repeat EKG, then a right ventricular infarction is also present. Because this will take less than 30 seconds and has the potential to significantly alter patient management, the right-sided EKG should be done prior to or during your OLMC contact.

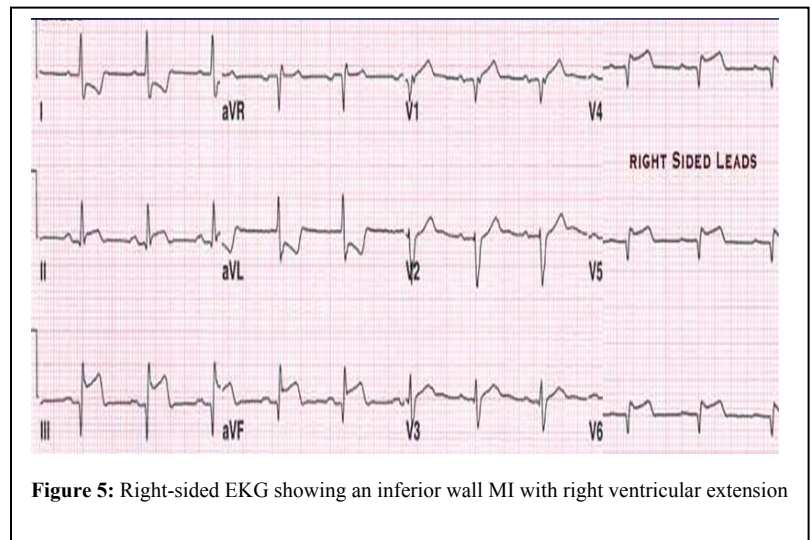


Figure 5: Right-sided EKG showing an inferior wall MI with right ventricular extension

Protocol 505-A – Supraventricular Tachycardia

As we first discussed with respect to the changes in the VF / pulseless VT protocol, this use of the phrase “or equivalent biphasic” is very unclear. This protocol (and others to follow) has been modified to address this need for clarity. Whether your ALS monitor is biphasic or monophasic, the joule settings will now be the same. The only difference may come when the recommended monophasic setting exceeds the joules that are allowable with a particular biphasic machine. When this occurs, the next cardioversion and all subsequent attempts should occur at the highest setting possible using the biphasic monitor.

Protocol 505-B – Atrial Fibrillation / Atrial Flutter, and

Protocol 505-C – Ventricular Tachycardia with a Pulse / Wide Complex Tachycardia

That same change was also made to Protocol 505-B and 505-C, setting the biphasic energies as equal to those values listed for monophasic cardioversion and, when the recommended energy exceeds the maximum possible energy for a particular biphasic monitor, the highest possible energy setting should be used.

Protocol 505-D – Brady Dysrhythmias and Complete Heart Block

For some emergencies, there may be acceptable medical treatments which are not useful for our protocols. This is the case for epinephrine infusions / drips. In recent years, there have been no FDNY OLMC contacts that have resulted in the use of an epinephrine infusion for the treatment of a bradycardia. In addition, as compared to most other drugs that we provide via IV infusion, epinephrine has a significant potential for under- or overdosing unless an IV pump is being used. For these reasons, the epinephrine drip was removed from this protocol.

Protocol 506 – Acute Pulmonary Edema

After several years of discussion, one change was made to Protocol 506. Lasix, or furosemide, has been moved from a standing order to a medical control option. And based on the initial reaction to this change (yes, I actually read what you post on Facebook and some other sites), it appears that a fair degree of explanation is in order.

Furosemide has been part of the management of acute pulmonary edema for decades, and when you consider its mechanism of action, it's not surprising. In addition to being a loop diuretic, furosemide directly induces some degree of vasodilation. And because both of these mechanisms will help to reduce preload, the drug should be beneficial to patients with acute pulmonary edema.

But keep in mind that the diuretic effects take 20-90 minutes to occur, so for the acute management of these patients, that part of its effects are not rapid enough to make a big difference. Add to that the fact that 40% of patients with acute pulmonary edema are not fluid overloaded (their lungs may be, but their total body has a normal volume – euvolemic – or is actually hypovolemic). So for those patients, furosemide would be harmful.

And with respect to vasodilation, which is a great way to reduce preload, nitroglycerin is actually much more effective (and it has the benefit in higher doses of reducing afterload as well). It is for these reasons that furosemide, when given as part of the routine management of all pulmonary edema patients, results in higher rates of ICU admission, worsening renal function, need for intubation, and death. Clearly not something that we want to continue to do in this or any other EMS system.

This is not to say that furosemide is inappropriate for all pulmonary edema patients, but it should be considered after the initial use of oxygen, nitrates, ensuring that the patient is not having an AMI, and (if available) CPAP. And at that point, the decision should be made whether further nitrates and/or furosemide is appropriate (is the patient truly hypervolemic?), a decision that will be made in conjunction with OLMC.

510 – Anaphylactic Reaction

As discussed previously, the epinephrine drip has been removed from the bradycardias protocol and, for the same reasons, from this protocol as well.

521 – Head Injuries

In the face of signs of increasing intracranial pressure, hyperventilation is needed, but only to a degree. So, for the management of head injuries, the use of the GCS and controlled hyperventilation have been added.

Hyperventilation is a rapid way to deal with rising intracranial pressure. A pCO₂ of 30-35mmHg (remember normal is 35-45mmHg) will result in up to a 25% reduction in intracranial pressure – an effect that begins within 30 seconds and peaks within 8 minutes.

But the hyperventilation must be based upon CO₂, and not just respiratory rate. This is because, if the patient is hyperventilated too much, and if the pCO₂ drops below ~25mmHg, cerebral vasodilation will occur, resulting in increased blood flow, swelling, and will actually increase ICP.

So this protocol, unlike the BLS protocol, allows for more controlled hyperventilation. The ventilation rate is not specified, but rather the protocol focuses in on the important thing – accomplishing an pCO₂ between 30 and 35mmHg.

540 – Obstetric Complications

After several years of discussion, the decision was made to remove oxytocin from our protocols. This is because of the risks associated with its use, the lack of any data from our system to suggest a need for it in our protocols, and a preference to have patients with severe post-partum hemorrhage transported rather than being treated on the scene.

551 – Pediatric Obstructed Airway

No different than the changes to Protocol 501, and for the same reasons, this protocol has been modified to include the use of the intentional right-mainstem displacement of tracheal foreign bodies and the removal of the needle cricothyroidotomy procedure.

554 – Pediatric Asthma / Wheezing

We were told that there was some confusion about the wording of this protocol and, looking back, its no wonder. The intent was always to have ipratropium (Atrovent) administered with each albuterol treatment, but the use of the term “may” certainly didn’t communicate that. So the wording was changed to state that ipratropium should be administered “in conjunction with each” albuterol.

This still leaves to the discretion of each system medical director whether the two drugs are to be given together in a single nebulizer treatment or as two separate treatments. For FDNY paramedics, the two should be given together.

One final note on this protocols: Keep in mind that children under the age of six (6) should receive a half-dose (i.e. half vial) of ipratropium with each albuterol treatment.

555 – Pediatric Anaphylactic Reaction

As with the adult anaphylactic protocol, the use of the epinephrine drip has been removed.

Conclusion

2010 is another year of change for the New York City REMAC Protocols. And the future will undoubtedly bring even more changes as we incorporate the latest medical knowledge and science into the care that is provided to patients by the EMTs and Paramedics of the New York City EMS System. But that is what separates us from other systems. We believe that the health of our patients requires us to constantly re-evaluate what we are doing to see if there are things that we can somehow do better.

Finally, for all of their work as members of the REMAC and its committees, without whom the work that led to these protocols would not have been possible, we should all extend our thanks to:

Dr. Roger Yurt	Dr. Glenn Asaeda	Dr. Doug Isaacs	Dr. Stephen Lynn
Dr. Heidi Cordi	Dr. Josef Schenker	Dr. Lewis Marshall (chair)	Frank Mineo, PhD
Anthony Conrardy	Dr. David Ben-Eli	Dr. Peter Wyer	Dr. Lewis Soloff
Dr. Charles Martinez	Dr. Victor Politi	Martin Grillo	Joseph Raneri
Dr. Jeffrey Horwitz	Clifford Miller	Marie Diglio (executive director)	John Peruggia
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Alison Burke	Dr. Lorraine Giordano	Dr. Joseph Bove	Ralph Cefalo
Dr. George Foltin	Dr. Eliot Lazar	Dr. Arthur Cooper	Dr. Allen Cherson
Dr. Geoffrey Doughlin	Dr. Heidi Cordi	Dr. Dario Gonzalez	Dr. David Lobel
Dr. Katherine Vlascia	Tony Dejar	Dr. Manuel Ceja	Dr. Robert Crupi
Dr. James Kenny	Dr. Charles Martinez	Dr. Christopher McCarthy	Dr. Anthony Shallash
Dr. Bonnie Simmons	Dr. Rachel Waldron	George Benedetto	Rudy Medina
Jack Quigley	Madeline Fong	Yedidyah Langsam, PhD	Dr. Jeffrey Rabrich
Dr. Jay Reich	Robert Goldstein	Nancy Benedetto	Dr. Kevin Munjal

And, most importantly, a heartfelt thanks to every one of you – the Emergency Medical Technicians and Paramedics of the New York City EMS System – to whom patients turn in their moment of need and, in some cases, to whom they owe their lives. Without you, none of this would matter.

Written by: John Freese, MD
FDNY EMS Medical Director of Training

FEBRUARY 2010 JOURNAL CME QUIZ

1. Which is **false** regarding cyanosis?
 - a. It may indicate a need for assisted ventilation.
 - b. It is a sign of hypoxemia.
 - c. It is least easily visible in the nail beds and mucous membranes.
 - d. It may result from non-respiratory causes such as certain drug overdoses.
 - e. It may be a chronic finding in COPD patients.
2. Which is true of inadequate ventilation?
 - a. It results in decreased carbon dioxide levels in the body.
 - b. It may result from inadequate respiratory rate or tidal volume.
 - c. It cannot occur if the patient is hypoxic.
 - d. Shallow respirations are always a sign of inadequate ventilation.
 - e. Deep, sighing breaths are always a sign of inadequate ventilation.
3. Which condition must be met in order for a BLS provider to administer an epinephrine autoinjector to an asthmatic patient?
 - a. The patient must have been prescribed an epinephrine autoinjector.
 - b. The patient must have failed to respond to nebulized albuterol.
 - c. The patient must be in severe respiratory distress (i.e. in need of BVM ventilation).
 - d. The patient must be over the age of thirty-three (33).
 - e. OLMC contact must be made prior to administration.
4. Which is the appropriate management for a suspected flail segment?
 - a. bulky dressing
 - b. supportive measures (i.e. oxygen)
 - c. sandbag
 - d. occlusive dressing
 - e. paradoxical care
5. When caring for a burn patient, which of the following is **false**?
 - a. Burns resulting in severe pain should cause ALS assistance to be considered.
 - b. All burns should all be treated with saline-moistened dressings.
 - c. Burns of more than 10% BSA should be treated with dry, sterile dressings.
 - d. Burns of less than 10% BSA should be treated with saline-moistened dressings.
 - e. Saline moistened dressings may result in hypothermia or wound contamination.
6. Which is **false** regarding the use of etomidate for procedural sedation?
 - a. The dose for procedures other than intubation is 0.15mg/kg.
 - b. It has the benefit of rapid onset (2-3 minutes).
 - c. It is the drug most likely to result in further blood pressure reduction.
 - d. It is approved for use for synchronized cardioversion.
 - e. It has the benefit of rapid offset (8-9 minutes).
7. All of the following are true regarding a tracheal foreign body **except**:
 - a. it may result in an ability to intubate but not ventilate the patient.
 - b. it may be corrected via right-mainstem displacement of the foreign body.
 - c. attempts to displace the obstruction may result in airway injury.
 - d. this technique has never been successfully used in this system.
 - e. it is essential that the cuff of the endotracheal tube is deflated during attempted displacement.

8. Which is the correct joule setting for attempted defibrillation of pulseless ventricular tachycardia / ventricular fibrillation?
 - a. “150J, or biphasic equivalent”
 - b. “200J, or biphasic equivalent”
 - c. “300J, or biphasic equivalent”
 - d. “360J, or biphasic equivalent”
 - e. “maximum joule setting possible”

9. Which is true regarding the administration of D50 for a PEA / asystolic arrest?
 - a. It should only be administered as an OLMC discretionary order.
 - b. It should only be administered to patient with a blood glucose <120mg/dL.
 - c. It should only be administered to known diabetics.
 - d. It should be administered to all patients who do not respond to initial resuscitation efforts.
 - e. Its use has not been shown to result in any short-term change in resuscitation outcomes.

10. Regarding the administration of furosemide for the management of acute pulmonary edema, which of the following is true?
 - a. Furosemide is no longer part of the protocol for the management of acute pulmonary edema.
 - b. Furosemide may be approved by OLMC only after CPAP has been utilized.
 - c. Routine administration of furosemide to acute pulmonary edema patients may be harmful in as many as 40% of patients.
 - d. Only 40% of acute pulmonary edema patients are in a state of “fluid overload.”
 - e. Furosemide is more effective than nitroglycerin in producing vasodilation.

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.

February 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 – February 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	TBA	TBA	TBA: call to inquire →	ED Conference Room	Dr Hew	Manny Delgado 718-363-6644
	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 →	Weill Auditorium, enter at E 69 St and York Ave	Dr. Samuels	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	2/17	1030-1430	Call Review or Lecture	Fort Totten Bldg 325	TBA	swansoc@fdny.nyc.org
		3/24					
		4/21					
	Flushing Hosp	3 rd Wed	1330-1530	Call Review	Board Room	Dr Crupi	Mordechai Lax 718-240-5570
	NYH Queens	Mondays	1600-1800	Call Review/Trauma Rounds	East bldg, courtyard flr	Dept of Surgery	Lisa Galati 718-670-2501
	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	Richmond UMC	TBA	TBA	TBA: call to inquire →	MLB conference room	Dr. Ben-Eli	William Amaniera 718-818-1364

2010 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	
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.