This presentation is meant to familiarize you to the changes being introduced in the 2009 New York City REMAC Protocols. Each slide will display the old protocol, provide some rationale for the change(s), and then display the new protocol. We hope that you find this useful, that it will help you to understand an explanation of these changes, and the new protocol under which you will operate as you continue to provide cutting edge care for the patients in New York City.
Disclaimer

It should be noted that the explanations, definitions, and justifications offered in this presentation are exclusively those of the person who prepared this presentation. There may be others who opinions and interpretations differ, and those are always cause for good discussion and debate. With that in mind, let us proceed…
Instructions

At any time during this presentation, you may click on the FDNY Office of Medical Affairs logo in the lower right-hand corner to return to the main menu.

You may also click on the FDNY logo in the lower left-hand corner at any time to return to the first slide in a particular section.

So, let’s begin....
Main Menu

1. BLS Changes – GOPs
2. BLS Changes – BLS Protocols
3. ALS Changes – GOPs
4. ALS Changes – ALS Protocols
BLS Changes - GOPs
There are just two changes to note within the General Operating Procedures that apply to both BLS and ALS providers:

- 10 Minute Rule Redefined
- Signs and Symptoms of Shock
### BLS Changes - GOPs

**Other Care**

If the mechanism of illness/injury and/or historical/physical findings do **NOT** indicate major trauma or burns or a need for these other types of specialty care, transport the patient to the nearest New York City 911 System Ambulance Destination Emergency Department (see Appendix I), unless **one** of the following conditions is met:

- The patient remains stable or potentially unstable throughout transport, **AND** the patient requests treatment or receives regular medical/surgical care at an alternative destination, **AND** the additional transport time to the alternative destination is **LESS THAN TEN MINUTES**;
- The patient requires specialty care available at the alternative destination that is unavailable at the nearest New York City 911 System Specialty Referral Center;
- An on-line medical control physician so directs.

**NOTE:** PATIENTS WHO BECOME CRITICAL OR UNSTABLE MUST BE TRANSPORTED TO THE NEAREST NEW YORK CITY 911 SYSTEM AMBULANCE DESTINATION EMERGENCY DEPARTMENT.

The GOPs had stated that patient may request and be transported to a location other than the nearest New York City 911 System Ambulance Destination Emergency Department so long as the time necessary for that transport is less than 10 minutes.
BLS Changes - GOPs

The protocols now reflect the same emphasis as the FDNY 911 Operating Guide Procedure: such requests may be honored by the EMS crew so long as the total transport time is no more than 10 minutes beyond the time needed to reach the closest 911 receiving facility.

Other Care
If the mechanism of illness/injury and/or historical/physical findings do NOT indicate major trauma or burns or a need for these other types of specialty care, transport the patient to the nearest New York City 911 System Ambulance Destination Emergency Department (see Appendix I), unless one of the following conditions is met:

- The patient remains stable or potentially unstable throughout transport, AND the patient requests treatment or receives regular medical/surgical care at an alternative destination, AND the estimated additional transport time to the alternative destination is LESS THAN OR EQUAL TO AN ADDITIONAL TEN MINUTES;
- The patient requires specialty care available at the alternative destination that is unavailable at the nearest New York City 911 System Specialty Referral Center;
- An on-line medical control physician so directs.

NOTE: PATIENTS WHO BECOME CRITICAL OR UNSTABLE MUST BE TRANSPORTED TO THE NEAREST NEW YORK CITY 911 SYSTEM AMBULANCE DESTINATION EMERGENCY DEPARTMENT.
BLS Changes - GOPs

The result of this protocol can be thought of in terms of this diagram:

- More than an additional 20 minutes – Requires OLMC approval and an established relationship with that facility.
- Additional 10 minutes – Requires No Approval.
- Additional 20 minutes – Requires On-Scene EMS Officer or OLMC Approval.

= Your are Here
= Nearest ED
Because pale conjunctiva are a sign of anemia, but not necessarily shock, and because it is a bad idea to ask someone with suspected decompensated shock to stand just to that you can assess for orthostatic vital signs, this wording has been removed from this section of the GOPs.
BLS Changes – BLS Protocols
BLS Changes – BLS Protocols

The following BLS Protocols were changed:
- 400 – Weapons of Mass Destruction Nerve Agent Exposure Protocol
- 404 – Non-Traumatic Chest Pain
- 407 – Asthma
- 414 – Poisoning or Drug Overdose
- 421 – Head and Spine Injuries
- 432 – Cold-Related Emergencies
One of the downsides to having an autoinjector is that it is hard to give only part of the dose. It is either all or nothing. This reality is what has driven the change to this protocol.
BLS Changes – BLS Protocols

Protocol 400 – WMD / Nerve Agent Protocol

The Mark I autoinjector kit that was previously used is no longer available. Instead, the company is now packaging both drugs in a single autoinjector kit – Duodote.
So, particularly during the initial treatment, you can’t give one drug (atropine) without giving the other (2-PAM). For this reason, the portion of the protocol for the treatment of the yellow tag adult patient has been changed – calling for two doses of each agent.

### Initial Treatment (Table 1)

<table>
<thead>
<tr>
<th>Tag Color</th>
<th>Signs &amp; Symptoms</th>
<th>Atropine Dose Monitor Interval</th>
<th>2-Pam Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>Severe Respiratory Distress, Agitation SLUDGEM</td>
<td>3 Auto-injectors (6 mg) Monitor every 5 minutes</td>
<td>3 Auto-injectors (1.8 gm)</td>
</tr>
<tr>
<td>YELLOW</td>
<td>Respiratory Distress, SLUDGEM</td>
<td>2 Auto-injectors (4 mg) Monitor every 10 minutes</td>
<td>2 1 Auto-injector (600 mg 1.2 gm)</td>
</tr>
<tr>
<td>GREEN</td>
<td>Asymptomatic None</td>
<td>Monitor for signs &amp; symptoms Monitor every 15 minutes</td>
<td>None</td>
</tr>
</tbody>
</table>

**NOTE:** DO NOT GIVE MORE THAN THREE (3) 2-PAM (GRAY TOP) AUTO-INJECTORS TO ANY PATIENT. THE MAXIMUM TOTAL DOSE OF 2-PAM IS 1.8 GRAMS.
404 – Non-Traumatic Chest Pain

“Don't take VIAGRA if you take nitrates, often prescribed for chest pain, as this may cause a sudden, unsafe drop in blood pressure.”

Though this warning is straight out of the commercial, it also applies to us.
There are a variety of drugs used to treat erectile dysfunction: sildenafil (Viagra), tadalafil (Cialis) and vardenafil (Levitra). And rather than writing a protocol for each, the new protocol simply requires that 72 hours have passed from the time that a patient takes one of these medications until you can safely administer nitroglycerin without OLMC contact.

6. Place patient in a position of comfort.
7. If chest pain is still present, assist the patient with self-administration of the patient's own previously prescribed Nitroglycerin, if available. One tablet or spray may be taken provided that the patient's systolic pressure is at least 120 mm Hg.

NOTE: UNLESS OTHERWISE DIRECTED BY ON-LINE MEDICAL CONTROL, PATIENTS WHO HAVE USED ERECTILE DYSFUNCTION MEDICATIONS IN THE PREVIOUS 72 HOURS SHALL NOT BE GIVEN NITROGLYCERIN.
One additional change is the age at which the treatments in the protocol are indicated. Consistent with the American Heart Association recommendations, patients age 33 or older are to be considered “at risk” for heart disease and treated as such. This protocol has been altered to reflect this younger age.
BLS Changes – BLS Protocols

BLS Protocol 407 – Asthma
The first change to this protocol is right at the top. In fact, it’s the title.
BLS Changes – BLS Protocols

BLS Protocol 407 – Asthma Wheezing
The first change to this protocol is right at the top. In fact, it’s the title.

Now titled wheezing, this protocol no longer requires that the patient have a history of asthma. Whether their wheezing is due to asthma, COPD, smoke inhalation or anything, you can treat their wheezing with this protocol.
BLS Changes – BLS Protocols

BLS Protocol 407 – Asthma Wheezing

For patients over one (1) year of age who are experiencing an exacerbation of their previously diagnosed asthma exacerbation or wheezing:

1. Assess the airway
2. Administer oxygen
3. Monitor breathing

NOTE: IF PATIENT EXHIBITS SIGNS OF IMMINENT RESPIRATORY FAILURE, REFER TO PROTOCOL #401 – ADULT RESPIRATORY DISTRESS/FAILURE OR #450 – PEDIATRIC RESPIRATORY DISTRESS/FAILURE.

4. Do not permit physical activity
5. Place the patient in a Fowler’s or Semi-Fowler’s position
6. Assess the following prior to administration of the first nebulized treatment:
   • Vital signs
   • Patient’s ability to speak in complete sentences
   • Accessory muscle use
   • Wheezing
7. Administer Albuterol Sulfate 0.083%, one (1) unit dose or 3 cc via nebulizer at a flow rate that will deliver the solution over 5 minutes to 15 minutes. Do not delay transport to complete medication administration.
8. Begin transport.

NOTE: FOR PATIENTS IN SEVERE RESPIRATORY DISTRESS, CALL FOR ADVANCED LIFE SUPPORT ASSISTANCE. DO NOT DELAY TRANSPORT.

9. If symptoms persist, Albuterol Sulfate 0.083% may be repeated twice for a total of three (3) doses, with the third occurring during transport.
10. Upon completion of patient treatment or transfer of patient care to an ALS Provider or a 911 Receiving Hospital, reassess the patient. See Step # 8.

NOTE: MEDICAL CONTROL MUST BE CONTACTED FOR ANY PATIENT REFUSING MEDICAL ASSISTANCE OR TRANSPORT.

So here is how that change looks within the protocol.
BLS Changes – BLS Protocols

BLS Protocol 411 – Poisoning or Drug Overdose

For this reason, and because its benefit is even questionable for many overdoses, it has been removed from the REMAC protocols.
Activated charcoal is not a harmless substance. Besides causing some serious stains, it can make a patient feel nauseated and, if aspirated, can cause a severe inflammatory reaction in the lungs, leading to acute and even chronic lung diseases.
BLS Changes – BLS Protocols

BLS Protocol 421 – Head and Spine Injuries

After years of development, the statewide selective spinal immobilization protocol is finally ready for implementation. And, beginning January 1st, it will be incorporated into the NYC REMAC protocols.
BLS Changes – BLS Protocols

BLS Protocol 421 – Head and Spine Injuries
First, let’s address why this is such an important change.

Q: Do you know how long it takes, just lying on a long spine board, to develop the changes consistent with a decubitus ulcer (“bedsore”, “decub”)?

A: Just one hour.
BLS Changes – BLS Protocols

BLS Protocol 421 – Head and Spine Injuries

Spinal immobilization, when unnecessary, prolongs scene times, causes undo pain for the patient, and may even worsen some injuries.

The problem is figuring out when it is unnecessary.
BLS Changes – BLS Protocols

BLS Protocol 421 – Head and Spine Injuries
Fortunately, this question has been asked and answered. A large study (NEXUS) was performed to identify criteria which could be used to determine who does and does not need x-rays. And, in subsequent studies, it was shown that these same criteria could be used to determine who did and did not need spinal immobilization.
BLS Changes – BLS Protocols

BLS Protocol 421 – Head and Spine Injuries

The table to the right shows the criteria that are to be used. If any of these criteria are present, the patient should be immobilized. If they are absent, spinal immobilization is not necessary.

**IMMOBILIZATION CRITERIA**

1. Altered Mental Status for any reason, including possible intoxication from alcohol or drugs (GCS <15 or AVPU other than A).
2. Complaint of neck and/or spine pain or tenderness.
3. Weakness, tingling, or numbness of the trunk or extremities at any time since the injury.
4. Deformity of the spine not present prior to this incident.
5. Distracting injury or circumstances (i.e. anything producing an unreliable physical exam or history).

*High risk mechanisms of injury associated with unstable spinal injuries include, but are not limited to:*

- Axial load (i.e. diving injury, spearing tackle)
- High speed motorized vehicle crashes or rollover
- Falls greater than standing height

**IF THERE IS ANY DOUBT, SUSPECT THAT A SPINE INJURY IS PRESENT!**
BLS Changes – BLS Protocols

BLS Protocol 421 – Head and Spine Injuries

And here is how those criteria have been inserted into the protocol.

### HEAD AND SPINE INJURIES

1. Establish and maintain airway control while stabilizing the cervical spine.

**NOTE:** DO NOT USE A NASOPHARYNGEAL AIRWAY IN PATIENTS WITH FACIAL INJURIES OR IF SEVERE HEAD INJURY HAS OCCURRED.

2. **Patients meeting one or more of the following criteria must be immobilized:**
   a. Altered mental status for any reason, including possible intoxication due to drugs or alcohol.
   b. GCS <15
   c. Complaint of, or inability of the provider to assess for, neck and/or spine pain or tenderness.
   d. Weakness, paralysis, tingling, or numbness of the trunk or extremities at any time since the injury.
   e. Deformity of the spine not present prior to the injury.
   f. Distracting injury or circumstances, including anything producing an unreliable physical exam or history.
   g. High risk mechanism (axial load such as diving or tackling, high-speed motor vehicle accidents, rollover accidents, falls greater than standing height).
   h. Provider concern for potential spinal injury.

**NOTE:** ONCE SPINAL IMMOBILIZATION HAS BEEN INITIATED, IT MUST BE COMPLETED. SPINAL IMMOBILIZATION MAY NOT BE REMOVED IN THE PREHOSPITAL SETTING.

3. If necessary to initiate spinal immobilization, utilize the Rapid Takedown technique ONLY if the patient is standing.

4. Administer oxygen.

5. Monitor breathing for adequacy.

**NOTE:** MONITOR BREATHING CONTINUOUSLY. BE ALERT FOR SIGNS OF HYPOXIA AND/OR INCREASING RESPIRATORY DISTRESS.

6. Control external bleeding.

7. If the patient meets any of the criteria described in #2, is not awake or is unstable, immobilize the patient’s head and spine with a rigid collar and appropriate immobilization device.
BLS Changes – BLS Protocols

BLS Protocol 421 – Head and Spine Injuries

Three final comments on this protocol:

1) Once immobilization is initiated (c-collar, KED, backboard, etc), it may not be removed.

2) The protocol is not meant to identify patients for whom immobilization is needed, only those for whom it is not needed.

3) If a patient is found to not need immobilization, all of the criteria that led to this decision must be documented in the ePCR narrative.
BLS Changes – BLS Protocols

BLS Protocol 432 – Cold-Related Emergencies

Severely hypothermic patients may have very slow heart rates and/or hypotension. And so their pulse can be very difficult to feel. The protocol now reflects that, allowing “at least 30-45 seconds” to check for a carotid pulse.

HYPOTHERMIA (General):
1. Monitor the airway.
2. Begin Basic Cardiac Life Support procedures, if appropriate. (See Protocol #403.)

**NOTE:** VITAL SIGNS MAY BE EXTREMELY DEPRESSED. ALLOW AT LEAST 30-45 SECONDS TO CHECK FOR A CAROTID PULSE. HYPOTHERMIC PATIENTS REMAIN VIABLE FOR A LONGER PERIOD OF TIME. THEREFORE, CPR SHOULD BE INITIATED ON ALL PULSELESS AND APNEIC HYPOTHERMIC PATIENTS.

3. Administer oxygen.
ALS Changes - GOPs
ALS Changes - GOPs

There are several changes to note within the General Operating Procedures that apply to ALS providers:

- STEMI
- Airway Management
- Prehospital Sedation
- Endotracheal Drug Administration
- Intranasal Drug Administration
- Drug Advisory Guidelines
- Controlled Substances
- Pediatric Protocols
ALS Changes - GOPs

General Operating Procedures – STEMI

Consistent with the AHA, the criteria for STEMI is now 1mm (or greater) ST-segment elevation in two or more contiguous leads. No more differences between limb and precordial leads.

**STEMI (ST Elevation) / Myocardial Infarction**

For all adults, if the historical / physical findings indicate an acute myocardial infarction, and the 12 lead EKG reveals 1 mm ST elevation in 2 or more contiguous leads, they have the following: ST segment elevation on 12 lead EKG in 2 contiguous leads (1 mm in leads), or new left bundle branch block; transport the patient to the closest 24 hour NYS certified interventional cardiac catheterization facility, as per medical control, unless one of the following conditions is met:

- The patient is in extremis;
- The patient has an unmanageable airway;
- The patient has other medical conditions (Trauma, Burn, CVA) that warrant transport to the closest appropriate hospital emergency department as per protocol.
ALS Changes - GOPs

General Operating Procedures – Airway Management
As of January 1, 2009, a new rule will exist for paramedics in New York State: No waveform capnography = No endotracheal intubation.

Ensuring tube placement is not enough. Maintaining a good tube until the patient is delivered to the ED is essential.

Whether the patient is breathing or apneic, the result of a displaced endotracheal tube is nearly universally the same… death. And that is obviously unacceptable.

And so the protocol has changed….
### General Operating Procedures – Airway Management

**Airway Management**

- All patients require continuous monitoring of their airways to ensure airway patency. Wherever the term "Monitor Airway" is used throughout these protocols, the following elements shall be utilized:
  - Position of the patient’s head
  - Need for airway adjuncts
  - Need for oropharyngeal suctioning
  - Need for Advanced Life Support airway management techniques

**Use of Pulse Oximetry ($S_{PO2}$):**
  - Mandatory for Advanced Life Support (Effective date: July 1, 2005)
  - Optional for Basic Life Support

**Use of End Tidal Capnography (ETCO2):** (Effective date: January 1, 2009)

**NOTE:** ALL INTUBATED PATIENTS REQUIRE CONTINUOUS END-TIDAL WAVEFORM CAPNOGRAPHY TO CONFIRM ADVANCED AIRWAY DEVICE PLACEMENT AND CONTINUED MONITORING.

**NOTE:** WHEREVER THE TERM ‘INTUBATED’ APPEARS IT INCLUDES ANY ADVANCED AIRWAY DEVICE (i.e. ENDOTRACHEAL TUBE, COMBITUBE, ETC.)

- For ALL intubated patients (arrest or not), waveform Capnography is MANDATORY. Wherever the term ‘monitor airway’ is used throughout the protocols, the following elements shall be utilized:
  - Use of secondary form of Endotracheal Tube confirmation is mandatory. (Example: End Tidal Capnography (ETCO2).) Secondary confirmation devices are not a substitute for primary confirmation techniques that rely upon direct visualization and auscultation, but serve as an additional method of documenting proper endotracheal tube placement.
ALS Changes - GOPs

General Operating Procedures – Airway Management
And “coming to a drill near you”…..


Stay tuned for more in the January drill…..
Etomidate is an ideal drug for facilitated intubation. It has a quick onset, is effective even in the face of significant hypotension, has no significant cardiovascular side effects, limited adverse effects, and wears off within a matter of minutes.

But for those who are successfully intubated, this last benefit can become a problem.
ALS Changes - GOPs

General Operating Procedures – Prehospital Sedation
Imagine that you are intubating a critical COPD patient….  

They are unable to effective ventilate themselves…

Their CO2 rises…

They become more sleepy (CO2 narcosis)…

They ventilate even less, their CO2 continues to rise….
ALS Changes - GOPs

General Operating Procedures – Prehospital Sedation
You arrive to find that the patient is in respiratory failure…

But they still have a gag and are resisting intubation…

You contact OLMC, etomidate is ordered and given…

And the patient is successfully intubated….
ALS Changes - GOPs

General Operating Procedures – Prehospital Sedation
Now, as you ventilate the patient, their CO2 decreases…

And the etomidate begins to wear off…

The they begin to wake up….

To find a rather annoying piece of plastic between their vocal cords.
ALS Changes - GOPs

General Operating Procedures – Prehospital Sedation

Because this is not just theoretical, and because it has happened with resulting injuries to patients and providers, this GOP section has changed.

As you can see, when an order for etomidate is given by OLMC, it now is accompanied by an AUTOMATIC approval for a benzodiazepine for continued sedation.
ALS Changes - GOPs

General Operating Procedures – Prehospital Sedation

In addition, as you can see, the option of administering intranasal midazolam to allow for intubation is included, though it should be noted that this dose of midazolam is likely to be less effective than either the IV dosing or the use of IV etomidate.

**Conscious patients requiring Endotracheal Intubation**

a) Administer Diazepam 5 – 10 mg, IV/Saline Lock bolus. Repeat doses of Diazepam 5 – 10 mg, IV/Saline Lock bolus, may be given as necessary. (Maximum total dosage is 20 mg.) OR

b) Administer Midazolam 1 – 2 mg, IV/IN/Saline Lock bolus. Repeat doses of Midazolam 1 mg, IV/IN/Saline Lock bolus, may be given as necessary. (Maximum total dosage is 5 mg.) OR

c) Administer Etomidate 0.3 mg/kg, IV/Saline Lock bolus, over 30-60 seconds. (Maximum total dose is 20 mg.) After successful intubation, consider administer Diazepam 5 mg IV/Saline Lock bolus or Lorazepam 2 mg, IV/Saline Lock or IM, for continued sedation.
ALS Changes - GOPs

General Operating Procedures – Prehospital Sedation

And one final note on this section, the Prehospital Sedation piece has been removed from all protocols and is now only found in the GOPs.
ALS Changes - GOPs

General Operating Procedures – Endotracheal Drug Administration

In short, this doesn’t work. In our own data from this City, and from the published literature, we know that cardiac arrest patients who receive only endotracheal drugs universally do not survive. And the protocols now reflect this.

**Endotracheal Drug Administration**

*Endotracheal drug administration is no longer standard of care in this region.*

If no IV or Saline Leak is in place and the patient is intubated, Lidocaine, Epinephrine, Atropine, and Naloxone may be administered via the endotracheal route. In the adult patient, the dosage for these medications should be DOUBLED, and diluted to 10 ml total drug volume with Normal Saline (0.9 NS). The patient must be hyperventilated prior to drug administration. CPR must be halted while administering any drug via the endotracheal route. After administration the patient should be hyperventilated at the rate of 20-30 breaths/min for 2-3 minutes to facilitate absorption of drug from the lungs; CPR should also be resumed.
Intranasal drug administration can be a valid alternative when IV access is not available. This is particularly true when other routes may subject the provider or patient to increased risk. This is certain the case when administering IM medications to violent EDPs and rectal diazepam to pediatric seizure patients. So, this section has been modified to allow for IN administration in both cases.
ALS Changes - GOPs

General Operating Procedures – Drug Advisory Guidelines
This section has been modified, removing references to drugs that are no longer utilized in our protocols.

**Drug Advisory Guidelines**

- Aspirin should **NOT** be administered to patients with known hypersensitivity to aspirin. Gastrointestinal complaints are **NOT** a contraindication to aspirin administration.

- Diphenhydramine Hydrochloride has an atropine-like action and must be used with caution in patients with a history of increased intraocular pressure, hyperthyroidism, cardiovascular disease, and/or hypotension.

  - **Epinephrine must be used in a 1:1,000 solution instead of a 1:10,000 solution when doubling the initial dose or subsequent doses of standard dose Epinephrine for administration via the endotracheal route in patients 14 years of age or older, then diluted to 10 mL total fluid volume with Normal Saline (0.9 NS).**

  - **Lidocaine must be used with caution in patients 70 years of age or older, and in patients with liver disease, congestive heart failure, and/or hypotension. The initial dose should be 4.5 mg/kg with a single repeated dose of 0.75 mg/kg. The IV drip (maintenance dose) should be reduced to 0.5 mg/min—2 mg/min.**

- Normal Saline (0.9 NS) may be used interchangeably with Ringer’s Lactate (RL) for intravenous or intraosseous infusion.

- Diltiazem must be used with caution in patients with liver or kidney disease, congestive heart failure, atrioventricular conduction abnormalities, and/or hypotension. Medical Control should be alerted to these conditions, and the dose should be reduced to HALF the normal dose.
General Operating Procedures – Controlled Substances

In light of past and present changes regarding the use of controlled substances, this section has been reworded to simply refer to the individual protocols.

**CONTROLLED SUBSTANCES**

Refer to individual protocols for directions regarding the administration of controlled substances.

The administration of controlled substances by AEMTs in the field is permitted only as a Medical Control Option, with the exception of Protocols #513 and #529, where administration of a benzodiazepine is permitted under Standing Orders for control of ongoing seizures and pain management, respectively.
ALS Changes - GOPs

General Operating Procedures – Pediatric Protocols

Three items to note:

- Appendix J has been removed in favor of the Broselow Tape.
- In order to avoid using trade names, devices such as the Broselow Tape are now referred to as “length-based dosing devices.”

<table>
<thead>
<tr>
<th>Pediatric Protocols</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. <strong>Pediatric Drug Dosage and Fluid Administration</strong></td>
</tr>
<tr>
<td>For drug dosage and fluid administration, refer to both the Broselow Tape and the Pediatric Schedule in Appendix J.</td>
</tr>
</tbody>
</table>
ALS Changes - GOPs

General Operating Procedures – Pediatric Protocols

Three items to note:

- And endotracheal drug administration has been removed.

<table>
<thead>
<tr>
<th>Pediatric Protocols</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Pediatric Drug Dosage and Fluid Administration</td>
</tr>
<tr>
<td>For drug dosage and fluid administration, refer to both the Broselow Tape and the Pediatric Schedule in Appendix J.</td>
</tr>
<tr>
<td>If no IV/Saline Lock, or IO is in place and the patient is intubated, Lidocaine, Epinephrine, Atropine, and Naloxone may be administered via the Endotracheal Tube. Initial drug dosage of these medications via the Endotracheal Tube is the Same as the IV/Saline Lock or IO dose for all drugs but Epinephrine, which is Ten Times Higher than the initial IV/Saline Lock or IO dose except in Pediatric Anaphylactic Reaction (Protocol #555) where it remains the same as the initial IV/Saline Lock or IO dose; these medications should be diluted to 3-5 ml total drug volume with Normal Saline (0.9 NS), instilled through a catheter passed beyond the tip of the Endotracheal Tube, and followed by several positive pressure ventilations via a bag-valve device attached to the Endotracheal Tube.</td>
</tr>
<tr>
<td>Initial fluid administration should not exceed 20 ml/kg.</td>
</tr>
</tbody>
</table>
ALS Changes – ALS Protocols
ALS Changes – ALS Protocols

The following ALS Protocols were changed:
- 501 – Respiratory Arrest
- 502 – Obstructed Airway
- 503A – Ventricular Fibrillation / Pulseless Ventricular Tachycardia
- 503B – Pulseless Electrical Activity (PEA) / Asystole
- 504 – Suspected Myocardial Infarction
- 504A – Drug Therapy of Myocardial Ischemia
- 506 – Acute Pulmonary Edema
- 507 – Asthma
- 508 – Chronic Obstructive Pulmonary Disease
- 509 – Altered Mental Status
- 513 – Seizures
- 521 – Head Injuries
- 528 – Burns
- 529 – Pain Management for Isolated Extremity Injuries
- 530 – Emotionally Disturbed Patient
- 554 – Pediatric Asthma / Wheezing
- 557 – Pediatric Seizures
ALS Changes – ALS Protocols

ALS Protocol 501 – Respiratory Arrest

As we mentioned in the GOP section, the Prehospital Sedation section has been removed from all protocols, including this one.

For patients in actual or imminent respiratory arrest:

**NOTE:** IF OVERDOSE IS SUSPECTED, REFER TO PROTOCOL 511 (Altered Mental Status)

2. If a tension pneumothorax is suspected, perform Needle Decompression. (See Appendix O.)
3. Perform Endotracheal intubation*.
4. Begin Cardiac Monitoring, record and evaluate EKG rhythm.
5. Begin an IV infusion of Normal Saline (0.9% NS) to keep vein open, or a Saline Lock.
6. If the patient requires sedation, contact Medical Control and refer to General Operating Procedures: Prehospital Sedation, for implementation of one or more of the following MEDICAL CONTROL OPTIONS:
7. Transportation Decision.

**MEDICAL CONTROL OPTIONS:**

**OPTION A:** Transportation Decision.

* PREHOSPITAL SEDATION PROCEDURE: Prior Permission from Medical Control is Required if the patient is alert prior to performing Endotracheal Intubation, consider prehospital sedation as follows:

a. Administer Diazepam 5—10 mg, IV/Saline Lock bolus. Repeat dose of Diazepam 5—10 mg, IV/Saline Lock bolus, may be given as necessary. (Maximum total dosage is 20 mg.)

OR

b. Administer Midazolam 1—2 mg, IV/Saline Lock bolus. Repeat dose of Midazolam 1 mg, IV/Saline Lock bolus, may be given as necessary. (Maximum total dosage is 5 mg.)

OR

c. Administer Etomidate 0.3 mg/kg, IV/Saline Lock bolus, over 30-60 seconds. (Maximum total dose is 20 mg.) After successful intubation, consider administering Diazepam 5 mg IV/Saline Lock bolus or Lorazepam 2 mg, IV/Saline Lock or IM, for continued sedation.
ALS Changes – ALS Protocols

ALS Protocol 502 – Obstructed Airway

The wording of this protocol has been modified to provide a more common-sense approach to the obstructed airway.

<table>
<thead>
<tr>
<th>502</th>
<th>OBSTRUCTED AIRWAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Perform Direct Laryngoscopy. Attempt to remove the foreign body with Magill Forceps.</td>
</tr>
<tr>
<td>3.</td>
<td>Perform Endotracheal Intubation.</td>
</tr>
<tr>
<td>4.</td>
<td>If unable to perform endotracheal intubation and the airway remains obstructed, perform Needle Cricothyroidotomy. (See Appendix N)</td>
</tr>
<tr>
<td>5.</td>
<td>Transportation Decision.</td>
</tr>
</tbody>
</table>
ALS Changes – ALS Protocols

**ALS Protocol 502 – Obstructed Airway**

What the protocol does not address is when you are able to intubate but still cannot ventilate.

So we will address that scenario here with what can be a truly life-saving technique…
ALS Changes – ALS Protocols

ALS Protocol 502 – Obstructed Airway

In such cases endotracheal intubation will not be successful either, as the obstruction must lie beyond the tip of the endotracheal tube shown here in blue (which is the reason that you would still be unable to ventilate).
ALS Changes – ALS Protocols

ALS Protocol 502 – Obstructed Airway
And if you are able to intubate a patient, but still unable to ventilate, the obstruction must also be below the level of the cricoid membrane.

In such cases, a Needle Cricothyroidotomy (blue arrow) will only ventilate the trachea. And since no oxygen / CO2 exchange occurs here, it will be ineffective and the patient will die.
ALS Changes – ALS Protocols

ALS Protocol 502 – Obstructed Airway

The only maneuver that will save the patient’s life at this point is if you can find a way to “open up” part of the lung to allow for ventilation.

To accomplish this, deflate the cuff on the endotracheal tube, note the tube depth, and then advance the tube as far as possible. This should displace the foreign body into the right lung (mainstem bronchus or lower).
ALS Protocol 502 – Obstructed Airway

Then withdraw the endotracheal tube to its original depth. By displacing the obstruction further into the airway (likely into the right lung), you should be able to effectively ventilate at least the left lung (light blue arrow).

Though this technique is not without risk of injury to the airway, the alternative is to not ventilate or oxygenate the patient until after their arrival in the emergency department, which will almost universally result in death. So for the patient, it seems worth the risk.
In 2005, the American Heart Association allowed for the option of using either vasopressin or epinephrine as the first-line vasopressor agent in cardiac arrest management. Until now, the regional protocols had allowed for the same option.
ALS Protocol 503A – VF / Pulseless VT

In the past few years, there has been increasing evidence regarding the lack of any benefit and, potentially, increased harm due to epinephrine. For this reason, vasopressin is now the only acceptable first-line vasopressor for the management of persistent cardiac arrest. Epinephrine is reserved for persistent cardiac arrest following the administration of vasopressin.
ALS Changes – ALS Protocols

ALS Protocol 503A – VF / Pulseless VT

In addition, as you can see, the option of administering the drugs for the management of VT / Pulseless VT have been modified to allow for the use of intraosseous administration when IV access has not been obtained.
ALS Changes – ALS Protocols

ALS Protocol 503B – PEA / Asystole

The changes that were just described for Protocol 503A were also made within this protocol. Vasopressin is to be used as the initial vasopressor, epinephrine is to be reserved for refractory cardiac arrest that does not respond to vasopressin, and IO administration is allowed for all drugs within this protocol.

<table>
<thead>
<tr>
<th>503-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>PULSELESS ELECTRICAL ACTIVITY (PEA)/ASYSTOLE</td>
</tr>
</tbody>
</table>

**NOTE:** CONSIDER THE POSSIBILITY OF CONDITIONS MASQUERADING AS PEA/ASYSTOLE WHICH REQUIRE IMMEDIATE IN-HOSPITAL TREATMENT SUCH AS SEVERE SHOCK, TRAUMATIC CARDIAC ARREST, PERICARDIAL TAMPOANDE, HYPOVolemIA, TENsION PNEUMOTHORAX, ETC.

1. Continue CPR with minimal interruption.
2. If a tension pneumothorax is suspected, perform Needle Decompression. (See Appendix O.)
3. Perform Endotracheal Intubation.
4. Begin an IV/IO infusion of Normal Saline (0.5% NS) to keep veins open, or a Saline Lock.
5. Administer Vasopressin 40 unit IV/IO/Saline Lock Bolus, single dose.

OR

Administer Epinephrine 1 mg (10 ml of a 1:10,000 solution), IV/Saline Lock bolus.

6. If there is no change in the rhythm within 3-5 minutes **after administration of Vasopressin**, administer Epinephrine 1 mg (10 ml of a 1:10,000 solution), IV/IO/Saline Lock bolus, every 3-5 minutes.

7. If the patient has a heart rate (based on rhythm strip) less than 60 beats/min, administer Atropine Sulfate 1 mg, IV/IO/Saline Lock bolus. If there is no change in the heart rate within 3-5 minutes, remains less than 60 bpm, repeat Atropine Sulfate 1 mg, IV/IO/Saline Lock bolus, every 3-5 minutes. (Maximum total dosage is 3 mg.)

8. If there is insufficient improvement in hemodynamic status, contact Medical Control for implementation of one or more of the following MEDICAL CONTROL OPTIONS:

**MEDICAL CONTROL OPTIONS:**

**OPTION A:** Administer Sodium Bicarbonate 44-88 mEq IV/IO/Saline Lock bolus. Repeat doses of Sodium Bicarbonate 44 mEq. IV/IO/Saline Lock bolus, may be given every 10 minutes.

**OPTION B:** In cases of hyperkalemia or Calcium Channel Blocker overdose administer Calcium Chloride (CaCl₂) 1 gm, SLOWLY, IV/IO/Saline Lock bolus. Follow with a Normal Saline (0.9% NS) flush.

**OPTION C:** Begin rapid IV/IO/Saline Lock infusion of Normal Saline (0.9% NS), up to three (3) liters.

**OPTION D:** Transportation Decision.
ALS Changes – ALS Protocols

ALS Protocol 503B – PEA / Asystole

Also, the initial wording of this protocol has been changed. It is not enough to consider those reversible causes that may be best treated in the hospital. It is just as (if not more) important to consider those causes that you can treat immediately in the field. And the language of the protocol now reflects this.

---

**ALS Protocol 503B – PULSELESS ELECTRICAL ACTIVITY (PEA)/ASYSTOLE**

- **NOTE:** CONSIDER THE POSSIBILITY OF CONDITIONS MASQUERADING AS PEA/ASYSTOLE WHICH REQUIRE IMMEDIATE IN-HOSPITAL TREATMENT SUCH AS SEVERE SHOCK, TRAUMATIC CARDIAC ARREST, PERICARDIAL TAMPOANDE, HYPOVOLEMIA, TENSION PNEUMOTHORAX, ETC.

1. Continue CPR with minimal interruption.
2. If a tension pneumothorax is suspected, perform Needle Decompression. (See Appendix O.)
3. Perform Endotracheal Intubation.
4. Begin an IV/IO infusion of Normal Saline (0.5% NS) to keep vein open, or a Saline Lock.
5. Administer Vasopressin 40 unit IV/IO/Saline Lock Bolus, single dose.
   OR
   Administer Epinephrine 1 mg (10 ml of a 1:10,000 solution), IV/Saline Lock bolus.
6. If there is no change in the rhythm within 3 – 5 minutes after administration of Vasopressin, administer Epinephrine 1 mg (10 ml of a 1:10,000 solution). IV/IO/Saline Lock bolus, every 3 – 5 minutes.
7. If the patient has a heart rate (based on rhythm strip) less than 60 beats/min, administer Atropine Sulfate 1 mg, IV/IO/Saline Lock bolus. If there is no change in the heart rate within 3 – 5 minutes, remains less than 60 bpm, repeat Atropine Sulfate 1 mg, IV/IO/Saline Lock bolus, every 3 – 5 minutes. (Maximum total dosage is 3 mg.)
8. If there is insufficient improvement in hemodynamic status, contact Medical Control for implementation of one or more of the following MEDICAL CONTROL OPTIONS:

**MEDICAL CONTROL OPTIONS:**

**OPTION A:** Administer Sodium Bicarbonate 44-88 mEq IV/IO/Saline Lock bolus. Repeat doses of Sodium Bicarbonate 44 mEq. IV/IO/Saline Lock bolus, may be given every 10 minutes.

**OPTION B:** In cases of hyperkalemia or Calcium Channel Blocker overdose administer Calcium Chloride (CaCl₂) 1 gm, SLOWLY. IV/IO/Saline Lock bolus. Follow with a Normal Saline (0.9% NS) flush.

**OPTION C:** Begin rapid IV/IO/Saline Lock infusion of Normal Saline (0.9% NS), up to three (3) liters.

**OPTION D:** Transportation Decision.
ALS Changes – ALS Protocols

ALS Protocol 504 – Suspected Myocardial Infarction
A patient with a critical coronary artery narrowing so severe that it is impairing the heart’s ability to pump efficiently, to the point of causing hypotension, is the patient most in need of a STEMI evaluation and transport, when they meet the criteria. Though the protocols had previously allowed a 12-lead EKG only for normotensive patients, this is no longer true.

<table>
<thead>
<tr>
<th>504</th>
<th>SUSPECTED MYOCARDIAL INFARCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Begin Cardiac Monitoring, record and evaluate EKG rhythm.</td>
</tr>
<tr>
<td>3.</td>
<td>Perform, record, and evaluate a 12 Lead EKG on any patient hemodynamically stable (i.e., systolic blood pressure greater than 90 mmHg).</td>
</tr>
</tbody>
</table>
ALS Changes – ALS Protocols

ALS Protocol 504A – Drug Therapy of Myocardial Ischemia

Two quick changes to note within this protocol.

1) As with the BLS protocol (404), a note / criteria has been added regarding nitroglycerin administration in the setting of recent use (72 hours) of medications for erectile dysfunction.

2) The dosing of morphine has been modified to be consistent with all other protocols.
ALS Changes – ALS Protocols

ALS Protocol 506 – Acute Pulmonary Edema

In addition to the note regarding nitroglycerin administration in the setting of medications for erectile dysfunction, one additional change was made to the On-Line Medical Control Options.

<table>
<thead>
<tr>
<th>506</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACUTE PULMONARY EDEMA</strong></td>
</tr>
<tr>
<td>2. Begin Cardiac Monitoring, record and evaluate EKG rhythm.</td>
</tr>
<tr>
<td>3. Begin an IV infusion of Normal Saline (0.9% NS) to keep vein open, or a Saline Lock.</td>
</tr>
<tr>
<td>4. Monitor vital signs every 2-3 minutes.</td>
</tr>
<tr>
<td>5. Administer Nitroglycerin Tablet 1/150 gr or Spray 0.4 mg, sublingually, every 5 minutes, for a total of 3 doses. Before each administration, check the patient's pulse and blood pressure to ensure the patient is hemodynamically stable.</td>
</tr>
<tr>
<td>6. Administer Nitropaste 1½ inches (if available).</td>
</tr>
</tbody>
</table>

**NOTE:** NITROGLYCERIN AND/OR NITROPASTE MAY NOT BE ADMINISTERED TO PATIENTS WITH A SYSTOLIC BLOOD PRESSURE OF LESS THAN 100 mm Hg, UNLESS AN IV/SALINE LOCK IS IN PLACE.

| 7. Administer Furosemide 20 – 80 mg, IV/Saline Lock bolus. (Maximum combined total dosage is 80 mg.) |
| 8. Initiate CPAP Therapy, if available, (see Appendix P) |
| 9. Contact Medical Control for implementation of one or more of the following MEDICAL CONTROL OPTIONS: |
ALS Changes – ALS Protocols

ALS Protocol 506 – Acute Pulmonary Edema

The use of morphine in the management of acute pulmonary edema is both long-standing and controversial.

The goal in administering morphine is to reduce the patient’s anxiety and to thereby reduce their heart rate. By doing so, you allow more time for ventricular filling, shifting their position on the Starling curve, and improving cardiac output.
ALS Protocol 506 – Acute Pulmonary Edema

The problem is that morphine has now been shown to be a direct myocardial depressant. And its use in acute pulmonary edema is associated with worse outcomes (more intubations, more ICU admissions, and more deaths). So, the Medical Control Options have been modified to allow for another class of drugs – one that accomplishes the anxiolysis, but without the myocardial side effects of morphine.

<table>
<thead>
<tr>
<th>MEDICAL CONTROL OPTIONS:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OPTION A:</strong> Administer Morphine Sulfate 0.1mg/kg (not to exceed 5mg) 2–5 mg, IV/Saline Lock bolus. Repeat doses of Morphine Sulfate 0.1mg/kg (not to exceed 5mg) 2–5 mg IV/Saline Lock bolus, may be given as necessary. (Maximum total dosage is 15 mg.)</td>
</tr>
<tr>
<td><strong>NOTE:</strong> IF HYPOVENTilation DEvelOPS, ADMINISTER NALoxONE UP TO 2 MG, IV/SALINE LOCK BOLUS</td>
</tr>
<tr>
<td><strong>OPTION B:</strong> Administer Lorazepam 1 – 2 mg, IV/IN Saline Lock bolus. OR Administer Midazolam 1 – 2 mg, IV/IN Saline Lock bolus.</td>
</tr>
<tr>
<td><strong>OPTION B C:</strong> Repeat Nitroglycerin Tablet 1/150 gr. or Spray 0.4 mg, sublingually.</td>
</tr>
<tr>
<td><strong>OPTION C D:</strong> Transportation Decision.</td>
</tr>
</tbody>
</table>
ALS Changes – ALS Protocols

ALS Protocol 507 – Asthma

While metaproterenol has been removed from the protocol, the more important change was the addition of ipratropium.

507
ASTHMA

In patients with acute asthma and/or active wheezing:
2. Administer Albuterol Sulfate 0.083% (one unit dose bottle of 3 ml), by nebulizer, at a flow rate that will deliver the solution over 5 to 15 minutes. May be repeated twice (total of 3 doses).
   OR
   Administer Metaproterenol 6% (0.3 ml in 2.5—5 ml of Normal Saline (0.9% NS)); by nebulizer, at a flow rate that will deliver the solution over 5—15 minutes. May be repeated twice (total of 3 doses).
3. Administer Ipratropium Bromide 0.5 mg (1 unit dose), by nebulizer, in conjunction with each Albuterol Sulfate dose.

NOTE: ALBUTEROL SULFATE AND IPRATROPium BROMIDE MAY BE MIXED AND ADMINISTERED SIMULTANEOUSLY, IF APPROVED BY THE AGENCY MEDICAL DIRECTOR.

NOTE: IPRATROPium BROMIDE IS CONTRAINDICATED IN CASES OF SUSPECTED "NUT OR "SOY" ALLERGY.

NOTE: DO NOT DELAY TRANSPORT TO ADMINISTER ADDITIONAL NEBULIZER TREATMENTS.

4. In patients with signs of impending respiratory failure, administer Epinephrine 0.3 mg (0.3 ml of a 1:1,000 solution), IM.

5. Begin Cardiac Monitoring, record and evaluate EKG rhythm, in patients in severe respiratory distress with history of dysrhythmia or cardiac disease.

6. In patients in severe respiratory distress, begin an IV/Saline Lock infusion of Normal Saline (0.9% NS) to keep vein open, or a Saline Lock.

7. In patients with persistent severe respiratory distress, administer Magnesium Sulfate, 2 gm, IV/Saline lock, diluted in 50-100 ml Normal Saline (0.9% NS) over 10-20 minutes.

8. In patients with persistent severe respiratory distress, administer Methylprednisolone 125 mg, IV/Saline lock bolus, or IM,
   OR
   Administer Dexamethasone, 12 mg, IV/Saline Lock bolus, or IM.

9. If the patient develops or remains in severe respiratory distress, contact Medical Control for implementation of one or more of the following MEDICAL CONTROL OPTIONS:

MEDICAL CONTROL OPTIONS:

OPTION A: Repeat Albuterol Sulfate 0.083% (one unit dose bottle of 3 ml), by nebulizer, at a flow rate that will deliver the solution over 5 to 15 minutes.

   OR

Repeat Metaproterenol 3% (0.3 ml in 2.5—5 ml of Normal Saline (0.9% NS)); by nebulizer, at a flow rate that will deliver the solution over 5—15 minutes.

OPTION B: Administer Epinephrine 0.3 mg (0.3 ml of a 1:1,000 solution), IM.

OPTION C: Transportation Decision.
ALS Protocol 507 – Asthma

Ipratropium is an anticholinergic agent. As such, it decreases mucous production. And because asthma is a three-fold problem (airway inflammation, mucous production, bronchoconstriction), this drug combines with albuterol to produce a more dramatic effect on asthma symptoms in some patients.
ALS Changes – ALS Protocols

ALS Protocol 508 – Chronic Obstructive Pulmonary Disease

For the same reason that the change was made within the asthma protocols, metaproterenol has been removed from and ipratropium has been added to this protocol.

<table>
<thead>
<tr>
<th>CHRONIC OBSTRUCTIVE PULMONARY DISEASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>In patients in severe respiratory distress due to chronic obstructive pulmonary disease:</td>
</tr>
<tr>
<td>2. Begin Cardiac Monitoring, record and evaluate EKG rhythm.</td>
</tr>
<tr>
<td>3. Administer Albuterol Sulfate 0.083% (one unit dose bottle of 3 ml), by nebulizer, at a flow rate that will deliver the solution over 5 - 15 minutes. May be repeated twice (total of 3 doses). OR</td>
</tr>
<tr>
<td>Administer Metaproterenol 5% (0.3 ml in 2.5 - 5 ml of Normal Saline (0.9% NS)), by nebulizer, at a flow rate that will deliver the solution over 5 - 15 minutes. May be repeated twice (total of 3 doses).</td>
</tr>
<tr>
<td>4. Administer Ipratropium Bromide 0.5 mg (1 unit dose), by nebulizer, in conjunction with each Albuterol Sulfate dose.</td>
</tr>
</tbody>
</table>

**NOTE:** ALBUTEROL SULFATE AND IPRASTOPHIUM BROMIDE MAY BE MIXED AND ADMINISTERED SIMULTANEOUSLY, IF APPROVED BY THE AGENCY MEDICAL DIRECTOR.

**NOTE:** IPRASTOPHIUM BROMIDE IS CONTRAINDICATED IN CASES OF SUSPECTED NUT OR SOY ALLERGY.

**NOTE:** DO NOT DELAY TRANSPORT TO ADMINISTER ADDITIONAL NEBULIZER TREATMENTS.

4. Begin an IV infusion of Normal Saline (0.9% NS) to keep vein open, or Saline Lock.
5. In patients with persistent severe respiratory distress, administer Methylprednisolone 125 mg, IV/Saline lock bolus, or IM, OR
   - Administer Dexamethasone, 12 mg, IV/Saline Lock bolus, or IM.
6. If the patient remains in severe respiratory distress, contact Medical Control for implementation of one or more of the following MEDICAL CONTROL OPTIONS:

**MEDICAL CONTROL OPTIONS:**

**OPTION A:** Repeat Albuterol Sulfate 0.083% (one unit dose bottle of 3 ml), by nebulizer, at a flow rate that will deliver the solution over 5 - 15 minutes. OR
- Repeat Metaproterenol 5% (0.3 ml in 2.5 - 5 ml of Normal Saline (0.9% NS)), by nebulizer, at a flow rate that will deliver the solution over 5 - 15 minutes.

**OPTION B:** Transportation Decision.
After years of discussion, thiamine is being removed from the protocols. Due to a decreased incidence of Wernicke-Korsakoff syndrome, an increase in thiamine supplementation in breads, and questions regarding the necessity to administer thiamine prior to glucose, the decision has been made to remove this from the regional protocols.
ALS Changes – ALS Protocols

ALS Protocol 513 - Seizures

As discussed in prior sections, thiamine has been removed and the option of intranasal drug administration has been added.

<table>
<thead>
<tr>
<th>ALS Protocol 513</th>
<th>SEIZURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>For patients experiencing seizures that are ongoing or recurring:</td>
<td></td>
</tr>
<tr>
<td>2. Begin Cardiac Monitoring, record and evaluate EKG rhythm.</td>
<td></td>
</tr>
<tr>
<td>3. Begin an IV/Saline Lock infusion of Normal Saline (0.9% NS) to keep vein open, or a Saline Lock.</td>
<td></td>
</tr>
<tr>
<td>4. Administer Dextrose 25 gm (50 ml of a 50% solution), IV/Saline Lock bolus.</td>
<td></td>
</tr>
<tr>
<td>5. Administer Lorazepam 2 mg, IV/Saline Lock bolus, or, if IV access is unavailable, IN or IM. A single repeat dose of Lorazepam 2 mg, IV/Saline Lock bolus, or, if IV access is unavailable, IM, may be given after 5 minutes if seizure activity persists or recurs.</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>Administer Diazepam 5 mg, IV/Saline Lock bolus. A single repeat dose of Diazepam 5 mg, IV/Saline Lock bolus, may be given if seizure activity persists or recurs. (Rate of administration may not exceed 5 mg/min.)</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>Administer Midazolam 10 mg, IM or IN, if IV access is unavailable.</td>
<td></td>
</tr>
<tr>
<td>6. Administer Thiamine 100 mg, IV/Saline Lock bolus.</td>
<td></td>
</tr>
<tr>
<td>7. If seizure activity persists, contact Medical Control for implementation of one or more of the following MEDICAL CONTROL OPTIONS:</td>
<td></td>
</tr>
<tr>
<td><strong>MEDICAL CONTROL OPTIONS:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>OPTION A:</strong> Repeat Lorazepam 2 mg, IV/Saline Lock bolus, or, if IV access is unavailable, IN or IM.</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>Repeat Diazepam 5 mg, IV/Saline Lock bolus. (Rate of administration may not exceed 5 mg/min.)</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>Repeat Midazolam 10 mg, IN or IM, if IV access is unavailable.</td>
<td></td>
</tr>
<tr>
<td><strong>OPTION B:</strong> Transportation Decision.</td>
<td></td>
</tr>
</tbody>
</table>
Effective January 1st, head injury patients who experience seizures will be treated no differently than medical patients who experience on-going seizures. In fact, when this occurs, this protocol will not just refer you directly to the Seizure protocol, allowing for their treatment under standing orders.

And, as already mentioned, the Prehospital Sedation section has been removed and is now found only in the GOPs.
ALS Changes – ALS Protocols

ALS Protocol 528 – Burns

Three changes to note in this protocol.

1) Prehospital Sedation has been moved to the GOPs.

2) Pulse oximetry monitoring is required.

3) And most importantly, pain management is now standing order, as seen here.

<table>
<thead>
<tr>
<th>528 BURNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. If there is evidence of burns to the upper airway or upper airway compromise is anticipated, perform orotracheal intubation. If the patient requires sedation refer to General Operating Procedures: Prehospital Sedation.</td>
</tr>
<tr>
<td>3. For patients with electrical burns, begin Cardiac Monitoring, record and evaluate the EKG rhythm.</td>
</tr>
<tr>
<td>4. Begin Pulse Oximetry monitoring</td>
</tr>
<tr>
<td>5. Begin an IV infusion of Normal Saline (0.9% NS) or Ringer’s Lactate (RL) to keep veins open, or a Saline Lock.</td>
</tr>
<tr>
<td>6. Begin a rapid IV/Saline Lock infusion of Normal Saline (0.9% NS) or Ringer’s Lactate (RL), up to 3 liters, via a macro-drip, if transport is delayed or extended.</td>
</tr>
<tr>
<td>7. For patients who are experiencing severe pain due to the burn injury:</td>
</tr>
<tr>
<td>i. For patients with a systolic blood pressure greater than 110mmHg, administer Morphine Sulfate 0.1mg/kg (not to exceed 3mg), IV / Saline Lock bolus. For continued pain, repeat dose of 0.1mg/kg (not to exceed 3mg) may be repeated every 5 minutes following the initial dose. (Maximum total dose is 10mg)</td>
</tr>
<tr>
<td>NOTE: IF HYPOVENTILATION DEVELOPS, ADMINISTER NALOXONE UP TO 2 MG, IV/N/IV/SALINE LOCK BOLUS.</td>
</tr>
<tr>
<td>THE ADMINISTRATION OF NARCOTIC ANALGESICS IS CONTRAINDICATED IN PATIENTS WITH BURNS INVOLVING THE FACE AND/OR AIRWAY.</td>
</tr>
<tr>
<td>8. If the patient requires sedation, contact Medical Control for implementation of one or more of the following MEDICAL CONTROL OPTIONS:</td>
</tr>
</tbody>
</table>

MEDICAL CONTROL OPTIONS:

OPTION A - For the purposes of analgesia, Morphine Sulfate 2–5 mg, IV/Saline Lock bolus; may be administered. Repeat doses of Morphine Sulfate 2–5 mg, IV/Saline Lock bolus may be given as necessary. (Maximum total dosage is 15mg).

NOTE: IF HYPOVENTILATION, HYPOXEMIA, OR STUPOR DEVELOPS, WITHHOLD MORPHINE SULFATE, ELEVATE THE LEGS, AND ADMINISTER NALOXONE UP TO 2 mg, IV/SALINE LOCK BOLUS.

OPTION A - Transportation Decision.
ALS Changes – ALS Protocols

ALS Protocol 529 – Pain Management for Isolated Extremity Injuries

The only real change to this protocol has to do with pulse oximetry monitoring, which is now required.

<table>
<thead>
<tr>
<th>529</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PAIN MANAGEMENT FOR ISOLATED EXTREMITY INJURY</strong></td>
</tr>
<tr>
<td>For patients with isolated extremity injury, if there is severe pain</td>
</tr>
<tr>
<td>2. Begin cardiac monitoring. Record and evaluate rhythm <strong>strip</strong>.</td>
</tr>
<tr>
<td>3. Begin pulse Oximetry monitoring <em>(if-available)</em>.</td>
</tr>
<tr>
<td>4. Begin an IV/Saline Lock infusion of Normal Saline (0.9% NS) at a KVO rate.</td>
</tr>
<tr>
<td>5. Monitor vital signs every 5 minutes.</td>
</tr>
<tr>
<td>6. For patients with a systolic blood pressure greater than 110 mmHg, administer Morphine Sulfate 0.1 mg/kg (not to exceed 5 mg), IV/Saline lock bolus. For continued pain, repeat dose of 0.1 mg/kg (not to exceed 5 mg) may be administered. (Maximum total dose is 10 mg).</td>
</tr>
</tbody>
</table>

**NOTE:** IF HYPOVENTILATION DEVELOPS, ADMINISTER NALOXONE UP TO 2 MG, IV/SALINE LOCK BOLUS.
ALS Changes – ALS Protocols

ALS Protocol 529 – Pain Management for Isolated Extremity Injuries

But one additional comment is certainly worth making...

If you haven’t picked up on it in the several CME articles in which it was mentioned, the FDNY Office of Medical Affairs has put forth their interpretation of this policy for FDNY Paramedics.

In short, the protocol is for the patient for whom it reads – someone with an injury (or injuries) isolated to a single extremity who is experiencing severe pain.

This means a suspected fracture, sprain, strain, burn (though this is now covered in Protocol 528), frostbite, amputation, etc. So long as it is an injury, is isolated to an extremity (including a hip or shoulder), and is causing severe pain, that pain may be treated under standing orders as per this protocol.
ALS Protocol 530 – Emotionally Disturbed Patient

When treating a violent EDP who presents an immediate threat to themselves, you, or others, chemical sedation may be appropriate. But for your safety, IM administration may present a significant risk of needle injury. For this reason, the Medical Control Options have been adapted to allow for intranasal (IN) administration as shown.

**Medical Control Options:**

**Prenotial Chemical Restraint Procedure**

<table>
<thead>
<tr>
<th>OPTION A</th>
<th>OPTION B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administer Diazepam, 5 – 10 mg, IV/Saline Lock bolus. OR Administer Midazolam, 1 – 2 mg, IV/Saline Lock bolus or if IV access is unavailable, administer Midazolam, 10 mg IM or IN. OR Administer Lorazepam, 2 – 4 mg, IV/Saline Lock bolus or if IV access is unavailable, administer Lorazepam, 4 mg IM or IN.</td>
<td>Transportation Decision.</td>
</tr>
</tbody>
</table>
ALS Changes – ALS Protocols

ALS Protocol 554 – Pediatric Asthma / Wheezing

Four changes:

1) No more Appendix J.
2) Broselow Tape is now a “length-based dosing device”
3) Ipratropium has been added, including pediatric-specific dosing
4) Terbutaline has been removed as epinephrine is already available.
ALS Changes  ALS Protocols

ALS Protocol 554 – Pediatric Asthma / Wheezing

And so, when put into the protocol, the changes look like this:

For pediatric patients with acute asthma and/or active wheezing:

2. Administer Albuterol Sulfate 0.083% (one unit dose vial of 3 ml), by nebulizer, at a flow rate that will deliver the solution over 5 – 15 minutes. (See Broselow Tape or Appendix J) (Refer to Length Based Dosing Device) May be repeated twice during transport (total of 3 doses).
3. Ipratropium Bromide 0.02% (one unit dose vial of 0.5 ml in children 6 years of age or older, or half unit dose vial of 0.5 ml in children under 6 years of age), by nebulizer, may be mixed with Albuterol Sulfate. (See Broselow Tape)
4. In patients one (1) year of age or older with severe respiratory distress, respiratory failure, and/or decreased breath sounds, administer Epinephrine 0.01 mg/kg (0.01 ml/kg of a 1:1,000 solution), IM. Maximum dose is 0.3 ml. (See Broselow Tape or Appendix J) (Refer to Length Based Dosing Device)

NOTE: SEVERE RESPIRATORY DISTRESS IN A CHILD IS CHARACTERIZED BY MARKEDLY INCREASED RESPIRATORY EFFORT, I.E., SEVERE AGITATION, DYSPNEA, TRIPOD POSITION, AND SUPRASTERNAL AND SUBSTERNAL RETRACTIONS.

A SILENT CHEST IS AN OMINOUS SIGN THAT INDICATES RESPIRATORY FAILURE AND ARREST ARE IMMINENT.

During transport, or if transport is delayed:

4. If the patient develops or remains in severe respiratory distress or respiratory failure, and/or continues to have decreased breath sounds, contact Medical Control for implementation of one or more of the following MEDICAL CONTROL OPTIONS:

MEDICAL CONTROL OPTIONS:

OPTION A: Repeat Albuterol Sulfate 0.083% (one unit dose bottle of 3 ml), by nebulizer, at a flow rate that will deliver the solution over 5 to 15 minutes. (See Broselow Tape or Appendix J) (Refer to Length Based Dosing Device)

OPTION B: Ipratropium Bromide 0.02% (one unit dose vial of 0.5 ml in children 6 years of age or older, or half unit dose vial of 0.5 ml in children under 6 years of age), by nebulizer, may be mixed (if available) with Albuterol Sulfate. (See Broselow Tape or Appendix J).

OPTION C: Repeat Epinephrine 0.01 mg/kg (0.01 ml/kg of a 1:1,000 solution), IM, or Terbutaline 0.04 mg/kg, SC, 20 minutes after the initial dose. (See Broselow Tape or Appendix J) (Refer to Length Based Dosing Device)

OPTION D: Begin an IV infusion of Normal Saline (0.9% NS) to keep vein open, or a Saline Lock. Attempt IV no more than twice.

OPTION E: Transportation Decision.
ALS Changes – ALS Protocols

ALS Protocol 554 – Pediatric Seizures

The administration of rectal (PR) diazepam has been associated with worsened outcomes in pediatric seizure patients. For this reason, the option of intranasal (IN) midazolam administration has been added. And, as we have mentioned several times, Appendix J has been removed.
Conclusion

As you can see, the members of REMAC and those who have attended their meetings have been busy over the past year. No doubt, this coming year will be equally busy. And while the yearly changes may sometimes seem too frequent, the fact that your patients continue to receive cutting-edge medical care in the prehospital setting is why these changes and constant review of the protocols remains so important.
If you have any questions about these most recent protocol changes, please contact your medical director, the FDNY Office of Medical Affairs (718-999-2790) or the New York City REMSCO (212-870-2301). Or you may contact the author of this presentation (who shamelessly included pictures of his dogs) at freesej@fdny.nyc.gov.