

September 9, 2008

T0: All Health Care Providers in the State of Maryland

From: Office of State EMS Medical Director

Subject: Changes/Additions to 2008 Maryland Medical Protocols for EMS Providers

The EMS Board recently approved changes/additions that will impact the 2008 Maryland Medical Protocols for Emergency Medical Services Providers that went into effect on July 1, 2008. MIEMSS is not mandating an additional roll-out, as the changes are few. However, it is the responsibility of each provider to review the updated content to ensure familiarity and consistency. The following highlight approved additions and deletions.

1. General Patient Care
  - ❖ Revision to the NEW '08 ALERT Adding Freestanding Medical Facility as a alternative destination for patient without patent airway
2. Treatment
  - ❖ Removal of the following text from Chest Pain/Acute Coronary Syndrome Protocol:  
ASPIRIN: Medical Consult symbol and (Paramedic may perform without consult.)
3. Treatment
  - ❖ Modification of ST Elevation Myocardial Infarction (STEMI) protocol  
Converting BBB to New Left BBB
4. ALS Pharmacology
  - ❖ Removal of the following text from Aspirin Protocol:  
ASPIRIN: Medical Consult symbol and (Paramedic may perform without consult.)

A detailed summary spreadsheet that lists each change and the revised protocol pages are available in PDF format on the MIEMSS web page at [www.miemss.org](http://www.miemss.org).

Should you have any questions regarding the content, please contact the Office of the State EMS Medical Director at 410.706.0880.

## II. GENERAL PATIENT CARE (GPC)

### A. RESPONSE

Review the dispatch information and select appropriate response.

### B. SCENE ARRIVAL AND SIZE-UP

1. Consider Body Substance Isolation (BSI).
2. Consider Personal Protective Equipment (PPE).
3. Evaluate the scene safety.
4. Determine the number of patients.
5. Consider the need for additional resources.

### C. PATIENT APPROACH

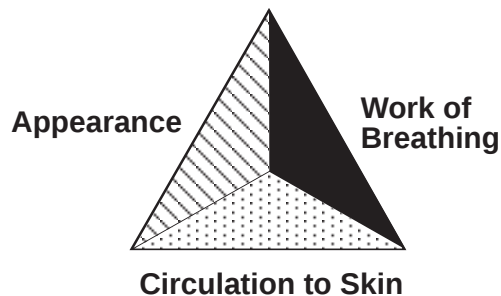
1. Determine the Mechanism of Injury (MOI)/Nature of Illness (NOI).
2. If appropriate, begin triage and initiate Mass Casualty Incident (MCI) procedures.

### D. INITIAL ASSESSMENT



CORRECT LIFE-THREATENING PROBLEMS AS IDENTIFIED.  
STABILIZE CERVICAL SPINE WHEN APPROPRIATE.

FOR PEDIATRIC PATIENTS, CONSIDER USING THE PEDIATRIC ASSESSMENT TRIANGLE.



1. Assess mental status
  - a) **A**lert
  - b) Responds to **V**erbal stimuli
  - c) Responds to **P**ainful stimuli
  - d) **U**nresponsive
2. Airway
  - a) Open and establish airway using appropriate adjunct.
  - b) Place patient in appropriate position.
  - c) Suction airway as needed, including tracheostomy tubes.



IF A PATENT AIRWAY CANNOT BE ESTABLISHED, THE PATIENT MUST BE TRANSPORTED TO THE NEAREST APPROPRIATE HOSPITAL-BASED EMERGENCY DEPARTMENT **OR DESIGNATED FREESTANDING MEDICAL FACILITY**. ONCE THE PATIENT PRESENTS TO THE HOSPITAL **OR DESIGNATED FREESTANDING MEDICAL FACILITY** FOR TREATMENT OF AN EMERGENCY CONDITION, TREATMENT AND TRANSFER DECISIONS ARE THE RESPONSIBILITY OF THE HOSPITAL UNDER APPLICABLE LAW. THE PROVIDER SHOULD STAND BY TO BE AVAILABLE FOR AND ASSIST WITH TRANSFER OF THE PATIENT IF THE HOSPITAL DETERMINES SUCH A TRANSFER IS APPROPRIATE. **(NEW '08)**

IN INFANTS AND YOUNG CHILDREN, INSPIRATORY STRIDOR IS AN INDICATION OF UPPER AIRWAY FOREIGN BODY OR PARTIAL AIRWAY OBSTRUCTION. REQUEST ALS RENDEZVOUS. TRANSPORT THE PATIENT RAPIDLY AND CAUTIOUSLY AND HAVE FOREIGN BODY AIRWAY REMOVAL EQUIPMENT READY FOR IMMEDIATE USE IN CASE THE PATIENT'S AIRWAY BECOMES OBSTRUCTED.

### 3. Breathing

#### a) Determine if breathing is adequate.

- (1) If patient's ventilations are not adequate, provide assistance with 100% oxygen using Bag-Valve-Mask (BVM). (The use of a manually activated positive pressure oxygen delivery device is allowed when a BVM is not available.)
- (2) Consider pulse oximetry, if available.

| Percent O <sub>2</sub> Saturation                                                                                                                                                                         | Ranges           | General Patient Care                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------|
| 95–100%                                                                                                                                                                                                   | Normal           | Give Oxygen as necessary                                                       |
| 91–94%                                                                                                                                                                                                    | Mild Hypoxia     | Give Oxygen as necessary                                                       |
| 86–90%                                                                                                                                                                                                    | Moderate Hypoxia | Give 100% Oxygen<br>Consider Assisting Ventilations                            |
| ≤ 85%                                                                                                                                                                                                     | Severe Hypoxia   | Give 100% Oxygen<br>Assist Ventilations if necessary<br>If indicated, Intubate |
| <b><i>False SPO<sub>2</sub> readings may occur in the following patients:</i></b><br>Hypothermic, Hypoperfusion (Shock), Carbon Monoxide Poisoning, Hemoglobin Abnormality, Anemic, and Vasoconstriction. |                  |                                                                                |

#### b) Hyperventilate the head-injured patient as follows:

Adult 20 breaths per minute  
Child 30 breaths per minute  
Infant 35 breaths per minute

- (1) Who has signs of herniation such as unequal pupils, posturing, or paralysis
- (2) Who is manifesting a rapidly decreasing GCS **or**,

## I. CARDIAC EMERGENCIES: CHEST PAIN/ACUTE CORONARY SYNDROME

1. Initiate General Patient Care.

2. Presentation

Chest discomfort that may radiate to the arm, shoulders, jaw, or back. Generally described as a crushing pain or toothache. May be accompanied by shortness of breath, sweating, nausea, or vomiting.



ACUTE CORONARY SYNDROME (ACS) IS DEFINED AS PATIENTS PRESENTING WITH ANGINA OR ANGINAL EQUIVALENTS SUCH AS CHEST, EPIGASTRIC, ARM, OR JAW PAIN OR DISCOMFORT AND MAY BE ASSOCIATED WITH DIAPHORESIS, NAUSEA, SHORTNESS OF BREATH OR DIFFICULTY BREATHING. **(NEW '08)**

3. Treatment



- a) Place patient in position of comfort.
- b) Assist patient with administration of patient's own prescribed Nitroglycerin. May be repeated in 3-5 minutes if chest pain persists, blood pressure is greater than 90 mm Hg, and pulse is greater than 60 bpm. Maximum three doses total (patient and EMT-B assisted).
- c) Assess and treat for shock if indicated.
- d) Constantly monitor airway and reassess vital signs every 5 minutes.



NITROGLYCERIN IS CONTRAINDICATED FOR ANY PATIENT HAVING TAKEN MEDICATION FOR ERECTILE DYSFUNCTION (eg, VIAGRA™, LEVITRA™, OR CIALIS™) WITHIN THE PAST 48 HOURS. MEDICAL CONSULTATION IS REQUIRED TO OVERRIDE THIS CONTRAINDICATION.

IF THE PATIENT'S BLOOD PRESSURE DROPS MORE THAN 20 mm Hg AFTER ADMINISTRATION OF NITROGLYCERIN, OBTAIN MEDICAL CONSULTATION BEFORE FURTHER ADMINISTRATION.

- e)  Additional doses of Nitroglycerin require medical consultation.



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- f) Initiate IV LR KVO.
  - g) Shall perform a 12 lead ECG for patients with ACS. **(NEW '08)**  
(If trained, providers may perform a 15 lead ECG.)
  - h) If patient has a prescription or previous history of Nitroglycerin use, administer Nitroglycerin: 0.4 mg SL. May be repeated if symptoms persist, and BP is greater than 90 mm Hg, and pulse is greater than 60 bpm, to a maximum dose of 1.2 mg.

## CARDIAC EMERGENCIES: CHEST PAIN/ACUTE CORONARY SYNDROME (Continued)

- i) If patient does **not** have a prescription or previous history of Nitroglycerin use, an IV must be established prior to administration; then administer nitroglycerin as above.
  - j) If IV cannot be established, Nitroglycerin may be administered with medical consultation.
  - k) Identify rhythm and treat according to appropriate algorithm.
  - l)  Administer additional doses of Nitroglycerin.
  - m)  Consider Morphine Sulfate.  
2-10 mg slow IV/IM/IO  
Administer 1-2 mg/min
  - n) Consider aspirin 324 mg or 325 mg chewed, if acute myocardial infarction is suspected.
4. Continue General Patient Care.

## M. CARDIAC EMERGENCIES: ST ELEVATION MYOCARDIAL INFARCTION [STEMI] (NEW '08)

1. Initiate General Patient Care.
2. Presentation



ACUTE CORONARY SYNDROME (ACS) IS DEFINED AS PATIENTS PRESENTING WITH ANGINA OR ANGINAL EQUIVALENTS SUCH AS CHEST, EPIGASTRIC, ARM, OR JAW PAIN OR DISCOMFORT AND MAY BE ASSOCIATED WITH DIAPHORESIS, NAUSEA, SHORTNESS OF BREATH OR DIFFICULTY BREATHING.

### Inclusion Criteria:

Patient presents with Acute Coronary Syndrome (ACS) symptoms and has one of the following in a diagnostic quality ECG:

- a) Anterior, Inferior, or Lateral MI: ST elevation greater than 1 mm in two or more contiguous leads **and** QRS complex is narrower than 0.12 (3 small boxes) seconds; (if wider than 0.12, you are unable to diagnose as STEMI)

### OR

- b) Posterior MI: ST depression greater than 1mm in V1 and V2 with an R/S ratio of greater than or equal to one **and** QRS complex is narrower than 0.12 (3 small boxes) seconds; (if wider than 0.12, you are unable to diagnose as STEMI)

### OR

- c) **New Left Bundle Branch Block:** If patient has in his/her possession a previous ECG with narrow QRS to demonstrate that the wide complex is a new change

3. Treatment



- 
- a) Follow Chest Pain Protocol for nitrate, aspirin and pain management.
  - b) If patient meets above STEMI criteria, this patient is a priority I patient and requires a medical consult.
  - c) If patient meets one of the above condition sets for STEMI inclusion criteria, the patient shall be transported to closest Acute Cardiac Intervention Center unless the transport time is more than 30 minutes greater than the transport time to the closest Emergency Department. (Acute Cardiac Intervention Centers are anticipated to be designated in 2008.)
  - d) When indicated and based on the EMS Providers report, the Base Station physician at the receiving Acute Cardiac Intervention Center will activate its Cardiac Intervention team.
  - e) The receiving Emergency Department physician will determine if the patient can bypass the Emergency Department and go directly to the cardiac catheterization lab to meet the cardiac interventional team.

## CARDIAC EMERGENCIES: ST ELEVATION MYOCARDIAL INFARCTION [STEMI] (Continued)

- f) If patient does not have ECG ST elevations greater than 1mm in two contiguous leads, the patient shall be transported to the closest appropriate facility.



CONSULT A PEDIATRIC BASE STATION FOR CHILDREN WHO HAVE **NOT** REACHED THEIR 15<sup>TH</sup> BIRTHDAY WITH ST ELEVATIONS. (NEW '08)

Jurisdictional EMS operational programs must equip all ALS chase and transport vehicles with 12-lead ECG monitor/defibrillators by July 1, 2008. CRTs, CRT-Is and Paramedics must be trained in their use and ECG interpretation.



### 3. ALBUTEROL SULFATE (PROVENTIL, VENTOLIN)

#### a) Pharmacology

- (1) Synthetic sympathomimetic amine (a type of stimulant)
- (2) Stimulates beta-2 adrenergic receptors of the bronchioles
- (3) Little effect on blood pressure
- (4) Little cardiac effects
- (5) Main effect is bronchodilation.
- (6) It may cause some vasodilation as evidenced by headache or flushing.

#### b) Pharmacokinetics

- (1) Bronchodilation begins within 5 to 15 minutes after inhalation.
- (2) Peak effect occurs in 30-120 minutes.
- (3) Duration of action is usually 3-4 hours.

#### c) Indications

To reverse bronchospasm (wheezing)

#### d) Contraindications

Known hypersensitivity

#### e) Adverse Effects

Tachycardia, palpitations, peripheral vasodilation, tremors, and nervousness, headache, sore throat, PVCs, nausea, and vomiting

#### f) Precautions

- (1) Bronchospasm may worsen in rare situations due to patient tolerance or hypersensitivity.
- (2) If respirations worsen, consider discontinuing use.
- (3) Should be used with caution in patients with hyperthyroidism or coronary artery disease.
- (4) Use with caution when administering to patients taking MAO inhibitors or tricyclic antidepressants which may be potentiated by albuterol.
- (5)  Medical direction required before administering to pregnant patient or patient having a cardiac history.

#### g) Dosage

- (1) Adult: 2.5 mg (3 ml) by nebulized aerosol connected to 6-8 lpm of oxygen; may repeat one time
- (2) Pediatric: May repeat one time; connect to 6-8 lpm of oxygen
  - (a) **Ages less than two years:** 1.25 mg (1.5 ml) by nebulized aerosol
  - (b) **Age two or older:** 2.5 mg (3 ml) by nebulized aerosol



#### 4. ASPIRIN

**a) Pharmacology**

- (1) Platelet inhibitor
- (2) Anti-inflammatory

**b) Pharmacokinetics**

Blocks platelet aggregation

**c) Indications**

Chest pain when acute myocardial infarction is suspected.

**d) Contraindications**

Known hypersensitivity

**e) Adverse Effects**

- (1) Heartburn
- (2) Nausea and vomiting
- (3) Wheezing

**f) Precautions**

GI bleeding and upset

**g) Dosage**

- (1) Adult: 324 mg or 325 mg chewed
- (2) Pediatric: Not Indicated

**2008 PROTOCOL UPDATE SUMMARY**  
**MARYLAND MEDICAL PROTOCOLS FOR EMS PROVIDERS**

| PROTOCOL TITLE                                                  | PAGE # | LINE # | ORIGINAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | NEW INFORMATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------|--------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GPC                                                             | 26     | ALERT  | IF A PATENT AIRWAY CANNOT BE ESTABLISHED, THE PATIENT MUST BE TRANSPORTED TO THE NEAREST APPROPRIATE HOSPITAL-BASED EMERGENCY DEPARTMENT. ONCE THE PATIENT PRESENTS TO THE HOSPITAL FOR TREATMENT OF AN EMERGENCY CONDITION, TREATMENT AND TRANSFER DECISIONS ARE THE RESPONSIBILITY OF THE HOSPITAL UNDER APPLICABLE LAW. THE PROVIDER SHOULD STAND BY TO BE AVAILABLE FOR AND ASSIST WITH TRANSFER OF THE PATIENT IF THE HOSPITAL DETERMINES SUCH A TRANSFER IS APPROPRIATE. | New text was added to the ALERT. The new text reads:<br>IF A PATENT AIRWAY CANNOT BE ESTABLISHED, THE PATIENT MUST BE TRANSPORTED TO THE NEAREST APPROPRIATE HOSPITAL-BASED EMERGENCY DEPARTMENT <b>OR DESIGNATED FREESTANDING MEDICAL FACILITY</b> . ONCE THE PATIENT PRESENTS TO THE HOSPITAL <b>OR DESIGNATED FREESTANDING MEDICAL FACILITY</b> FOR TREATMENT OF AN EMERGENCY CONDITION, TREATMENT AND TRANSFER DECISIONS ARE THE RESPONSIBILITY OF THE HOSPITAL UNDER APPLICABLE LAW. THE PROVIDER SHOULD STAND BY TO BE AVAILABLE FOR AND ASSIST WITH TRANSFER OF THE PATIENT IF THE HOSPITAL DETERMINES SUCH A TRANSFER IS APPROPRIATE. |
| Cardiac Emergencies: Chest Pain/Acute Coronary Syndrome         | 58     | I.3.n) | Consider aspirin 324 mg or 325 mg chewed, if acute myocardial infarction is suspected. (Paramedic may <del>perform without consult.</del> )                                                                                                                                                                                                                                                                                                                                    | The following text was deleted:<br>Medical consult symbol and<br>(Paramedic may perform without consult.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Cardiac Emergencies: ST Elevation Myocardial Infarction [STEMI] | 65     | M.2.c) | Bundle Branch Block: If patient has in his/her possession a previous ECG with narrow QRS to demonstrate that the wide complex is a new change                                                                                                                                                                                                                                                                                                                                  | Additional text was added. The new text reads:<br><b>New Left</b> Bundle Branch Block: If patient has in his/her possession a previous ECG with narrow QRS to <del>demonstrate that the wide complex is a new change</del>                                                                                                                                                                                                                                                                                                                                                                                                                    |
| ALS Pharmacology                                                | 214    | 4.g)   | Dosage (Paramedic may perform without consult.)                                                                                                                                                                                                                                                                                                                                                                                                                                | The following text was deleted:<br>Medical consult symbol and<br>(Paramedic may perform without consult.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |