



# **Pennsylvania Statewide**

## **Advanced EMT Protocols**

**Pennsylvania Department of Health  
Bureau of Emergency Medical Services**

**2017**



(717) 787-8740

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Dear EMS Provider:

The Bureau of EMS, Department of Health, is pleased to provide this updated version of the Statewide Advanced EMT (AEMT) Protocols. These updates replace the July 1, 2015 version of these protocols. AEMTs provide basic EMS and ALS skills as listed in the scope of practice published in the Pennsylvania Bulletin. In addition to these Statewide AEMT Protocols, AEMTs must also follow the Statewide BLS Protocols.

EMS providers are permitted to perform patient care, within their PA defined scope of practice, when following the appropriate protocol(s) or when following the order of a medical command physician. Each EMS provider is responsible for being knowledgeable regarding current state-approved protocols so that he/she may provide the safest, highest quality and most effective care to patients. Because these are an initial version of protocols for AEMTs, it is critically important that every AEMT fully understands this entire document before providing patient care at the AEMT level.

There are many benefits to using statewide protocols. Specifically, statewide protocols allow for patient care that is uniform (in both everyday patient care and disaster response), evidence-based, and up-to-date. These Statewide AEMT Protocols have been approved by the Commonwealth's Regional EMS Medical Directors.

To assist providers in becoming familiar with the changes to the protocols, a continuing education presentation will be available to regions and agencies. This update will be available for in-person presentations or the course can be completed on the Learning Management System (LMS). **The 2017 ALS Protocol Update (BEMS course #009111) will be considered a core requirement for all EMS providers at and above the level of AEMT that register their certification during the current time period. Furthermore, the completion of this course should be used by EMS agencies when ensuring that the agency's providers have been educated to the current protocols.**

The Department of Health's Bureau of EMS website will always contain the most current version of the EMS protocols, the scope of practice for each level of provider, important EMS Information Bulletins, and many other helpful resources. This information can be accessed online at [www.health.pa.gov](http://www.health.pa.gov). The Statewide AEMT Protocols may be directly printed or downloaded into a PDA, smart phone, or tablet for easy reference.

The Department is committed to providing Pennsylvania's EMS providers with the most up-to-date protocols, and to do this requires periodic updates. The protocols will be reviewed annually, and EMS providers are encouraged to provide recommendations for improvement at any time. Comments should be directed to the Commonwealth EMS Medical Director, Pennsylvania Dept of Health, Bureau of EMS, Room 606, 625 Forster Street, Harrisburg, PA 17120

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## GENERAL PROTOCOL PRINCIPLES STATEWIDE AEMT PROTOCOL

### Criteria:

- A. These general principles apply to the use of all protocols used by Advanced EMT (AEMT) providers

### Purpose:

- A. The Statewide EMS Protocols are written with the goal of providing the highest quality of EMS care to patients treated by EMS providers in the Commonwealth.
- B. The Statewide EMS Protocols provide a statewide uniformity and consistency to expected EMS care provided by EMS providers.
- C. The Statewide EMS Protocols are written based upon the most current and best scientific evidence related to prehospital/ out-of-hospital EMS care, when this evidence is available.
- D. The Statewide EMS Protocols are written to provide a balance between expected patient care and some educational information related to possible variations, newer information, and important warnings/ contraindications.

### Policy:

#### A. Scope of Practice

1. An AEMT who is appropriately credentialed by the EMS agency and EMS agency medical director may perform basic EMS and additional ALS skills as defined by the EMS provider's scope of practice as published in the PA Bulletin and listed on the EMS Bureau website when following the order of a medical command physician or when using Department-approved statewide EMS protocols. **The EMS agency medical director must verify the competence of an AEMT to perform the ALS skills within the AEMT's scope of practice.**
2. The Statewide BLS Protocols apply to patient care provided by AEMT providers unless a statewide AEMT protocol or Department-approved regional protocol supersedes the statewide BLS protocol.

#### B. Deviation from Protocols:

1. When providing patient care under the EMS System Act (EMSS Act), EMS providers must follow the orders of a medical command physician or, in the absence of such orders, the applicable protocols. In addition to the Statewide AEMT Protocols, AEMT providers must follow applicable Statewide BLS Protocols. Since written protocols cannot feasibly address all patient care situations that may develop, the Department expects EMS providers to use their training and judgment regarding any protocol-driven care that in their judgment would be harmful to a patient under the circumstances. When the provider believes that following a protocol is not in the best interest of the patient, the EMS provider must contact a medical command physician if possible. Cases where deviation from a protocol is justified are rare. The reason for any deviation should be documented. All deviations are subject to investigation to determine whether or not they were appropriate. In all cases, EMS providers are expected to deliver care within the scope of practice for their level of certification.
2. Medical command physicians are permitted to provide orders for patient care that are not consistent with the protocols when, under the circumstances, the procedures identified in a protocol are not the most appropriate care in the judgment of the physician or when there is not a specific protocol that is appropriate to the patient's condition. Some protocols have a section of "Possible Medical Command Orders". These are provided as a possible resource for the medical command physician and as an educational resource for the EMS providers. These "Possible Medical Command Orders" do not substitute for the judgment of the medical command physician, and the medical command physician is under no obligation to follow the treatment options listed in this section.

3. In cases where a specific step, treatment, or medication dose within a protocol is contraindicated, EMS providers are expected to use their judgment and training to identify these contraindications, and in these situations, the provider is not expected to provide that specific treatment. Failure to provide a treatment that is contraindicated is not considered a deviation from protocol, but the EMS provider should document the contraindication. Medical command must be contacted if the patient's condition requires alternative treatments that are not listed within the protocol.
4. Under no circumstance may an EMS agency medical director institute a protocol that is separate from Department-approved Statewide or Regional protocols. Under no circumstance may an EMS agency medical director institute a policy that contradicts or is not consistent with the Statewide Protocols.

#### **C. Guidelines and Protocol Options:**

1. Some documents are labeled as guidelines rather than protocols. Guidelines serve as "best practice" suggestions, and these may be used by agencies and regions. The suggested guidelines are not considered expected care, although a region may choose to request Department approval to use a guideline as a regional protocol.
2. Some protocols or treatments within a protocol may be listed as "optional" or "if available". Regions or agencies may choose to use an optional protocol or treatment/medication. EMS agency medical directors may set requirements for options, treatments, or medications that apply to all ALS providers within the agency.

#### **D. Format and Use of Protocols**

1. Criteria/Exclusion Criteria - these sections list the patient conditions that are applicable to the specific protocol and list exclusion criteria that are examples of patient conditions that are not applicable to the specific protocol.
2. System Requirements - this section defines specific service or provider requirements that must be met in addition to the usual expectations of every EMS agency or provider when providing treatments within the specific protocol. Most AEMT protocols are applicable to all AEMT providers, and therefore specific "system requirements" are rare.
3. Possible Medical Command Orders - this section is added for educational purposes. It provides EMS providers with an understanding of options that may be available through medical command order, and it may be useful to medical command physicians when providing medical command orders.
4. Using the algorithm flow charts:
  - a. Although algorithms follow a step-wise approach to patient care, there are frequently several treatments that should vary in order or may be done simultaneously. Treatments that are listed within solid boxes may be done in any order, based upon the patient presentation, or may be done simultaneously when additional EMS providers are present.
  - b. When several medication/treatment options are available, the algorithm step may refer the EMS provider to a "box" (outlined with a broken line) that is outside of the algorithm flow. The provider should refer to the box to choose the appropriate treatment and then return to the algorithm step and continue to follow the algorithm flow sheet. Regions or EMS agency medical directors may define specific expectations for expected treatment options to be chosen from these boxes.
  - c. In general, the algorithms and protocols do not specify when to initiate packaging or transportation of most patients. Patient condition and paramedic judgment of the utility of on-scene treatment should determine where packaging and initiation of transport are done. If transport issues are not directly identified in the protocols, quality improvement benchmarks set by regions or agency medical oversight should guide transport expectations.

- d. EMS providers are not required to follow every step within a protocol if a step is deemed to be inappropriate for a particular patient. For example, if a patient's condition has improved and the treatment would be unnecessary or if a medication is contraindicated.
  - e. In most cases, the algorithm does not specify when or how to reassess patients. It is expected that patients are reassessed frequently and results documented, particularly after each medical intervention or medication administration. Vital signs or other appropriate reassessments should be done and documented after administering any medication that could change hemodynamic parameters, level of consciousness, etc.
  - f. Most protocols list a "Contact Medical Command" point. Although medical command should be contacted earlier if the EMS provider believes that consultation with a medical command physician would be helpful in treating the patient, AEMT providers must use the Medical Command Contact AEMT Protocol # 9001i, which defines actions that must be taken, when the "Contact Medical Command" point is reached.
5. Notes - these footnotes refer to the identified step of the algorithm. The notes provide additional information regarding the general step. Notes are generally used to draw attention to rarer circumstances or to provide additional educational information. Providers are expected to follow information within the notes as if they were a step in the algorithm flow chart.
  6. Performance Parameters - this section provides suggested benchmarks for quality improvement reviews that may occur at the service, regional or statewide level. In some instances, following quality improvement review using, at a minimum, the listed performance parameters is required.

#### **E. Use of medical command**

1. Medical command may be contacted at any step in patient care, and EMS providers should contact medical command if a patient's condition is unusual and is not covered by a specific protocol, if a patient's presentation is atypical and the protocol treatment may not be the best treatment for the patient, or in any situation where the EMS provider is not sure about the best treatment for the patient.
2. Agency medical directors may place limitations on an AEMT provider that require contact with medical command earlier than defined by the Statewide Protocols. These limitations may be placed upon an individual AEMT provider when there is reason to restrict the skills that the provider is credentialed to perform, or the limitations may apply to all agency AEMT providers for uncommon skills/procedures that may require online direction.
3. The "Medical Command Contact" AEMT Protocol # 9001i defines when medical command must be contacted and when it is appropriate to proceed beyond the "Contact Medical Command" step if communication with a medical command facility cannot be established.

#### **F. Statewide Drug Lists**

1. AEMTs may only use medications that are listed on the Statewide AEMT Drug List as published in the Pennsylvania Bulletin and posted on the Bureau of EMS website.
2. At a minimum, the IALS (Intermediate Advanced Life Support) vehicle must carry each medication that is required to provide the care that is listed in the Statewide AEMT protocols. This list will be used by regional council staff when conducting licensure inspections. In addition, the IALS vehicle may carry any additional medications that are listed within state AEMT drug list as optional.
3. Unlike paramedic level personnel, AEMTs are more restricted in the routes that various medications may be delivered. **Except for specified crystalloid fluids, dextrose is the only medication that the AEMT may deliver by the intravenous route.**

#### **G. Medications/Procedural Skills**

1. The protocols may list some medications and treatments that are optional and are not required of every IALS vehicle or of every AEMT provider. Any optional medications or treatments within the AEMT scope of practice or medication list may be carried on an IALS vehicle at the discretion of the EMS agency medical director.
2. General medication issues
  - a. When possible, dosing for various medications has been standardized across all protocols. EMS providers must use their training and knowledge to assure that doses given are appropriate for the patient's age and weight. Although doses may not exceed those listed in the protocol, it may be appropriate to decrease the doses of some medications based upon patient condition, patient vital signs or patient age.
  - b. All references to medications, abbreviations, and doses have been standardized with attention to pharmacologic principles of medication error reduction.
  - c. Agencies should assure that medications are stored in a manner that provides for maximal shelf life and appropriate security. Some medications may have limitations to the listed expiration date if the medication is not refrigerated. EMS agencies should follow Department guidance and good medication storage practices to assure that medications have not lost their potency.
  - d. EMS providers are expected to know the contraindications for each medication and are expected to assess patients for allergies, when possible, to any medication that is given. EMS providers should not administer medications to a patient when that medication is contraindicated in that situation.
3. Drawing blood samples – Drawing blood in the prehospital setting may assist receiving facilities in providing better diagnoses or more rapid treatment of patients, but in some areas the receiving facilities will not accept blood drawn by prehospital providers. AEMTs are only permitted to draw blood samples (except blood used for point of care glucose testing) when in the physical presence of and under the direct supervision of an EMS provider above the level of AEMT.
4. Vascular Access:
  - a. Intravenous access – Peripheral venous access will be established with a NSS intravenous infusion. The rate of the infusion should be determined by specific IV fluid volumes as stated in the appropriate protocol. AEMTs may only initiate intravenous vascular access in the following situations:
    - 1) Patient with hypotension when following appropriate AEMT protocol
    - 2) Patient with hypoglycemia for the purpose of administering intravenous dextrose when following appropriate protocol
    - 3) Prior to administering nitroglycerine when following appropriate protocol
    - 4) When in the physical presence of and assisting a paramedic an EMS provider above the level of AEMT.
  - b. Intraosseous access – AEMTs may insert an intraosseous needle for vascular access only when in the direct presence of and supervised by a paramedic, PHRN, PHPE, or PHP on an ALS service.
    - 1) IO access may be obtained in the following extremity sites:
      - a) Proximal tibia
      - b) Distal femur
      - c) Proximal humerus



- 2) Any acceptable method or device carried by an ALS service that obtains IO access in an extremity site listed above is appropriate. The AEMT must have received education and be assessed as competent in the skill by the EMS agency medical director. EMS agency policy may indicate which technique or extremity sites listed above are acceptable for IO access.

#### **H. Pediatric issues**

1. Unless otherwise stated, pediatric protocols will apply to patients  $\leq 14$  years of age. If the patient's age is not known, then pediatric protocols will apply until there are physical signs that the patient has reached puberty/adolescence as indicated by armpit hair in boys and breast development in girls.
2. All IALS vehicles must carry a commercial length-based device to estimate patient weight and appropriate drug dosages. When possible, these devices should be used as the primary method for determining the weight/appropriate drug doses for children. Additionally, the following formula or table may be used:
  - a. Formula:  $(\text{Age in years} \times 3) + 7 = \text{estimated weight in kgs.}$
  - b. Table
    - 1) 1 y/o =10 kg
    - 2) 3 y/o =15 kg
    - 3) 5 y/o =20 kg
    - 4) 7 y/o =25 kg
    - 5) 9 y/o =30 kg

#### **I. Equipment Issues**

1. All medical devices must be used, maintained, and calibrated in accordance with the recommendations from the manufacturer.
2. All IALS vehicles must carry electronic glucose testing meters, and these services must have either a CLIA license or certificate of waiver. An ALS service performing glucose testing with a meter cleared for home use by the FDA must hold a CLIA certificate of waiver. A CLIA certificate of waiver (CoW) is good for two years. Each agency is responsible for determining whether a CLIA license or waiver is required.

#### **J. Release to BLS**

1. There is no AEMT protocol for release of a patient to a lower level care. An AEMT is generally expected to accompany a patient during transport. In the rare situation when an AEMT considers releasing a patient to care by an EMT, medical command should be contacted for this order.
2. An ALS vehicle should be dispatched to patients that are anticipated to need care that exceeds the level of an EMT, and the ALS provider above the level of AEMT can assist with decision to release to a BLS crew using the Statewide ALS Release to BLS Protocol.

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## CONFIRMATION OF AIRWAY PLACEMENT STATEWIDE AEMT PROTOCOL

**Criteria:**

- A. Patient who has an alternative (King/ Combitube) airway device inserted by EMS provider.

**Exclusion Criteria:**

- A. None

**System Requirements:**

- A. Every IALS vehicle must carry and use an electronic wave-form ETCO<sub>2</sub> detector device<sup>1</sup> for confirmation and continuous monitoring of alternative airway device placement.

**Procedure:**

- A. Insert Alternative Airway Device
- B. Attach electronic ETCO<sub>2</sub> monitor to BVM.
- C. Ventilate <sup>2</sup> while simultaneously:
  - 1. Assuring “positive” CO<sub>2</sub> wave with each ventilation.
  - 2. Verifying absence of gastric sounds.
- D. Verify presence of bilateral breath sounds.
- E. Secure airway device.
- F. Continuously monitor waveform ETCO<sub>2</sub>. <sup>3</sup>
- G. Reassess bilateral breath sounds and absence of gastric sounds after each move or transfer of the patient.
- H. Document all of the above.

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**Notes:**

- 1. Colorimetric ETCO<sub>2</sub> detectors may give false negative results when the patient has had prolonged time in cardiac arrest. EDD aspiration devices may give false negative results in patients with lung disease (e.g. COPD or status asthmaticus), morbid obesity, late stages of pregnancy, or cardiac arrest.
- 2. Immediately remove alternative airway device if any step reveals evidence of lack of lung ventilation. If there is any doubt about adequate ventilation with an alternative airway device, remove the device and ventilate with BVM.
- 3. Quantitative ETCO<sub>2</sub> readings may be beneficial in assessing the quality of CPR or as an indicator of the prognosis for successful resuscitation.

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**Performance Parameters:**

- A. Review all alternative airway device insertions for documentation of absence of gastric sound, presence of bilateral breath sounds, and appropriate use of a confirmation device.
- B. If systems have the capability of recording a capnograph tracing, review records of all intubated patients to assure that capnograph was recorded.
- C. Document ETCO<sub>2</sub> reading immediately after airway device placement, after each movement or transfer of patient and final transfer to ED stretcher.

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**GENERAL CARDIAC ARREST – ADULT  
STATEWIDE AEMT PROTOCOL**

Initial Patient Contact - See Protocol # 201  
Patient pulseless, may have gasping/agonal breathing

**Cardiac arrest witnessed by EMS personnel  
OR  
Quality CPR in progress on EMS arrival**

**NO**

**YES**

**DURING UNINTERRUPTED COMPRESSIONS:**

Airway Options<sup>5</sup>:

- Naso/oropharyngeal Airway
- Extraglottic/ Alternative Airway

Ventilation Options<sup>5</sup>:

- No Ventilation
- 1 ventilation every 10-15 compressions (Monitor Perfusion with Capnography)

Oxygen Options: <sup>5</sup>  
via NRB  
or  
via BVM  
or  
via Extraglottic/ Alternative Airway

Give Compressions while AED is charging

**NO** mechanical CPR device during initial 10 minutes

200 Uninterrupted Chest Compressions<sup>1,2</sup>

Analyze with AED  
Shock (360 joules<sup>3,4</sup>) if indicated

200 Uninterrupted Chest Compressions<sup>1,2</sup>

Analyze with AED  
Shock (360 joules<sup>3,4</sup>) if indicated

200 Uninterrupted Chest Compressions<sup>1,2</sup>

Analyze with AED  
Shock (360 joules<sup>3,4</sup>) if indicated

200 Uninterrupted Chest Compressions<sup>1,2</sup>

Analyze with AED  
Shock (360 joules<sup>3,4</sup>) if indicated

Continue cycles of 200 compressions followed by AED analysis/shock<sup>1,3</sup>  
BVM: 1 ventilation/ 15 compressions  
May use mechanical CPR device (optional)

**Return of Pulse**

**Assess Vital Signs**

**Provide Oxygen and Ventilate as needed (Goal= SpO2 95-99%)**

**Place in Recovery Position**

**Transport ASAP**

**AWAIT ARRIVAL OF ALS  
IF ETA < 15 MIN.<sup>6</sup>  
OR**

**Contact Medical Command for possible field termination of CPR<sup>7</sup>**

**OR**

**TRANSPORT<sup>8</sup>**

**GENERAL CARDIAC ARREST – ADULT  
STATEWIDE AEMT PROTOCOL****Criteria:**

- A. Adult patient (>14 years old) with cardiac arrest (may have gasping or agonal breathing).

**Exclusion Criteria:**

- A. If patient meets criteria for DOA (e.g. decapitation, decomposition, rigor mortis in warm environment, etc...) then follow DOA protocol # 322.
- B. Cardiac arrest due to acute traumatic injury – see Cardiac Arrest - Traumatic Protocol #332. AED use is not indicated in traumatic cardiac arrest, but this protocol should be followed if there is the possibility of a medical condition causing cardiac arrest prior to a traumatic incident.
- C. Patient displaying an Out-of-Hospital Do Not Resuscitate (OOH-DNR) original order, bracelet, or necklace - see OOH-DNR Protocol #324.

**System Requirements:**

- A. Ideally, providers in each EMS agency will use a “pit crew” approach when using this protocol to ensure the most effective and efficient cardiac arrest care. Training should include teamwork simulations integrating QRS, BLS, and ALS crew members who regularly work together. High-performance systems should practice teamwork using “pit crew” techniques with predefined roles and crew resource management principles. For example:
1. Rescuer 1 and 2 set up on opposite sides of patient’s chest and perform continuous chest compressions, alternating after every 100 compressions to avoid fatigue.
  2. Use metronome or CPR feedback device to ensure that compression rate is 100-120/ minute.
  3. Chest compressions are only interrupted during rhythm check (AED analysis or manual) and defibrillation shocks. Continue compressions when AED/ defibrillator is charging.
  4. During the first four cycles of compressions/defibrillation (approximately 10 minutes) do not apply or use mechanical CPR device.
  5. Use of a CPR checklist to ensure that all best practices are followed during CPR.
- B. For efficient “pit crew” style care, the EMS agency medical director should establish whether any ventilation is given during initial compression cycles. If BVM ventilation is used, compressions should not be interrupted when giving a ventilation every 15 compressions.
- C. The EMS agency, overseen by the agency medical director, must perform a QI review of care and outcome for every patient that receives CPR.
1. The QI should be coordinated with involved ALS agency and receiving hospital to include hospital admission, discharge, and condition information. This EMS agency QI can be accomplished by participation in the Cardiac Arrest Registry for Enhanced Survival (CARES) program through the ALS agency.
  2. The QI should be coordinated with local PSAP/dispatch centers to review opportunities to assure optimal recognition of possible cardiac arrest cases and provision of dispatch-assisted CPR (including hands-only CPR when appropriate).

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**Notes:**

1. Excellent CPR is a priority:
  - a. Push hard (at least 2 inches deep) and fast (100-120/min) and allow full recoil of chest during compressions.
  - b. Change rescuer doing compressions every 1-2 minutes (100-200 compressions) to avoid fatigue

- c. Restart CPR immediately after any defibrillation attempts.
  - d. Keep pauses in CPR to a minimum. Immediately after AED recommends shock resume compressions until AED is fully charged, then immediately after shock, resume compressions without checking pulse or rhythm. Avoid pauses in CPR during airway management.
  - e. CPR sequence is CAB (Compressions, Airway, Ventilation) for all ages, except the ABC sequence should be used in drowning.
  - f. For pregnant patients, a rescuer should manually displace the uterus to the patient's left during CPR.
2. Do not move or package patient for transport at this time. Chest compressions are much less effective during patient transportation/movement, and any possible interventions by medical command will be less effective without optimal CPR.
  3. Shock at maximum output of defibrillator, up to maximum of 360 joules, for initial and subsequent defibrillation attempts.
  4. Patient with severe hypothermia (if available, core temperature < 90° F or 32° C) see Hypothermic Protocol # 681. For hypothermic patients, no more than 1 shock should be delivered. Further action will be directed by medical command. Begin transport immediately after initial countershock. Transport to center with capability of cardiopulmonary bypass surgery if possible.
  5. The optimal airway management/ventilation during initial cycles of uninterrupted compressions has not been established. Agency medical director can set agency policy using the following approaches:
    - a. Open airway with manual technique or naso/oropharyngeal airway – with or without passive oxygen
    - b. Provide either no active ventilation (passive ventilation from compressions) or bag ventilate 8-10 breaths per minute (one ventilation every 10-15 compressions) without interrupting compressions (monitor perfusion with capnography if providing active ventilation)
    - c. If BVM ventilation, consider 2-thumbs-up 2-person BVM technique
  6. If the AED continues to indicate that shocks are advised, it is best to focus on excellent chest compressions and use AED to reanalyze every 2 minutes until ALS arrives. Packaging or moving the patient at this point will decrease the effectiveness of CPR. After three AED messages of “no shock advised”, contact medical command. If unable to contact medical command, transport patient as soon as possible while continuing CPR.
  7. AHA Guidelines suggest that the following are reliable and valid criteria for BLS termination of resuscitation. Before moving the patient to the ambulance, consider contact with medical command for orders to terminate CPR in the field if ALL of the following apply:
    - a. Arrest not witnessed by EMS personnel, AND
    - b. No return of spontaneous circulation/ pulse (prior to transport), AND
    - c. No AED shock was delivered (prior to transport).
  8. During packaging and transport, minimize interruptions of CPR and reanalyze rhythm about every 10 minutes, and deliver additional shocks if advised.
    - a. The vehicle and all patient movement should stop before reanalyzing the rhythm.
    - b. Practitioners must be familiar with the AED used by their agency. AEDs that automatically analyze every 2 minutes should be temporarily disabled during patient movement and transport, since the motion of transport may lead to inappropriate shocks. In many machines, this can be accomplished by disconnecting the electrodes from the machine. Avoid turning the AED off, since this may reset all of the data collection within the device.
    - c. Transport without lights or siren to minimize chance of injury to EMS personnel providing CPR and patient care, unless unusual circumstances exist.

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**Performance Parameters:**

- A.** EMS agency should document patient outcome and QI indicators for cardiac arrest, including ROSC during EMS care, ROSC on arrival to ED, admitted to hospital, discharged from hospital alive, and neurologic function on discharge.
- B.** Review of number of cardiac arrest patients that received bystander CPR. [Benchmark may be set with the goal of increasing community CPR classes to improve this percentage.]
- C.** System review of time from dispatch to arrival on scene of initial responder with access to AED. [Possible benchmark of response of 5 minutes or less to 90% of cardiac arrests.]



**GENERAL CARDIAC ARREST – PEDIATRIC  
STATEWIDE AEMT PROTOCOL**

Initial Patient Contact - See Protocol # 201  
Patient pulseless, may have gasping/agonal breathing  
Call for ALS if not already dispatched  
Assess patient age

**Infant < 1 year of age**

**CPR <sup>1,2,3</sup>  
15:2 (Infant)**

**TRANSPORT <sup>9</sup>  
ASAP**

**Child between 1-14 years old  
Cardiac arrest witnessed by EMS personnel  
OR  
Quality CPR in progress on EMS arrival**

**NO**

**YES <sup>2</sup>**

CPR 15:2 <sup>1,2</sup>  
10 cycles or 2 minutes

Analyze with AED<sup>3,4</sup>  
Shock (360 joules<sup>5,6,7</sup>) if indicated

CPR 15:2 <sup>1,2</sup>  
10 cycles or 2 minutes

Analyze with AED<sup>3,4</sup>  
Shock (360 joules<sup>5,6,7</sup>) if indicated

CPR 15:2 <sup>1,2</sup>  
10 cycles or 2 minutes

Analyze with AED<sup>3,4</sup>  
Shock (360 joules<sup>5,6,7</sup>) if indicated

CPR 15:2 <sup>1,2</sup>  
10 cycles or 2 minutes

Analyze with AED<sup>3,4</sup>  
Shock (360 joules<sup>5,6,7</sup>) if indicated

Continue cycles CPR 15:2  
followed by AED  
analysis/shock every 2 minutes

**PAUSE FOR  
VENTILATIONS,  
BUT MINIMIZE  
ALL OTHER  
INTERRUPTIONS IN  
COMPRESSIONS**

Give Compressions  
while AED is charging

Naso/oropharyngeal  
Airway  
or  
Age-appropriate  
Extraglottic/  
Alternative Airway  
(if available)

Monitor capnography

Supplemental Oxygen

Mechanical CPR  
should not be used for  
pediatric patients

**Return of Pulse**

**Assess Vital  
Signs**

**Provide Oxygen  
and Ventilate as  
needed  
(Goal= SpO2 95-  
99%, if available)**

**Place in Recovery  
Position**

**Transport ASAP**

**AWAIT ARRIVAL OF ALS  
IF ETA < 15 MIN.<sup>7</sup>  
OR**

**Contact Medical  
Command  
for possible  
field  
termination of  
CPR<sup>8</sup>**

**OR  
TRANSPORT <sup>9</sup>**

**GENERAL CARDIAC ARREST – PEDIATRIC  
STATEWIDE AEMT PROTOCOL****Criteria:**

- A. Pediatric patient ( $\leq 14$  years old) with cardiac arrest (may have gasping or agonal breathing).

**Exclusion Criteria:**

- A. If patient meets criteria for DOA (e.g. decapitation, decomposition, rigor mortis in warm environment, etc...) then follow DOA protocol # 322.
- B. Cardiac arrest due to acute traumatic injury – see Cardiac Arrest - Traumatic Protocol #332. AED use is not indicated in traumatic cardiac arrest, but this protocol should be followed if there is the possibility of a medical condition causing cardiac arrest prior to a traumatic incident.
- C. Cardiac arrest in newborn – see Newborn / Neonatal Resuscitation Protocol # 333.
- D. Patient displaying an Out-of-Hospital Do Not Resuscitate (OOH-DNR) original order, bracelet, or necklace - see OOH-DNR Protocol #324.

**Possible Medical Command Orders:**

- A. After 4 “no shock advised messages, if ETA to hospital or ETA of ALS are  $> 15$  minutes, medical command may order termination of resuscitation efforts.

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**Notes:**

- Ventilations should be given over 1 second. When giving chest compressions:
  - Push hard (at least 1/3 AP chest diameter for children and infants)
  - Push fast (100-120 compressions/min)
  - Release hand pressure completely after each compression.
  - To avoid tiring, rescuer doing chest compressions should be replaced at least every 5 cycles or 2 minutes.
  - It is essential to minimize interruptions in chest compressions during CPR.**
  - CPR sequence is CAB (Compressions, Airway, Ventilation) for all ages, except the ABC sequence should be used in drowning.
  - Compression to ventilation ratio is 30:2 for all single rescuers, but 15:2 for children and infants when 2 rescuers are available.
- Ventilate the patient with appropriate oral/nasopharyngeal airway using high flow oxygen, as soon as possible, but **Do Not** delay CPR to connect oxygen. Ideal ventilation includes two-person technique. Routine cricoid pressure is not recommended during CPR.
  - Before extraglottic/ alternative airway**, compression to ventilation ratio is: Child and Infant = 15:2. (**NOTE:** 1-rescuer CPR compression to ventilation ratio is 30:2 for all patients except newborns)
  - After extraglottic/ advanced airway, avoid overzealous hyperventilation.**

After an advanced airway is in place, chest compressions should be given by one rescuer at a rate of 100-120 compressions/ minute without pauses while a second rescuer provides continuous ventilations at a rate of 8-10 breaths/ minute for all patient ages.
  - If unable to ventilate, proceed to Obstructed Airway maneuvers.
- Pediatric AED Use:** If pediatric AED electrodes are immediately available, follow protocol flowchart for adult patients but use pediatric AED electrodes if patient is  $< 8$  years old. If no pediatric AED electrodes are available, adult AED/electrodes should be used on patients  $< 8$  year old, including infants. Check pulse only after the AED gives a “no shock indicated” message. After each shock is delivered, start CPR immediately without checking the pulse.
- If no shock is indicated, check pulse, if pulseless repeat 5 cycles of CPR and then re-analyze (if applicable). After three sequential “no shock indicated” messages, repeat “analyze” period every 10 minutes. (Note: some AEDs automatically re-analyze for you.)
- If available, pediatric AED pads used on patients  $< 8$  years of age will provide appropriate lower shock energy dose.

6. Patient with severe hypothermia (if available, core temperature < 90° F or 32° C) see Hypothermic Protocol # 681. For hypothermic patients, no more than 1 shock should be delivered. Further action will be directed by medical command. Begin transport immediately after initial countershock. Transport to center with capability of cardiopulmonary bypass surgery if possible.
7. If the AED continues to indicate that shocks are advised, it is best to focus on excellent chest compressions and use AED to reanalyze every 2 minutes until ALS arrives. Packaging or moving the patient at this point will decrease the effectiveness of CPR. After three AED messages of “no shock advised”, contact medical command. If unable to contact medical command, transport patient as soon as possible while continuing CPR.
8. AHA Guidelines suggest that the following are reliable and valid criteria for BLS termination of resuscitation. Before moving the patient to the ambulance, consider contact with medical command for orders to terminate CPR in the field if ALL of the following apply:
  - a. Arrest not witnessed by EMS personnel, AND
  - b. No return of spontaneous circulation/ pulse (prior to transport), AND
  - c. No AED shock was delivered (prior to transport).
9. During packaging and transport, minimize interruptions of CPR and reanalyze rhythm about every 10 minutes, and deliver additional shocks if advised.
  - a. The vehicle and all patient movement should stop before reanalyzing the rhythm.
  - b. Practitioners must be familiar with the AED used by their agency. AEDs that automatically analyze every 2 minutes should be temporarily disabled during patient movement and transport, since the motion of transport may lead to inappropriate shocks. In many machines, this can be accomplished by disconnecting the electrodes from the machine. Avoid turning the AED off, since this may reset all of the data collection within the device.
  - c. Transport without lights or siren to minimize chance of injury to EMS personnel providing CPR and patient care, unless unusual circumstances exist.

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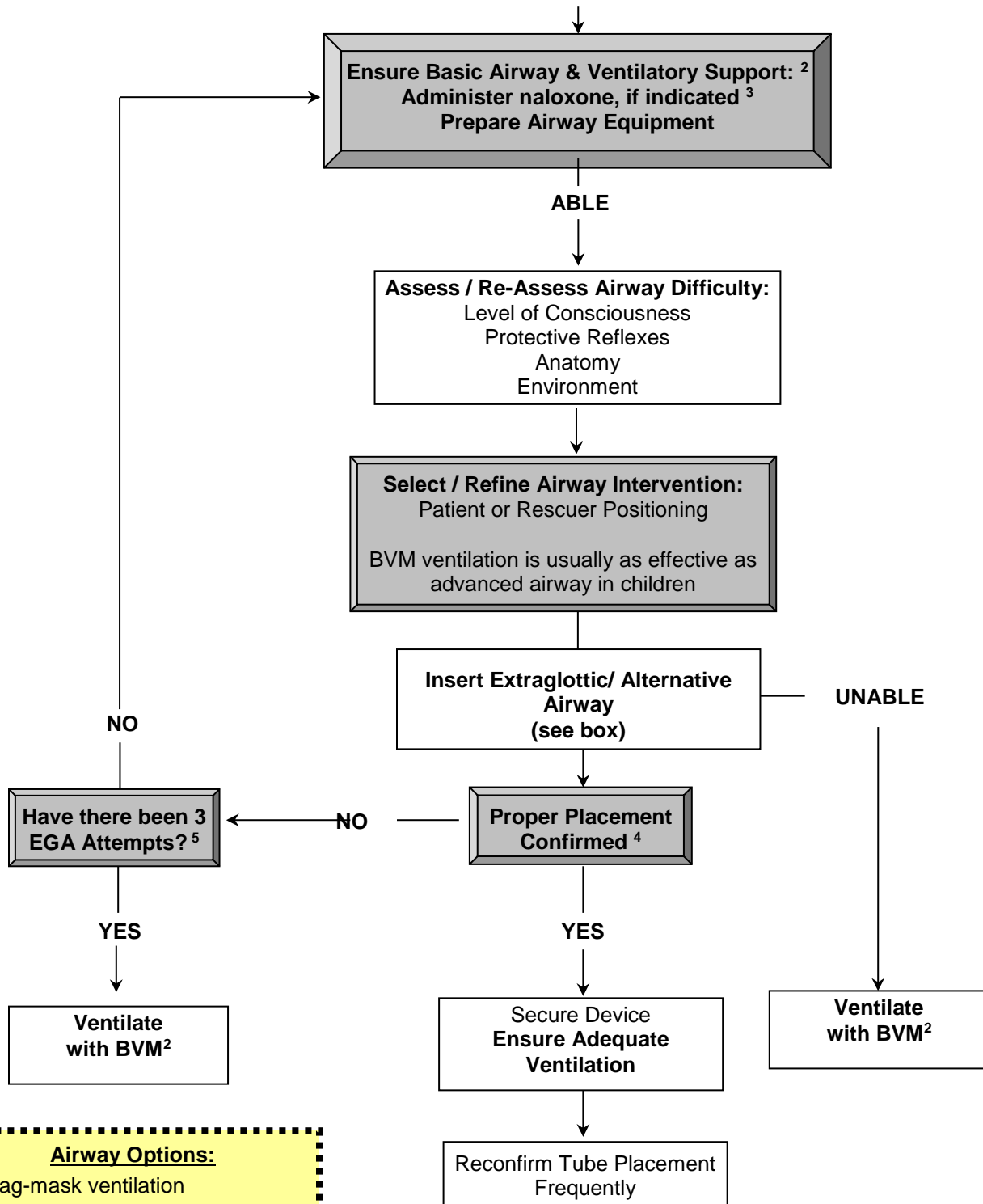
**Performance Parameters:**

- A. EMS agency should document patient outcome and QI indicators for cardiac arrest, including ROSC during EMS care, ROSC on arrival to ED, admitted to hospital, discharged from hospital alive, and neurologic function on discharge.
- B. Review of number of cardiac arrest patients that received bystander CPR. [Benchmark may be set with the goal of increasing community CPR classes to improve this percentage.]
- C. System review of time from dispatch to arrival on scene of initial responder with access to AED. [Possible benchmark of response of 5 minutes or less to 90% of cardiac arrests.]

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### AIRWAY MANAGEMENT STATEWIDE AEMT PROTOCOL

Assess Need for Airway or Ventilatory Support <sup>1</sup>



- Airway Options:**
- Bag-mask ventilation
  - Extraglottic/ alternative airway
    - Combitube
    - i-gel® Supraglottic Airway
    - King LT Airway

**AIRWAY MANAGEMENT  
STATEWIDE AEMT PROTOCOL**

**Criteria:**

- A.** Any patient that requires airway management to assure adequate ventilation or a patent airway

**Exclusion Criteria:**

- A.** Patient with obstructed airway- Follow BLS procedures for airway obstruction
- 

**Notes:**

1. The need for airway management is based upon the provider's judgment after a rapid global assessment of the patient. Indications for airway management include:
    - a. Apnea or agonal respirations
    - b. Airway reflexes compromised
    - c. Ventilatory effort compromised
    - d. Injury or medical condition compromising airway patency
    - e. Potential for future rapid compromise of airway (for example airway burns or expanding neck hematoma).
  2. If patient ventilation is initially adequate, but airway management is anticipated, high-flow oxygen should be administered. If ventilation is inadequate, provide positive pressure ventilation with high-flow oxygen (ideally, BVM ventilation should be done with two-person two-thumbs-up technique, and an oropharyngeal/ nasopharyngeal airway if possible).
  3. If narcotic overdose is suspected, administer naloxone per Altered Mental Status AEMT Protocol #7002iA or 7002iP while ventilating with BVM if needed.
  4. Confirm and document tube placement with absence of gastric sounds and presence of bilateral breath sounds *AND* continuous waveform ETCO<sub>2</sub> monitor. Follow Confirmation of Airway Placement AEMT Protocol #2032i
  5. Placing the tip of an extraglottic/ alternative airway into the patient's mouth is considered an insertion attempt, and each attempt should be documented as successful or unsuccessful. A maximum number of 3 attempts (total for all providers) is suggested. The EMS agency medical director may determine the number of insertion attempts that are appropriate.
- 

**Performance Parameters:**

- A.** Review PCRs for documentation of the following:
1. In perfusing patients, document pulse oximetry, heart rate, and wave-form ETCO<sub>2</sub> during insertion attempts. In perfusing patients, ideally a continuous recording strip is documented.
  2. Document number of attempts at insertion of extraglottic/ alternative airway.
  3. Document confirmation of tube placement consistent with AEMT protocol #2032i

**ALLERGIC REACTION  
STATEWIDE AEMT PROTOCOL**

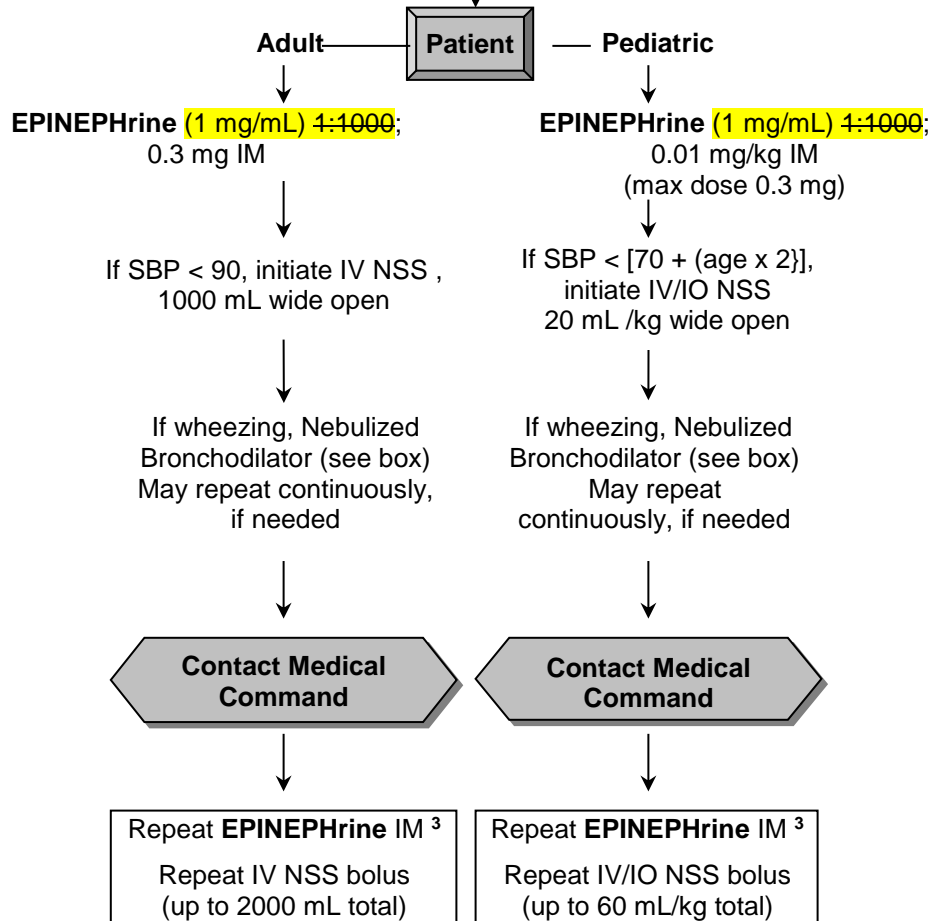
Initial Patient Contact - see Protocol #201  
**Look for Medic Alert bracelet/necklace**

↓  
Manage Airway/ Ventilate, if needed  
**Apply Oxygen if needed**

↓  
Monitor Pulse Oximetry, remove stinger if visible<sup>1</sup>,  
keep part dependent if possible, apply cold pack as available

**Respiratory Distress/ Wheezing or Hypotension (BP < 90 systolic)<sup>2</sup>**

↓  
**YES**



**BRONCHODILATOR OPTIONS**

- Albuterol (approx. 2.5 mg) nebulized

**OR**

- Albuterol (approx 3 mg)/ ipratropium (500 mcg) combination nebulized.  
[Half dose if ≤ 14 y/o]

**ALLERGIC REACTION  
STATEWIDE AEMT PROTOCOL**

**Criteria:**

- A. Severe Allergic Reaction/Anaphylaxis:** A patient with any of the following symptoms of severe allergic reaction after suspected exposure to an allergen (e.g. bee/wasp stings, medications/antibiotics, nuts, seafood):
1. Difficulty breathing and wheezing
  2. Difficulty breathing from swollen tongue/lips
  3. Hypotension
- B. Moderate Allergic Reaction:** A patient with less severe reaction may have:
1. Mild shortness of breath with wheezing
  2. Extensive hives and itching
  3. Mild tongue/lip swelling without difficulty swallowing or shortness of breath
- C. Mild Allergic Reaction:** A patient with a mild reaction may have:
1. Local swelling or itching isolated to extremity or area around bite site.

**Possible MC Orders:**

- A.** If unconscious or life threatening condition, consider additional doses of EPINEPHrine.
1. Additional dose of ~~1:1000~~ EPINEPHrine 0.3 mg IM (0.3 mL of 1 mg/mL concentration) in adults

**Notes:**

1. Remove stinger(s) by gently scraping stinger free with a blade or credit card, without squeezing or using forceps. In severe reaction, do not delay treatment while attempting to remove stingers.
2. In pediatrics, hypotension is SBP < [70 + (age x 2)]
3. EPINEPHrine IM dose may be repeated once if hypotension and severe symptoms persist. Higher doses may be needed in patients that are taking  $\beta$ -blocker medications. **WARNING: An AEMT may not administer EPINEPHrine by IV or IO routes.**

**Performance Parameters:**

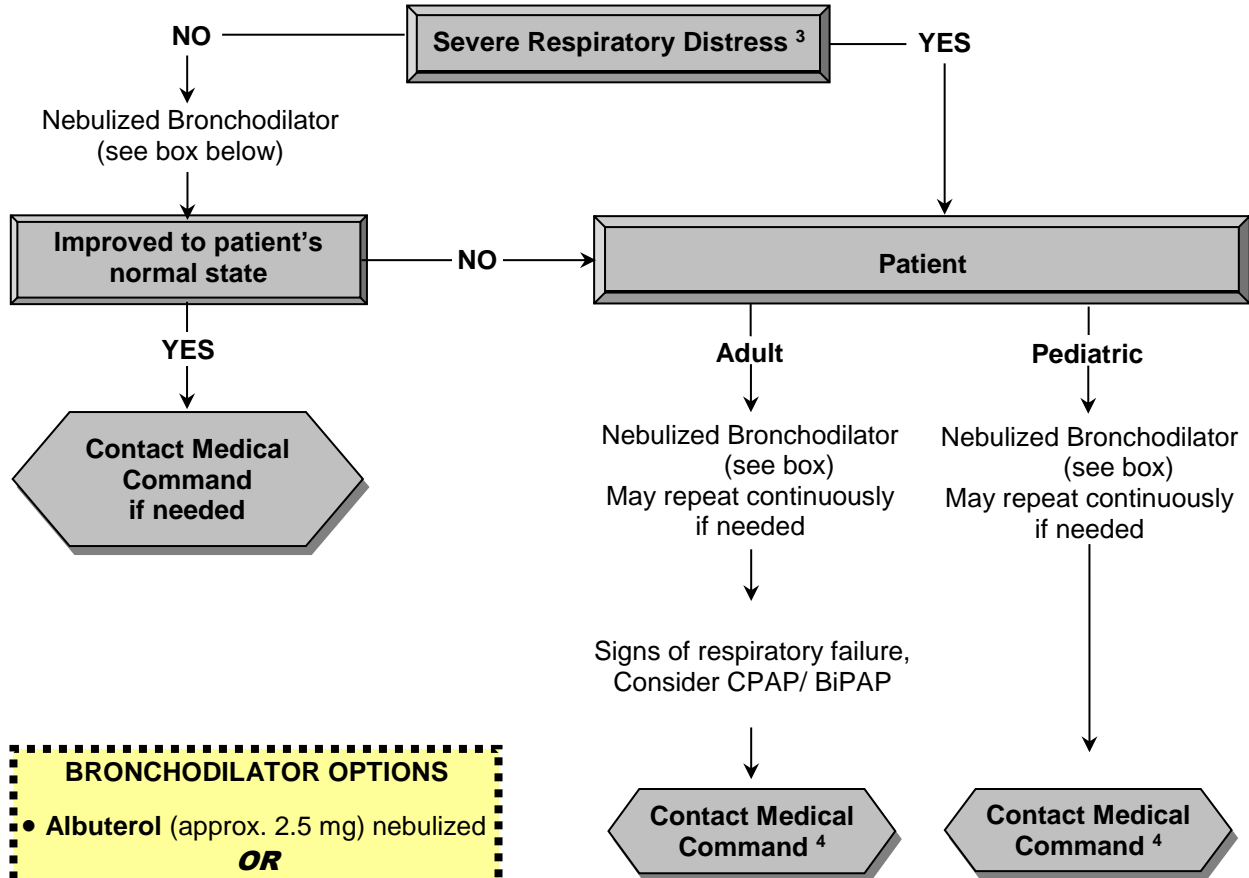
- A.** Review for documentation of level of consciousness, airway patency, and pulse oximetry reading.



**ASTHMA / COPD / BRONCHOSPASM  
STATEWIDE AEMT PROTOCOL**

Initial Patient Contact - See protocol #201

Manage Airway/ Ventilate, if needed <sup>1</sup>  
Administer Oxygen <sup>2</sup>  
Monitor Pulse Oximetry



**BRONCHODILATOR OPTIONS**

- Albuterol (approx. 2.5 mg) nebulized **OR**
- Albuterol (approx 3 mg)/ Ipratropium (500 mcg) combination nebulized. [Half dose if ≤ 14 y/o ]

**ASTHMA / COPD / BRONCHOSPASM  
STATEWIDE AEMT PROTOCOL**

**Criteria:**

- A. A patient with signs and symptoms of acute respiratory distress from bronchospasm or restrictive airway disease:
  - 1. Symptoms/signs may include:
    - a. Wheezing - will have expiratory wheezing unless they are unable to move adequate air to generate wheezes
    - b. May have signs of respiratory infection (e.g. fever, nasal congestion, cough, sore throat)
    - c. May have acute onset after inhaling irritant
  - 2. This includes:
    - a. Asthma exacerbation
    - b. COPD exacerbation
    - c. Wheezing from suspected pulmonary infection (e.g. pneumonia, acute bronchitis)

**Exclusion Criteria:**

- A. Respiratory distress secondary to trauma – Follow appropriate trauma protocol.
- B. Respiratory distress secondary to congestive heart failure - Follow BLS Respiratory Distress Protocol #421
- C. Allergic reactions – Follow Allergic Reaction AEMT Protocol #4011i
- D. Suspected Croup – Follow Croup AEMT Protocol #4023i

**Possible MC Orders:**

- A. Additional nebulized bronchodilators
- B. EPINEPHrine (IM)
- C. CPAP/BiPAP, if not already being used.

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**Notes:**

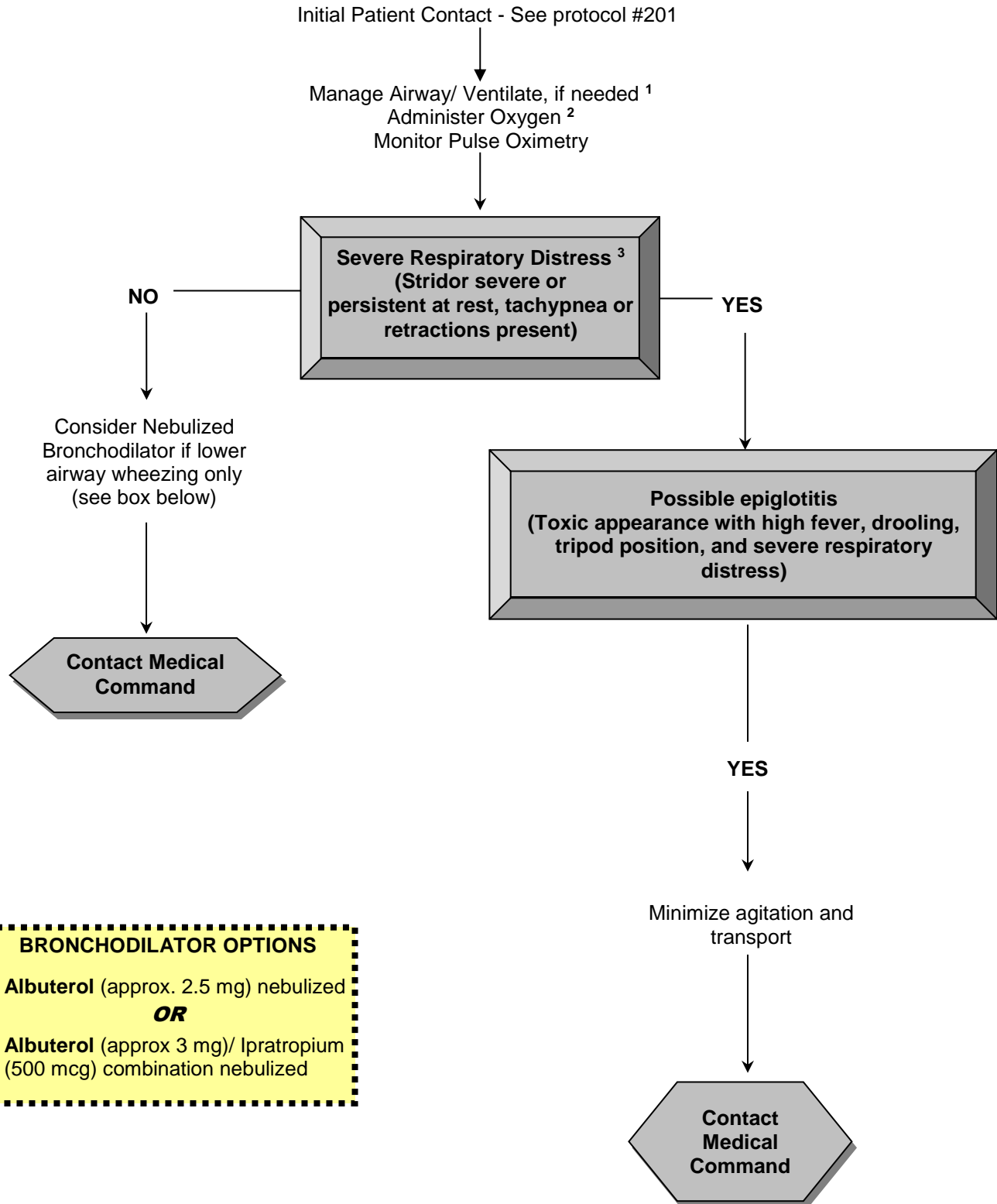
- 1. **WARNING:** Although sometimes needed, intubation further narrows the airway restriction in a severe asthma exacerbation, and this may worsen some cases. Aggressive use of bronchodilators is generally the most important therapy for severe asthma exacerbation.
- 2. Administer oxygen at high-flow rate to all patients in severe respiratory distress. COPD patients **NOT** in respiratory distress should be given oxygen to maintain adequate O<sub>2</sub> saturation (e.g. > 90%).
- 3. Indications of severe respiratory distress include:
  - a. apprehension, anxiety, combativeness
  - b. hypoxia, SpO<sub>2</sub> < 90%
  - c. intercostals/subcostal retractions
  - d. nasal flaring
  - e. cyanosis
  - f. use of accessory muscles
- 4. EPINEPHrine IM may be given only when order from Medical Command Physician. **WARNING: An AEMT may not administer EPINEPHrine by IV or IO routes.**

---

**Performance Parameters:**

- A. Review for documentation of lung sounds, pulse oximetry, repeat assessments/ pulse oximetry readings, and response to treatment.

### CROUP/ STRIDOR/ UPPER AIRWAY DISEASE – PEDIATRIC STATEWIDE AEMT PROTOCOL



**CROUP/ STRIDOR/ UPPER AIRWAY DISEASE – PEDIATRIC  
STATEWIDE AEMT PROTOCOL****Criteria:**

- A.** A pediatric patient with signs and symptoms of stridor and cough from upper respiratory disease:
  - 1. Symptoms/signs may include:
    - a. Stridor
    - b. Barking cough
    - c. May have signs of respiratory infection (e.g. fever, nasal congestion, cough, sore throat)

**Exclusion Criteria:**

- A.** Patient with obstructed airway- Follow BLS procedures for airway obstruction
- B.** Respiratory distress secondary to lower airway bronchoconstriction – Follow Asthma/ COPD/Bronchospasm AEMT Protocol #4022i
- C.** Respiratory distress secondary to trauma – Follow appropriate trauma protocol.
- D.** Allergic reactions – Follow Allergic Reaction AEMT Protocol #4011i

**Possible MC Orders:**

- A.** Nebulized bronchodilator if suspected lower airway bronchospasm.

---

**Notes:**

- 1. **WARNING:** Avoid extraglottic/ alternative airway insertion attempts if epiglottitis is suspected – most patients can be adequately ventilated with BVM. If epiglottitis is possible, manipulating the airway with intubation attempts can be fatal.
- 2. Administer oxygen at high-flow rate to all patients in severe respiratory distress.
- 3. Indications of severe respiratory distress include:
  - a. apprehension, anxiety, combativeness
  - b. hypoxia, SpO<sub>2</sub> < 90%
  - c. intercostals/subcostal retractions
  - d. nasal flaring
  - e. cyanosis
  - f. use of accessory muscles

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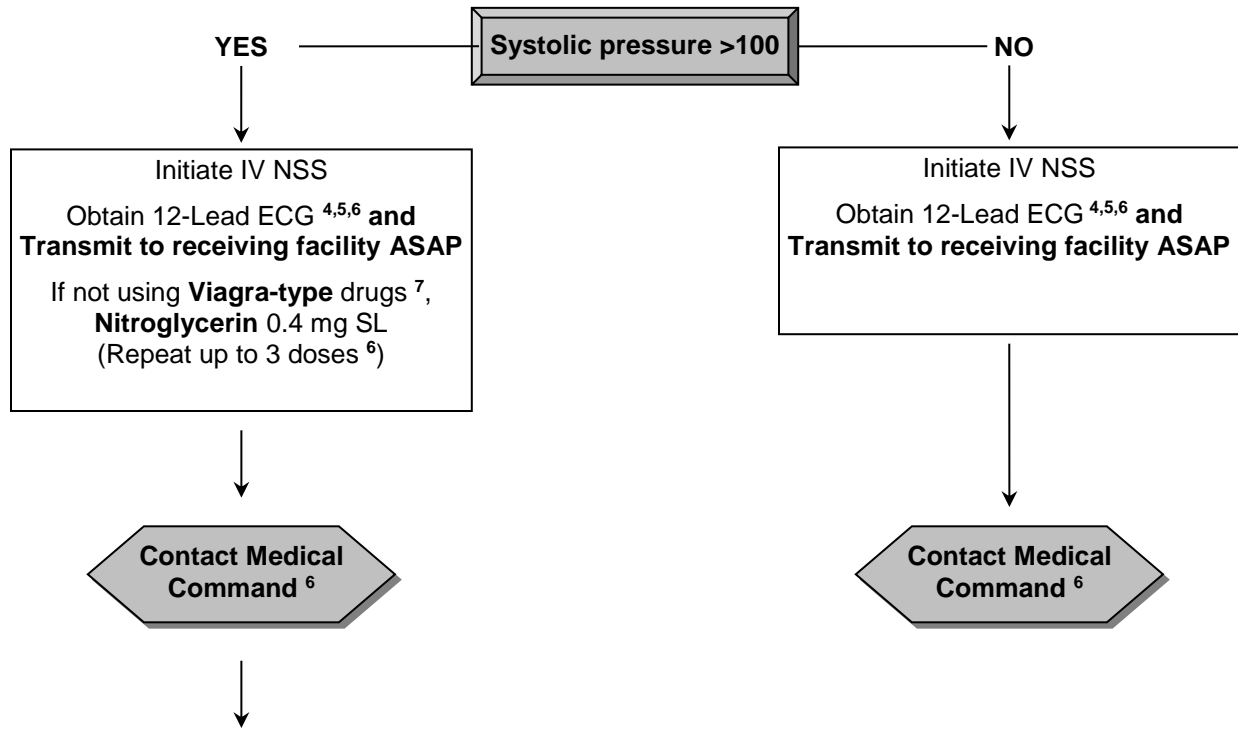
**Performance Parameters:**

- A.** Review for documentation of lung sounds, pulse oximetry, repeat assessments/ pulse oximetry readings, and response to treatment.
- B.** Review cases of nebulized EPINEPHrine use for appropriate differentiation between croup and lower respiratory bronchospasm.

**SUSPECTED ACUTE CORONARY SYNDROME  
STATEWIDE AEMT PROTOCOL**

Initial Patient Contact – see Protocol #201  
 Consider non-cardiac causes <sup>1</sup>  
 Administer Oxygen titrated to SpO<sub>2</sub> 95-99% <sup>2</sup>  
 Monitor Pulse Oximetry

Administer Aspirin 324 mg PO chewed <sup>3</sup>



If STEMI identified by ECG device and Medical Command can't be contacted,

- transport to closest STEMI receiving center <sup>5,6</sup> capable of emergency primary percutaneous coronary angioplasty (PPCI) if within 45 minute transport time.
- intercept with ALS enroute, if possible.

**SUSPECTED ACUTE CORONARY SYNDROME  
STATEWIDE AEMT PROTOCOL****Criteria:**

- A.** Adult patients with symptoms of possible cardiac ischemia. Diabetics, women, and elderly patients may have atypical symptoms without retrosternal chest pain. May include:
1. Retrosternal chest heaviness/pressure/pain
  2. Radiation of pain to arm(s), neck, or jaw
  3. Associated SOB, nausea/vomiting, or sweating
  4. Possibly worsened by exertion
  5. Patient with history of recent cocaine/amphetamine use

**Exclusion Criteria:**

- A.** Chest pain/symptoms, probably not cardiac origin:
1. May include:
    - a. Pleuritic chest pain - worsens with deep breath or bending/turning
    - b. Patient less than 30 y/o

**Possible MC Orders:**

- A.** Diversion to receiving facility capable of emergent primary percutaneous coronary intervention (PPCI).
- 

**Notes:**

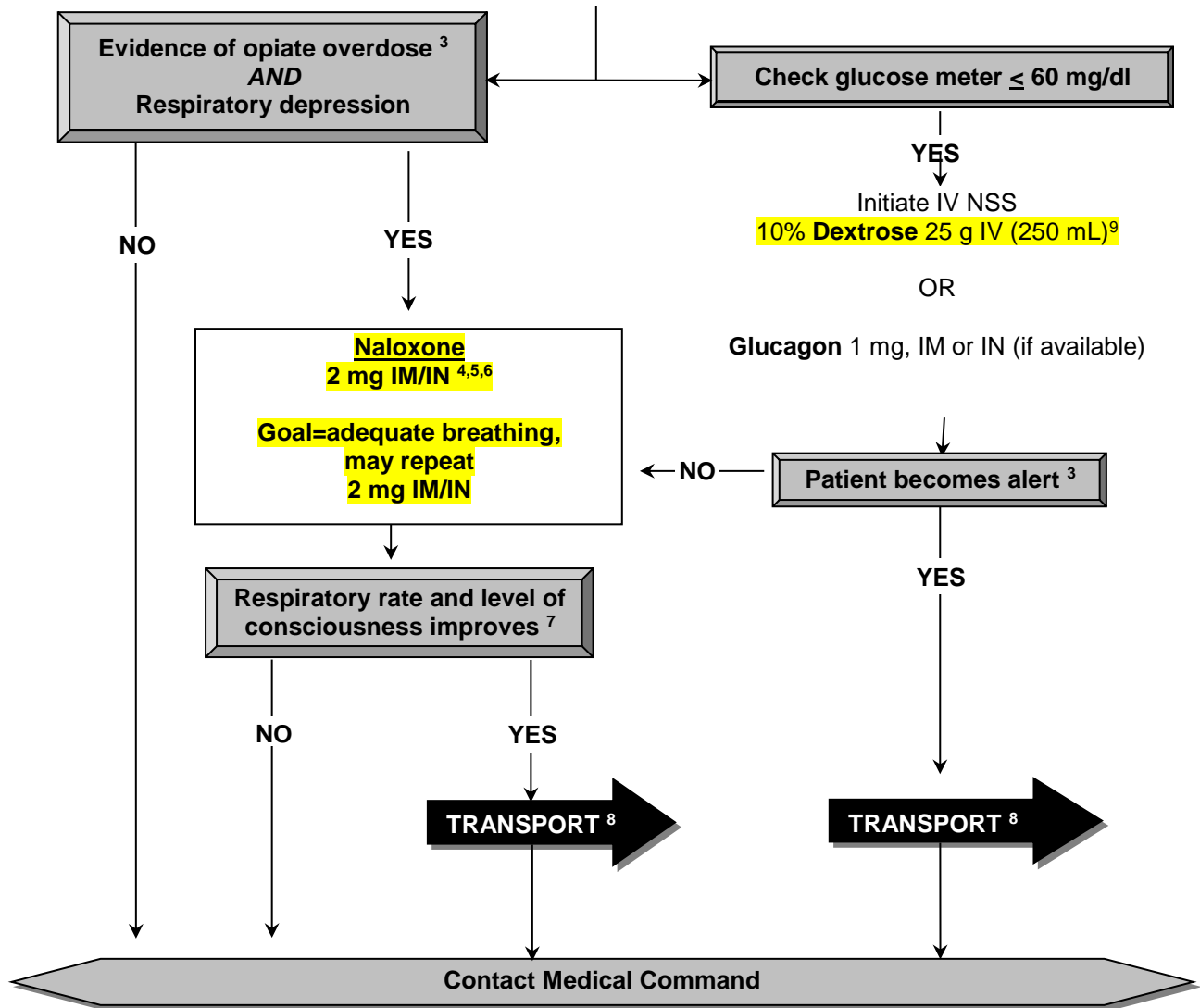
1. Some potentially lethal mimics of Acute Coronary Syndrome (ACS) that must be considered as the patient is assessed and treated include:
    - a. Aortic dissection
    - b. Acute pericarditis
    - c. Acute myocarditis
    - d. Spontaneous pneumothorax
    - e. Pulmonary embolism
    - f. Pneumonia/Lung infection
  2. Administer oxygen by appropriate method and monitor Pulse Oximetry. Place patient in position of comfort. Nasal cannula may be utilized if patient is unable to tolerate a facemask.
  3. Preferred method is to chew 4 baby ASA (81 mg each). **Do not give aspirin if the patient has had his/her daily dose of 324 mg or has an aspirin allergy.**
  4. **12-lead ECG should be transmitted to receiving/ command facility ASAP. If transmission failure, give copy of all 12-lead ECGs to ED physician ASAP on arrival to facility.**
  5. Contact medical command after transmitting 12-lead ECG to determine if it is consistent with STEMI since some patients may benefit from transport to a receiving facility capable of emergent primary percutaneous coronary intervention (PPCI). Medical Command may order transport to STEMI-receiving center (facilities that are either accredited as a Mission Lifeline STEMI (Heart Attack) Receiving Center by the American Heart Association or accredited as a Chest Pain Center with PCI by the Society of Cardiovascular Patient Care or identified by the EMS region to have PPCI capabilities). **See protocol 170.**
  6. Early contact with Medical Command is encouraged for patients with chest pain who have continued pain despite 3 doses of NTG, shock, or evidence of STEMI on prehospital 12-lead ECG, since these patients may benefit by direct transport to a receiving facility capable of PPCI.
  7. **WARNING:** Nitroglycerin may lead to fatal hypotension if given to patients using drugs for erectile dysfunction.
    - a. **DO NOT** administer nitroglycerin (NTG) to a patient has taken sildenafil (Viagra/Revatio) or vardenafil (Levitra) within 24 hours.
    - b. **DO NOT** administer NTG to a patient who has taken tadalafil (Cialis) within the last 48 hours.
    - c. These medications may be used for conditions other than erectile dysfunction (e.g. Revatio is used for pulmonary hypertension).
- 

**Performance Parameters:**

- A.** All patients should either receive aspirin or the PCR should include documentation of why aspirin was contraindicated.
- B.** Review for appropriate transmission of 12-lead ECG. Review for appropriate diversion to facility capable of PCI and/or for appropriate notification of receiving facility when STEMI is identified.
- C.** 12-lead ECGs documented with graphs included in PCR.
- D.** Possible benchmark for on scene time of  $\leq 20$  minutes.
- E.** Vital signs documented after each use of vasoactive medication (e.g. nitroglycerin).

### ALTERED LEVEL OF CONSCIOUSNESS STATEWIDE AEMT PROTOCOL

Initial Patient Contact - See Protocol # 201  
Administer Oxygen <sup>1</sup>  
Manage Airway/Ventilate, if needed  
Monitor Pulse Oximetry <sup>2</sup>  
Assess Glasgow Coma Scale



**ALTERED LEVEL OF CONSCIOUSNESS - ADULT  
STATEWIDE AEMT PROTOCOL**

**Criteria:****A.** Patient with altered level of consciousness due to:

1. Unclear etiology after assessing patient
2. History consistent with hypoglycemia
3. Suspected drug ingestion /overdose
4. Seizure

**Exclusion Criteria:****A.** Altered level of consciousness due to:

1. Trauma - Follow appropriate trauma protocol (e.g. head injury or multi-system trauma protocol)
2. Shock - Follow Shock AEMT protocol # 7005i
3. Toxicologic
  - a. Carbon monoxide - Follow Poisoning/Toxic Exposure Protocol #831.
4. Stroke - Follow Stroke AEMT Protocol #7006i (If glucose <60, follow this protocol for dextrose dosing)
5. Other medical problems specifically suspected due to history or exam, e.g. choking, hypoxia due to respiratory failure, etc...- Follow applicable specific protocol.

**Possible MC Orders:**

- A.** Additional doses of naloxone
- B.** Additional doses of dextrose or glucagon (if available)

---

**Notes:**

1. Administer oxygen by appropriate method.
2. See Pulse Oximetry Protocol #226. Pulse Oximetry must not delay the application of oxygen. Record SpO<sub>2</sub> after administration of oxygen or intubation.
3. Indications of possible opiate overdose include decreased respirations, pinpoint pupils, skin “track marks”, *AND/OR* the presence of drug paraphernalia.
4. Naloxone should not be given to patients that have an extraglottic/ alternative airway in place and also have oxygen saturation >95% and SBP >90.
5. Naloxone can be administered IM or intranasally. **AEMTs may not administer naloxone by IV or IO routes.** Ideally, IN administration should be done via an atomizing device, giving half of dose in each nostril. AEMTs may give naloxone IM by autoinjector.
6. The goal of each naloxone dose is return of adequate spontaneous respirations – the goal is not consciousness or walking. Do not give additional doses if patient breathing spontaneously with adequate oxygen saturation. Larger individual doses of naloxone can precipitate opiate withdrawal with the potential for a violent or combative patient that is difficult to manage at the scene and once the patient is admitted to the hospital. Some opioids may require higher doses of naloxone. Principles related to naloxone use include:
  - a. Assisting ventilation with BVM should occur prior to and during naloxone administration if needed.
  - b. If inadequate respiratory effort, repeat naloxone dosing in 2-4 minutes.



- c. If inadequate spontaneous ventilation after a total of up to 4 mg naloxone by any route, efforts should be focused on adequate BVM ventilation and placement of advanced airway, if possible
7. Indicators of improved mental status include:
  - a. Orientation to person, place and time
  - b. Increased alertness
  - c. Increased responsiveness to questions
8. For patients refusing transport, adhere to Refusal of Treatment /Transport Protocol #111.
9. There is an increased risk of tissue damage if 50% dextrose extravasates, and the time to regaining consciousness is similar when using either 10% or 50%, therefore administration of 10% dextrose is preferred. IALS services may carry dextrose for the treatment of hypoglycemia in adults in any concentration between 10 – 50%.  
  
25 gm of dextrose is:  
250 mL of 10% dextrose,  
100 mL of 25% dextrose,  
50 mL of 50% dextrose

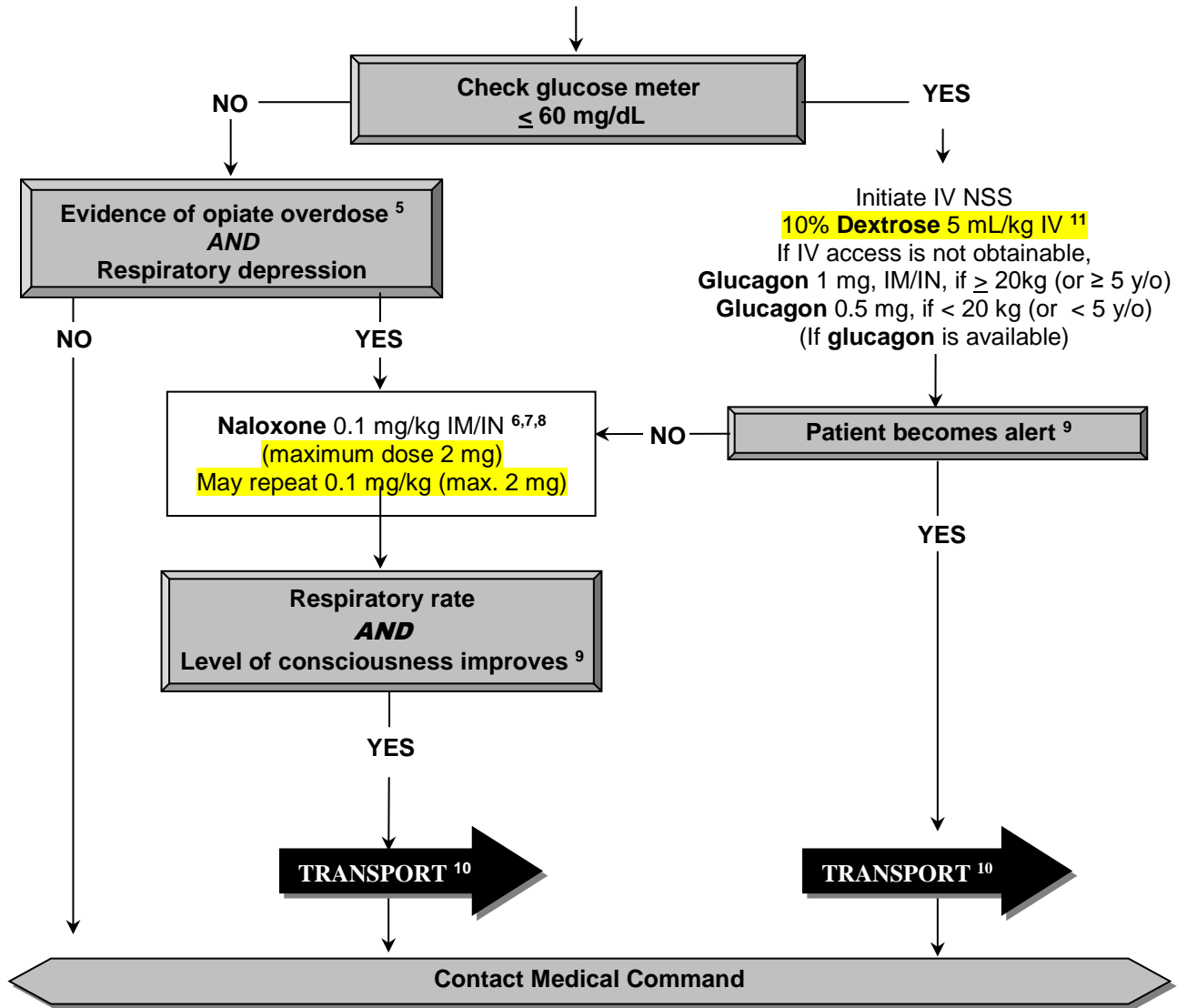
**Performance Parameters:**

- A. Review for proper use of naloxone and glucose and documentation of neurologic assessment/ response to treatment.

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**ALTERED LEVEL OF CONSCIOUSNESS - PEDIATRIC  
STATEWIDE AEMT PROTOCOL**

Initial Patient Contact - See Protocol #201  
 Administer Oxygen <sup>1</sup>  
 Manage Airway/Ventilate, if needed <sup>2,3</sup>  
 Monitor Pulse Oximetry <sup>4</sup>  
 Assess Glasgow Coma Scale



## ALTERED LEVEL OF CONSCIOUSNESS - PEDIATRIC STATEWIDE AEMT PROTOCOL

### Criteria:

- A. Patient with altered level of consciousness due to:
  - 1. Unclear etiology after assessing patient
  - 2. History consistent with hypoglycemia (in infants and children, hypoglycemia frequently accompanies overdose, alcohol ingestion, poisoning, or metabolic/medical diseases)
  - 3. Suspected drug ingestion /overdose
  - 4. Seizure

### Exclusion Criteria:

- A. Altered level of consciousness due to:
  - 1. Trauma - Follow appropriate trauma protocol (e.g. head injury or multi-system trauma protocol)
  - 2. Shock - Follow Shock AEMT Protocol #7005i
  - 3. Toxicologic
    - a. Carbon monoxide - Follow Poisoning / Toxic Exposure Protocol #831.
  - 4. Other medical problems specifically suspected due to history or exam, e.g. choking, hypoxia due to respiratory failure, etc...- Follow applicable specific protocol.

### Possible MC Orders:

- A. Additional doses of naloxone
- B. Additional doses of dextrose or glucagon (if available)

---

### Notes:

1. Administer oxygen by appropriate method.
2. In children, ventilation by bag-valve-mask is the preferred method of airway maintenance and ventilation if transport time is short. However, if patient cannot be adequately oxygenated or ventilated by bag-valve-mask or if transport time is long, insertion of age appropriate extraglottic/ alternative airway is indicated. Use a length-based device to assist with selection of appropriate sized airway equipment.
3. Confirm and document tube placement with auscultation and ETCO<sub>2</sub> detector/secondary device - Follow Confirmation of Airway Placement Protocol #2032i
4. See Pulse Oximetry Protocol #226. Pulse Oximetry must not delay the application of oxygen. Record SpO<sub>2</sub> after administration of oxygen or intubation.
5. Indications of possible opiate overdose include decreased respirations, pinpoint pupils, skin "track marks", *AND/OR* the presence of drug paraphernalia.
6. Naloxone should not be given to patients that have an extraglottic airway in place and also have oxygen saturation >95% and SBP >90.
7. Naloxone can be administered IM or intranasally. **AEMTs may not administer naloxone by IV or IO routes.** Ideally, IN administration should be done via an atomizing device with dose split evenly between each nostril.
8. The goal of each naloxone dose is return of adequate spontaneous respirations – the goal is not consciousness or walking. Do not give additional doses if patient breathing spontaneously with adequate oxygen saturation. Larger individual doses of naloxone can precipitate opiate withdrawal with the potential for a violent or combative patient that is difficult to manage at the

scene and once the patient is admitted to the hospital. If no response to dose of naloxone, dose may repeat in 2-4 minutes to a total of 4 mg. Some opioids may require higher doses of naloxone. Principles related to naloxone use include:

- a. Assisting ventilation with BVM should occur prior to and during naloxone administration if needed.
  - b. Options for titrating naloxone dosing every 2-4 minutes until adequate spontaneous respirations:
    - i. 0.1 mg/kg IM/IN (maximum 2 mg first dose)
    - ii. then 0.1 mg/kg IM/IN (up to 2 mg second dose)
    - iii. 2 mg dose by any route is acceptable for patient with both respiratory depression and poor perfusion (hypotension, weak/thread pulse), then additional 2 mg
  - c. If inadequate spontaneous ventilation after a total of up to 4 mg naloxone by any route, efforts should be focused on adequate BVM ventilation and placement of advanced airway, if possible.
9. Indicators of improved mental status include:
- a. Orientation to person, place and time
  - b. Increased alertness
  - c. Increased
  - d. If no response to dose responsiveness to questions
10. For patients refusing transport, adhere to Refusal of Treatment/Transport Protocol #111.
11. IALS services may carry dextrose for the treatment of hypoglycemia in children in any concentration between 10-25%. Patients awaken in a similar amount of time whether using 10 or 25%. For neonates, 25% dextrose dose should be diluted with equal amounts of NSS for 12.5% dextrose at 4 mL/kg (or administer 5 mL/kg of 10% dextrose for any age).

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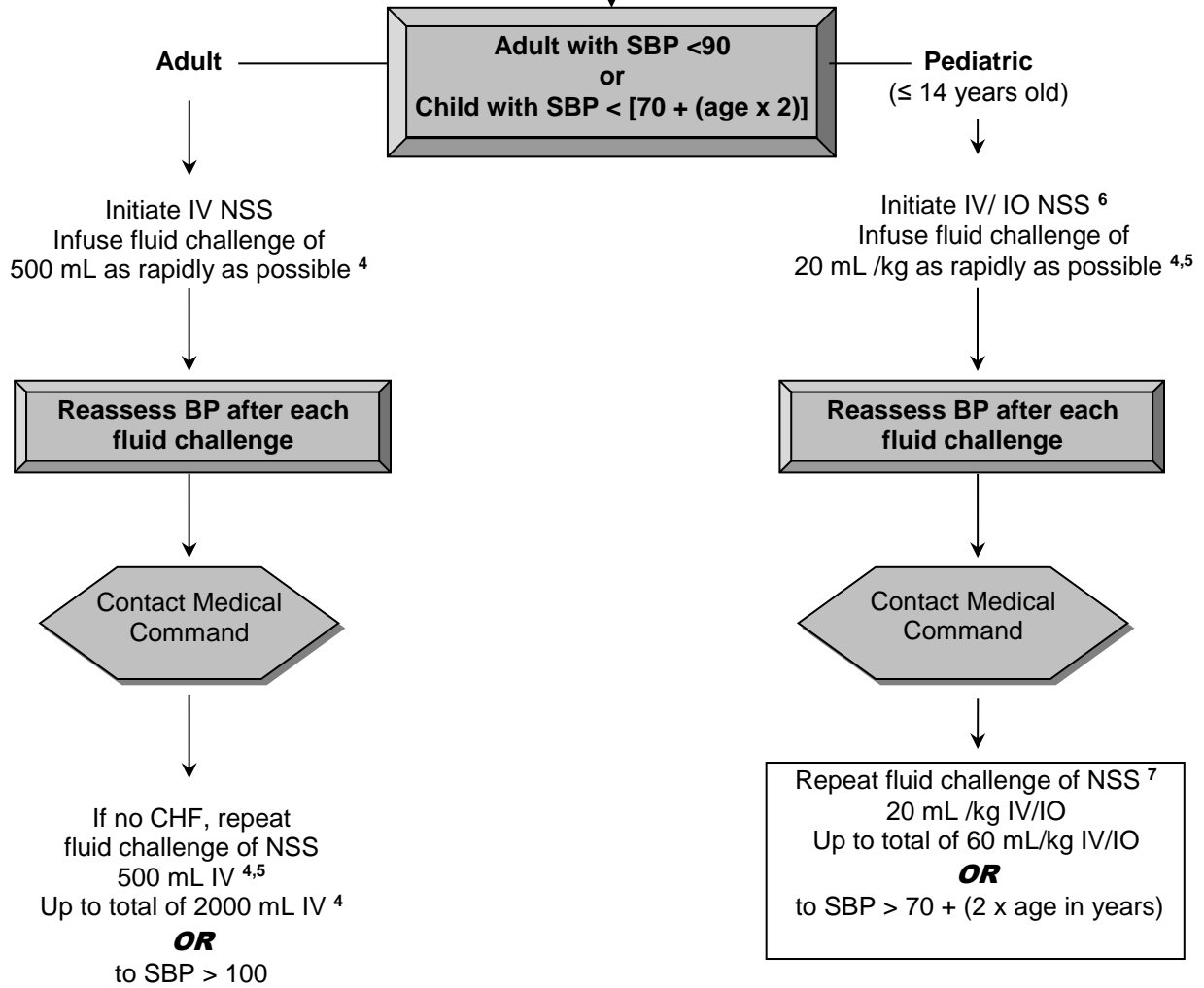
**Performance Parameters:**

- A. Review for proper use of naloxone and glucose and documentation of neurologic assessment/response to treatment.

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### SHOCK/ SEPSIS STATEWIDE AEMT PROTOCOL

Initial Patient Contact - Follow protocol #201  
Manage Airway/Ventilate, if needed <sup>1,2</sup>  
High-flow oxygen  
Keep patient warm  
Monitor Pulse Oximetry <sup>3</sup>



**SHOCK/ SEPSIS**  
**STATEWIDE AEMT PROTOCOL**

**Criteria:**

- A.** Hypoperfusion of body organs is characterized by alterations in mental status, pallor, diaphoresis, tachypnea, tachycardia, poor capillary refill, and hypotension.
1. Septic Shock - signs or symptoms of hypoperfusion from a suspected infectious source (e.g. urosepsis, pneumonia, bacteremia / septicemia). These patients may present with a fever or preceding infectious illness.
  2. Hypovolemic Shock from gastrointestinal bleeding or from repetitive vomiting/diarrhea in infants/children.
  3. Hypoperfusion of unknown etiology.

**Exclusion Criteria:**

- A.** Hypovolemic Shock of due to trauma – Permissive hypotension may be helpful in hemorrhagic shock from trauma.

**Possible MC Orders:**

- A.** Additional NSS fluid boluses
- 

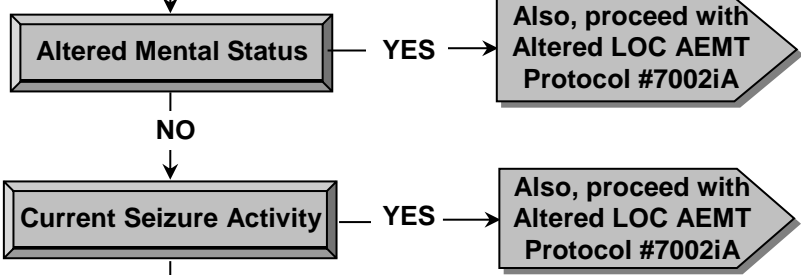
**Notes:**

1. Confirm and document tube placement with auscultation and ETCO<sub>2</sub> detector - Follow AEMT Confirmation of Airway Placement Protocol #2032i
2. In children, ventilation by bag-valve-mask is the preferred method of airway maintenance and ventilation if transport time is short. However, if patient cannot be adequately oxygenated or ventilated by bag-valve-mask or if transport time is long, insertion of age appropriate extraglottic/ alternative airway is indicated. Use a length-based device to assist with selection of appropriate sized airway equipment.
3. See Pulse Oximetry Protocol #226. Pulse Oximetry must not delay the application of oxygen. Record SpO<sub>2</sub> after administration of oxygen or intubation.
4. Bolus IV fluid should be given as quickly as possible, ideally in less than ten minutes.
5. Do not give IV fluid bolus prior to medical command if the patient has signs of CHF (for example, rales or significant pitting edema).
6. If unable to obtain peripheral IV access, place an intraosseous (IO) line, if available.
7. In infants, it is difficult to distinguish between hypoperfusion from hypovolemia and that due to cardiogenic shock. Hypovolemia frequently follows a history of repetitive vomiting/diarrhea. If cardiogenic shock is suspected, fluid boluses should be limited to the initial 20 mL/kg.



### STROKE STATEWIDE AEMT PROTOCOL

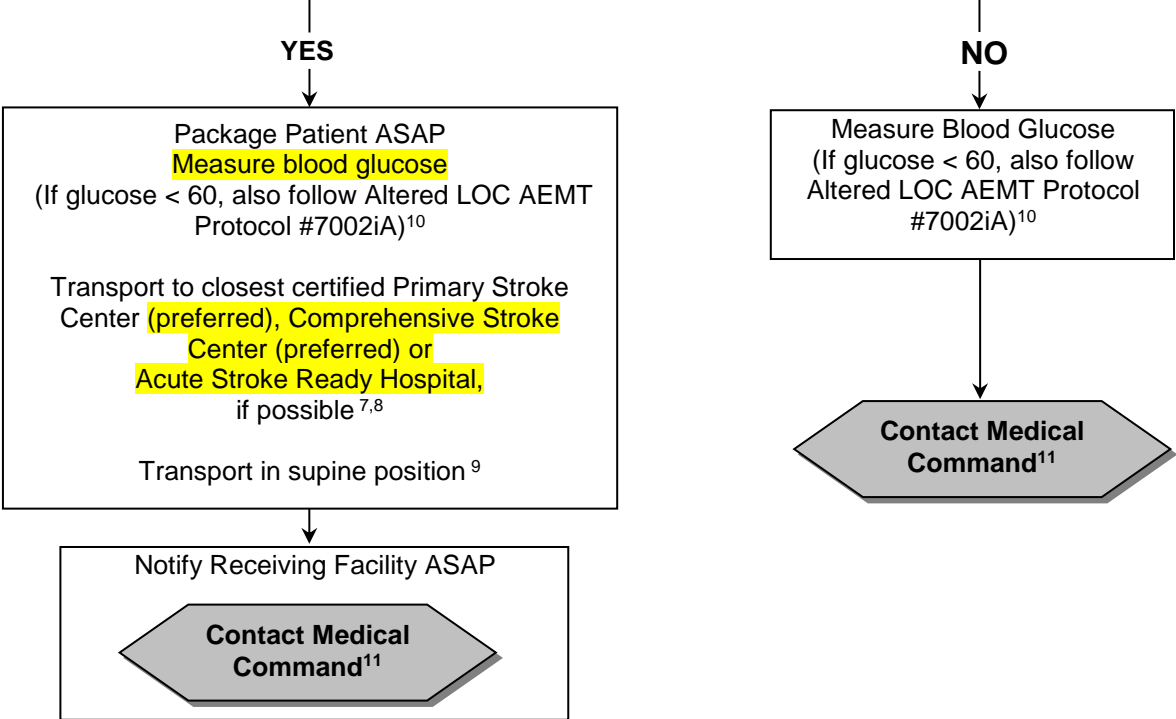
Initial Patient Contact - See Protocol #201  
Administer Oxygen titrated to SpO2 95-99%<sup>1</sup>  
Manage Airway/Ventilate, if needed <sup>2</sup>  
Monitor Pulse Oximetry <sup>3</sup>



**Is acute stroke suspected by Cincinnati Prehospital Stroke Scale <sup>4,5</sup> (CPSS)?**

**Face** - facial droop present,  
**OR**  
**Arm** - upper extremity arm drift present (arms extended/ palms up),  
**OR**  
**Speech** - inability to say, "The sky is blue in Pennsylvania" normally,  
**AND**  
**Time** - time last known well < 12 hours <sup>6</sup>

~~Exclude patient if another history of a stroke within last 3 months,~~  
**OR**  
~~Major surgery within last 14 days.~~



## STROKE STATEWIDE AEMT PROTOCOL

### Criteria:

- A. Patients may have the following clinical symptom(s):
  1. Impaired expression or understanding of speech
  2. Unilateral weakness/hemiparesis
  3. Facial asymmetry/droop
  4. Headache
  5. Poor coordination or balance
  6. Partial loss of peripheral vision
  7. Vertigo
- B. **CAUTION:** Respiratory and cardiovascular abnormalities may reflect increased intracranial pressure. Lowering of the blood pressure may be dangerous.

### Exclusion Criteria:

- A. Consider hypoglycemia, trauma, and other etiologies that can cause focal neurological symptoms that mimic stroke, and follow applicable protocol if appropriate.

### Possible MC Orders:

- A. Transport to a receiving facility that is a certified primary stroke center.

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### Notes:

1. Administer oxygen by appropriate method and monitor Pulse Oximetry, if available.
2. Confirm and document tube placement with auscultation and ETCO<sub>2</sub> detector - Follow AEMT Confirmation of Airway Placement Protocol #2032i
3. See Pulse Oximetry Protocol #226. Pulse Oximetry must not delay the application of oxygen. Record SpO<sub>2</sub> after administration of oxygen or intubation.
4. Neurological examination includes level of consciousness, Glasgow Coma Scale, pupils, individual limb movements, and Cincinnati Prehospital Stroke Scale (CPSS).
5. **Cincinnati Prehospital Stroke Scale.** If any of the following is **abnormal** and **new** for the patient, he/she may have an acute stroke:
  - a. Facial Droop (patient smiles or shows teeth) - abnormal if one side of the face does not move as well as the other.
  - b. Arm Drift (patient holds arms straight out in front of him/her and closes eyes) – abnormal if one arm drifts down compared with the other.
  - c. Speech (patient attempts to say “The sky is blue in Pennsylvania”) – abnormal if patient slurs words, uses inappropriate words, or can’t speak.
6. Attempt to identify the precise time of the onset of the patient’s first symptoms. The time of onset is extremely important information, and patient care may be different if patient can be delivered to a certified primary stroke center within 3 hours from onset of symptoms. Time is based upon the last time that the patient was witnessed to be at his/her neurologic baseline.
7. The current list of recognized certified Primary Stroke Centers (which includes comprehensive stroke centers) is posted on the Pennsylvania Department of Health website. **Transport to the closest certified Primary Stroke Center or Comprehensive Stroke Center if the patient can arrive at**

the stroke center within 45 minutes. Otherwise, transport to an Acute Stroke Ready Hospital, if the patient can arrive at that facility within 45 minutes.

8. If patient can be delivered by air (but not by ground) to receiving facility within 3 hours of symptom onset, consider contact with medical command for assistance in deciding upon the utility of air medical transport. See Protocol #181.
9. If patient can't tolerate supine position, transport with head elevated < 30 degrees.
10. If glucose < 60 or SBP < 90, initiate IV NSS and follow either Altered LOC AEMT protocol #7002iA for dextrose dosing or Shock AEMT protocol #7005i for fluid dosing. Otherwise, AEMT should not initiate IV in suspected stroke patient.
11. Contact Medical Command for all patients with acute CPSS symptoms that have onset within 3 hours of estimated arrival at the receiving facility so the receiving hospital can prepare for the patient's arrival. Describe to the Medical Command Physician your findings, including CPSS results. Medical command may order transport to a certified primary stroke center. If the medical command physician is not at the receiving facility, the medical command physician should relay pertinent information to the receiving facility.

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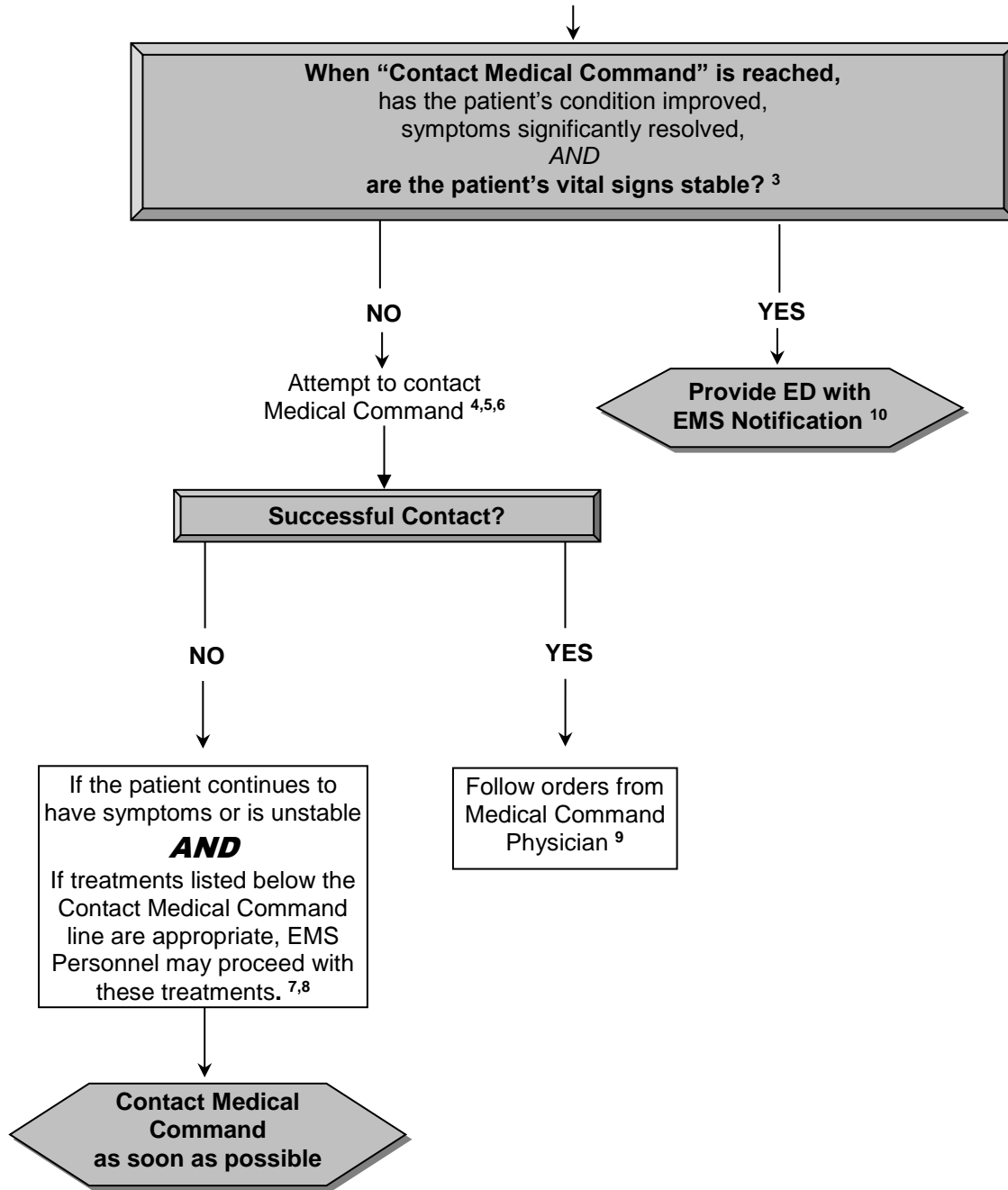
**Performance Parameters:**

- A. Review on scene time for all cases of suspected stroke with time of symptom onset less than 3 hours from time of EMS arrival. Consider benchmark of on scene time ≤10 minutes.
- B. Review documentation for CPSS criteria, time of symptom onset, glucose determination, and appropriate communication with medical command and receiving facility to maximize prearrival warning to receiving facility and most appropriate receiving facility.

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### MEDICAL COMMAND CONTACT STATEWIDE AEMT PROTOCOL

Follow Appropriate Protocol <sup>1,2</sup>



## MEDICAL COMMAND CONTACT STATEWIDE AEMT PROTOCOL

### Purpose of Medical Command contact:

- A. By the Pennsylvania EMSS Act and its regulations, EMS personnel will provide care within their scope of practice and will follow Department of Health-approved protocols or Medical Command orders when delivering EMS care.
- B. Medical Command must order any treatment (medication or procedure) that an EMS provider administers when that treatment is not included in or is a deviation from the Statewide EMS Protocols.
- C. In certain circumstances, as defined by the Statewide BLS Protocols, medical command must be contacted by EMS providers.
- D. Protocols cannot adequately address every possible patient scenario. The Pennsylvania EMS System provides a structured Medical Command system so that EMS providers can contact a Medical Command Physician when the providers are confronted with a situation that is not addressed by the protocols or when the EMS providers have any doubt about the appropriate care for a patient.
- E. In some situations and geographic locations, it is not possible for an EMS provider to contact a medical command physician. In some protocols, there are accommodations for additional care when a medical command facility cannot be contacted.
- F. The protocol section entitled "Possible Medical Command Orders" are intended to educate EMS providers to the possible orders that they may receive, and as a resource to medical command physicians. Medical command physicians are not obligated to provide orders consistent with these "possible orders". **Interventions listed under "Possible Medical Command Orders" may ONLY be done when they are ordered by a medical command physician. These possible treatments should not be done in situations where medical command cannot be contacted.**
- G. Contact with medical command may be particularly helpful in the following situations:
  - 1. Patients who are refusing treatment
  - 2. Patients with time-dependent illnesses or injuries who may benefit from transport to a specific facility with special capabilities (e.g. acute stroke, acute ST-elevation MI)
  - 3. Patients with conditions that have not responded to the usual protocol treatments.
  - 4. Patients with unusual presentations that are not addressed in protocols.
  - 5. Patients with rare illnesses or injuries that are not frequently encountered by EMS providers.
  - 6. Patients who may benefit from uncommon treatments (e.g. unusual overdoses with specific antidotes).
- H. EMS agency medical directors may require more frequent contact with medical command than required by protocol for ALS personnel who have restrictions to the skills that they are credentialed to perform. EMS agency medical directors that want medical command to be contacted on every call must do this in conjunction with local medical command facilities or within a regional plan.

### Purpose of facility "EMS Notification":

- A. If a patient's condition has improved and the patient is stable, interventions from a medical command physician are rarely needed, and contact with the medical command physician is disruptive to the physician's care of other patients.
- B. When medical command is not required or necessary, regional policy may require that the receiving facility should still be notified if the patient is being transported to the Emergency Department. This "EMS notification" should be provided to the facility by phone or radio, and may be delivered to any appropriate individual at the facility.

- C. An “EMS Notification” should be a short message that includes the ambulance identifier or designation, the patient age/gender, the chief complaint or patient problem, and whether the patient is stable or unstable.
- D. “EMS Notification” is not necessary when a patient is not being transported to the receiving facilities Emergency Department (e.g. Inter-facility transfer to an acute care facility when the patient is a direct admission to an inpatient floor).
- E. Providing “EMS Notification” to the ED may allow a facility to be better prepared for a patient arriving by ambulance and may decrease the amount of time needed to assign an ED bed to an arriving patient.

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**Notes:**

1. You may contact medical command regardless of your position in the protocol if you need advice or direction in caring for the patient. Medical command should be contacted for orders if a patient requiring interfacility transport needs a medication/ treatment that is not included above the contact medical command line in any Department-approved protocol.
2. When in doubt, contact medical command.
3. For example, a patient with chest pain may have almost complete resolution of pain after oxygen, aspirin, and several nitroglycerins AND may have normal vital signs.
4. Regional policy may determine the preferred method of medical command contact/ EMS notification.
5. Cellular technology may be utilized but all EMS services must maintain the ability to contact medical command by radio also.
6. **If the receiving facility is also a medical command facility, the initial medical command contact should be made to the receiving facility.** If the receiving facility cannot be contacted, an alternate facility may be contacted. The medical command physician at the alternate facility is responsible for relaying the information to the receiving facility.
7. Procedures or treatments listed after the medical command box may be considered and performed at the discretion of the ALS provider if unable to contact medical command if the ALS provider believes that these treatments are appropriate and necessary.
8. Attempts to contact medical command must be documented on the PCR, and the provider should document the reasons for continuing with care below the medical command box. Only mark the Medical Command section of the PA PCR if you sought Medical Command.
9. Every time medical command was contacted, the EMS provider must document the medical command facility, the medical command physician, and the orders received.
10. If patient condition worsens after EMS notification, contact medical command.

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**Performance Parameters:**

- A. 100% audit of cases where treatments beyond the “contact medical command” box were performed after unsuccessful contact with medical command.
- B. Documentation of medical command facility contacted, medical command physician contacted, and orders received in every case where medical command is contacted.
- C. Review of cases for appropriate contact with medical command when required by certain protocols (e.g. acute stroke symptoms, refusal of treatment, etc...), when patient’s condition does not improve with protocol treatment, and when patients are unstable.
- D. Review of cases for appropriate use of EMS notification, and inappropriate use of medical command contact for stable patients whose symptoms were alleviated by protocol treatments.

**APPENDIX A  
REQUIRED DRUG LIST FOR IALS VEHICLES**

Albuterol  
Aspirin  
Dextrose (at a minimum, must carry one formulation between 10-25%)  
EPINEPHrine (1 mg/mL) (~~1:1,000~~)  
Glucagon  
Naloxone  
Nitroglycerine  
Normal saline solution  
Oxygen

NOTE: IALS vehicles may carry additional medications that are listed on most recent version of the medication list for IALS ambulances as published in the Pennsylvania Bulletin.



Airway Management ..... 4001-1 thru 4001-2

Allergic Reaction ..... 4011-1 thru 4011-2

Altered Level of Consciousness-Pediatric .....7002P-1 thru 7002P-3

Altered Level of Consciousness-Adult .....7002A-1 thru 7002A-3

Asthma/COPD/Bronchospasm..... 4022-1 thru 4022-2

Confirmation of Airway Placement..... 2032-1 thru 2032-1

Croup – Pediatric .....4023P-1 thru 4023P-2

Drug List for IALS Vehicles.....A-1

General Cardiac Arrest – Adult .....3031A-1 thru 3031A-4

General Cardiac Arrest – Pediatric .....3031P-1 thru 3031P-3

General Protocol Principles..... 1000-1 thru 1000-5

Medical Command Contact..... 9001-1 thru 9001-3

Shock/Sepsis ..... 7005-1 thru 7005-2

Stroke ..... 7006-1 thru 7006-3

Suspected Acute Coronary Syndrome..... 5001-1 thru 5001-2