# PATIENT CARE PROTOCOLS

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These protocols are intended to guide Emergency Medical Services Personnel (EMSP) in the response and management of emergency situations and the care and treatment of patients. Anyone who wants to change the protocols can make a request in writing to the State Emergency Medical Control Committee, or an EMSP may make the request by email to:

Dr. William Crawford, State EMS Medical Director  
Alabama State Emergency Medical Control Committee  
c/o Office of EMS  
Alabama Department of Public Health (ADPH)  
P.O. Box 303017  
Montgomery, AL 36130-3017

Or  William.Crawford@adph.state.al.us

This manual contains ALL the medications and procedures allowed for EMSP in Alabama. EMSP are responsible for their actions within the respective scope of practice of the license that they hold. Online Medical Direction (OLMD) can only order procedures and medication administration within the EMSP scope of practice. EMSP should respectfully decline any orders which would cause them to violate their scope of practice.

The medication section of this manual is provided for information purposes only. EMSP may administer medications only as listed in the protocol unless OLMD orders a deviation.

This manual also serves as a reference for physicians providing OLMD to EMSP. Treatment direction which is more appropriate to the patient’s condition than the protocol should be provided by the physician as long as the EMSP scope of practice is not exceeded. Treatment direction includes basic care, advanced procedures, and medication administration. OLMD can expect an EMSP to respectfully decline any orders which would cause them to violate their scope of practice.

Patient preference of hospital destination supersedes the Acute Health Care System as long as the patient is deemed competent by EMSP and OLMD.

**Pediatric information is differentiated by label and font characteristics. Anything pertaining to pediatric patients will be presented in Green Bold Tahoma Font. Unless otherwise noted in a protocol, a pediatric patient is defined as someone 15 years old or younger.**
### PROTOCOL UPDATES

The ADPH EMS Protocols are revised through updates performed by request of the State Emergency Medical Control Committee (SEMCC) or the Office of EMS (OEMS) Director.

Individual protocols and guidelines are updated through REVISIONS. Each protocol can be revised individually and the revision letter and revision date are noted on the protocol in the upper right hand corner. Periodically, the revisions are incorporated into the manual and a new Edition is released. The new EDITION number and date are printed on the cover and the lower right footnote.
**KEY POINTS**

Licensed Emergency Medical Services Personnel (EMSPs) are authorized to perform procedures and administer medications as defined by these protocols. Each level of EMSP, as defined by the EMS Rules, has a specific list of authorized procedures and medications as defined by that level’s scope of practice.

EMSPs are prohibited from performing any procedure or utilizing any medication not approved by the State Board of Health even though they may have been taught these medications and procedures in their EMSP curriculum.

Lower level EMSPs can assist higher level EMSPs with patient care activities as long as the lower level EMSP does not exceed his/her Scope of Practice regarding administration of medications or performance of procedures. Ultimately, the higher level EMSP is responsible for patient care and documentation.
EMT

An EMT, licensed by the ADPH-OEMS, is authorized to perform patient care procedures and administer medications as follows:

Procedures:
1. Patient assessment including taking and recording vital signs and appropriate history.
2. Administration of supplemental oxygen via cannula or mask.
3. Administration of aspirin for suspected cardiac chest pain.
4. Use of oropharyngeal and nasopharyngeal airways.
5. Placement of Blind Insertion Airway Device (BIAD).
6. Use of bag-valve mask.
7. Use of mouth to mask device with or without supplemental oxygen.
8. Use of pulse oximetry devices.
9. Opening and maintaining a patent airway using simple airway maneuvers.
10. Use of suction equipment.
11. Cardiopulmonary resuscitation.
12. Simple management of a cardiac emergency including the use of an AED.
13. Acquiring and transmitting 12-lead ECG (if AED is capable).
14. Control of bleeding and shock through positioning, direct pressure, and tourniquet.
15. Use of hemostatic agents.
16. Bandaging.
17. Spinal Motion Restriction and Spinal Precautions.
18. Splinting including traction splint.
21. Assistance with emergency childbirth, NOT including any surgical procedures.
22. Capillary puncture for the purpose of blood glucose monitoring.
23. Use of automated glucometer.
24. Properly lifting and moving a patient.
25. Patient extrication.
26. Mass casualty incident triage including triage tags.
27. Scene management, such as directing traffic, but only when such activities do not interfere with patient care duties and law enforcement personnel are not at the scene.
28. Continuous Positive Airway Pressure (CPAP) or Bilevel Positive Airway Pressure (BiPAP).
29. Use of Capnography.

Medications (for use as specified in treatment protocols):
1. Administration of aspirin, glucose paste, auto-injection epinephrine, and naloxone.
2. Assist self-administration of nitroglycerin; auto-inhalers; auto-injection epinephrine; and auto-injection, sublingual, or intranasal naloxone.
3. Site maintenance of heparin locks and saline locks.
ADVANCED EMT

An Advanced EMT, licensed by the ADPH-OEMS, is authorized to perform all patient care procedures and administer all medications as defined in the EMT Scope of Practice AND the additional procedures and medications as follows:

Procedures:
1. Placement of Blind Insertion Airway Device (BIAD).
2. Peripheral venipuncture (IV).
3. Adult and pediatric intraosseous cannulation (IO).
   - Adult Sites – Proximal Humerous, Sternal (with appropriate device), Proximal Tibia.
   - Pediatric Sites - Proximal Humerous, Proximal Tibia, Distal Femur (<2 years old).

Medications (for use as specified in treatment protocols):
1. Administration of medications within the scope of practice of an Advanced EMT in the EMS setting. Medications may be administered via the intravenous, intraosseous, intranasal, subcutaneous, intramuscular, oral, sublingual, and through inhalers if approved for such administration by the State Board of Health; and,
2. Maintenance of I.V. fluids within the scope of practice of an Advanced EMT for inter-hospital transfer patients.
An Intermediate EMT, licensed by the ADPH OEMS, is authorized to perform all patient care procedures and administer all medications as defined in the EMT and the Advanced EMT Scope of Practice AND the additional procedures as follows:

Procedures:
1. Placement of oral and nasal endotracheal tubes.
2. Use of cardiac monitoring equipment, including placement of electrical leads and obtaining 12-Lead ECG.
3. Delivery of electrical therapy to patients including manual defibrillation and synchronized cardioversion.
A Paramedic, licensed by the ADPH-OEMS, is authorized to perform all patient care procedures and administer all medications as defined in the EMT, Advanced EMT, and Intermediate EMT Scope of Practice AND the additional procedures and medications as follows:

### Procedures:
1. External Cardiac Pacing.
2. Nasogastric or Orogastric tube placement.
3. Needle Decompression at the second or third intercostal space on the anterior chest at the midclavicular line or along the anterior axillary line at the 4th intercostal space on the same side as the tension pneumothorax.

### Medications:
1. Administration of medications on the list approved by the State Board of Health for such use in the EMS setting. Medications may be administered via the intravenous, intraosseous, intranasal, subcutaneous, intramuscular, oral, sublingual, rectal routes, and through inhalers and endotracheal tubes if approved for such administration by the State Board of Health; and,
2. Within the constraints specified in the State EMS rules, administration of medications and maintenance of I.V. fluids for inter-hospital transfer patients.
## CRITICAL CARE PARAMEDIC

A paramedic endorsed by the OEMS, certified by the International Board of Specialty Certifications (IBSC) as Critical Care Paramedic-Certified (CCPC) or Flight Paramedic-Certified (FPC), and has been validated by the provider service Medical Director. This certification grants an expanded scope of practice and medication formulary only when the individual receives the current endorsement on their EMSP license issued by the OEMS and they are working for a provider service that is currently licensed at the Critical Care level.
COMMUNITY PARAMEDICINE

PURPOSE: To provide guidance to EMS personnel engaged in scheduled patient visits for the purpose of preventing future medical emergencies.

KEY POINTS:

- No EMSP shall engage in any patient care activities other than BLS interventions during scheduled patient encounters for the sake of EMS prevention.
- When a patient is assessed, the EMSP shall document the encounter and outcome at the conclusion (i.e., Refusal of Transport).
- If at any time during the scheduled visit, the patient or the provider identifies the need for emergency treatment, the EMSP shall perform the necessary interventions within his or her scope of practice and arrange for emergency transport.
- All EMS prevention activities should be approved by the agency’s medical director prior to implementation.
PURPOSE
To provide patient entry criteria and system guidance for the Alabama Trauma System.

GUIDELINE
ALABAMA TRAUMA SYSTEM ENTRY CRITERIA

Physiological Criteria:
1. A systolic BP <90 mm/Hg in an adult or child 6 years or older
   <80 mm/Hg in a child five or younger.
   This includes any trauma related cardiac arrest that will be treated or transported to the hospital.
2. Respiratory distress - rate < 10 or >29 in adults, or
   <20 or >60 in a newborn.
   <20 or >40 in a child three years or younger.
   <12 or >29 in a child four years or older.
3. Head trauma with Glasgow Coma Scale score of 13 or less or head trauma with any neurologic changes in a child five years or younger.

Anatomical Criteria:
1. The patient has a flail chest.
2. The patient has two or more obvious proximal long bone fractures (humerus, femur).
3. The patient has penetrating trauma to the head, neck, torso, or extremities proximal to the elbow or knee.
4. The patient has in the same body area a combination of trauma and burns (partial and full thickness) of fifteen percent or greater.
5. See Burns Protocol (3.08) for criteria to enter a burned patient into the trauma system.
6. The patient has an amputation proximal to the wrist or ankle.
7. The patient has one or more limbs which are paralyzed.
8. The patient has a pelvic fracture, as evidenced by a positive “pelvic movement” exam.
9. The patient has a crushed, degloved, mangled, or pulseless extremity.
10. The patient has an open or depressed skull fracture.

Mechanism of the patient injury:
1. A patient with the same method of restraint and in the same seating area as a deceased victim.
2. Ejection of the patient from an enclosed vehicle.
3. Motorcycle/bicycle/ATV crash with the patient being thrown at least ten feet from the motorcycle/bicycle.
4. Auto versus pedestrian with significant impact with the patient thrown, or run over by a vehicle.
5. An unbroken fall of twenty feet or more onto a hard surface. Unbroken fall of 10 feet or 3 times the height of the child onto a hard surface.
## ALABAMA TRAUMA SYSTEM ENTRY CRITERIA

**EMSP Discretion:**

1. If the EMSP is convinced that the patient could have a severe injury which is not yet obvious, the patient should be entered into the Alabama Trauma System.

2. The EMT’s suspicion of severity of trauma/injury may be raised by the following factors:
   - Age >55
   - Age < five
   - Environment (hot/cold)
   - Patient’s previous medical history
   - Insulin dependent diabetes or other metabolic disorder
   - Bleeding disorder or currently taking anticoagulant medication (e.g. coumadin, heparin)
   - COPD/Emphysema
   - Renal failure on dialysis
   - Pregnancy
   - Child with congenital disorder
   - Extrication time >20 minutes with heavy tools utilized
   - Motorcycle crash
   - Head trauma with history of more than momentary loss of consciousness.

### ENTERING A PATIENT INTO THE ALABAMA TRAUMA SYSTEM

EMS Providers should call the Alabama Trauma Communications Center (ATCC) to determine patient destination.

ATCC contact numbers:
Toll-Free Emergency: 1-800-359-0123, or
Southern LINC EMS Fleet 55: Talkgroup 10/Private 55*380, or Nextel: 154*132431*4

The initial unit on-scene should enter the patient into the Alabama Trauma System but if they have not done so, it becomes the responsibility of the transporting service (ground or air) before the receiving facility is selected.
ENTERING A PATIENT INTO THE ALABAMA TRAUMA SYSTEM (continued)
For helicopter EMS (HEMS) it is preferable to request a preliminary receiving facility from ATCC prior to arrival on the scene and then later enter the patient into the ATCC as soon as is logistically possible. After assessing a trauma situation and making the determination that the patient should be entered into the Alabama Trauma System, the EMSP licensed at the highest level should contact the ATCC at the earliest practical time before the receiving facility is selected and provide the following information. The highest level EMSP on the scene may delegate the call to ATCC to a lower level EMSP if patient care duties require the higher level EMSP's attention:

1) EMSP service
2) Location of Trauma Scene
3) Age and Sex of the patient(s)
4) Reason for Entry and Mechanism of Injury
5) Patient assessment
   a) Airway Status
   b) Vital signs and GCS
   c) Areas of Injury
   d) Environmental issues or co-morbid factors
6) Transportation type
7) Transportation timing

ATCC will provide a unique identification number that must be entered into the e-PCR.

Notify the ATCC of any change in the patient’s condition. The receiving trauma center or ATCC should be updated by the transporting unit 5-10 minutes out. This update should only consist of any patient changes and patient’s current condition. A repeat of information used to enter the patient into the Alabama Trauma System is not necessary since this information will be relayed by the ATCC to the receiving trauma center.

After the patient is delivered to the trauma center, the transporting provider should call the ATCC with the Patient Care Report times.

TRAUMA SYSTEM DIVERT TO CLOSEST FACILITY
Criteria for diverting to the closest hospital includes:
- Loss of airway.
- Hemodynamic instability (with no vascular access).
- Uncontrolled bleeding (external).

Notify ATCC of intent to divert to closest facility for listed criteria.
**PURPOSE**

The stroke system is for patients who have signs and symptoms of stroke, also defined as an acute episode of neurological deficit without any evidence of trauma. If the patient has altered mental status other causes such as hypoxia, hypoperfusion, hypoglycemia, trauma, or overdose should be considered. Any patient treated by EMS using this protocol should be entered into the stroke system.

**GUIDELINE**

**Prehospital System Entry Criteria**

1. Does the patient have facial droop (F), arm or leg weakness (A), or difficulty speaking (S)? When was the last (clock) time (T) patient was seen normal? (FAST – see next section). Determination of time of symptom onset is critical, as treatment for stroke can be time dependent.
2. Did the patient have a previous neurological deficit (this will not rule out stroke, but should be noted so that new findings can be assessed against baseline)?
3. Does the patient have stroke risk factors (i.e., hypertension, diabetes, heart disease, smoking, dysrhythmias, hypercholesterolemia, anticoagulation use, transient ischemic attack, or previous stroke)?
4. Has the patient had any recent similar events?
5. Does the patient have a Medic Alert tag?

**Prehospital Physical Assessment**

1. Vital signs
2. Rapid physical exam: perform FAST stroke scale (Face, Arm, Speech, and Time):
   - **A.** Face: Assess for facial droop (have patient show teeth or smile).
     - Normal—both sides of face move equally well.
     - Abnormal—one side of face droops or does not move as well as the other side.
   - **B.** Arm: Assess for arm drift (have patient close eyes and hold both arms straight out, palms up for 10 seconds).
     - Normal—both arms move the same or both arms do not move.
     - Abnormal—one arm does not move or one arm drifts down compared with the other.
   - **C.** Speech: Assess for abnormal speech (have the patient say “you can’t teach an old dog new tricks”).
     - Normal—patient uses correct words with no slurring.
     - Abnormal—patient slurs words, uses inappropriate words, does not understand, does not obey commands, or is unable to speak.
   - **D.** Time: If any of the above is positive, attempt to determine the time of symptom onset and last time seen normal (clock time).

If the patient has an abnormal response to any single component of the FAST stroke scale, and if that abnormal response is acute in nature, then the patient should be entered into the stroke system.
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<tr>
<td><strong>EMSP Discretion</strong></td>
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<td>1. If the EMSP is convinced that the patient is likely to have a stroke which is not yet obvious then the patient may be entered into the stroke system.</td>
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| 2. EMSP suspicion of stroke may be raised by the following factors (but these situations alone do not constitute reason for stroke system entry):
  - Symptoms of stroke occurred and disappeared within a few minutes, even if the patient is presently normal.
  - Patient is awake with spontaneous inability to remember or understand what is said or to express himself (expressive or receptive aphasia). |
| 3. EMSP are to immediately inform the ATCC, when a decision is made to enter a patient into the stroke system using discretion and inform the ATCC of the reason for that decision. |
| 4. It is to be specifically noted in the run report that EMSP discretion is being used to enter a patient into the stroke system and the reason or basis for that decision is to be written on the prehospital PCR. |
Each Treatment Protocol begins with sections titled **History and Physical Exam**, and **Key Points**. These sections include information that is useful to all EMSPs.

The third section of each protocol is titled **Treatment**. This section is divided into two columns.

The left column includes general treatment information that does not specify Scope of Practice for each intervention.

The right column is divided into four levels that correspond to the levels of EMSP licensure in Alabama. This section specifies treatments that are suitable for each level of EMSP and are color-coded.

- **EMT** approved treatments are listed on the top in the white field.
- **Advanced-EMT** approved treatments are listed next in the yellow field.
- **Intermediate-EMT** approved treatments are listed third in the green field.
- **Paramedic** approved treatments are listed last in the blue field.

Each EMSP can perform and is responsible for the treatments listed in the right column of the treatment protocol appropriate to their Scope of Practice **IN ADDITION TO** all the treatments listed in the Scope of Practice for all levels of lesser training. For example, an EMT may perform those treatments listed under EMT. An Advanced-EMT may perform those treatments listed under EMT and Advanced-EMT. Intermediate-EMTs may perform all treatments listed under EMT, Advanced-EMT, and Intermediate-EMT. Paramedics may perform all treatments listed.

All providers are required to understand and operate within their Scope of Practice.

All levels of providers are responsible to utilize online medical direction (OLMD) when indicated.

It may be appropriate to treat a patient using more than one Treatment Protocol.
**HISTORY AND PHYSICAL EXAM**

**Complete:**
- Primary survey.
- History.
- Vital signs including Pulse Oximetry.
- Secondary survey.

**KEY POINTS**
- This protocol is the starting point for assessment of every patient. All patients should have appropriate assessment of “ABCs,” that is Airway patency, Breathing adequacy, and Circulation.
- This protocol can be used for documentation purposes when no other specific protocol is used.
- Follow specific History, Physical Exam, and Treatment.
- Follow Communication Protocol.

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<th>DRUGS/PROCEDURES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Airway:</strong></td>
<td><strong>EMT:</strong></td>
</tr>
<tr>
<td>- Maintain Patency.</td>
<td>Glucometer as needed</td>
</tr>
<tr>
<td>- Suction as needed.</td>
<td>Pulse Oximetry if available</td>
</tr>
<tr>
<td><strong>Breathing:</strong></td>
<td><strong>Advanced:</strong></td>
</tr>
<tr>
<td>- Assist as needed, see Respiratory Distress Protocol (3.29) if indicated.</td>
<td>Consider IV access as needed</td>
</tr>
<tr>
<td><strong>Circulation:</strong></td>
<td><strong>Intermediate:</strong></td>
</tr>
<tr>
<td>- Monitor for adequate perfusion.</td>
<td>Cardiac monitoring as needed</td>
</tr>
<tr>
<td><strong>Complete secondary survey and ongoing exam:</strong></td>
<td><strong>Paramedic:</strong></td>
</tr>
<tr>
<td>- If further treatment required, follow appropriate Treatment Protocol.</td>
<td></td>
</tr>
<tr>
<td><strong>Contact receiving hospital with patient report as soon as possible.</strong></td>
<td></td>
</tr>
</tbody>
</table>
## HISTORY AND PHYSICAL EXAM

- **Pain:** PQRST-Place, Quality, Radiation, Severity, and Time Began.
- **Symptoms:** Nausea, vomiting (bloody or coffee-ground), diarrhea, constipation, melena, rectal bleeding, urinary difficulties, or fever.
- **History:** Previous trauma, abnormal ingestion, medications, known disease, surgery, menstrual history, possibility of pregnancy.
- **Abdomen:** Tenderness, guarding, rigidity, bowel sounds, distention, pulsating mass, evidence of rectal bleeding.

## KEY POINTS

- Abdominal pain may be the first warning of catastrophic internal bleeding leading to hemorrhagic shock. Maintain a high index of suspicion and monitor for early signs of shock.
- Use caution with fluid administration in patients with suspected dissecting aortic aneurysm. Do not try to exceed systolic BP of 90 mmHg.
- Nitrous Oxide causes bowel distention and is contraindicated in abdominal pain.

## TREATMENT

- Monitor closely for shock.
- If shock is present, proceed to Shock Protocol (3.31).
- Transport in position of comfort.
- Give nothing by mouth.
- Re-assess patient and check vital signs frequently.
- Consider Ketamine, Morphine Sulfate, or Fentanyl for patients with severe pain.

## DRUGS/PROCEDURES

<table>
<thead>
<tr>
<th>EMT:</th>
<th>Advanced:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Consider IV.</td>
</tr>
<tr>
<td></td>
<td>Intermediate: Cardiac monitoring as needed.</td>
</tr>
<tr>
<td></td>
<td>Paramedic:</td>
</tr>
<tr>
<td><strong>Ketamine:</strong></td>
<td>Ketamine:</td>
</tr>
<tr>
<td>Adult:</td>
<td>0.2 mg/kg slow IV Push. 25 mg MAX.</td>
</tr>
<tr>
<td></td>
<td>0.5 mg/kg IM. 50 mg MAX.</td>
</tr>
<tr>
<td></td>
<td>Contact OLMD for further dosing.</td>
</tr>
<tr>
<td>Pediatric:</td>
<td>0.2 mg/kg slow IV Push. 25 mg MAX.</td>
</tr>
<tr>
<td></td>
<td>0.5 mg/kg IM. 25 mg MAX.</td>
</tr>
<tr>
<td></td>
<td>1 mg/kg IN. 50 mg MAX.</td>
</tr>
<tr>
<td></td>
<td>Contact OLMD for further dosing.</td>
</tr>
<tr>
<td><strong>Morphine Sulfate:</strong></td>
<td>Morphine Sulfate:</td>
</tr>
<tr>
<td>Adult:</td>
<td>4 mg IV initial dose, titrate to pain relief in</td>
</tr>
<tr>
<td></td>
<td>2 mg doses, every 3-5 minutes, 10 mg MAX.</td>
</tr>
<tr>
<td></td>
<td>If pain not relieved after 10 mg, the EMSP may call</td>
</tr>
<tr>
<td></td>
<td>OLMD for further doses. (Cat B) ☭</td>
</tr>
<tr>
<td>Pediatric:</td>
<td>0.1 mg/kg 5 mg MAX (Cat B) ☭</td>
</tr>
<tr>
<td><strong>Fentanyl:</strong></td>
<td>Fentanyl:</td>
</tr>
<tr>
<td>Adult:</td>
<td>1 mcg/kg slow IV push/IM/IN, 50 mcg MAX.</td>
</tr>
<tr>
<td></td>
<td>May repeat once.</td>
</tr>
<tr>
<td></td>
<td>If pain not relieved after second dose you may call</td>
</tr>
<tr>
<td></td>
<td>OLMD for further doses. (Cat B) ☭</td>
</tr>
<tr>
<td>Pediatric:</td>
<td>1 mcg/kg slow IV push/IN, 50 mcg MAX</td>
</tr>
</tbody>
</table>
HISTORY AND PHYSICAL EXAM

- History of diagnosed Adrenal Insufficiency.
- Many diseases can cause Adrenal Insufficiency, including Primary Adrenal Insufficiency, Congenital Adrenal Hyperplasia (CAH), long-term administration of steroids, pituitary gland problems, auto-immune diseases, cancers, and infections.
- Early signs of adrenal crisis: pallor, dizziness, headache, weakness, abdominal pain, nausea, and vomiting.
- Late signs of adrenal crisis: lethargy, hypotension, shock, cardiorespiratory failure, and death.

KEY POINTS

- Adrenal glands make the steroids cortisol and aldosterone, which are both necessary for the body’s response to physiologic stress such as acute illness or injury.
- Persons with adrenal insufficiency are unable to respond to physiologic stressors and may develop hypoglycemia, shock, or cardiovascular collapse that is refractory to treatment until adrenal corticosteroid replacement is given.
- This protocol is only for patients with diagnosed Adrenal Insufficiency and is intended to guide paramedics in assisting these patients with self-administration of medications prescribed for them by their physician to treat Adrenal Insufficiency in the setting of acute illness or injury. This is commonly referred to as adrenal crisis.
- All patients receiving steroids using this protocol must be transported to the hospital for further evaluation and treatment.

TREATMENT

- Oxygen to maintain pulse oximetry >95%.
- If the patient has their own steroid medications prescribed by their physician, the EMSP may administer them according to the accompanying directions. This includes Hydrocortisone sodium succinate, Methylprednisolone, and Dexamethasone. If dosing information is not provided with the medication, use the doses recommended here. If further assistance is needed, the EMSP may contact OLMD or the ATCC for medical control assistance. (Cat B)
  - Cardiac Monitor and 12 Lead ECG.
  - Glucometer. If patient is hypoglycemic, treat using Hypoglycemia Protocol (3.21).
  - Consider IV access.
  - If patient remains hypotensive, treat using Shock Protocol (3.31).

DRUGS/PROCEDURES

EMT:

Advanced:
- Establish IV.

Intermediate:
- Cardiac monitoring as needed.

Paramedic:

Hydrocortisone sodium succinate:
- Adult: 100 mg IM (Cat B)
- Pediatric: 2 mg/kg IM, 100 mg MAX (Cat B)

Methylprednisolone:
- Adult: 125 mg IM (Cat B)
- Pediatric: 2 mg/kg IM, 125 mg MAX (Cat B)

Dexamethasone:
- Adult: 5 mg IM (Cat B)
- Pediatric: 5 mg IM (Cat B)
**HISTORY AND PHYSICAL EXAM**

- Allergen exposure and route of exposure.
- History and type of previous allergic reactions.
- Symptoms: pruritus, dyspnea, sensation of airway closure, generalized weakness or dizziness.
- Airway: Oropharyngeal edema, drooling.
- Pulmonary: Wheezing, stridor, hoarseness, ability to speak.
- Skin: Hives, swelling, or erythema.
- Cardiovascular: Hypotension.

**KEY POINTS**

- Epinephrine is associated with many adverse reactions including hypertension, tachycardia, arrhythmias, tremor, anxiety, vomiting, and chest pain.
- Epinephrine should be used with caution in the elderly, in patients with known heart disease, and in patients with uncontrolled hypertension except in life-threatening allergic reactions.
- The two forms of Epinephrine must not be confused or over-dosage may occur. The 1:1000 dilution is appropriate for intramuscular injection. The 1:10,000 dilution is for intravenous injection, which requires OLMD. The 1:1,000 dilution is NEVER given intravenously. An Epi Pen Auto Injector is approved for administration of 1:1,000 dose IM.
- If the patient has a self-administration device for Epinephrine the EMSP may administer or assist the patient in self-administration.
- Patients with Moderate/Severe Allergic Reaction should be transported without delay due to the potential for rapid deterioration and airway compromise.
### TREATMENT

**Minor reaction:** Reaction limited to skin with no sign of airway, respiratory, or hemodynamic compromise.
- *Oxygen* as needed.
- Consider IV access.

**Moderate/Severe Reaction:** Skin rash with presence of respiratory symptoms such as wheezing. Can include severe respiratory distress including airway compromise or signs of shock.
- *Oxygen* 15 L/M non-rebreather mask.
- Consider IV access.
- Cardiac monitor.
- *Epinephrine 1:1000 IM or Epi Auto Injector* (Preferred first line medication).
  For repeat dosing, contact online medical control.
- *Albuterol*.
- *Diphenhydramine*.
- *Normal Saline* Bolus if signs of shock such as tachycardia or hypotension.
- *Epinephrine 1:10,000 IV* for refractory reaction with OLMD approval.

### DRUGS/PROCEDURES

**EMT:**
- *Oxygen*
  Assist patient with self-administration epinephrine device. *Epi Auto Injector*

**Advanced:**
- Consider IV Access
- *Normal Saline Bolus*
  Adult: 500 cc bolus and re-assess

**Pediatric:**
- *Epinephrine 1:1000*
  Adult: 0.3 mg (0.3 cc) IM (Cat A) or Epi Auto Injector
  If pt is age 65 or older, has history of heart disease, or uncontrolled hypertension contact OLMD prior to administration (Cat B) 🚫
  Pediatric: 0.01 mg/kg (0.01 cc/kg) MAX 0.3 mg (0.3 cc) IM or Epi Auto Injector

**Intermediate:**
- *Cardiac Monitor.*
### Allergic Reaction (continued)

<table>
<thead>
<tr>
<th><strong>Paramedic:</strong></th>
<th><strong>Epinephrine 1:1000</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult:</td>
<td>0.3 mg (0.3 cc) IM (Cat A) or Epi Auto Injector</td>
</tr>
<tr>
<td></td>
<td>If pt is age 65 or older, has history of heart disease, or uncontrolled hypertension contact OLMD prior to administration (Cat B) ☢</td>
</tr>
</tbody>
</table>

**Pediatric:**

| 0.01 mg/kg (0.01 cc/kg) MAX 0.3 mg (0.3 cc) IM or Epi Auto Injector |

<table>
<thead>
<tr>
<th><strong>Epinephrine 1:10,000</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult:</td>
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</tbody>
</table>

**Pediatric:**

| 0.01 mg/kg (0.1 cc/kg) MAX 0.3 mg (3 cc) IV, repeat every 5 minutes as needed. (Cat B) ☢ or Epi Auto Injector |
HISTORY AND PHYSICAL EXAM

- Last time seen conscious or normal, progression of symptoms, recent symptoms such as headache, seizure, confusion, or trauma. Medical problems and medication history, toxin exposure, history of seizure or stroke.
- Psychiatric problems, recent crisis, bizarre or abrupt changes in behavior, suicidal ideas, alcohol/drug intoxication, psychotropic or behavioral drugs.
- Surroundings: Bring pill bottles, syringes etc., with patient. Note any peculiar odors in environment.
- Pupils: Size, symmetry, and reactivity.
- Mental status: Altered mental status includes not only unconsciousness or confusion, but also irrational activity such as verbal attacks, spitting, or combativeness. Note level of consciousness and neurologic status. Document GCS if applicable.
- Look for signs of trauma, evidence of drug use such as needle tracks.
- Characteristic odor on patient’s breath.

KEY POINTS

- In cases of dangerous environment, safety of personnel on scene is paramount.
- If there are multiple patients, suspect poisoning.
- Be particularly attentive to airway management. Aspiration of secretions, vomiting, and inadequate ventilations may be present in patients with severely altered mental status.
- Hypoglycemia may present as focal neurologic deficit or altered mental status, particularly in elderly patients.
- All patients treated using this protocol should have a medical evaluation and should not be considered or referred to as a psychiatric patient unless under a bona fide mental health hold by a physician, mental health professional, or law enforcement officer. Medical causes of altered mental status should be considered first before psychiatric causes of altered mental status.
- CAUTION: Suicidal patients and patients with hallucinations or delusions may potentially exhibit violent behavior.
### Treatment

If possibility of carbon monoxide poisoning, give 100% oxygen. Pulse oximetry will be unreliable in cases of carbon monoxide poisoning.

Consider IV.

Cardiac monitor, ECG, and capnography.

Glucometer. If patient is hypoglycemic, treat using Hypoglycemia Protocol (3.21).

If respiratory depression is present, consider **Naloxone**.

If patient is suicidal, do not leave them alone. Search patient for and remove dangerous objects (e.g. knives, guns, pills).

Transport in calm, quiet manner with continuous monitoring.

Consider restraint if necessary.

If patient is combative and potential for harm to patient and/or personnel is present, consider **Haloperidol with Diphenhydramine or Ketamine**.

Haloperidol is not appropriate if postictal state.

The purpose of the **Diphenhydramine** is to prevent extrapyramidal symptoms. If additional doses of **Haloperidol** are given (Cat B), do not repeat the Diphenhydramine.

One dose of **Diphenhydramine** is adequate to cover multiple doses of Haloperidol.

Consider an intramuscular benzodiazepine such as **Diazepam, Lorazepam, or Midazolam** for treatment of excited delirium. Contact OLMD for dosing instructions. (Cat B)

<table>
<thead>
<tr>
<th><strong>EMT:</strong></th>
<th><strong>DRUGS/PROCEDURES</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Naloxone:</strong></td>
<td><strong>EMT:</strong></td>
</tr>
<tr>
<td><strong>Pediatric:</strong></td>
<td><strong>2-4 mg IN (all ages and weights)</strong></td>
</tr>
<tr>
<td><strong>Advanced:</strong></td>
<td><strong>Contact OLMD for dosing instructions</strong></td>
</tr>
</tbody>
</table>

**Intermediate:**

**Paramedic:**

**Ketamine:**

**Pediatric:**

**Haloperidol:**

**Pediatric:**

**Diphenhydramine**

**Pediatric:**

**Diazepam, Lorazepam, or Midazolam**

Contact OLMD (Cat B)
### HISTORY AND PHYSICAL EXAM

- Timing and mechanism of amputation.
- History of bleeding disorder, including blood thinning medications.
- Amount of blood loss.
- Note structural attachments in partial amputations.

### KEY POINTS

- Do not immerse the amputated part in liquid or dry ice.
- Time is of the greatest importance to assure viability. If the extrication time will be prolonged, consider sending the amputated part ahead to be surgically prepared for reimplantation.
- If bleeding cannot be controlled by direct pressure and elevation, a tourniquet should be applied as close as practical to the injury site. The tourniquet should not be covered. Note on the patient the time of tourniquet application and document in the record.
- If the amputated part is recovered and appears to be reimplantable, consider transport to a hospital with reimplantation capability. If required, contact ATCC for assistance in locating a hospital with reimplantation capabilities. OLMD should be consulted if there is any question concerning the viability of the amputated part of the transport distance.
- Amputations proximal to the wrists or ankles must be entered into the Alabama Trauma System where applicable.
**TREATMENT**

- Control bleeding.
- If bleeding cannot be controlled using direct pressure and elevation, consider using a tourniquet. If the tourniquet does not control the bleeding, consider using a Hemostatic Agent.
- If bleeding is severe, consider Tranexamic Acid.
- Consider IV.
- If shock present, proceed to Shock Protocol (3.31).
- Consider Ketamine, Morphine Sulfate, or Fentanyl for treatment of pain.

**Amputation category:**

- **Stump:** Control bleeding and cover with sterile dressing.
- **Amputated Part:** Wrap in sterile dressing moistened with sterile saline and place in a plastic bag. Place the bag in ice water. Transport the part with the patient if possible.
- **Partial Amputation:** Control bleeding. Saturate wound with sterile saline and cover with dry sterile dressing. Splint in anatomical position.

<table>
<thead>
<tr>
<th>DRUGS/PROCEDURES</th>
<th>EMT:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hemostatic Agent</strong></td>
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<table>
<thead>
<tr>
<th>Advanced:</th>
</tr>
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<tbody>
<tr>
<td>Consider IV.</td>
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</table>

<table>
<thead>
<tr>
<th>Nitrous Oxide: (Cat B)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Pediatric: (Cat B)</th>
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</table>

**Intermediate:**

<table>
<thead>
<tr>
<th>Paramedic:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ketamine:</td>
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<table>
<thead>
<tr>
<th>Pediatric:</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Adult:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2 mg/kg slow IV Push. 25 mg MAX.</td>
</tr>
<tr>
<td>0.5 mg/kg IM. 50 mg MAX.</td>
</tr>
<tr>
<td>Contact OLMD for further dosing.</td>
</tr>
</tbody>
</table>

| Morphine Sulfate: |

<table>
<thead>
<tr>
<th>Adult:</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 mg IV initial dose, titrate to pain relief in 2 mg doses, every 3-5 minutes, 10 mg MAX.</td>
</tr>
<tr>
<td>If pain not relieved after 10 mg, call OLMD for further doses. (Cat B)</td>
</tr>
</tbody>
</table>

| Pediatric: |

| 0.1 mg/kg MAX 5 mg |

| Fentanyl: |

<table>
<thead>
<tr>
<th>Adult:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mcg/kg slow IV push/IM/IN, 50 mcg MAX. May repeat once.</td>
</tr>
<tr>
<td>If pain not relieved after second dose you may call OLMD for further doses. (Cat B)</td>
</tr>
</tbody>
</table>

| Pediatric: |

| 1 mcg/kg slow IV push/IN, 50 mcg MAX |

| Tranexamic Acid: |

<table>
<thead>
<tr>
<th>Adult &gt;18 years old:</th>
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</thead>
<tbody>
<tr>
<td>2 g over 20 mins, MAX 100mg per min.</td>
</tr>
<tr>
<td>Mix 2g in 100 mL (NS, D5W, or LR) and administer by IV flow regulator or pump infusion (300mL/hr) over 20 mins.</td>
</tr>
</tbody>
</table>

**Pediatric: Not Indicated.**
HISTORY AND PHYSICAL EXAM

- Type of bite/sting and description of creature, rabies status of creature.
- Timing, location, size of bite/sting.
- Previous reaction to bite/sting.
- Rash, wound, soft tissue swelling, redness, amount of pain.
- Evidence of allergic reaction such as itching, hives, difficulty breathing, wheezing, hypotension or shock.

KEY POINTS

- **Human bites** have higher infection rates than animal bites due to normal mouth bacteria.
- **Cat bites** may progress to infection rapidly due to specific bacteria in their mouths.
- **Carnivore bites** (such as dogs) have potential for progression to infection and risk of Rabies exposure.
- **Venomous snakes** in this area are generally of the pit viper family: rattlesnake, copperhead, cottonmouth water moccasin. Coral snake bites are rare. The amount of envenomation is variable. It is no longer recommended to use tourniquets or venom extractors to treat snakebites.
- **Black widow spider** bites tend to be minimally painful at first, but over a few hours patients develop severe muscular pain and abdominal rigidity.
- **Brown recluse spider** bites are minimally painful, but progress to tissue necrosis over the course of a few days.
- **Jellyfish** stings can be very painful. Treat by flushing the skin with salty ocean water and carefully removing any visible tentacles with tweezers. Do not use freshwater to flush the skin as this will cause undischarged nematocysts to rupture and release their toxins.
- **Stingray** spine punctures can be extremely painful. Impaled barbs should be left in place for transport. The wound can be immersed in non-scalding hot water to tolerance for 30 minutes which attenuates the heat labile venom of the stingray.
- While identification of the creature is important, remember that safety of the EMSP is more important than killing and/or identifying the creature. Consider taking a photo of the creature to show to the receiving physician if a camera is available to the EMSP.
### TREATMENT
- Control bleeding.
- Consider IV.
- If shock present, proceed to Shock Protocol (3.30).
- If allergic reaction identified, proceed to Allergic Reaction Protocol (3.04).
- Consider Ketamine, Morphine Sulfate, Fentanyl, or Nitrous Oxide for treatment of pain.
- Flush jellyfish stings with salty ocean water; carefully remove visible tentacles with tweezers.
- Stingray stings can be soaked in non-scalding hot water to tolerance, if hot water is available.

### DRUGS/PROCEDURES

| EMT: | 
| Advanced: | Consider IV.  
| Nitrous Oxide: (Cat B) |  
| Pediatric: (Cat B) |  |
| Intermediate: |  |
| Paramedic: |  
| Ketamine: |  
| Adult: |  
| 0.2 mg/kg slow IV Push. 25 mg MAX.  
| 0.5 mg/kg IM. 50 mg MAX.  
| Contact OLMD for further dosing. |  
| Pediatric: |  
| 0.2 mg/kg slow IV Push. 25 mg MAX.  
| 0.5 mg/kg IM. 25 mg MAX.  
| 1 mg/kg IN. 50 mg MAX.  
| Contact OLMD for further dosing. |  
| Morphine Sulfate: |  
| Adult: |  
| 4 mg IV initial dose, titrate to pain relief in 2 mg doses, every 3-5 minutes, 10mg MAX.  
| If pain not relieved after 10 mg, call OLMD for further doses.(Cat B) |  
| Pediatric: |  
| 0.1 mg/kg MAX 5 mg |  
| Fentanyl: |  
| Adult: |  
| 1 mcg/kg slow IV push/IM/IN, 50 mcg MAX. May repeat once.  
| If pain not relieved after second dose you may call OLMD for further doses. (Cat B) |  
| Pediatric: |  
| 1 mcg/kg slow IV push/IN, 50 mcg MAX |  
| Intermediate: |  |

### HISTORY AND PHYSICAL EXAM

- Environmental Hazards - Smoke, toxic chemicals or fumes, potential for explosion, electrical sources, etc.
- Type of exposure - Any information concerning products involved should be collected at the scene if possible. Note if patient was in a closed space and if inhalation of smoke or fumes occurred.
- Duration of exposure. Associated trauma or blast injury.
- History of loss of consciousness.
- Past medical history - especially cardiac or pulmonary disorders.
- Identify severity of burns (superficial- reddened only; partial thickness- blistered areas; full thickness - scarred or leathery areas) and extent of burns (refer to the rule of nines).
- Associated trauma - Burns associated with explosion have great potential for other injuries.
**KEY POINTS**

- Inhalation exposure can cause airway compromise. Note presence of stridor, facial swelling, carbonaceous sputum, singed nasal hair or drooling. Be prepared to support patient or secure the airway if necessary via endotracheal intubation.
- Smoke or chemical exposure can cause bronchospasm. Note presence of wheezing. Carbon monoxide poisoning routinely will cause dyspnea. Pulse oximeter gives false high reading in presence of carbon monoxide poisoning or cyanide poisoning.
- Large burns will cause severe fluid loss. Note tachycardia, signs of volume depletion and hypotension.
- Carbon monoxide will cause cerebral anoxia. Check for headache, confusion, or decreased level of consciousness.
- Scene hazards - electrical wires, chemical fumes, carbon monoxide or fire. Do not attempt rescue in hazardous environment unless trained in this area.
- Unconsciousness - always consider the possibility of occult head or cervical spine injury. Suspect the possibility of carbon monoxide exposure. Pulse oximeter is unreliable if carbon monoxide is present. If unconscious from smoke inhalation consider use of Cyanokit.
- Do not induce hypothermia by applying cold or moist dressing to burned areas as the body loses excessive heat through burned skin.
- Consider the possibility of abuse when certain burns are encountered. These include cigarette burns, iron burns, grill burns, and any burns in the elderly or children where the described mechanism of injury appears to be unlikely.
- Cardiac involvement - consider the potential for myocardial injury, ischemia, and arrhythmia in any patient with electrical or inhalation injury.
- Avoid initiating IVs in burned areas except in extreme circumstances.
- Transport - Do not delay the transport of the seriously burned patient to administer volume boluses of fluid. Fluid loss occurs over the course of hours. Initiate fluids en route if burns are extensive, or the potential for airway compromise exists.
- Patients with the following types of burns need to be treated at a burn specialty center. These patients should be entered into the Alabama Trauma System where applicable:
  a. Partial-thickness burns of >10% Total Body Surface Area (TBSA).
  b. Burns to the face, hands, feet, genitalia, perineum, or major joints.
  c. Third-degree burns.
  d. Electrical burns, including lightning injury.
  e. Chemical burns.
  f. Inhalation injury.
  g. Burns in patients with co-morbid medical conditions.
  h. Burns >15% TBSA with concomitant trauma.
### TREATMENT

- Stop the burning process by removing burning clothing and cooling with adequate available sterile water.
- Brush off dry chemicals if present on skin before flushing with large amounts of water.
- Liquid chemical should be flushed with copious amounts of normal saline.
- Eyes may be irrigated with normal saline.
- Cover affected areas with a dry burn sheet.
- Cardiac monitor for patients with electrical or significant inhalational injury.
- If patient is wheezing, consider *Albuterol*.
- Start large bore IV for all electrical burns, significant chemical exposures, inhalational exposures, any loss of consciousness, potential for other associated trauma, or severe burns.
- *Normal Saline* for burns >20% with at least partial thickness involvement and hospital arrival time will be >20 min.
- If shock present, proceed to Shock Protocol (3.31).
- Consider *Ketamine*, *Morphine Sulfate*, *Fentanyl*, or *Nitrous Oxide* for treatment of pain.
- If known cyanide exposure or if patient is a smoke inhalation victim who shows clinical evidence of closed-space smoke exposure and is either comatose, in shock, or in cardiac arrest, consider *Hydroxocobalamin*.

### DRUGS/PROCEDURES

**EMT:**

- Oxygen 12-15 L/M non-rebreather mask for all significant burns or inhalation injuries.
- Consider Advanced Airway: Blind Insertion Airway Device.

**Advanced:**

- *Albuterol*
  
  2.5 mg (nebulized or inhaler).
  
  **Pediatric:** 2.5 mg (nebulized or inhaler).
  
  Consider IV.

- *Normal Saline*
  
  250-500 cc/hr.
  
  **Pediatric:** 20 cc/kg bolus and reassess

- *Nitrous Oxide*: (Cat B) 🦄
  
  **Pediatric:** (Cat B) 🦄

**Intermediate:**

- Consider Advanced Airway: Endotracheal tube.

- **Pediatric:** Usually not indicated in pediatric patients (Cat B) 🦄
- Cardiac Monitor

**Paramedic:**

- *Ketamine*:
  
  0.2 mg/kg slow IV Push. 25 mg MAX.
  
  0.5 mg/kg IM. 50 mg MAX.
  
  Contact OLMD for further dosing.

- **Pediatric:**
  
  0.2 mg/kg slow IV Push. 25 mg MAX.
  
  0.5 mg/kg IM. 50 mg MAX.
  
  1 mg/kg IN. 50 mg MAX.
  
  Contact OLMD for further dosing.

- *Morphine Sulfate*:
  
  4 mg IV initial dose, titrate to pain relief in 2 mg doses, every 3-5 minutes, 10 mg MAX.
  
  If pain not relieved after 10 mg, call OLMD for further doses. (Cat B) 🦄

- **Pediatric:** 0.1 mg/kg not to exceed 4 mg

- *Fentanyl*:
  
  1 mcg/kg slow IV push/IM/IN, 50 mcg MAX. May repeat once.
  
  If pain not relieved after second dose, you may call OLMD for further doses. (Cat B) 🦄

- **Pediatric:** 1 mcg/kg slow IV push/IN, 50 mcg MAX

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*ADPH OEMS PATIENT CARE PROTOCOLS* 32  EDITION 9.01, JANUARY 2020
RULE OF NINES
When it is necessary to estimate the percentage of Total Body Surface (TBS) burns, such as making the decision to transport directly to a burn center, the rule of nines is useful. In children, relatively more area is taken up by the head and less by the lower extremities. Accordingly, the rule of nines is modified. An accurate description of the burn, including location and severity, should be provided to the receiving facility. The rule of nines is not intended to replace such a description.

<table>
<thead>
<tr>
<th>ADULT Body Part</th>
<th>Percentage of Total Body Surface (TBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm (shoulder to fingertips)</td>
<td>9 %</td>
</tr>
<tr>
<td>Head and neck</td>
<td>9 %</td>
</tr>
<tr>
<td>Leg (groin to toes)</td>
<td>18 %</td>
</tr>
<tr>
<td>Anterior trunk</td>
<td>18 %</td>
</tr>
<tr>
<td>Posterior trunk</td>
<td>18 %</td>
</tr>
<tr>
<td>Perineum</td>
<td>1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHILD Body Part</th>
<th>Percentage of Total Body Surface (TBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm (shoulder to fingertips)</td>
<td>9 %</td>
</tr>
<tr>
<td>Head and neck</td>
<td>18 %</td>
</tr>
<tr>
<td>Leg (groin to toes)</td>
<td>14 %</td>
</tr>
<tr>
<td>Anterior trunk</td>
<td>18 %</td>
</tr>
<tr>
<td>Posterior trunk &amp; Buttocks</td>
<td>18 %</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INFANT Body Part</th>
<th>Percentage of Total Body Surface (TBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm (shoulder to fingertips)</td>
<td>9 %</td>
</tr>
<tr>
<td>Head and neck</td>
<td>14 %</td>
</tr>
<tr>
<td>Leg (groin to toes)</td>
<td>16 %</td>
</tr>
<tr>
<td>Anterior trunk</td>
<td>18 %</td>
</tr>
<tr>
<td>Posterior trunk</td>
<td>18 %</td>
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</tbody>
</table>
Cardiac Arrest (Adult)

### HISTORY AND PHYSICAL EXAM

- Downtime and circumstances, was arrest witnessed? Was bystander CPR performed? Preceding symptoms?
- Patient’s past medical history, medications, allergies.
- Determine level of responsiveness, quality of respiratory effort, presence of pulses.
- Cardiac rhythm analysis.
- Reversible causes of cardiac arrest: Hypovolemia, Hypoxia, Acidosis, Hypokalemia, Hyperkalemia, Hypothermia, Tension Pneumothorax, Cardiac Tamponade, Toxins, Pulmonary Thromboembolism, Acute MI.

### KEY POINTS

- Performance of high quality chest compressions at a rate of 100-120 compressions/minute and 2 inches depth allowing for full chest recoil combined with early defibrillation are the most critical elements of the resuscitation. Consider use of a metronome to ensure proper chest compression rate.
- Once resuscitative efforts are begun, they should be continued until arrival at the receiving hospital or until a joint decision has been made with OLMD that resuscitation should cease.
- Remember to treat the patient and not the monitor. Treatment decisions must be made considering the patient’s condition, not just the rhythm on the monitor.
- Patients with penetrating torso injury and cardiac arrest can sometimes survive. The priority for these patients, as opposed to patients with other etiologies of cardiac arrest, is rapid transport and NOT chest compressions. Chest compressions may still be performed, but should not delay transport. These patients should receive IV fluids according to the Shock protocol (3.31).
- If the patient in cardiac arrest has a venous port or other central venous access device, the EMSP may use it.
- If quantitative waveform capnography <10 mm Hg, attempt to improve CPR quality.
- Consider treatment for opiate overdose per Poisons and Overdoses Protocol (3.27) if opiate overdose is suspected in the cardiac arrest patient.
### Cardiac Arrest (Adult) (continued)

#### Ventricular Fibrillation/Pulseless Ventricular Tachycardia

- **CPR** with minimal interruption to chest compressions.
- Bag-valve-mask ventilation with 100% oxygen. Avoid excessive ventilation.
- Cardiac Monitor or AED.
- Defibrillation. Consider escalating energy settings if first shock is unsuccessful.
- Establish IV/IO Access.
- Provide continuous chest compressions, alternating 2 min cycles of chest compressions with defibrillation and drug therapies.
- **Epinephrine** every 3-5 min.
- **Amiodarone** or **Lidocaine**.
- **Magnesium Sulfate** for torsades de pointes.
- Consider Advanced Airway.
- Treat reversible causes.

**EMT:**
- CPR
- Bag-Valve-Mask Ventilation 30:2 compressions to ventilations rate.
- Advanced Airway: Blind Insertion Airway Device.
- Oxygen
- AED

**Advanced:**
- 8-10 breaths/minute with continuous chest compressions.

**Intermediate:**
- Defibrillation
  - Biphasic: use manufacturers recommended setting
  - Monophasic: 360 J
- Advanced Airway: Endotracheal tube.
- 8-10 breaths/minute with continuous chest compressions.

**Paramedic:**
- **Epinephrine:**
  - 1 mg IV/IO every 3-5 min
- **Amiodarone:**
  - 1<sup>st</sup> dose: 300 mg IV/IO
  - 2<sup>nd</sup> dose: 150 mg IV/IO
- **Lidocaine:**
  - 1<sup>st</sup> dose: 1.5 mg/kg IV/IO
  - 2<sup>nd</sup> dose: 0.75 mg/kg IV/IO
  - MAX 3 mg/kg
- **Magnesium Sulfate:**
  - 2 gm in 250 cc NS IV/IO

*Follow American Heart Association (AHA) Guidelines*
### Asystole/Pulseless Electrical Activity

- **CPR** with minimal interruptions to chest compressions.
- Bag-valve-mask ventilation with 100% oxygen. Avoid excessive ventilation.
- Cardiac Monitor or AED.
- Establish IV/IO Access.
- Provide continuous chest compressions, alternating 2 min cycles of chest compressions with drug therapies.
- **Epinephrine** every 3-5 min.
- Consider Advanced Airway.
- Treat reversible causes.
- Consider **Sodium Bicarbonate** particularly in prolonged cardiac arrest, known cocaine, aspirin, or tricyclic antidepressant toxicity, or renal failure patients who may have hyperkalemia (high potassium).
- Consider **Calcium Chloride** particularly in renal failure patients who may have hyperkalemia (high potassium).

*Follow AHA Guidelines

### Return of Spontaneous Circulation

- Optimize ventilation and oxygenation to keep oxygen saturation >94%.
- Treat hypotension:
  - IV fluid bolus
  - Dopamine infusion
- 12-Lead ECG.
- If patient is not following commands, consider transport to hospital with therapeutic hypothermia capabilities.

*Follow AHA Guidelines

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<table>
<thead>
<tr>
<th>EMT:</th>
<th>CPR</th>
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<tbody>
<tr>
<td>Advanced Airway: Blind Insertion Airway Device.</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Advanced:</strong></th>
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</thead>
<tbody>
<tr>
<td>8-10 breaths/minute with continuous chest compressions.</td>
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</table>

<table>
<thead>
<tr>
<th>Intermediate:</th>
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</thead>
<tbody>
<tr>
<td>Advanced Airway: Endotracheal tube.</td>
</tr>
<tr>
<td>8-10 breaths/minute with continuous chest compressions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Paramedic:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Epinephrine: 1 mg IV/IO every 3-5 min.</td>
</tr>
<tr>
<td>Sodium Bicarbonate: 1 mg/kg IV/IO.</td>
</tr>
<tr>
<td>Calcium Chloride: 1 gm (10 cc of 10% solution) IV/IO.</td>
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</table>

<table>
<thead>
<tr>
<th>EMT:</th>
<th>Oxygen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bag-valve-mask ventilation as needed.</td>
<td></td>
</tr>
<tr>
<td>12 lead ECG</td>
<td></td>
</tr>
<tr>
<td>Advanced Airway: Blind Insertion Airway Device.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Advanced:</strong></th>
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<tbody>
<tr>
<td>8-10 breaths/minute</td>
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<table>
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<tr>
<th><strong>Intermediate:</strong></th>
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<tbody>
<tr>
<td>Advanced Airway: Endotracheal tube.</td>
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<tr>
<td>8-10 breaths/minute.</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Paramedic:</strong></th>
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</thead>
<tbody>
<tr>
<td>Dopamine: 5-20 mcg/kg/min IV/IO</td>
</tr>
</tbody>
</table>
HISTORY AND PHYSICAL EXAM

- Downtime and circumstances; was arrest witnessed?, was bystander CPR performed?, preceding symptoms?
- Patient’s past medical history, medications, allergies.
- Determine level of responsiveness, quality of respiratory effort, presence of pulses.
- Cardiac rhythm analysis.
- Reversible causes of cardiac arrest: Airway Obstruction, Hypovolemia, Hypoxia, Acidosis, Hypokalemia, Hyperkalemia, Hypothermia, Tension Pneumothorax, Cardiac Tamponade, Toxins, Pulmonary Thromboembolism.

KEY POINTS

- Performance of high quality chest compressions at a rate of 100-120 compressions/minute and a depth of 1.5” in infants and 2” in children, allowing for full chest recoil, combined with early defibrillation are the most critical elements of the resuscitation. Consider use of a metronome to ensure proper chest compression rate.
- Pediatric patients rarely require Advanced Airway: Bag-Valve-Mask ventilation is usually sufficient.
- Once resuscitative efforts are begun, they should be continued until arrival at the receiving hospital or until a joint decision has been made with OLMD that resuscitation should cease.
- Remember to treat the patient and not the monitor. Treatment decisions must be made considering the patient’s condition, not just the rhythm on the monitor.
- Patients with penetrating torso injury and cardiac arrest can sometimes survive. The priority for these patients, as opposed to patients with other etiologies of cardiac arrest, is rapid transport and NOT chest compressions. Chest compressions may still be performed, but should not delay transport. These patients should receive IV fluids according to the Shock Protocol (3.31).
- If the patient in cardiac arrest has a venous port or other central venous access device, the EMSP may use it.
- If quantitative waveform capnography <10 mm Hg, attempt to improve CPR quality.
- Consider treatment for opiate overdose per Poisons and Overdoses Protocol (3.27) if opiate overdose is suspected in the cardiac arrest patient.
### Cardiac Arrest (Pediatric) (continued)

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>DRUGS/PROCEDURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ventricular Fibrillation/Pulseless Ventricular Tachycardia</td>
<td></td>
</tr>
<tr>
<td>• CPR with minimal interruption to chest compressions.</td>
<td>EMT:</td>
</tr>
<tr>
<td>• Bag-valve-mask ventilation with 100% oxygen. Avoid excessive ventilation.</td>
<td>CPR</td>
</tr>
<tr>
<td>• Cardiac Monitor or AED.</td>
<td>Bag-Valve-Mask Ventilation 15:2 compressions to ventilations rate for two rescuer CPR, 30:2 for single rescuer.</td>
</tr>
<tr>
<td>• Defibrillation. Consider escalating energy settings if first shock is unsuccessful.</td>
<td>Advanced Airway: Blind Insertion Airway Device.</td>
</tr>
<tr>
<td>• Establish IV/IO Access.</td>
<td>Oxygen</td>
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<tr>
<td>• Provide continuous chest compressions, alternating 2 min cycles of chest compressions with defibrillation and drug therapies.</td>
<td>AED</td>
</tr>
<tr>
<td>• <strong>Epinephrine</strong> every 3-5 min.</td>
<td></td>
</tr>
<tr>
<td>• <strong>Amiodarone</strong> or <strong>Lidocaine</strong>. If amiodarone is given, the dose may be repeated up to 2 times if needed.</td>
<td></td>
</tr>
<tr>
<td>• <strong>Magnesium Sulfate</strong> for torsades de pointes.</td>
<td></td>
</tr>
<tr>
<td>• Consider Advanced Airway.</td>
<td></td>
</tr>
<tr>
<td>• Treat reversible causes.</td>
<td></td>
</tr>
<tr>
<td><em>Follow AHA Guidelines</em></td>
<td></td>
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</table>

**EMT:**
- CPR
- Bag-Valve-Mask Ventilation 15:2 compressions to ventilations rate for two rescuer CPR, 30:2 for single rescuer.
- Advanced Airway: Blind Insertion Airway Device.
- Oxygen
- AED

**Advanced:**
- 8-10 breaths/minute with continuous chest compressions.

**Intermediate:**
- Defibrillation
- **1st shock:** 2J/kg
- **2nd and subsequent shocks:** 4 J/kg
- Advanced Airway: Endotracheal tube.
- 8-10 breaths/minute with continuous chest compressions.
- Usually not indicated in pediatric patients (Cat B)

**Paramedic:**
- **Epinephrine:**
  - 0.01 mg/kg (0.1 cc/kg) 1:10,000 IV/IO every 3-5 min.
- **Amiodarone:**
  - 5 mg/kg IV/IO, MAX dose 300 mg
- **Lidocaine:**
  - 1 mg/kg IV/IO MAX 3 mg/kg
- **Magnesium Sulfate:**
  - 50 mg/kg MAX 2 grams IV/IO over 20 min (Cat B)
### Cardiac Arrest (Pediatric) (continued)

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<thead>
<tr>
<th>TREATMENT</th>
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<tbody>
<tr>
<td><strong>Asystole/Pulseless Electrical Activity</strong></td>
<td></td>
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<tr>
<td>- CPR with minimal interruptions to chest compressions.</td>
<td><strong>EMT:</strong></td>
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<tr>
<td>- Bag-valve-mask ventilation with 100% oxygen. Avoid excessive ventilation.</td>
<td>CPR</td>
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<tr>
<td>- Cardiac Monitor or AED.</td>
<td>Bag-Valve-Mask Ventilation 15:2 compressions to ventilations rate for two rescuer CPR, 30:2 for single rescuer.</td>
</tr>
<tr>
<td>- Provide continuous chest compressions, alternating 2 min cycles of chest compressions with drug therapies.</td>
<td>Oxygen</td>
</tr>
<tr>
<td>- <em>Epinephrine</em> every 3-5 min.</td>
<td>AED</td>
</tr>
<tr>
<td>- Consider Advanced Airway.</td>
<td></td>
</tr>
<tr>
<td>- Treat reversible causes.</td>
<td><strong>Advanced:</strong></td>
</tr>
<tr>
<td>- Consider <em>Sodium Bicarbonate</em> particularly is prolonged cardiac arrest, known cocaine, aspirin, or tricyclic antidepressant toxicity, or renal failure patients who may have hyperkalemia (high potassium).</td>
<td>8-10 breaths/minute with continuous chest compressions.</td>
</tr>
<tr>
<td></td>
<td><strong>Intermediate:</strong></td>
</tr>
<tr>
<td></td>
<td>Advanced Airway: Endotracheal tube.</td>
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<tr>
<td></td>
<td>8-10 breaths/minute with continuous chest compressions.</td>
</tr>
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<td></td>
<td><strong>Usually not indicated in pediatric patients (Cat B)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Paramedic:</strong></td>
</tr>
<tr>
<td></td>
<td><em>Epinephrine</em>: 0.01 mg/kg (0.1 cc/kg) 1:10,000 IV/IO every 3-5 min.</td>
</tr>
<tr>
<td></td>
<td><em>Sodium Bicarbonate</em>: 1 mEq/kg (dilute 50% with Normal Saline)</td>
</tr>
</tbody>
</table>

*Follow AHA Guidelines*
### TREATMENT PROTOCOLS

**Cardiac Arrest (Pediatric) (continued)**

#### 3.10

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>DRUGS/PROCEDURES</th>
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</thead>
<tbody>
<tr>
<td><strong>Return of Spontaneous Circulation</strong></td>
<td></td>
</tr>
<tr>
<td>- Optimize ventilation and oxygenation to keep oxygen saturation &gt;94%.</td>
<td></td>
</tr>
<tr>
<td>- Treat hypotension:</td>
<td></td>
</tr>
<tr>
<td>- IV fluid bolus</td>
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<tr>
<td>- <strong>Dopamine</strong> infusion</td>
<td></td>
</tr>
<tr>
<td>- 12 Lead ECG.</td>
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</tbody>
</table>

*Follow AHA Guidelines*

**EMT:**

**Oxygen**

Advanced Airway: Blind Insertion Airway Device.

Bag-valve-mask ventilation as needed

12 lead ECG

**Advanced:**

8-10 breaths/minute (Cat B) ⚠️

**Normal Saline:** NS 20 cc/kg

**Intermediate:**

Advanced Airway: Endotracheal tube.

8-10 breaths/minute. (Cat B) ⚠️

**Usually not indicated in pediatric patients** (Cat B) ⚠️

**Paramedic:**

**Dopamine:** 5-20 mcg/kg/min IV/IO
### HISTORY AND PHYSICAL EXAM

- Chief Complaint, onset sudden or gradual.
- Related symptoms such as palpitations, dizziness, chest pain, syncope, dyspnea.
- Past medical history and medications.
- Look for evidence of low cardiac output such as altered level of consciousness, presence of shock syndrome, signs of congestive heart failure.

### KEY POINTS

Cardiac dysrhythmias may not require treatment in the field if the patient has no signs of impaired perfusion.

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>DRUGS/PROCEDURES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Oxygen</strong> as needed to maintain pulse oximetry &gt;95%.</td>
<td><strong>EMT:</strong> Oxygen</td>
</tr>
<tr>
<td>Cardiac monitor.</td>
<td><strong>Advanced:</strong> Consider IV</td>
</tr>
</tbody>
</table>
| Consider IV, particularly if vital signs abnormal. | **Intermediate:** Cardiac Monitor 
Synchronized Cardioversion (Cat B) 📣 |
| **Premature Ventricular Complexes (PVC’s)** | **Paramedic:** Lidocaine: (Cat B) 📣 
1<sup>st</sup> dose: 1.5 mg/kg IV/IO 
2<sup>nd</sup> dose: 0.75 mg/kg IV/IO 
MAX 3 mg/kg 
2-4 mg/min maintenance infusion 
Decrease maintenance dose by 50% if patient is in CHF, is >70 yrs old, is in shock, or has liver disease. Atropine: 
1 mg IV/IO, may repeat in 5 minutes 
MAX 3 mg or if heart rate >60 and SBP>90 | 
Dopamine: 
5-20 mcg/kg/min IV/IO External cardiac pacing (Cat B) 📣 
Amiodarone: 
150 mg slow IV over 10 min (Cat B) 📣 Adenosine: (Cat B) 📣 
1<sup>st</sup> dose: 6 mg rapid IV Push 
2<sup>nd</sup> dose: 12 mg rapid IV Push. Cardizem: (Cat B) 📣 
10 mg slow IV Push. 
5-10 mg/hr drip. Titrate pulse 60-100 and BP >100 mmHg. Pediatric: Not indicated. | 
| **Bradycardia** | 
- Atropine for patients with signs of cardiopulmonary compromise (chest pain, pulmonary edema, difficulty breathing, hypotension, altered mental status). 
- Dopamine if atropine is ineffective. 
- Consider External cardiac pacing if the patient is unstable. | 
| **Tachycardia with Pulse** | 
- Wide complex-consider Amiodarone and contact OLMD. 
- Narrow complex, irregular-Contact OLMD 
- Narrow Complex, regular- attempt vagal maneuvers. If unsuccessful, give Adenosine or Cardizem. 
- All hemodynamically unstable tachycardias with a pulse should be treated with Synchronized Cardioversion. Hemodynamically unstable=altered mental status, ongoing chest pain, hypotension, or other signs of shock. Consider sedation-contact OLMD. |
### HISTORY AND PHYSICAL EXAM

- Chief Complaint, onset sudden or gradual.
- Related symptoms such as palpitations, dizziness, chest pain, syncope, dyspnea.
- Past medical history and medications.
- Look for evidence of low cardiac output such as altered level of consciousness, presence of shock syndrome, signs of congestive heart failure.

### KEY POINTS

- Cardiac dysrhythmias may not require treatment in the field if the patient has no signs of impaired perfusion.
- Bradycardia in children is usually due to respiratory causes.
### Cardiac Dysrhythmia (Pediatric) (continued)

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>DRUGS/PROCEDURES</th>
</tr>
</thead>
</table>
| **Oxygen** as needed to maintain pulse oximetry >95%. | EMT: 
*Oxygen* 
Chest Compressions |
| Cardiac monitor. | Advanced:  
Consider IV |
| Consider IV, particularly if vital signs abnormal. | Intermediate:  
Cardiac Monitor 
Synchronized Cardioversion (Cat B)\(\text{^\text{\textregistered}}\) 
0.5-1 J/kg |
| **Bradycardia** | Paramedic:  
*Epinephrine*: 0.01 mg/kg (0.1 cc/kg)  
1:10,000 IV/IO every 3-5 min.  
*Atropine*: 0.02 mg/kg, may repeat x1 in 5 minutes  
Max total dose 1 mg, Minimum dose 0.1 mg.  
External cardiac pacing (Cat B)\(\text{^\textregistered}}\)  
*Amiodarone*: (Cat B)\(\text{^\textregistered}}\)  
*Adenosine*: (Cat B)\(\text{^\textregistered}}\)  
1\(^{\text{st}}\) dose: 0.1 mg/kg rapid IV Push (max 6 mg)  
2\(^{\text{nd}}\) dose: 0.2 mg/kg rapid IV Push (max 12 mg) |
| Chest Compressions if heart rate <60 with poor perfusion in infant or child despite adequate oxygenation and ventilation. | |
| **Epinephrine** if evidence of cardiopulmonary compromise continues. | |
| **Atropine** if evidence of cardiopulmonary compromise continues. | |
| External cardiac pacing if unresponsive to Atropine or if unable to establish IV/IO access (Age 14 and above). | |
| **Tachycardia with Pulse** | |
| Wide complex—consider *Amiodarone*, Contact OLMD. | |
| Narrow complex, irregular—Contact OLMD. | |
| Narrow Complex, regular—attempt vagal maneuvers. If unsuccessful, give *Adenosine*. All hemodynamically unstable tachycardias with a pulse should be treated with Synchronized Cardioversion. Hemodynamically unstable=altered mental status, ongoing chest pain, hypotension, or other signs of shock. Consider sedation—contact OLMD. | |
HISTORY AND PHYSICAL EXAM

- Assess Pain (Onset, Place, Quality, Radiation, Severity, Time began).
- Associated symptoms: nausea, vomiting, diaphoresis, shortness of breath.
- History: cardiac or pulmonary events, medications, syncope.
- Risk Factors: Family history, smoking, obesity, diabetes, hypertension, high cholesterol.
- Vital signs no less than every 10 minutes and after each medication.
- Symmetry of pulses.
- Signs of Congestive Heart Failure such as neck vein distention, peripheral edema, or pulmonary edema.
- Examine abdomen.

KEY POINTS

- **This protocol is for adults. Contact OLMD for chest pain in pediatric patients.**
- Chest wall tenderness does not rule out cardiac ischemia.
- ST segment elevation MI (STEMI) can only be accurately diagnosed by acquiring a 12 lead ECG.
- Have a high index of suspicion for cardiac disease in women, diabetics, and all patients >50 years old who have any symptoms that might be attributed to acute coronary syndrome (e.g. nausea, neck, jaw, or arm pain, chest pain, diaphoresis, syncope).
- 12-Lead ECG should be performed on all patients with chest pain, epigastric discomfort, or suspected acute coronary syndrome before leaving the scene.
- In patients with STEMI, time to reperfusion is critical. The performance of a 12-lead ECG at the scene and its transmittal to the receiving hospital can significantly shorten the time to reperfusing treatment. Minimize scene times after performing and transmitting the 12-lead ECG when possible. Consider transporting patients with STEMI to hospital with available catheterization lab for percutaneous coronary intervention (PCI). If unsure of appropriate destination hospital, contact OLMD.
### Treatment

- **Oxygen** as needed to maintain pulse oximetry >95%.
- Cardiac Monitor and 12 lead ECG, transmit if possible.
- Consider IV, especially if vital signs are abnormal.
- **Nitroglycerin** if SBP>90 mm Hg. May repeat twice at 5 minute intervals.
- **Aspirin** for patients with suspected acute coronary syndrome. Do not give if the patient cannot swallow, has an allergy to aspirin, has current gastrointestinal bleeding, or has already taken 324 mg of aspirin in the last 24 hours.
- Consider **Morphine Sulfate**, **Fentanyl**, or **Ketamine** for treatment of pain. Medications are listed in the preferred order of administration.
- Consider **Nitrous Oxide** if available.

### Drugs/Procedures

<table>
<thead>
<tr>
<th>Treatment</th>
<th>EMT:</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Oxygen</td>
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<tr>
<td></td>
<td>12 lead ECG</td>
</tr>
<tr>
<td></td>
<td>Assist patient with their own <strong>Nitroglycerin</strong></td>
</tr>
<tr>
<td><strong>Aspirin:</strong></td>
<td>324 mg PO (4 chewable baby aspirin)</td>
</tr>
<tr>
<td>Pediatric:</td>
<td><strong>Not Indicated</strong></td>
</tr>
</tbody>
</table>

**Advanced:**

- Consider IV
- **Nitroglycerin:**
  - 0.4 mg if SBP>90, may repeat twice at 5 minute intervals for a total of 3 doses.
  - **Pediatric: Not Indicated**
- **Nitrous Oxide:** (Cat B) 🔄
  - **Pediatric: (Cat B) 🔄**

**Intermediate:**

Cardiac Monitor

**Paramedic:**

- **Morphine Sulfate:**
  - Adult:
    - 4 mg IV initial dose, titrate to pain relief in 2 mg doses, every 3-5 minutes, 10 mg MAX.
    - If pain not relieved after 10 mg, call OLMD for further doses. (Cat B) 🔄
  - **Pediatric:**
    - 0.1 mg/kg not to exceed
    - 4 mg (Cat B) 🔄
- **Fentanyl:**
  - Adult:
    - 1 mcg/kg slow IV push/IM/IN, 50 mcg MAX. May repeat once.
    - If pain not relieved after second dose, you may call OLMD for further doses. (Cat B) 🔄
  - **Pediatric:**
    - 1 mcg/kg slow IV push/IN, 50 mcg MAX
- **Ketamine:**
  - Adult:
    - 0.2 mg/kg slow IV Push. 25 mg MAX.
    - 0.5 mg/kg IM. 50 mg MAX
    - Contact OLMD for further dosing.
  - **Pediatric:**
    - 0.2 mg/kg slow IV Push. 25 mg MAX.
    - 0.5 mg/kg IM. 25 mg MAX.
    - 1 mg/kg IN. 50 mg MAX.
    - Contact OLMD for further dosing.
### HISTORY AND PHYSICAL EXAM

- History of pregnancy: Due date, last menstrual period, is this a known multiple gestation?
- Does the patient feel that she is in labor or about to deliver (e.g. rectal or vaginal pressure)?
- Recent symptoms such as pain or contractions? Timing and regularity? Vaginal bleeding, ruptured membranes, urge to push?
- Medical history: medications, medical problems, age, number of prior pregnancies.
- Vital signs and fetal heart rate if possible.
- Contractions and relaxation of uterus.
- Where privacy is possible, inspect perineum for vaginal bleeding or fluid (note color and presence of meconium), crowning (check during contraction), abnormal presentation (foot, arm, cord, or breech).

### KEY POINTS

- Do not delay transport particularly for patients with previous cesarean section, known imminent multiple births, abnormal presenting parts, excessive bleeding, and premature labor.
- In case of prolapsed umbilical cord, place the mother in Trendelenburg or knee chest position. Elevated presenting body part to relieve pressure on the cord and keep the cord moist with saline gauze if it is exposed. Do not delay transport.
- If thick meconium is present, aggressively suction and consider intubation for neonate. (See Newborn Protocol 3.26).
- If a non-viable premature fetus is delivered and the fetus is available, place the fetus in a clean container and transport to the hospital with the mother. Remember to treat the fetus with the same respect as the EMSP would treat any deceased patient.
**TREATMENT**

- **Oxygen** to maintain pulse oximetry >95%. Consider 15 L/M non-rebreather mask for any abnormal delivery.
- Consider large bore IV, particularly in cases of abnormal delivery or excessive bleeding.
- If shock present, treat using Shock Protocol (3.31).
- If not pushing or bleeding, transport in left lateral recumbent position.

**Normal Delivery:**

- Clean or sterile technique.
- Guide and control delivery.
- Suction mouth (not throat), then nose with bulb syringe after head delivers and before torso delivers.
- Check for cord around the neonate’s neck when head is visible and after suctioning. If possible, remove the cord from around the neck.
- Clamp cord in two places approximately 8-10” from neonate.
- Cut cord between clamps.
- Protect neonate from falls and temperature loss, wrap neonate in clean or sterile blanket.
- Check neonate’s vital signs: if compromised initiate resuscitation. See Newborn Protocol (3.26).
- Give neonate to mother, allow to nurse if mother wishes (aids in contracting uterus).
- If excessive maternal bleeding, massage uterus gently and proceed to Shock Protocol (3.31).
- Transport immediately, do not wait for placenta to delivery.
- If placenta delivers spontaneously, bring to hospital.
- Determine APGAR score at birth and five minutes later.
- Monitor neonate and mother.

**DRUGS/PROCEDURES**

<table>
<thead>
<tr>
<th><strong>EMT:</strong></th>
<th><strong>Oxygen</strong></th>
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<tbody>
<tr>
<td><strong>Advanced:</strong></td>
<td>Consider IV</td>
</tr>
<tr>
<td><strong>Intermediate:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Paramedic:</strong></td>
<td></td>
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</tbody>
</table>
**HISTORY AND PHYSICAL EXAM**

- Past history: Chronic lung or heart problems? Medications or home oxygen?
- Associated symptoms: Chest pain, paresthesias of mouth or hands.
- Vital signs including pulse oximetry. If patient is usually on supplemental oxygen, note their pulse oximetry on their usual amount of oxygen.
- Level of consciousness.
- Cyanosis.
- Signs of congestive heart failure: distended neck veins, pulmonary edema, possible wheezing, possible blood-tinged or frothy sputum, and peripheral edema.

**KEY POINTS**

- Accurate assessment of breath sounds is crucial.
- Use caution when treating congestive heart failure patients with albuterol since a side-effect is tachycardia, which may worsen the congestive heart failure.

**TREATMENT**

- **Oxygen** 12-15 L/M, non-rebreather mask to maintain oxygen saturation >95%.
- Upright sitting position may be more comfortable and effective for the patient.
- Be prepared to assist ventilations with bag-valve-mask.
- Cardiac Monitor and 12-Lead ECG.
- If hemodynamically unstable, treat patient using Shock Protocol (3.31).
- If symmetrical crackles present (pulmonary edema):
  - **Nitroglycerin** if SBP>110 mm Hg.
  - CPAP or BiPAP if patient is awake and oriented and has the ability to maintain an open airway.
  - **Furosemide**.
  - **Morphine Sulfate** (watch for respiratory depression).
- If wheezing is present:
  - **Albuterol**.

**DRUGS/PROCEDURES**

| EMT: Oxygen | Bag-valve-mask ventilations if needed |
| 12 Lead ECG | Assist patient with their own Albuterol inhaler |
| CPAP or BiPAP (age >12 years) |

**Advanced:**

- Start IV
- **Nitroglycerin:**
  - 0.4 mg sublingual if SBP is >110, may repeat twice at 5 min intervals for a total of 3 doses.
- **Pediatric: Not Indicated**

- **Albuterol**
  - 2.5 mg (nebulized or inhaler)
  - **Pediatric: 2.5 mg (nebulized or inhaler)**

**Intermediate:**

- Cardiac Monitor

**Paramedic:**

- **Furosemide:**
  - 40 mg IV (Cat B)
  - **Pediatric: Call OLMD (Cat B)**

- **Morphine Sulfate:**
  - 2-4 mg IV slowly (Cat B)
  - **Pediatric: Not indicated**
HISTORY AND PHYSICAL EXAM

- What was the patient doing that required use of the TASER®?
- Past History: Illicit drug use types and frequency. Medical problems and medications? Psychotropic or behavioral drugs. Previous psychiatric disorders?
- If the device uses a barb (TASER®), are the barbs (2) still penetrating the skin?
- Are the barbs in a sensitive area such as the eye, eyelid, ear, nose, neck, female breast, or genitalia?
- Are the wires still attached to the barbs? Do not touch the barbs or wires. Do not step on the wires. The EMSP may safely touch the patient while the barbs and wires are attached.
- Take vital signs if safe and possible (patient cooperative). Note pupil size, symmetry, and reactivity.
- Mental status. Document status each time vital signs are taken.
- Characteristic odor on breath?
- Medical alert tag?

KEY POINTS

- Law enforcement may request EMSPs to evaluate a patient who was the target of an electromuscular incapacitation device. The important issue is not removal of barbs but rather what caused the patient to be so combative that he/she had to be restrained using an electromuscular incapacitation device. Deaths have been recorded after use of these devices, however, it has always been due to the underlying cause of the combative behavior (psychosis, drugs, hypoglycemia, brain tumor, etc.).
- Patients with normal vital signs who have returned to a normal mental status do not require transportation to the hospital unless physician assistance is required for barb removal or some other reason is present mandating hospital transport. If there is any doubt about whether or not transport is required, contact OLMD.
If vital signs are abnormal, apply cardiac monitor and obtain 12 lead ECG.
Consider IV if vital signs are abnormal.
If patient exhibits Altered Mental Status, treat using Altered Mental Status protocol (3.05).
Consider patient restraint if necessary. If the patient is under arrest, law enforcement should accompany the patient to the hospital.

**Removal of barbs:**
- Treat barbs as contaminated needles.
- Confirm that the TASER has been shut off and that the wires have been removed from the barbs.
- Remove one barb at a time.
- Grab barb firmly and pull straight out in a quick motion, using two fingers of the EMSP’s free hand on either side of the barb as a brace.
- Clean the area with betadine or alcohol and apply a dressing.
- Dispose of the barb in a sharps container or, if requested, give to law enforcement personnel.
- Barbs in the eye, eyelid, ear, nose, neck, female breast, or genitalia should be transported to the hospital for physician removal.

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>DRUGS/PROCEDURES</th>
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**EMT:**
- 12 Lead ECG

**Advanced:**
- Consider IV

**Intermediate:**
- Cardiac Monitor

**Paramedic:**
## HISTORY AND PHYSICAL EXAM

- History of trauma and mechanism of injury.
- Localized Tenderness, Instability, and Crepitation.
- Pulses, Motor Function, and Sensation.
- Obvious deformity, angulation, deep lacerations, and exposed bone fragments.

## KEY POINTS

- Fractures do not necessarily lead to deformity or loss of function, e.g., impacted fractures may cause pain but little or no deformity or loss of function.
- Extremity injuries benefit from appropriate care, but are of low priority in a patient with multiple injuries.
- Patients with fractures of two or more proximal long bones or pelvic fractures should be entered into the Alabama Trauma System where applicable.
Fractures and Dislocations (continued)

### TREATMENT

- **Oxygen** as needed to maintain oxygen saturation >95%.
- If vitals are stable, consider large bore IV.
- If vitals are unstable, proceed to Shock Protocol (3.31).
- Consider spinal motion restriction.
- Examine for additional injuries. Treat higher priority injuries first.
- If a high index of suspicion of pelvic or femur fractures, start large bore IV with normal saline. Monitor closely for signs of shock.
- Apply sterile dressings to open fractures.
- Splint and apply axial traction as needed.
- Elevate simple fractures. Apply ice or cold packs if time and extent of other injuries allow.
- Transport as necessary. Monitor circulation (pulse and skin temperature), neurological, and motor function in affected extremity.
- If the patient has severe incapacitating pain, consider analgesia:
  - **Ketamine**
  - **Morphine Sulfate**.
  - **Fentanyl**.
  - **Nitrous Oxide**.

### DRUGS/PROCEDURES

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<tr>
<td><em>Nitrous Oxide:</em></td>
<td>(Cat B) 📣</td>
</tr>
<tr>
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</tr>
<tr>
<td><strong>Intermediate:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Paramedic:</strong></td>
<td><strong>Ketamine:</strong></td>
</tr>
<tr>
<td>Adult:</td>
<td>0.2 mg/kg slow IV Push. 25 mg MAX.</td>
</tr>
<tr>
<td></td>
<td>0.5 mg/kg IM. 50 mg MAX</td>
</tr>
<tr>
<td></td>
<td>Contact OLMD for further dosing.</td>
</tr>
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<td></td>
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<td>Adult:</td>
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<td>4 mg IV initial dose, titrate to pain relief in 2 mg doses, every 3-5 minutes, 10 mg MAX.</td>
</tr>
<tr>
<td></td>
<td>If pain not relieved after 10 mg, call OLMD for further doses. (Cat B) 📣</td>
</tr>
<tr>
<td><strong>Pediatric:</strong></td>
<td><strong>0.1 mg/kg not to exceed 4 mg</strong></td>
</tr>
<tr>
<td><strong>Fentanyl:</strong></td>
<td>Adult:</td>
</tr>
<tr>
<td></td>
<td>1 mcg/kg slow IV push/IM/IN, 50 mcg MAX. May repeat once.</td>
</tr>
<tr>
<td></td>
<td>If pain not relieved after second dose you may call OLMD for further doses. (Cat B) 📣</td>
</tr>
<tr>
<td><strong>Pediatric:</strong></td>
<td><strong>1 mcg/kg slow IV push/IN, 50 mcg MAX</strong></td>
</tr>
</tbody>
</table>
## HISTORY AND PHYSICAL EXAM

- **History:**  Mechanism of injury, Level of Consciousness changes.
- **Past medical history.**
- **Protective devices:** helmet or seat belts.
- **Evaluate airway patency, breathing capability, and gross injuries to extremities and trunk.**
- **Document Glasgow Coma Scale** (Document all 3 component scores, as well as the total: Eyes, Verbal, and Motor).
- **Pupil position and response to light stimulation.**
- **External evidence of head trauma,** (e.g. bleeding from ears, CSF draining from the head or mouth, scalp lacerations).

## KEY POINTS

- **Notify OLMD of changes in the patient’s GCS score in relation to time intervals.**
- **Always consider cervical spine injury in patients with head trauma.**
- **Head injury does not cause shock in adults.** If shock is present in an adult patient with head trauma, consider that there is probably another cause of shock.
- **Head injury can cause shock in infants.**
- **Other causes of alteration of level of consciousness should be ruled out.**
- **Hypoventilation can cause cerebral edema.** Maintain rate of 8 breaths per minute or, if using capnography, maintain CO2 35-45.
- **Call OLMD if signs of cerebral herniation (extensor posturing, dilated or nonreactive pupils, or decrease in GCS of >2 if the initial was <9) Hyperventilation (rate 20 bpm) is (Cat B) 🧑‍⚕️.**
- **Head injury in itself is not a contraindication to air medical transport.**
- **Patients with Head Injury and GCS <13 or prolonged loss of consciousness should be entered into the Alabama Trauma System where applicable.**
### TREATMENT

- Maintain neutral alignment of cervical spine.
- Oxygen 12-15 L/M, by non-rebreather mask to keep oxygen saturation >95%. Support ventilations with Bag-valve-mask if necessary.
- If GCS <9 or if the transport time is long and oxygen saturation is not maintained at >95% with other methods, use an Advanced Airway to provide ventilatory support (at a rate of 8 bpm).
- Do not hypo or hyper-ventilate the patient. Maintain oxygen saturation >95% and ETCO2 35-45.
- Control external bleeding by direct pressure unless there is suspicion of skull fracture.
- Start IV.
- Cardiac monitor.
- If shock syndrome present, proceed to Shock Protocol (3.31).
- Maintain a normal Blood Pressure.
- Use Glucometer and treat hypoglycemia Using Hypoglycemia Protocol (3.21).
- Monitor for changes in the patient’s level of consciousness and vital signs.

### DRUGS/PROCEDURES

**EMT:**
- *Oxygen*
  - Consider Advanced Airway: Blind Insertion Airway Bag-valve-mask ventilation as needed
  - Glucometer

**Advanced:**
- Device 8 breaths/min

**Intermediate:**
- Consider Advanced Airway: Endotracheal Intubation 8 breaths/min

**Usually not indicated in pediatric patients (Cat B)**

**Paramedic:**
- Cardiac Monitor
**Hemodialysis Emergency Disconnect**

### HISTORY AND PHYSICAL EXAM

- Some patients are now doing UNATTENDED (i.e. solo) home hemodialysis. In the event you respond to a scene where such a patient is unable to disconnect themselves from the machine, and no else is available who knows how to do so, follow this procedure to disconnect the patient from the machine for transport.

### KEY POINTS

- If time and patient condition permit, ALS backup should be called for BLS crews.
- IF you are trained in using HD shunt clamps, and such clamps are available, it is acceptable to remove the HD needles from the patient’s shunt and apply clamps. If not, this procedure should be followed, leaving the needles in situ as described above and below.
- The dialysis machine will be left at the home.
- If you can, note (or photograph) any clinically relevant values on the machine’s readouts (such as liters removed).
- For a patient with an AV shunt, the result of this procedure is that the patient still has the dialysis needles in their AV fistula, ATTACHED to CLAMPED tubing, which is wrapped with gauze to keep the needles and tubing next to the patient’s arm (unless HD shunt clamps are used).

### TREATMENT

**Procedure:**

- Push the **STOP** button on the front of the machine and unplug the machine’s power cord.
- Identify and close the 4 clamps on the tubing. If clamps are not on the tubing, use Kelly clamps or plastic clamps (which will usually be on or near the dialysis machine) to clamp off the 2 tubes both above and below the Luer lock disconnects.

### DRUGS/PROCEDURES

**EMT:**

**Advanced:**

**Intermediate:**

**Paramedic:**
The disconnects are in the center of the pictures below.

- If you are trained to do so, and you have sterile caps or sterile syringes, or they are on or near the dialysis machine, then swab each disconnect end-connector with alcohol and attach the cap or syringe.

- You will now have two needle-tubing pieces still inserted into the patient’s fistula. GENTLY tape the tubing to the patient’s arm, then LOOSELY wrap gauze around the arm. DO NOT apply a pressure dressing.

If you accidentally pull a needle out of the fistula, you will have to apply firm manual pressure (again, NOT a pressure dressing) to that bleeding point for approximately 20 minutes. Be prepared to call for additional resources if needed.
Hypertensive Emergencies

HISTORY AND PHYSICAL EXAM

- History of hypertension or other medical problems.
- Medication use or drug ingestion.
- Signs or symptoms of end organ damage such as headache, blurred vision, focal neurologic deficit, chest pain, congestive heart failure.

KEY POINTS

- Hypertensive emergency is only treated if signs and symptoms of end organ damage are present and DBP>115.
- Patients who appear to be having a stroke (focal neurological signs) usually do not have their BP treated unless the Systolic BP is >220 mm Hg or the Diastolic BP is >120 mm Hg.

TREATMENT

- Monitor airway for patency.
- Consider IV.
- Closely monitor patient for changes in vital signs.
- Consider Labetalol.

DRUGS/PROCEDURES

<table>
<thead>
<tr>
<th>EMT:</th>
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<tbody>
<tr>
<td>Advanced:</td>
</tr>
<tr>
<td>Consider IV</td>
</tr>
<tr>
<td>Intermediate:</td>
</tr>
<tr>
<td>Cardiac Monitor</td>
</tr>
<tr>
<td>Paramedic:</td>
</tr>
<tr>
<td>Labetalol:</td>
</tr>
<tr>
<td>20 mg slow IV Push (over 2 minutes).</td>
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<tr>
<td>Pediatric: Not Indicated.</td>
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<tr>
<td>Nicardipine:</td>
</tr>
<tr>
<td>5 mg/hr by slow IV infusion (50 mL/hr) initially.</td>
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<tr>
<td>Increasing by 2.5 mg/hr every 5 minutes to a maximum of 15 mg/hr.</td>
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<tr>
<td>Once the target BP is achieved, downward adjustment by 3 mg/hr should be attempted as tolerated. (Cat B)</td>
</tr>
<tr>
<td>Pediatric: Not Indicated.</td>
</tr>
</tbody>
</table>
**HISTORY AND PHYSICAL EXAM**

- Sudden collapse or gradual development?
- Exercise induced?
- Previous history of hyperthermia?
- Environmental conditions?
- Vital signs: Oral temperature (if available) of 106 degrees (41 degrees C) or greater. If available, rectal temperature may be obtained.
- Skin temperature, presence or absence of sweat. As hyperthermia progresses, the skin becomes hot and dry which indicates a failure of the normal sweat cooling mechanism.

**KEY POINTS**

- Heat stroke is a medical emergency. Heat stroke is hyperthermia with altered mental status. Heat stroke is more serious than simple heat cramps or heat exhaustion (hypovolemia related to gradual fluid loss). Be aware that heat exhaustion can progress to heat stroke.
- Suspect hyperthermia in patients with acute psychosis or seizures on a hot, humid day.
- Wet sheets wrapped over a patient without good air flow will tend to increase temperature and should be avoided.
- Definitive cooling may require an ice water bath. Cool patient if possible while en route.
- If a physician with expertise in hyperthermia management is on scene, contact OLMD to relinquish control.
- If ice water bath equipment or iced towels are immediately available, patient is to be immersed until their core temperature returns to normal.

**TREATMENT**

- Oxygen to maintain pulse oximetry >95%.
- Establish large bore IV access.
- *Normal Saline* bolus.
- Cardiac monitor.
- Cool patient by appropriate interventions. Call OLMD for guidance.
- If patient is actively seizing treat using Seizure Protocol (3.30).

**DRUGS/PROCEDURES**

<table>
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<th>EMT: Oxygen</th>
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<tbody>
<tr>
<td>Advanced: Consider IV Access</td>
</tr>
<tr>
<td><em>Normal Saline</em>: 500 cc IV bolus</td>
</tr>
<tr>
<td>Pediatric: 20 cc/kg IV bolus IV</td>
</tr>
<tr>
<td>Intermediate: Cardiac Monitor</td>
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<tr>
<td>Paramedic:</td>
</tr>
</tbody>
</table>
### HISTORY AND PHYSICAL EXAM

- Onset of symptoms sudden or gradual? When was patient last well?
- Recent stress either emotional or physical, last meal, or other oral intake.
- History of Diabetes Mellitus, medical alert tag.
- Medication history, including insulin (time/amount), and oral hypoglycemic agents.
- Rate and quality of respiration, odor on breath.
- Mental status.
- Skin color, temperature, and hydration.
- Signs of adrenaline effect: diaphoresis, tachycardia, tremor, and/or seizures.

### KEY POINTS

- The diabetic will frequently know what is needed - listen to the patient, but remember hypoglycemia is often associated with mental confusion.
- Hypoglycemia can present as seizures, coma, altered mental status, or stroke-like symptoms with focal neurologic deficits (particularly in elderly patients).
- Patients who are elderly or who have been hypoglycemic for prolonged periods of time may be slower to awaken once hypoglycemia has been treated.
- Hypoglycemia is not an indication for use of IO access except in extreme circumstances. All such uses of IO will be reviewed by the OEMS.

### TREATMENT

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<td>Glucometer</td>
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<tr>
<td>Oral Glucose Paste</td>
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<tr>
<td><strong>Advanced:</strong></td>
</tr>
<tr>
<td>Consider IV access</td>
</tr>
<tr>
<td><strong>Dextrose:</strong></td>
</tr>
<tr>
<td>Different concentations of dextrose may be used when approved by the service medical director.</td>
</tr>
<tr>
<td>25 gm Dextrose IV</td>
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<tr>
<td><strong>Pediatric:</strong></td>
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<tr>
<td>4 cc/kg D25W IV</td>
</tr>
<tr>
<td><strong>Thiamine:</strong></td>
</tr>
<tr>
<td>100 mg IV/IM</td>
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<tr>
<td><strong>Pediatric: Not Indicated</strong></td>
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<tr>
<td><strong>Glucagon:</strong></td>
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<tr>
<td>1 mg IM (Cat B)</td>
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<tr>
<td><strong>Pediatric:</strong></td>
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<td>0.5 mg IM, MAX 1 mg (Cat B)</td>
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HISTORY AND PHYSICAL EXAM

- Length of exposure.
- Environmental conditions.
- Observe for respiratory effort, pulses.
- Assess cardiac rhythm.
- Determine level of consciousness by verbal and motor responsiveness.

**Mild to Moderate Hypothermia (90°-95° F)**
Core body temperature (if available) is less than 95° F but greater than 90° F. Patient may present with a history of exposure to cold, altered mental status, shivering, stiffness of muscles, stumbling or staggering gait, cool or cold skin, or mottled/pale skin.

**Severe Hypothermia (less than 90° F)**
Core body temperature (if available) is less than 90° F. Patient may present with any of the above symptoms listed above except shivering, and they may also present with absent or difficult to detect respiratory effort, and/or peripheral pulses, respiratory and/or cardiac arrest.

**KEY POINTS**

- Handle patient gently - do not jostle.
- Do not force oral intubation.
- Do not intubate by nasotracheal route.
- Do chest compressions only if chest is compressible and patient has a disorganized rhythm.
- If terrain is difficult, evacuate patient first and treat second.

In cases of severe hypothermia, there is some evidence to suggest that metabolism of antiarrhythmic drugs is slowed, which could lead to accumulation of drugs to toxic levels. Therefore, it is recommended that in these cases, OLMD be consulted for advice prior to administration of antiarrhythmic drugs.
### TREATMENT

#### Mild to Moderate Hypothermia
- Cardiac Monitor.
- Consider large bore IV, large bore, with *Normal Saline* (warmed if possible).
- Glucometer.
- Treat hypoglycemia using Hypoglycemia Protocol (3.21)
- Remove wet garments.
- Protect against heat loss and wind chill.
- Maintain horizontal position.
- Avoid rough movement and excess activity.
- Add heat to patient’s head, neck, chest, and groin.
- Heat environment as much as possible.
- If patient has normal mental status, the EMSP may give warm fluids to drink.

#### Severe Hypothermia
Treat as Mild to Moderate Hypothermia except:
- Support airway and breathing as needed. Consider Bag-valve-mask ventilation if ventilations are inadequate. Consider Advanced Airway if patient is apneic.
- If patient is in cardiac arrest, treat using Cardiac Arrest, Adult Protocol (3.09) or Cardiac Arrest, Pediatric Protocol (3.10) as applicable due to patient’s age. Contact OLMD prior to giving any medications.
- Start IV, large bore, with *Normal Saline* (warmed if possible).
- Give nothing by mouth.

### DRUGS/PROCEDURES

<table>
<thead>
<tr>
<th>EMT:</th>
</tr>
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<tbody>
<tr>
<td><strong>Oxygen</strong></td>
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</table>
| Consider Advanced Airway:  
  - Blind Insertion Airway Device 8 breaths/min  
  - Bag-valve-mask ventilation as needed |
| Glucometer |

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<thead>
<tr>
<th>Advanced:</th>
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<tbody>
<tr>
<td><strong>Normal Saline:</strong></td>
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<tr>
<td>75 cc/hour</td>
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<tr>
<td><strong>Pediatric:</strong> consult OLMD</td>
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<table>
<thead>
<tr>
<th>Intermediate:</th>
</tr>
</thead>
</table>
| Consider Advanced Airway:  
  - Endotracheal Intubation 8 breaths/min  
  - **Pediatric:** Usually not indicated in pediatric patients (Cat B) |
| Cardiac Monitor |

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<tr>
<th>Paramedic:</th>
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</table>
Influenza/ Respiratory Illness

### HISTORY AND PHYSICAL EXAM

<table>
<thead>
<tr>
<th>Signs and Symptoms of Influenza</th>
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<tbody>
<tr>
<td>• Rapid onset of symptoms</td>
<td>• Difficulty breathing with exertion</td>
</tr>
<tr>
<td>• Doctor has already diagnosed influenza</td>
<td>• Cough</td>
</tr>
<tr>
<td>• Fever</td>
<td>• Shaking chills</td>
</tr>
<tr>
<td>• Pleuritic chest pain</td>
<td>• Sore throat (no difficulty breathing or swallowing)</td>
</tr>
<tr>
<td>• Nasal congestion</td>
<td>• Runny nose</td>
</tr>
<tr>
<td>• Muscle aches</td>
<td>• Headache</td>
</tr>
</tbody>
</table>

### KEY POINTS

- All EMS personnel engaged in aerosol generating activities (e.g. endotracheal intubation, bag-mask ventilation, nebulizer treatment, or CPAP or BiPAP [use expiratory filter]) should wear the PPE as described in this treatment protocol.
- When transporting a patient with symptoms of acute febrile respiratory illness, notify the receiving healthcare facility so that appropriate infection control precautions may be taken prior to patient arrival.
- Any nonessential equipment that can be removed from the patient compartment of the ambulance before transport will hasten the time needed to disinfect and return to service.
- After the patient has been removed and prior to cleaning, the air within the vehicle may be exhausted by opening the doors and windows of the vehicle while the ventilation system is running. This should be done outdoors and away from pedestrian traffic.
- Routine cleaning methods should be employed throughout the vehicle and on non-disposable equipment. Routine cleaning with soap or detergent and water to remove soil and organic matter, followed by the proper use of disinfectants, are the basic components of effective environmental management of influenza. Reducing the number of influenza virus particles on a surface through these steps can reduce the chance of hand transfer of virus particles. Influenza viruses are susceptible to inactivation by a number of chemical disinfectants readily available from consumer and commercial sources.
### TREATMENT

- Treat using General Patient Care Protocol (3.01).
- Use appropriate standard infectious precautions.
- Appropriate PPE for suspected cases of influenza includes disposable N-95 mask, eye protection, and disposable non-sterile gloves. Disposable non-sterile gown is optional depending on the situation (follow guidance of service medical director).
- If dispatch advises the EMSP of the potential for acute febrile respiratory illness symptoms on scene, do PPE for suspected cases of influenza prior to entering scene.
- If the EMSP encounters individuals with symptoms of acute febrile respiratory illness prior to donning PPE, stay more than six (6) feet away from individuals with symptoms and exercise appropriate routine respiratory droplet precautions. If patient has signs or symptoms of influenza or acute febrile respiratory illness, do the PPE described above before coming into close contact with them.
- All patients with acute febrile respiratory illness should wear a surgical mask, if tolerated by the patient.
- Encourage good patient compartment vehicle airflow/ventilation (turn on exhaust fan) to reduce the concentration of aerosol accumulation when possible.

### DRUGS/PROCEDURES

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<table>
<thead>
<tr>
<th>Advanced:</th>
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<table>
<thead>
<tr>
<th>Intermediate:</th>
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<table>
<thead>
<tr>
<th>Paramedic:</th>
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</table>
### HISTORY AND PHYSICAL EXAM

- Symptom onset.
- Associated symptoms, such as abdominal pain, diarrhea, and headache.
- If vomiting, is there any blood or coffee-ground like material in the vomitus.
- History of ingestion of potential poison or spoiled food.
- If female of child-bearing age, is the patient pregnant?
- History of recent head injury.
- Signs of dehydration (poor skin turgor, dry mucous membranes).
- Jaundice.
- Evidence of head trauma.
- Abdominal tenderness, guarding, rigidity, bowel sounds, and distention.
- Neurologic exam: level of consciousness, pupils, and focal findings.

### KEY POINTS

- Ondansetron may be used in cases of nausea to prevent vomiting.
- Ondansetron may be used to prevent nausea when administering morphine or fentanyl, especially if there is a history of nausea after receiving narcotics.

### TREATMENT

- Consider IV.
- If patient has signs or symptoms of dehydration, consider Normal Saline bolus.
- Ondansetron.

### DRUGS/PROCEDURES

<table>
<thead>
<tr>
<th>EMT:</th>
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<tbody>
<tr>
<td><strong>Advanced:</strong></td>
</tr>
<tr>
<td>Consider IV</td>
</tr>
<tr>
<td><strong>Normal Saline:</strong></td>
</tr>
<tr>
<td>500 cc IV bolus</td>
</tr>
<tr>
<td><strong>Pediatric:</strong> 20 cc/kg IV bolus</td>
</tr>
<tr>
<td><strong>Diphenhydramine:</strong></td>
</tr>
<tr>
<td>25-50 mg IV/IM</td>
</tr>
<tr>
<td><strong>Pediatric:</strong> 1 mg/kg IV/IM</td>
</tr>
<tr>
<td><strong>MAX 50 mg</strong></td>
</tr>
<tr>
<td><strong>Ondansetron:</strong></td>
</tr>
<tr>
<td>4 mg IV/IM or ODT</td>
</tr>
<tr>
<td><strong>Pediatric (1 month to 12 years):</strong></td>
</tr>
<tr>
<td>0.1 mg/kg IV/IM OR ODT</td>
</tr>
<tr>
<td><strong>MAX dose 4 mg</strong></td>
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</tbody>
</table>

| Intermediate: |

| Paramedic: |
Near Drowning

**HISTORY AND PHYSICAL EXAM**
- Length of submersion.
- Approximate temperature of water.
- Associated trauma.
- History of scuba diving.
- Resuscitation history, if applicable: time of arrest, bystander CPR, other interventions.
- Neurologic status.
- Respiratory distress.

**KEY POINTS**
- If patient is still in water, rescue by trained, equipped personnel only.
- Near drowning patients are likely to vomit, use caution and protect the airway.
- All near drowning patients should be transported. Patients may appear well initially, but rapid deterioration can occur. Monitor closely for pulmonary edema.
- Consider that patient may be hypothermic.
- It is a common error to underestimate injuries in near-drowning from diving, jumping, MVC, etc.

**TREATMENT**
- If chance of spinal injury, stabilize cervical spine immediately.
- Clear upper airway and consider intubation (vomiting precautions).
- Oxygen 15 L/M, by non-rebreather mask to maintain oxygen saturation >95%, assist with Bag-valve-mask and suction as necessary.
- Consider CPAP or Advanced Airway.
- Attach cardiac monitor, perform 12-Lead ECG.
- Consider IV access.
- Glucometer.
- Treat hypoglycemia using Hypoglycemia Protocol (3.21).
- Monitor for hypothermia.

**DRUGS/PROCEDURES**

**EMT:**
- **Oxygen**
  - Bag-valve-mask ventilation as needed
  - Consider Advanced Airway: Blind Insertion Airway Device 8 breaths/min
- 12 lead ECG
- Glucometer
- Consider CPAP

**Advanced:**
- Consider IV access

**Intermediate:**
- Cardiac Monitor
- Consider Advanced Airway:
  - Endotracheal Intubation 8 breaths/min

**Pediatric:**
- Usually not indicated in pediatric patients (Cat B)

**Paramedic:**
HISTORY AND PHYSICAL EXAM

- If neonate is not delivered prior to arrival at the scene, follow Childbirth Protocol (3.14).
- Note pregnancy history, due dates, prenatal care, and maternal medical history.
- Note meconium staining of amniotic fluid at birth. If meconium stain present at birth, suction the neonate’s mouth, then nose until clear (consider intubation to allow deep suctioning).
- Note heart rate, respiratory effort, muscle tone, irritability, and color.

KEY POINTS

- If delivery has taken place and a transport unit has arrived, transport and treat en route. Do not wait for or attempt to deliver the placenta. If placenta delivers spontaneously, bring it to the hospital.
- Do not pull on umbilical cord.
- Prevention of heat loss in the neonate is vitally important. Bundle the neonate, keep the head covered, and keep near the mother, if possible, to prevent heat loss.

<table>
<thead>
<tr>
<th>APGAR SCORING</th>
<th>0 POINTS</th>
<th>1 POINT</th>
<th>2 POINTS</th>
<th>SCORES</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEART RATE</td>
<td>ABSENT</td>
<td>&lt;100 BPM</td>
<td>&gt;100 BPM</td>
<td></td>
</tr>
<tr>
<td>RESPIRATORY EFFORT</td>
<td>ABSENT</td>
<td>WEAK CRY</td>
<td>STRONG CRY</td>
<td></td>
</tr>
<tr>
<td>MUSCLE TONE</td>
<td>FLACCID</td>
<td>SOME FLEXION</td>
<td>ACTIVE MOTION</td>
<td></td>
</tr>
<tr>
<td>REFLEX IRRITABILITY</td>
<td>NO RESPONSE</td>
<td>GRIMACE</td>
<td>VIGOROUS CRY</td>
<td></td>
</tr>
<tr>
<td>COLOR</td>
<td>BLUE, PALE</td>
<td>BODY PINK, EXTREMITIES BLUE</td>
<td>BODY PINK, EXTREMITIES PINK</td>
<td>TOTAL APGAR:</td>
</tr>
</tbody>
</table>
### Newborn (continued)

#### TREATMENT

- **Airway** - ensure patency, suction the neonate’s mouth then nose with bulb syringe.
- **Clamp and cut the cord** as noted in the Childbirth Protocol (3.14).
- **Perform tactile stimulation by drying** the neonate and wrapping in clean or sterile blanket.
- **Assess infant’s breathing and heart rate.**
  - Bag-valve-mask ventilation with 100% oxygen at a rate of 30 breaths/minute if infant is gasping or apneic or if heart rate <100/minute.
  - Chest compressions at a rate of 90/minute if heart rate <60.
  - Consider endotracheal intubation.
- **Complete two patient care records** (one for mother and one for neonate) and be sure to record time of delivery.
- **Repeat APGAR score** at birth and at 1 and 5 minutes.

*Follow AHA Guidelines*

#### DRUGS/PROCEDURES

<table>
<thead>
<tr>
<th>EMT:</th>
<th>Bag-valve-mask ventilation 30/min</th>
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<tbody>
<tr>
<td></td>
<td>Chest Compressions 90/min</td>
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</tbody>
</table>

**Advanced:**

**Intermediate:**

**Advanced Airway:** Endotracheal tube. (Cat B) 🦖

**Paramedic:**
### HISTORY AND PHYSICAL EXAM

- Scene safety: Do not enter an area that is possibly contaminated with a hazardous material unless properly protected. Do not enter scene if physical danger is present. Wait for police and/or hazardous materials units to clear or secure a dangerous scene.
- Type of ingestion: What, when and how much was ingested? Bring the poison, the container, and everything questionable in the area with the patient to the ED. Look for multiple patients with same signs and symptoms.
- Reason for ingestion: Screen for child neglect, and/or suicidal problem.
- Past history: Medications, diseases, psychiatric history, and/or drug abuse.
- Action taken by bystanders: Induced emesis, “antidote” given.
- Level of consciousness.
- Breath odor.
- Neurologic status, papillary findings.
- Vomitus.
- Needle marks or tracks.
- SLUDGES (Salivation, Lacrimation, Urination, Defecation, Gastric Emesis, and Sweating). These symptoms are consistent with cholinergic poisoning.

### KEY POINTS

- Inhalation poisoning is particularly dangerous to rescuers. Recognize an environment with continuing contamination and extricate rapidly by properly trained and equipped personnel.
- Do not induce vomiting.
- Do not try to neutralize acids with strong alkalis. Do not try to neutralize alkalis with acids.
- OLMD is encouraged to involve Poison Control Center when needed.

### TREATMENT

**EXTERNAL / INHALATION POISONING**
- Follow local Hazardous Material Protocol.
- Protect medical personnel.
- Remove the patient from contaminated area or remove contaminant from the patient.
- Remove contaminated clothing.
- Flush contaminated skin and eyes with copious amounts of water.
- Oxygen to maintain pulse oximetry >95%. If suspicion of Carbon Monoxide poisoning, remember pulse oximetry is unreliable.
- Cardiac Monitor.
- Consider IV Access.
- If cholinergic or organophosphate poisoning, administer **Atropine**.

**DRUGS/PROCEDURES**

**EMT:**

**Advanced:**
Consider IV Access

**Intermediate:**
Cardiac Monitor

**Paramedic:**

**Atropine:**
2 mg IV/IM every 5 minutes; titrate to effect. (Cat B) 🚭

**Pediatrics:** 0.02 mg/kg IV/IM MIN dose 0.1 mg, MAX single dose is 0.5 mg. (Cat B) 🚭
### TREATMENT

<table>
<thead>
<tr>
<th>INTERNAL POISONING</th>
<th>DRUGS/PROCEDURES</th>
</tr>
</thead>
</table>
| **Oxygen** to maintain pulse oximetry >95%. | **EMT:**  
| Cardiac monitor. | *Oxygen*  
| Consider IV Access. | Glucometer  
| If depressed respirations or altered mental status, consider *Naloxone*. | *Naloxone*:  
| Glucometer. | 2-4 mg IN every 3 minutes up to total 8 mg. If desired, the EMSP may start by giving 0.5 mg and titrate to effect.  
| Treat hypoglycemia using Hypoglycemia Protocol (3.21). | **Pediatric:** 2-4 mg IN (all ages and weights)  

#### Tricyclic antidepressant overdose:
- Administer *Sodium Bicarbonate*, especially if QRS>100 msec or patient has altered mental status.
- Do not delay transport, rapid deterioration may occur.
- Monitor for seizure activity.

#### Beta blocker overdose:
- *Glucagon*.

#### Calcium channel blocker overdose:
- *Calcium Chloride*.
- *Glucometer*.
- NOTE: flush the line with saline between giving calcium and glucagon to prevent precipitation.

#### Cyanide exposure or if patient is a smoke inhalation victim who shows clinical evidence of closed-space smoke exposure and is either comatose, in shock, or in cardiac arrest, consider *Cyanokit*.

| EMT: | **Advanced:**  
| Glucometer | Consider IV Access  
| *Naloxone*: | *Naloxone*:  
| 2-4 mg IV/IN/IM every 3 minutes, MAX dose 8 mg. If desired, start by giving 0.5 mg and titrate to effect. | **Pediatric:** <5 years or <20 kg: 0.1 mg/kg IV/IN/IM, max 2 mg  
| >5 years or >20 kg: 2-4 mg IV/IN/IM | **Pediatric:**  

#### Intermediate:
- Cardiac Monitor

#### Paramedic:
- *Sodium Bicarbonate*:
  - 1 mEq/kg IV (Cat B)  
  - **Pediatric:** Contact OLMD (Cat B)  
- *Glucometer*:
  - 1 mg IV/IM (Cat B)  
  - **Pediatric:** 0.5 mg IV/IM (Cat B)  
- *Calcium Chloride*:
  - 1 gram (10 cc of 10% solution) slow IV (Cat B)  
  - **Pediatric:** 20 mg/kg [0.2 cc/kg] of 10% solution slow IV, MAX 1 gram (Cat B)  
- *Cyanokit (Hydroxocobalamin)*:
  - 5 gms IV over 15 min  
  - **Pediatric:** Not Indicated
HISTORY AND PHYSICAL EXAM

- Prenatal care.
- History of seizure disorder (seizure with no prior history is more likely to be eclampsia).
- History of headache, vision changes, right upper quadrant pain, peripheral edema.
- Vital Signs:
  - Blood pressure normally decreases during pregnancy.
  - In the setting of pregnancy, hypertension is defined as BP >140/90 or a relative increase of 30 mm hg SBP or 20 mm hg DBP from patient’s pre-pregnancy blood pressure.
- Seizure activity.

KEY POINTS

- Disease of unknown origin.
- Field diagnosis of preeclampsia based on findings of pregnancy, hypertension, and edema.
- Usually occurs after 20th week of gestation. May occur up to 2 weeks postpartum.
- Eclampsia occurs with the signs/symptoms of preeclampsia with seizures or coma.
- Magnesium can cause respiratory depression and hypotension.

TREATMENT

<table>
<thead>
<tr>
<th>DRUGS/PROCEDURES</th>
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<tbody>
<tr>
<td><strong>EMT:</strong> Oxygen</td>
</tr>
<tr>
<td><strong>Advanced:</strong> Consider IV Access</td>
</tr>
<tr>
<td><strong>Intermediate:</strong> Cardiac Monitor</td>
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</tbody>
</table>
| **Paramedic:** Magnesium Sulfate:  
  4 grams IV. Mix 4 grams of magnesium sulfate (8 cc of 50% solution) in 250 cc of NS and give over 20 minutes. (Cat B)  
  Pediatric: Not applicable |

TREATMENT DRUGS/PROCEDURES

- Oxygen to maintain pulse oximetry >95%.
- Consider IV Access.
- Cardiac Monitor.
- Transport patient in left lateral recumbent position.
- Anticipate seizures.
- If seizures develop (eclampsia), treat first with Magnesium Sulfate, then use Seizure Protocol (3.30).
HISTORY AND PHYSICAL EXAM

- Onset and timing of symptoms.
- History of respiratory problems such as asthma, COPD, CHF, severe allergic reactions.
- History of pulmonary embolism or clotting risk factors such as recent surgery, immobilization, cancer.
- Associated symptoms such as chest pain, palpitations, peripheral edema, fever, productive cough.
- Home oxygen use.
- Evidence of airway obstruction: stridor, drooling, hoarseness, coughing, irrational behavior.
- Evidence of respiratory failure: inability to speak, weakened respiratory effort or increased work of breathing, cyanosis, decreased pulse oximetry.
- Abnormal lung sounds such as crackles, wheezing, and absence of lung sounds.
- Evidence of congestive heart failure such as peripheral edema, distended neck veins, crackles on lung exam.
- Evidence of trauma, suggesting possible pneumothorax or other intrathoracic injury.
- Evidence of allergic reaction such as hives, airway edema, urticaria, known exposure.

KEY POINTS

- Determining the exact etiology of respiratory distress can be difficult.
- **Children with croup, epiglottitis, or laryngeal edema usually have respiratory arrest due to exhaustion or spasm. They can often still be ventilated with bag-valve-mask ventilation and do not require Advanced Airway placement.**
- Pulmonary embolism and other serious pulmonary diseases may present simply as hyperventilation with anxiety.
- Equipment for airway support using rescue techniques for failed intubation attempts, such as blind insertion airway devices and bougies, should be readily available.
### TREATMENT

- Ensure patency of airway.
- **Pediatric patients with evidence of upper airway obstruction should be kept as calm as possible. Have parent hold child and give oxygen when possible.**
- Oxygen to maintain pulse oximetry >95%.
- Assist ventilations with Bag-valve-mask ventilations as necessary.
- Consider CPAP or BiPAP unless the patient has contraindications to CPAP or BiPAP.
- Consider Advanced Airway.
- Cardiac Monitor and 12 Lead ECG.
- Consider IV, especially if vital signs are abnormal.

### Allergic Reaction:
- Treat using Allergic Reaction Protocol (3.04).

### Wheezing:
- *Albuterol* Paramedics may instead give *Albuterol with Ipratropium* if desired and available.
- Consider *Magnesium Sulfate* for severe refractory asthma.
- Consider *Epinephrine 1:1000* IM for severe refractory asthma.

### Pulmonary edema:
- Treat using Congestive Heart Failure Protocol (3.15).

### Pneumothorax
- Consider Chest Decompression if signs of tension (distended neck veins, tracheal deviation, hypotension, absent unilateral breath sounds).

### Strider or Croup
- Consider *Racemic Epinephrine*.
- If Racemic Epinephrine is not available, consider diluting 0.3 mg Epinephrine 1:1000 in 3 ml of NS via nebulizer.

### DRUGS/PROCEDURES

#### EMT:
- **Oxygen**
- Assist patient with their own auto-inhaler
- Bag-valve-mask ventilations
- Advanced Airway: Blind Insertion Airway Device.
- 12 Lead ECG
- Consider CPAP or BiPAP

#### Advanced:
- Consider IV Access
- **Albuterol**
  - 2.5 mg, nebulized OR 1-2 puffs from inhaler
- **Pediatric: 2.5 mg, nebulized OR 2-4 puffs from inhaler**
- **Epinephrine 1:1000**
  - 0.3 mg (0.3 cc) IM (Cat B if pt elderly, has hypertension, or coronary artery disease)
  - **Pediatric: 0.01 mg/kg MAX 0.3 mg IM**

#### Intermediate:
- Consider Advanced Airway:
- Endotracheal Intubation 8 breaths/min
- **Pediatric: Usually not indicated in pediatric patients (Cat B)**
- Cardiac Monitor

#### Paramedic:
- **Albuterol/Ipratropium**
  - 3.0 mg/0.5 mg nebulized or 1-2 puffs from an inhaler
- Chest Decompression
- **Magnesium Sulfate:**
  - 2 gm diluted in 250 cc NS IV/IO over 20 minutes (Cat B)
  - **Pediatric: Not indicated**
- **Racemic Epinephrine:**
  - 0.5 ml of 2.25% diluted in 3 ml of NS via nebulizer.
### HISTORY AND PHYSICAL EXAM

- Onset and duration.
- History and description of seizures.
- Medications and compliance.
- History or evidence of trauma, particularly head trauma.
- History of diabetes, headache, recreational drug or alcohol use, pregnancy.
- Level of consciousness.
- Ongoing seizure activity.
- Incontinence.
- Focal neurologic signs.

### KEY POINTS

- Don’t force things into seizing patient’s mouths.
- Seizures may be caused by arrhythmias, particularly in patients over 50.
- Seizure activity may be caused by cerebral hypoxia from cardiac arrest, always check a pulse when seizures terminate.
- Seizures in pediatric patients are commonly febrile seizures and are usually benign and short lived.
- Pregnant women who seize may be eclamptic, treat using the Preecclampsia/Eclampsia Protocol (3.28).

### TREATMENT

**Drugs/Procedures**

**EMT:**
- Glucometer

**Advanced:**
- Consider IV Access

**Intermediate:**

**Paramedic:**
- **Lorazepam:** IV or Midazolam IV/IM/IN for Active Seizures. Note: Midazolam IN is the preferred drug for pediatric patients, if it is available.

**Midazolam:** 2 mg IV/IM/IN

**Pediatric:**
- IV/IM: 0.1 mg/kg slow IV or IM
- IN (PREFERRED): 0.2 mg/kg IN via atomizer
- MAX 5 mg (CAT B) 🟢

### **CAUTION:**
The dosages of Lorazepam and Midazolam are all different. Caution should be taken when administering these medications.
HISTORY AND PHYSICAL EXAM

Evidence of inadequate organ perfusion: Pulse>120, SBP<90 mmHg (adult), skin cold and clammy, altered mental status.

KEY POINTS

Types of shock:
- **Hypovolemic**: Loss of circulating blood volume. This may be due to hemorrhage or through loss of fluids such as through vomiting, diarrhea, poor intake, or burns.
- **Cardiogenic**: Pump failure.
- **Distributive**: Decreased vascular tone. Includes anaphylaxis, sepsis, and neurogenic shock.
- **Obstructive**: Mechanical obstruction to blood flow to or from the heart. Includes cardiac tamponade, tension pneumothorax, dissecting aortic aneurysm, and pulmonary embolism.

TREATMENT

**Oxygen** to maintain pulse oximetry >95%.

- Provide ventilatory support as needed.
- Control hemorrhage by using direct pressure, application of arterial tourniquet, and hemostatic agents if needed. Arterial tourniquets should be placed proximal to the wound and at least 2 inches above the knee or elbow.
- Establish large bore IV Access (Establish 2 IV’s if time permits).
- **Normal Saline**.
- Cardiac Monitor and 12 Lead ECG.
- Consider **Dopamine**, particularly in cases of cardiogenic, distributive, and obstructive shock. Titrate to effect.
- Consider allergic reaction; if present treat using Allergic Reaction Protocol (3.04).
- Consider cardiac dysrhythmia; if present treat using Cardiac Dysrhythmia Protocols (3.11 and 3.12).

DRUGS/PROCEDURES

**EMT**:
- Oxygen
- 12 Lead ECG

**Advanced**: Consider IV Access
- **Normal Saline**: 500 cc IV bolus, then titrate to SBP 90 mmHg
  - **Pediatric**: 20 cc/kg IV, then re-assess. May repeat 3 times.

**Intermediate**: Cardiac Monitor

**Paramedic**: **Dopamine**:
- 5-20 mcg/kg/min IV/IO
  - **Pediatric**: 5-20 mcg/kg/min IV/IO
HISTORY AND PHYSICAL EXAM

Mechanism of Injury: Elements that should increase suspicion for and prompt screening for spinal injury may include:

- Axial Loading (diving).
- Blunt trauma to head or neck.
- Motor Vehicle Crash.
- Fall > 3 feet or an adult falling from standing height.
- Any violent mechanism of injury with high energy transfer.
- History of arthritis of spine.

Patient Reliability: Assessment for spinal injury can only be utilized if the patient is alert, calm, cooperative, and not intoxicated. If there is a communication barrier, the patient cannot be properly assessed and based on mechanism and any complaint of injury the patient should receive spinal motion restriction (SMR).

Distracting Injury: Any painful injury might distract the patient from the pain of a spine injury. Both medical as well as traumatic causes for pain can be considered a distracting injury. If the patient has an injury or illness that seems to be causing enough pain to provide a distraction, the spine cannot be cleared clinically.

Neurologic Evaluation: A patient who is reliable and has no distracting injury should be examined for any neurologic deficits. Perform the following assessments bilaterally in the upper and lower extremities. Responses should be symmetrical. Any abnormalities should prompt SMR.

Motor:

- Have the patient spread the fingers of his or her hand and resist as the EMSP tries to squeeze them together. There should be some resistance against the squeeze.
- Ask the patient to hold his or her hand out with the palm facing down. While supporting the wrist, ask the patient to resist while the EMSP pushes down on the dorsal surface of the hand or fingers. The patient should be able to provide some resistance.
- Place a hand on the bottom of the patient’s foot at the great toe. Ask the patient to push down against resistance. The patient should be able to apply pressure to the EMSP’s hand.
- Move a hand to the top of the foot and ask the patient to pull his or her toe towards nose against the resistance. The patient should be able to apply pressure to the EMSP’s hand.

Sensory:

- Assess for the ability to distinguish soft and sharp sensation in each hand and foot. Use a sharp object and a soft object. A corner of a gauze pad and a pencil may be used.
- Alternately apply the soft and then the sharp object to each extremity. Do not let the patient know which one was used. Ask the patient whether the sensation is soft or sharp. Repeat soft and sharp in all extremities.
- The patient should be able to distinguish soft from sharp.
### HISTORY AND PHYSICAL EXAM (continued)

**Complaints of Pain or Examination Tenderness:**
- Palpate the entire spine. Any complaint of pain or tenderness to palpation along any part of the spine and where paralysis can be confirmed should be considered an indication that the patient requires SMR.
- Ask the patient about sensations of numbness, tingling, shooting pain, or motor weakness in any extremity. Any positive response requires full SMR.
- Some components of the sensory examination are subjective. When in doubt, apply SMR.

**Documentation:**
In any case where there is head and/or facial injury, or a mechanism of injury suggesting the possibility of a cervical spine injury, clear and concise documentation is absolutely essential. In the cases where the decision not to provide SMR is made, documentation must include the following information:
- The examination was performed on a reliable patient.
- The patient denies having any spinal pain.
- The patient denies having any extremity weakness or loss of movement.
- The patient denies having any tingling or feeling of pins and needles in the extremities.
- There is no pain on palpation of the spine.
- Motor function is intact in all of the extremities.
- Sensation is intact in all extremities.

### KEY POINTS

- **Full SMR as an automatic response to trauma may not always be in the patient’s best interest.**
  Patients packaged on hard SMR devices may develop complications or problems due to laying on a hard spine board. These complications or problems could potentially be avoided if a spinal assessment tool is utilized to reduce the number of patients unnecessarily placed in SMR.
- Only those patients who can confirm paralysis after the incident should receive full SMR.
- Patients with penetrating trauma to the head, neck, or torso and no evidence of spinal injury do not require full SMR.
- Use of a backboard for stabilization of some other injury than the spine where paralysis can be confirmed, or to move the patient does not mean that SMR is indicated. If a backboard device is used only to move the patient, it should be removed as soon as practical.
- Patients with one or more acutely paralyzed limbs in the setting of acute trauma should be entered into the Alabama Acute Health Care System where applicable.
- If paralysis can be confirmed, the following procedures should be followed with implementing full SMR:
  - Do not secure the head to the backboard before securing the body because this can cause torsion on the neck.
  - SMR with a cervical collar and a vacuum mattress is a recommended technique. A vacuum mattress, when available, is preferred for all but short transports.
### KEY POINTS (continued)

- Vomiting should be expected in head injury patients. Therefore, if the patient is on a spine board, they should be securely strapped to it to enable board and patient to be turned as a unit. EMSPs should be aware that additional help may be necessary during transport to turn patient and manage airway while maintaining cervical spine integrity.
- Chin straps that could compromise the airway should be removed as the patient is secured to the long board.
- Most adults require 1 to 1 ½ inches of firm padding behind the head to assume standard neutral anatomic position, and some additional padding behind the neck is necessary for full support. **Most children require padding under the shoulders to maintain neutral spinal alignment.**
- A rigid cervical collar, continuous manual in-line support during rapid extrication, and rapid transport should be substituted for more time consuming methods in the severely traumatized patient requiring immediate lifesaving intervention.
- Airway problems, respiratory difficulty, and shock are common in the traumatized patient. Alternate techniques for performing airway procedures should be used in spinal injured patients. To maintain proper control of the cervical spine during endotracheal intubation, in-line stabilization must be performed by two EMSPs.
- If any motion restriction techniques cause an increase in pain or neurologic deficit, the patient should be stabilized in position found or position of greatest comfort.
- Geriatric patients (over 55) should raise a higher index of suspicion for the EMSP due to physiologic aging changes. The EMSP’s awareness of the need to provide for cervical spine motion restriction should be more acute in these patients.
### TREATMENT

- If any suspicion, maintain the spine in the neutral position until assessment is complete.
- Ensure airway patency.
- **Oxygen** to maintain pulse oximetry >95%.
- Consider IV.
- Assess for possible spinal injury and need for SMR.

### DRUGS/PROCEDURES

**EMT:**  
*Oxygen*  
Spinal Precautions  
SMR  

**Advanced:**  
Consider IV  

**Intermediate:**  

**Paramedic:**  

---

**Spinal Precautions:** Spinal precautions include the use of a cervical collar and securing the patient firmly to the EMS stretcher maintaining the spine in neutral alignment. Spinal precautions may be appropriate for patients found ambulatory at the scene, patients who must be transported for a prolonged amount of time, or patients for whom a backboard is not otherwise indicated per the protocol algorithm.

**SMR:** SMR includes the use of a cervical collar, head immobilizer device, spinal motion restriction, padding where necessary, and adequate straps, so that the patient remains securely in place, even if the patient must be rolled in order to clear the airway. Other appropriate devices may be needed, depending on patient situation. Follow the manufacturer’s guidelines when utilizing any SMR devices.
HISTORY AND PHYSICAL EXAM

- Last time patient was seen normal.
- Existing previous neurologic deficit.
- Stroke risk factors (hypertension, diabetes, heart disease, smoking, dysrhythmias, blood thinner use, or previous stroke).
- Has the patient had any recent similar events?

Perform FAST stroke scale (Face, Arm, Speech, Time):

1. **Face**: Assess for facial droop: have the patient show teeth or smile.
   - Normal – both sides of face move equally.
   - Abnormal – one side of face does not move as well as the other side.
2. **Arm**: Assess for arm drift: have the patient close eyes and hold both arms straight out; with palms up, for 10 seconds.
   - Normal – both arms move the same or both arms do not move at all.
   - Abnormal – one arm does not move or one arm drifts down compared to the other.
3. **Speech**: Assess for abnormal speech: have the patient say “you can’t teach an old dog new tricks.”
   - Normal – patient uses correct words with no slurring.
   - Abnormal – patient slurs words, uses the wrong words, or is unable to speak.
4. **Time**: If any of above are positive, attempt to determine the time of symptom onset (clock time).

If any component of the FAST stroke scale is abnormal, the patient is very likely to be suffering from an acute stroke.

KEY POINTS

- This protocol is for patients who have an acute episode of neurologic deficit without any evidence of trauma. If the patient has altered mental status, treat using the Altered Mental Status Protocol (3.05).
- Determining the exact time of symptom onset is critical since administration of thrombolytic drugs for the treatment of stroke is time-dependent.
- High blood pressure during an acute stroke may be compensatory, do not attempt to lower it without consulting OLMD.
- Intravenous glucose may aggravate the effects of ischemia upon brain tissue. Do not administer glucose unless hypoglycemia is documented.
- If in a region with a stroke system, notify the ATCC and transport the patient to the appropriate ready stroke center.
- When possible, bring a knowledgeable friend or family member with the patient to assist with providing the patient’s history at the hospital. If it is not possible to for that person to accompany the patient, attempt to obtain a cell phone number for someone who can provide the receiving hospital with patient history and details of the event.
### Stroke (continued)

#### TREATMENT

- *Oxygen* to maintain pulse oximetry >95%.
- Establish large bore IV access.
- Cardiac Monitor and 12 Lead ECG.
- Give nothing by mouth.
- Glucometer
  - Treat hypoglycemia using Hypoglycemia Protocol (3.22).
- If patient has no signs of congestive heart failure, give *Normal Saline*.
- If patient can tolerate, place them in supine position.
- Monitor neurologic function frequently.
- If possible, bring a knowledgeable friend or family member with the patient to assist with history.
- Complete the “Thrombolytic Checklist (Stroke)” (6.03).

#### DRUGS/PROCEDURES

<table>
<thead>
<tr>
<th>EMT:</th>
<th><em>Oxygen</em></th>
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<tbody>
<tr>
<td></td>
<td>12 Lead ECG</td>
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<tr>
<td></td>
<td>Glucometer</td>
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</table>

<table>
<thead>
<tr>
<th>Advanced:</th>
<th><em>Normal Saline</em>: 500 cc IV bolus</th>
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<tbody>
<tr>
<td></td>
<td><strong>Pediatric: Call OLMD</strong></td>
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<table>
<thead>
<tr>
<th>Intermediate:</th>
<th>Cardiac Monitor</th>
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</table>

| Paramedic: | |
|------------| |
HISTORY AND PHYSICAL EXAM

- Description of event: Onset, duration, seizure activity, precipitating factors, activity when syncope occurred.
- Pregnancy status.
- Medications, past medical history, or prior syncope.
- Vertigo, nausea, chest or abdominal pain.
- Neurologic exam.
- Evidence of head trauma.

KEY POINTS

- Syncope is a transient state of unconsciousness from which the patient has recovered. If the patient is still unconscious, treat using the Altered Mental Status (3.05) or Shock (3.31) Protocols as indicated.
- Most syncope is vasovagal. Placing the patient in the recumbent position should be sufficient to restore vital signs and level of consciousness to normal. Other causes may be: cardiac dysrhythmias, hypotension, aortic dissection, GI bleed, hypoglycemia, seizure, stroke and transient ischemic attack.
- Syncope while in a recumbent position is almost always cardiac.
- Syncope of recent onset in middle-aged or elderly patients is often cardiac and deserves special concern.

TREATMENT

- Cardiac Monitor and 12 Lead ECG.
- Consider IV.
- Consider Normal Saline.
- Glucometer
  - Treat hypoglycemia using Hypoglycemia Protocol (3.22).

DRUGS/PROCEDURES

EMT:
- Oxygen
- 12 Lead ECG
- Glucometer

Advanced:
- Consider IV Access
- Normal Saline:
  - 500 cc IV bolus
  - Pediatric: 20 cc/kg IV

Intermediate:
- Cardiac Monitor

Paramedic:
HISTORY AND PHYSICAL EXAM

- Onset and duration of bleeding, amount, passage of clots or tissue, number of menstrual pads used.
- Last Menstrual period, pregnancy status, birth control method.
- Pregnant patients: Due date, Estimated Gestation Age.
- Postpartum patients: Time and place of delivery, history of complications.
- Bleeding disorders or anticoagulant medications.
- Evidence of blood loss, clots or tissue fragments.
- Fever.
- Signs of hypovolemic shock.

KEY POINTS

- Amount of vaginal bleeding is difficult to estimate. Try to get an estimate of number of saturated pads in the previous 6 hours. Discreet inspection of the perineum may be useful to determine if clots or tissue are being passed.
- Patients in shock from vaginal bleeding should be treated using the Shock Protocol (3.32).
- Always consider pregnancy or ectopic pregnancy as the cause of the bleeding.
- If a non-viable premature fetus is delivered and the fetus is available, place the fetus in a clean container or sheet and transport to the hospital with the mother.

TREATMENT

- Consider IV.
- If vital signs are unstable—proceed to Shock Protocol (3.32).
- If late pregnancy or immediately postpartum - refer to Childbirth Protocol (3.14).
- If severe, consider *Tranexamic Acid*.

<table>
<thead>
<tr>
<th>DRUGS/PROCEDURES</th>
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<tbody>
<tr>
<td><strong>EMT:</strong></td>
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<tr>
<td><strong>Advanced:</strong></td>
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<tr>
<td>Consider IV</td>
</tr>
<tr>
<td><strong>Intermediate:</strong></td>
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<tr>
<td><strong>Paramedic:</strong></td>
</tr>
<tr>
<td><em>Tranexamic Acid:</em></td>
</tr>
<tr>
<td>Adult &gt;18 years old:</td>
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<tr>
<td>2 g over 20 mins, MAX 100mg per min.</td>
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<tr>
<td>Mix 2g in 100 mL (NS, D5W, or LR) and administer by IV flow regulator or pump infusion (300mL/hr) over 20 mins. (Cat B) 🚫</td>
</tr>
<tr>
<td><strong>Pediatric:</strong> Not Indicated.</td>
</tr>
</tbody>
</table>
This section is provided for reference information only.

Medications may be administered only as defined by treatment protocol unless online medical direction orders a deviation.
### PHARMACOLOGY AND ACTIONS

Adenosine has the ability to slow conduction through the AV node. Since most cases of PSVT involve AV nodal reentry, adenosine is capable of interrupting the AV nodal circuit and stopping the tachycardia, restoring normal sinus rhythm. It is eliminated from the circulation rapidly, having a half-life in the blood of less than 10 seconds. This allows for the use of repeated doses in rapid succession if needed.

### INDICATIONS

To convert hemodynamically stable narrow complex regular tachycardia with a pulse.

### CONTRAINDICATIONS

- Second or third degree heart block.
- Poison or drug-induced tachycardia.
- Known hypersensitivity.

### PRECAUTIONS AND SIDE EFFECTS

- May cause brief asystole, dizziness, facial flushing, headache, nausea, and transient shortness of breath.
- IV adenosine has been shown to produce bronchospasm in asthmatic patients.
- If the patient becomes hemodynamically unstable, cardioversion should occur.
- OLMD may instruct the EMSP to reduce the dose for patients taking dipyridamole or carbamazepine.

### ADMINISTRATION

Administer in less than 5 seconds, preferably through a large bore IV in an antecubital vein using an IV port as close to the patient as possible. Repeat doses may be administered if no response to initial treatment.

**Adult (Cat B) 📦**

1\(^\text{st} \) Dose: 6 mg rapid IV Push, followed by rapid 20 cc normal saline.

2\(^\text{nd} \) Dose: 12 mg rapid IV Push, followed by rapid 20 cc normal saline.

**Pediatric (Cat B) 📦**

1\(^\text{st} \) dose: 0.1 mg/kg rapid IV Push, followed by 3 cc of normal saline (Max 6 mg).

2\(^\text{nd} \) dose: 0.2 mg/kg rapid IV Push, followed by 3 cc of normal saline (Max 12 mg).
# Albuterol and Ipratropium

## Pharmacology and Actions
Albuterol is a potent, relatively selective beta2-adrenergic bronchodilator. The onset of improvement in pulmonary function is within 2 to 15 minutes after the initiation of treatment and the duration of action is from 4-6 hours. As a beta2 agonist, albuterol induces bronchial dilation but has occasional beta1 overlap with clinically significant cardiac effects such as tachycardia.

Ipratropium antagonizes action of acetylcholine on the bronchial smooth muscle in the lungs, causing bronchodilation. It is considered particularly useful in patients with COPD who may require more than one bronchodilator.

## Indications
- Bronchial asthma and reversible bronchial spasm.
- Ipratropium may be given in a combination solution or combination inhaler with albuterol anytime albuterol is indicated in the EMS protocols, but may not be given separately. Administration of ipratropium is limited to the Paramedic Scope of Practice.

## Contraindications
Symptomatic tachycardia.

## Precautions and Side Effects
- May cause dizziness, anxiety, palpitations, headache, sweating, and muscle tremors.
- Clinically significant arrhythmias may occur especially in patients with underlying cardiovascular disorders.
- Stop treatment if significant tachycardia or other tachyarrhythmias occur.

## Administration

<table>
<thead>
<tr>
<th>Medication</th>
<th>Adult Details</th>
<th>Pediatric Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albuterol</td>
<td>2.5 mg, nebulized OR 1-2 puffs from inhaler</td>
<td>2.5 mg, nebulized OR 1-2 puffs from inhaler</td>
</tr>
<tr>
<td>Albuterol with Ipratropium</td>
<td>Adult: 3 mg/0.5 mg, nebulized OR 1-2 puffs from inhaler</td>
<td>Pediatric: 3 mg/0.5 mg, nebulized OR 1-2 puffs from inhaler</td>
</tr>
</tbody>
</table>
**Amiodarone**

<table>
<thead>
<tr>
<th>PHARMACOLOGY AND ACTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intravenous amiodarone is a complex anti-arrhythmic medication with effects on sodium, potassium, and calcium channels as well as alpha and beta-adrenergic blocking properties.</td>
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<thead>
<tr>
<th>INDICATIONS</th>
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<tbody>
<tr>
<td>Ventricular fibrillation, pulseless ventricular tachycardia, wide complex tachycardia with a pulse.</td>
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<thead>
<tr>
<th>CONTRAINDICATIONS</th>
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<tbody>
<tr>
<td>Second or Third degree AV blocks.</td>
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<thead>
<tr>
<th>PRECAUTIONS AND SIDE EFFECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>May cause hypotension and bradycardia.</td>
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<thead>
<tr>
<th>ADMINISTRATION</th>
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</thead>
<tbody>
<tr>
<td><strong>Ventricular Fibrillation/Pulseless Ventricular Tachycardia:</strong></td>
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<tr>
<td>Adult:</td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; dose: 300 mg IV/IO</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; dose: 150 mg IV/IO</td>
</tr>
<tr>
<td>If administration will not be delayed, amiodarone may be diluted in up to 20 cc of D5W or NS prior to administration, in order to prevent hypotension and bradycardia.</td>
</tr>
</tbody>
</table>

**Pediatric:**
5 mg/kg IV/IO, MAX dose 300 mg, may repeat up to 2 times

**Wide Complex Tachycardia with a Pulse:**
Adult:
150 mg slow IV over 10 min(Cat B)
Dilute in 20 cc of NS or D5W and administer over 10 minutes as a slow IV push OR inject into a 100 cc bag of NS or D5W and infuse over 10 minutes.

**Pediatric:**
Contact OLMD (Cat B)
### Aspirin

**PHARMACOLOGY AND ACTIONS**
Aspirin inhibits prostaglandin and disrupts platelet function. It is also a mild analgesic and anti-inflammatory.

**INDICATIONS**
Adult patients with suspected acute coronary syndrome.

**CONTRAINDICATIONS**
- Aspirin allergy or aspirin induced asthma.
- Active GI bleeding.
- If patient has taken 324 mg within the last 24 hours.

**PRECAUTIONS AND SIDE EFFECTS**
- May cause GI discomfort and nausea.
- May cause wheezing

**ADMINISTRATION**
**Adult:**
324 mg PO (4 chewable 81mg baby aspirin).

**Pediatric: Not Indicated.**
**Atropine Sulfate**

<table>
<thead>
<tr>
<th>PHARMACOLOGY AND ACTIONS</th>
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<tbody>
<tr>
<td>Atropine is a muscarinic-cholinergic blocking agent. As such, it has the following effects:</td>
</tr>
<tr>
<td>• Increases heart rate.</td>
</tr>
<tr>
<td>• Increases conduction through AV node.</td>
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<tr>
<td>• Reduces motility and tone of GI tract.</td>
</tr>
<tr>
<td>• Reduces action and tone of the urinary bladder (may cause urinary retention).</td>
</tr>
<tr>
<td>• Dilates pupils.</td>
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<tr>
<td>• Blocks cholinergic (vagal) influences already present. If there is little cholinergic stimulation present, effects will be minimal.</td>
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<thead>
<tr>
<th>INDICATIONS</th>
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</thead>
<tbody>
<tr>
<td>• Bradycardia with evidence of cardiopulmonary compromise.</td>
</tr>
<tr>
<td>• Antidote for organophosphate poisoning (some insecticides and nerve agents).</td>
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<table>
<thead>
<tr>
<th>CONTRAINDICATIONS</th>
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<tbody>
<tr>
<td>Bradycardia without evidence of cardiopulmonary compromise.</td>
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<tr>
<th>PRECAUTIONS AND SIDE EFFECTS</th>
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</thead>
<tbody>
<tr>
<td>Avoid in hypothermic bradycardia.</td>
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<thead>
<tr>
<th>ADMINISTRATION</th>
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</thead>
<tbody>
<tr>
<td><strong>Bradycardia:</strong></td>
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<tr>
<td>Adult:</td>
</tr>
<tr>
<td>1 mg IV/IO, may repeat in 5 minutes</td>
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<tr>
<td>MAX 3 mg or if heart rate &gt;60 and SBP&gt;90</td>
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<tr>
<td><strong>Pediatric:</strong></td>
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<tr>
<td>0.02 mg/kg, may repeat x1 in 5 minutes</td>
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<tr>
<td>MAX total dose 1 mg, Minimum dose 0.1 mg.</td>
</tr>
<tr>
<td><strong>Organophosphate Poisoning:</strong></td>
</tr>
<tr>
<td>Adult:</td>
</tr>
<tr>
<td>2 mg IV/IM every 5 minutes; titrate to effect. (Cat B) 📀</td>
</tr>
<tr>
<td><strong>Pediatrics:</strong></td>
</tr>
<tr>
<td>0.02 mg/kg IV/IM MIN dose 0.1 mg, MAX single dose is 0.5 mg. (Cat B) 📀</td>
</tr>
</tbody>
</table>
## Calcium Chloride

### Pharmacology and Actions
Calcium is essential for maintenance of the functional integrity of nervous, muscular and skeletal systems and cell membrane and capillary permeability. It is also an important activator in many enzymatic reactions and is essential to a number of physiologic processes including transmission of nerve impulses, contraction of cardiac, smooth and skeletal muscles.

### Indications
- Cardiac arrest with suspected hyperkalemia (usually seen in dialysis patients).
- Antidote for calcium channel blocker overdose.

### Contraindications
Do not use in setting of suspected digoxin toxicity.

### Precautions and Side Effects
- Requires OLMD for administration as antidote for calcium channel blocker overdose.
- May cause discomfort at injection site.
- Do not mix with sodium bicarbonate due to risk of precipitation in IV line.

### Administration

#### Cardiac Arrest:
- **Adult:**
  1 gram (10 cc of 10% solution) slow IV/IO

#### Pediatric:
- **Not indicated for pediatric cardiac arrest in the pre-hospital setting**

#### Calcium Channel Blocker Toxicity:
- **Adult:**
  1 gram (10 cc of 10% solution) slow IV/IO (Cat B)
- **Pediatric:**
  20 mg/kg [0.2 cc/kg] of 10% solution slow IV, MAX 1 gram (Cat B)
**MEDICATIONS**

**Cardizem**

**PHARMACOLOGY AND ACTIONS**
Cardizem is a calcium channel blocker that works by relaxing blood vessels in the body and heart and lowers the heart rate.

**INDICATIONS**
Cardiac dysrhythmia and for narrow complex tachycardia rate $\geq 140$ consider atrial flutter/atrial fibrillation with rapid ventricular response. Atrial flutter may be a regular rhythm whereas atrial fibrillation may be irregularly irregular.

**CONTRAINDICATIONS**
- Heart Block/Bradycardia.
- Blood Pressure $<90$ systolic.

**PRECAUTIONS AND SIDE EFFECTS**
- Hypersensitivity to drug.
- 2$\text{nd}$ or 3$\text{rd}$ degree AV block.
- SBP $<90$.
- Acute MI.
- V-Tach.
- Caution if renal impairment or CHF patient.

**ADMINISTRATION**

**Adult:** (Cat B)
- 10 mg slow IV Push.
- 5-10 mg/hr drip.
  - Titrate pulse 60-100 and BP $>100$ mmHg.

**Pediatric:** Not Indicated.
PHARMACOLOGY AND ACTIONS

Glucose is the body’s basic fuel. Its use is regulated by insulin which stimulates storage of excess glucose from the bloodstream and glucagon which mobilizes stored glucose into the bloodstream.

INDICATIONS

Hypoglycemia.

CONTRAINDICATIONS

None in prehospital setting.

PRECAUTIONS AND SIDE EFFECTS

- Extravasation of dextrose can cause necrosis of tissue. Use caution during administration. If extravasation does occur, immediately stop administration of drug. Report extravasation of the medication to receiving hospital personnel and document.
- If there is any evidence of malnutrition or alcohol abuse, thiamine should precede the administration of dextrose (adult patients only).

ADMINISTRATION

Adult:
25 gm D50W IV or D10W IV. Different concentrations of dextrose may be used when approved by the service medical director.

**Pediatric:**
4 cc/kg D25W IV (Note that the Dextrose 50% is diluted to Dextrose 25% using normal saline in pediatric patients).
Different concentrations of dextrose may be used when approved by the service medical director.
**PHARMACOLOGY AND ACTIONS**
Benzodiazepine drug that acts as an anticonvulsant and sedative.

**INDICATIONS**
- Active seizures.
- May be used as sedation prior to cardioversion.

**CONTRAINDICATIONS**
Alcohol intoxication, neurologic, or respiratory depression.

**PRECAUTIONS AND SIDE EFFECTS**
- Since diazepam can cause respiratory depression and/or hypotension, the patient must be monitored closely. Diazepam should not be given to adult patients without a good IV line in place and a bag valve mask ready.
- Paradoxical excitement or stimulation sometimes occurs.
- Most likely to produce respiratory depression in patients who have taken other depressant drugs, especially alcohol and barbiturates, or when given rapidly.
- Consider rectal administration if unable to administer IV, especially in seizing children.
- May be given rectally if IV formulation is unavailable.
- Administration for sedation should be done only in consultation with OLMD.

**ADMINISTRATION**
**Adult:**
5-10 mg IV or 0.2 mg/kg per rectum, MAX 20 mg for RECTAL dosing

**Pediatric:**
**IV:** 0.1 mg/kg slow IV
**Rectal:** 0.5 mg/kg PR
**MAX 5 mg (Cat B)**
### PHARMACOLOGY AND ACTIONS
An antihistamine which blocks action of histamines released from cells during an allergic reaction; also has anticholinergic properties which makes it useful to treat or prevent acute dystonic reactions to antipsychotic drugs. These reactions include: oculogyric crisis, acute torticollis, and facial grimacing.

### INDICATIONS
- Treatment of allergic reactions.
- Treatment or prevention of acute dystonic reactions to antipsychotic drugs.
- Nausea or vomiting

### CONTRAINDICATIONS
- Known hypersensitivity.
- **Newborns.**
- Nursing mothers (relative contraindication).

### PRECAUTIONS AND SIDE EFFECTS
- Usually causes sedation, however it may paradoxically cause excitation in children.
- May have additive sedation effect with alcohol or other CNS depressants.
- May cause hypotension when given IV.

### ADMINISTRATION
**Adult:**
25-50 mg IV/IM

**Pediatric:**
1 mg/kg IV/IM (MAX 50 mg)

Diphenhydramine is Cat A for Allergic Reaction, Cat B for Altered Mental Status in both pediatric and adult patients.
**PHARMACOLOGY AND ACTIONS**

Chemical precursor of nor-epinephrine which occurs naturally in humans and which has both alpha and beta-receptor and dopaminergic stimulating actions. Its actions differ with dosage given:

- **1-5 mcg/kg/min** - dilates renal and mesenteric blood vessels (no effect on heart rate or blood pressure).
- **2-10 mcg/kg/min** - beta effects on heart which usually increases cardiac output without greatly increasing heart rate or blood pressure.
- **10-20 mcg/kg/min** - alpha peripheral effects cause peripheral vasoconstriction and increased blood pressure.
- **20-40 mcg/kg/min** - alpha effects reverse dilatation or renal and mesenteric vessels with resultant decreased flow.

**INDICATIONS**

Treatment of refractory shock, particularly cardiogenic, distributive, or obstructive.

**CONTRAINDICATIONS**

Hypovolemic shock, especially with hypotension.

**PRECAUTIONS AND SIDE EFFECTS**

- May induce tachyarrhythmias, in which case infusion should be decreased or stopped.
- High doses (10 mcg/kg) may cause peripheral vasoconstriction.
- Should not be added to sodium bicarbonate or other alkaline solutions since dopamine will be inactivated in alkaline solutions.
- Consider hypovolemia and treat this with appropriate fluids before administration of dopamine.
- Dopamine is best administered by an infusion pump to accurately regulate rate. It may be hazardous when used in the field without an infusion pump. Monitor closely.

**ADMINISTRATION**

**5-20 mcg/kg/min IV/IO**

Mix 800 mg dopamine in 500 cc Normal Saline to produce concentration of 1600 mcg/ml. Start infusion rate 2-5 mcg/kg/min. Gradually increase by 5 mcg/kg/min until desired effect is achieved. Use microdrip chamber only. See dosage chart on next page.

**Pediatric:**

5-20 mcg/kg/min IV/IO

Mix 200 mg in 500 cc Normal Saline to produce concentration of 400 mcg/ml. Start infusion rate 2-5 mcg/kg/min. Gradually increase by 5 mcg/kg/min until desired effect is achieved. Use microdrip chamber only.
Dopamine Dosage Chart

800 mg dopamine per 500 mL NS (400 mg dopamine per 250 mL) NS for a concentration of 1600 mcg dopamine per mL. The following table assumes using a 60 drops per mL (microdrop) infusion set.

<table>
<thead>
<tr>
<th>PT WEIGHT</th>
<th>DESIRED DOSE (drops/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5 mcg/kg/min</td>
</tr>
<tr>
<td>Lbs</td>
<td>Kg</td>
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<tr>
<td>88</td>
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<td>297</td>
<td>135</td>
</tr>
<tr>
<td>308</td>
<td>140</td>
</tr>
</tbody>
</table>

USING THE DOPAMINE TABLE:
Find patient weight and then move across row to the column for the desired dose. Set dial-a-flow to the corresponding flow rate.
Epinephrine

**PHARMACOLOGY AND ACTIONS**
- Catecholamine with alpha and beta effects which increases heart rate and blood pressure.
- Potent bronchodilator.

**INDICATIONS**
- Cardiac Arrest.
- Pediatric Bradycardia with Cardiopulmonary Compromise.
- Moderate and Severe Allergic Reactions.
- Severe Refractory Wheezing.

**CONTRAINDICATIONS**
Uncontrolled hypertension is a relative contraindication.

**PRECAUTIONS AND SIDE EFFECTS**
- Epinephrine increases cardiac work and can precipitate angina, myocardial infarction or major dysrhythmias in an individual with ischemic heart disease. Extreme caution should be used when treating patients with allergic reaction or wheezing with Epinephrine due to the cardiac side effects.
- Wheezing in the elderly is most commonly a sign of conditions which do not require Epinephrine such as pneumonia, pulmonary embolism, or pulmonary edema.
- Other side effects include anxiety and tremor.
- Use extreme caution to prevent accidentally giving Epinephrine 1:1000 intravenously which could lead to accidental overdose of Epinephrine.

**ADMINISTRATION**

*Moderate allergic reaction and severe refractory wheezing:*
Epinephrine 1:1,000 or Epi Pen Auto Injector
Epinephrine 1:1,000 inhaled
  0.3 mg (0.3cc) IM (Cat A) If pt is age 65 or older, has history of heart disease, or uncontrolled hypertension contact OLMD prior to administration (Cat B) 
  Pediatric: 0.01 mg/kg MAX 0.3 mg IM or Epi Pen Jr.

*Major allergic reaction:*
Epinephrine 1:10,000
  0.3 mg (3 cc) IV repeat every 5 minutes as needed. (Cat B)
  Pediatric: 0.01 mg/kg (0.1 cc/kg) MAX 0.3 mg (3 cc) IV, repeat every 5 minutes as needed. (Cat B)

*Cardiac arrest:*
  1 mg IV/IO every 3-5 min
  0.01 mg/kg (0.1 cc/kg) 1:10,000 IV/IO every 3-5 min.

*Pediatric bradycardia with evidence of cardiopulmonary compromise:*
  0.01 mg/kg (0.1 cc/kg) 1:10,000 IV/IO every 3-5 min.
  If given ET: 0.1 mg/kg (1:1,000)
# Fentanyl

## Indications

Severe pain of any etiology.

## Contraindications

- Known allergy to Fentanyl.
- Oxygen saturation less than 90% or significant respiratory depression.

## Precautions and Side Effects

- Fentanyl causes neurologic and respiratory depression. Respiratory depression may be worse in patients with underlying lung disease or concomitant use of other depressant drugs such as benzodiazepines or alcohol. Respiratory support must be available when administering Fentanyl.
- Fentanyl can be reversed with naloxone.
- Check and document vital signs and patient response after each dose.
- Fentanyl may cause nausea and/or vomiting. Consider simultaneous administration of Ondansetron whenever administering Fentanyl.
- When Fentanyl is given to treat pain, the goal is reduction of pain not total elimination of pain.

## Administration

### Pain Management:

**Adult:**

1 mcg/kg slow IV push/IM/IN, 50 mcg MAX. May repeat once. If pain not relieved after second dose, call OLMD for further doses. (Cat B)

**Pediatric:**

1 mcg/kg slow IV push/IN, 50 mcg MAX
# Furosemide

## Pharmacology and Actions
Potent diuretic which acts primarily by inhibiting sodium re-absorption in the kidney. When given IV, it also causes immediate rapid venous dilation, which probably accounts for its positive effect in pulmonary edema. Peak effect: 30-60 min after IV administration, duration 2 hours.

## Indications
Acute pulmonary edema, such as that seen with congestive heart failure.

## Contraindications
None in prehospital setting.

## Precautions and Side Effects
Monitor closely; can lead to profound diuresis with resultant shock and electrolyte depletion. Hypovolemia, hypotension, hyponatremia, and hypokalemia are the main toxic effects. The hypokalemia induced is of concern in digitalized patients and particularly those who have digitalis toxicity.

## Administration
- 40 mg IV (Cat B) 🚭
- **Pediatric:** Call OLMD (Cat B) 🚭
**PHARMACOLOGY AND ACTIONS**

- Increases serum glucose by releasing glycogen stores from the liver. Will not work if patient is malnourished.
- Counteracts effects of Beta Blocker or Calcium Channel Blocker overdose.

**INDICATIONS**

- Symptomatic Hypoglycemic states (Glucometer reading <70 adults or <60 in children), when an IV cannot be established.
- The unconscious patient, when a glucometer reading cannot be obtained and an IV cannot be established.
- Known Beta Blocker or Calcium Channel Blocker overdose with hypotension.

**CONTRAINDICATIONS**

Glucagon is not a first line medication and is to be used ONLY when the EMSP is unable to start an IV on a patient who has symptomatic hypoglycemia (altered mental status).

**PRECAUTIONS AND SIDE EFFECTS**

- May cause tachycardia because of catecholamine release.
- May cause nausea and vomiting.
- Only the diluent supplied by the manufacturer should be used to mix the glucagon.
- Thiamine (IM) should precede the administration of glucagon in any adult patient when there is evidence of alcoholism or malnutrition.

**ADMINISTRATION**

Adult:
1 mg IV/IM (Cat B) 🦁

**Pediatric:**
0.5 mg IV/IM (Cat B) 🦁
**Haloperidol**

**PHARMACOLOGY AND ACTIONS**

Antipsychotic drug that acts as a dopamine antagonist. When given IM, time to peak drug concentration is 20 minutes; duration of action is several hours.

**INDICATIONS**

Altered Mental Status when patient is combative and potential for harm to patient and/or personnel is present.

**CONTRAINDICATIONS**

- Known hypersensitivity to haloperidol.
- Patients with known reversible cause of altered mental status.
- QT prolongation or history of torsades de pointes.

**PRECAUTIONS AND SIDE EFFECTS**

- Give with diphenhydramine to prevent extrapyramidal symptoms which are a common side effect.
- Use caution when treating elderly patients who may require smaller doses to achieve therapeutic effect.
- Haloperidol has been associated with cardiac arrest in patients with prolonged QT intervals. Patients who receive haloperidol should be closely monitored for cardiac arrhythmia, particularly when the medication is given IV.
- May cause neuroleptic malignant syndrome.

**ADMINISTRATION**

Adult:

5 mg IM. May repeat every 15 minutes up to total 20 mg as needed for agitation (Cat B)

**Pediatric:**

0.1 mg/kg IM (MAX dose 5 mg) (Cat B)
**Hydroxocobalamin (Cyanokit)**

### PHARMACOLOGY AND ACTIONS

When given IV, hydroxocobalamin binds cyanide ions to form Cyanocobalamin (vitamin B₁₂) which is then excreted in the urine.

### INDICATIONS

- Known cyanide poisoning.
- Smoke inhalation victims who show clinical evidence of closed-space smoke exposure (soot in mouth or nose, sooty sputum) and are either comatose, in shock, or in cardiac arrest.

### CONTRAINDICATIONS

None in the prehospital setting.

### PRECAUTIONS

- May cause transient elevation of blood pressure.
- Will cause red colored urine (for up to 5 weeks) and red colored skin (for up to 2 weeks). The red color of the blood serum and urine will interfere with colorimetric laboratory tests for several days.
- If possible, draw a red top blood tube before administering the Cyanokit but do not delay administration of the kit.

### ADMINISTRATION

**Adult:**

5 gms IV over 15 min

The 5 gram Cyanokit consists of 2 vials, each with 2.5 grams of hydroxocobalamin powder. Each vial must be reconstituted with 100 mL of Normal Saline (not included in the kit). Five grams (two vials) should be given IV over 15 minutes.

**Pediatric: Not Indicated**
### PHARMACOLOGY AND ACTIONS

Ketamine is a non-competitive NMDA receptor antagonist and dissociative, amnestic, analgesic, anesthetic agent.

### INDICATIONS

Ketamine has a variety of effects, including: anesthesia, analgesia, hallucinogen, and sympathetic stimulation.

### CONTRAINDICATIONS

- Known allergy to Ketamine.
- Oxygen saturation less than 90% or significant respiratory depression.
- Ages less than 1 year old.
- Pregnancy.

### PRECAUTIONS AND SIDE EFFECTS

- Transient periods of apnea (1-2 minutes) have occurred with IV ketamine administration, especially with rapid infusion.
- Relative contraindication for penetrating eye injury.
- May cause laryngospasm.
- May cause hypersalivation.
- Emergence reaction, consider administration of benzodiazepine, if applicable.
- Increased airway secretions, consider atropine.
- Nystagmus.

### ADMINISTRATION

**For Pain Management:**

**Adult:**
- 0.2 mg/kg slow IV Push. 25 mg MAX.
- 0.5 mg/kg IM. 50 mg MAX.
  - Contact OLMD for further dosing.

**Pediatric:**
- **0.2 mg/kg slow IV Push. 25 mg MAX.**
- **0.5 mg/kg IM. 50 mg MAX.**
- **1 mg/kg IN. 50 mg MAX.**
  - Contact OLMD for further dosing.

**For Altered Mental Status:**

**Adult:**
- 1 mg/kg slow IV Push.
- 4 mg/kg IM
  - Contact OLMD for further dosing.

**Pediatric:**
- **1 mg/kg slow IV Push.**
- **4 mg/kg IM.**
  - Contact OLMD for further dosing.
PHARMACOLOGY AND ACTIONS

Labetalol combines both selective, competitive alpha 1-adrenergic blocking and nonselective, competitive beta-adrenergic blocking activity in a single substance. These actions decrease blood pressure without reflex tachycardia and without a significant reduction in heart rate.

INDICATIONS

Control of blood pressure in severe hypertension.

CONTRAINDICATIONS

- Bronchial asthma.
- Overt cardiac failure.
- Greater than first degree heart block.
- Cardiogenic shock.
- Severe bradycardia.

PRECAUTIONS AND SIDE EFFECTS

- Cardiovascular:
  - Symptomatic postural hypotension.
  - Ventricular dysrhythmia.
  - Rarely syncope.
  - Bradycardia.
  - Heart block.
- CNS:
  - Dizziness.
  - Tingling of scalp/skin.
  - Numbness.
  - Vertigo.
- Respiratory:
  - Wheezing.
  - Bronchospasm.
- GI:
  - Nausea/vomiting

ADMINISTRATION

Adult:

20 mg slow (over 2 minutes) IV (CAT A).
If symptoms are not relieved, call OLMD for further dosing (CAT B)icap.

**Pediatric:**

**Not Indicated.**
**PHARMACOLOGY AND ACTIONS**

Antiarrhythmic drug. Half-life is 2 hours; therefore toxicity can develop with repeated doses.

**INDICATIONS**

- Cardiac Arrest due to Ventricular Fibrillation of Pulseless Ventricular Tachycardia.
- Premature Ventricular Complexes that are producing symptoms such as angina or hypotension. May be helpful in patients with STEMI who have closely coupled PVCs, R-on-T phenomenon, PVC runs of 3 or more, multiform PVCs.

**CONTRAINDICATIONS**

Bradycardia.

**PRECAUTIONS AND SIDE EFFECTS**

- At higher doses may cause CNS stimulation, seizure, depression, and respiratory failure.
- Toxicity is more likely in elderly patients and patients with Congestive Heart Failure or impaired liver function.

**ADMINISTRATION**

*Cardiac Arrest (VFib or Pulseless VTach)*

**Adult:**
- 1<sup>st</sup> dose: 1.5 mg/kg IV/IO
- 2<sup>nd</sup> dose: 0.75 mg/kg IV/IO
- MAX 3 mg/kg

**Pediatric:**
- 1 mg/kg IV/IO  MAX 3 mg/kg

*Premature Ventricular Complexes (PVC's):*

**Adult:**
- 1<sup>st</sup> dose: 1.5 mg/kg IV/IO
- 2<sup>nd</sup> dose: 0.75 mg/kg IV/IO
- MAX 3 mg/kg
- 2-4 mg/min maintenance infusion
  - Decrease maintenance dose by 50% if patient is in CHF, is >70 yrs old, is in shock, or has liver disease. (Cat B)

**Pediatric: Not Indicated**
**PHARMACOLOGY AND ACTIONS**

Benzodiazepine drug that acts as an anticonvulsant and sedative. Unrefrigerated shelf-life is 60 days.

**INDICATIONS**
- Active seizures.
- May be used as sedation prior to cardioversion.

**CONTRAINDICATIONS**
Alcohol intoxication, neurologic, or respiratory depression.

**PRECAUTIONS AND SIDE EFFECTS**
- Since lorazepam can cause respiratory depression and/or hypotension, the patient must be monitored closely. Lorazepam should not be given to adult patients without a good IV line in place and a bag valve mask ready.
- Paradoxical excitement or stimulation sometimes occurs.
- Most likely to produce respiratory depression in patients who have taken other depressant drugs, especially alcohol and barbiturates, or when given rapidly.
- Administration for sedation should be done only in consultation with OLMD.

**ADMINISTRATION**

Adult:
1-2 mg slow IV

**Pediatric:**

**IV:** 0.1 mg/kg slow IV
**MAX 2 mg (Cat B)**
## PHARMACOLOGY AND ACTIONS
Magnesium sulfate reduces striated muscle contractions and blocks peripheral neuromuscular transmission by reducing acetylcholine release at the myoneural junction.

## INDICATIONS
- Eclampsia.
- Torsades de pointes.
- Severe asthma.

## CONTRAINDICATIONS
None in prehospital setting.

## PRECAUTIONS AND SIDE EFFECTS
May cause hypotension and respiratory depression in large doses.

## ADMINISTRATION

**Eclampsia**
Adult:
4 grams IV. Mix 4 grams of magnesium sulfate (8 cc of 50% solution) in 250 cc of NS and give over 20 minutes. (Cat B)

**Pediatric: Not applicable**

**Cardiac Arrest with Torsades de pointes:**
Adult:
2 gm in 250 cc NS IV/IO

**Pediatric:**
50 mg/kg MAX 2 grams IV/IO (Cat B)

**Severe Asthma:**
Adult: 2 gm diluted in 250 cc NS IV/IO over 20 minutes (Cat B)

**Pediatric: Not indicated**
PHARMACOLOGY AND ACTIONS
Benzodiazepine drug that acts as an anticonvulsant and sedative and is a strong hypnotic.

INDICATIONS
- Active seizures.
- May be used as sedation prior to cardioversion.

CONTRAINDICATIONS
Alcohol intoxication, neurologic, or respiratory depression, hypotension.

PRECAUTIONS AND SIDE EFFECTS
- Midazolam has more potential than the other IV benzodiazepines to cause respiratory depression. Since midazolam can cause respiratory depression and/or hypotension, the patient must be monitored closely.
- Paradoxical excitement or stimulation sometimes occurs.
- Most likely to produce respiratory depression in patients who have taken other depressant drugs, especially alcohol and barbiturates, or when given rapidly.
- Administration for sedation should be done only in consultation with OLMD.

ADMINISTRATION
Adult:
2 mg IV/IM/IN

**Pediatric:**
**IV/IM:** 0.1 mg/kg slow IV or IM
**IN (PREFERRED):** 0.2 mg/kg IN via atomizer
**MAX 5 mg (Cat B) 🚫**
**PHARMACOLOGY AND ACTIONS**

Morphine Sulfate is a narcotic analgesic. It increases venous capacitance, decreases venous blood return (reduces preload), and reduces systemic vascular resistance at the arteriolar level (reduces afterload) which may lead to decreases in myocardial oxygen demand. Peak effect of action when given IV is 10 minutes with a duration of action 3-5 hours.

**INDICATIONS**

Severe pain of any etiology.

**CONTRAINDICATIONS**

- Known allergy to morphine.
- Respiratory rate less than 14 breaths per minute, oxygen saturation less than 90%, or significant respiratory depression.

**PRECAUTIONS AND SIDE EFFECTS**

- Morphine causes neurologic and respiratory depression. Respiratory depression may be worse in patients with underlying lung disease or concomitant use of other depressant drugs such as benzodiazepines or alcohol. Respiratory support must be available when administering morphine.
- Morphine can be reversed with naloxone.
- Check and document vital signs and patient response after each dose.
- Morphine may cause nausea and/or vomiting. Consider simultaneous administration of ondansetron whenever administering morphine.
- When morphine is given to treat pain, the goal is reduction of pain not total elimination of pain.

**ADMINISTRATION**

*Pain Management:*

**Adult:**

4 mg slow IV push initial dose, titrate to pain relief in 2 mg doses, every 3-5 minutes, 10mg MAX. If pain not relieved after 10 mg, call OLMD for further doses. (Cat B)

**Pediatric:**

0.1 mg/kg slow IV push not to exceed 5 mg (Cat B)
**Naloxone**

**PHARMACOLOGY AND ACTIONS**
Naloxone is a narcotic antagonist which competitively binds to narcotic sites but which exhibits almost no pharmacological activity of its own. Duration of action is 1-4 hours.

**INDICATIONS**
- Reversal of narcotic effects (particularly respiratory depression).
- Altered Mental Status of unknown etiology.

**CONTRAINDICATIONS**
None in the prehospital setting.

**PRECAUTIONS AND SIDE EFFECTS**
- In patients physically dependent on narcotics, frank and occasionally violent withdrawal symptoms may be precipitated. Be prepared to restrain the patient as they may become violent with reverse of the narcotic effect.
- The duration of some narcotics is longer than Naloxone. Repeated doses of Naloxone may be required. Patients who have received this medication must be transported to the hospital because coma may reoccur when Naloxone wears off.
- When administering Naloxone intranasally, never place a needle inside a patient’s nasal cavity. It is best to use a mucosal atomization device.

**ADMINISTRATION**

**Adult:**
2-4 mg IV/IN/IM every 3 minutes, MAX dose 8 mg. If desired, start by giving 0.5 mg and titrate to effect.

**Pediatric:**
- <5 years or <20 kg: 0.1 mg/kg IV/IN/IM, max 2 mg
- >5 years or >20 kg: 2-4 mg IV/IN/IM
**Nicardipine**

### Pharmacology and Actions
- Calcium channel blocker that produces vasodilation and decreases peripheral resistance.
- Onset: 5-15 minutes after IV administration.
- Duration: 4-6 hrs.

### Indications
Hypertension

### Contraindications
- Fentanyl, hydrocodone, or oxycodone use.
- Hypersensitivity to nicardipine or other calcium-channel.
- Advanced aortic stenosis.

### Precautions and Side Effects
- Use of other Calcium-channel blockers.
- May cause symptomatic hypotension or tachycardia.
- Titrate slowly to avoid systemic hypotension and possible negative inotropic effects with congestive heart failure (CHF), angina, and left ventricular dysfunction.
- Peripheral edema.
- Caution in patients with an acute cerebral infarction or hemorrhage.

### Administration
**Adults:**
- 5 mg/hr by slow IV infusion (50 mL/hr) initially,
- Increasing by 2.5 mg/hr every 5 minutes to a maximum of 15 mg/hr.
- Once the target BP is achieved, downward adjustment by 3 mg/hr should be attempted as tolerated (Cat. B)

**Pediatrics:**
- Not Indicated
### PHARMACOLOGY AND ACTIONS

Effects of nitroglycerin include vasodilation, decreased peripheral resistance, dilation of coronary arteries, and general smooth muscle relaxation.

### INDICATIONS

- Chest pain, particularly when Acute Coronary Syndromes is suspected.
- Hypertensive Emergency.
- Congestive Heart Failure.

### CONTRAINDICATIONS

Nitroglycerin is not to be given to children in the prehospital setting.

### PRECAUTIONS AND SIDE EFFECTS

- Generalized vasodilatation may cause profound hypotension and reflex tachycardia.
- May cause profound hypotension in patients taking medication for erectile dysfunction.
- Common side effects include throbbing headache, flushing, dizziness and burning under the tongue.
- Because nitroglycerin causes generalized smooth muscle relaxation, it may be effective in relieving chest pain caused by esophageal spasm.
- Nitroglycerin loses potency easily and should be stored in dark glass container with tight lid and not exposed to heat.

### ADMINISTRATION

#### Chest Pain

**Adult:**
0.4 mg if SBP>90, may repeat twice at 5 minute intervals for a total of 3 doses

**Pediatric: Not Indicated**

#### Congestive Heart Failure:

0.4 mg sublingual if SBP is >110, may repeat twice at 5 minute intervals for a total of 3 doses

**Pediatric: Not Indicated**
### Nitrous Oxide

**PHarmacology and Actions**
Nitrous Oxide is a blended mixture of 50% nitrous oxide and 50% oxygen which has potent analgesic effects. The high concentration of oxygen delivered with the nitrous oxide will increase the amount of oxygen in the blood.

**Indications**
Severe pain.

**Contraindications**
- Patients who cannot comprehend verbal instructions.
- Patients with altered mental status.
- Patients with suspected pneumothorax.
- Patients with abdominal pain.
- Patients who have COPD where the high oxygen concentration may depress ventilatory effort.

**Precautions and Side Effects**
- It is essential that Nitrous Oxide be self-administered.
- May cause nausea and vomiting.

**Administration**
**Adult:**
Self-administer until the pain is significantly relieved or until patient drops the mask. (Cat B) 🌐

**Pediatric:**
Consult with OLMD. (Cat B) 🌐
**Normal Saline**

**PHARMACOLOGY AND ACTIONS**

0.9% Saline solution.

**INDICATIONS**

Normal Saline is indicated for replacement of fluid volume losses such as in trauma, burns, dehydration, or shock, and is the only IV fluid authorized by these protocols.

Where IVs are used to maintain venous access, a heparin or saline lock may be substituted. They must be properly maintained to prevent occlusion.

**CONTRAINDICATIONS**

None in the prehospital setting.

**PRECAUTIONS AND SIDE EFFECTS**

In patients in which fluid overload is a problem, Normal Saline may be used with a microdrip, and this microdrip may be used to administer prehospital medications; also consider the use of a saline lock.

**ADMINISTRATION**

Adult:
Rate and amount to be given varies with the specific protocol.

**Pediatric:**
Rate and amount to be given varies with the specific protocol.
## PHARMACOLOGY AND ACTIONS
Ondansetron acts as an antiemetic by selectively antagonizing serotonin 5-HT3.

## INDICATIONS
Nausea or vomiting.

## CONTRAINDICATIONS
- Allergy to Ondansetron.
- **Age less than one month.**

## PRECAUTIONS AND SIDE EFFECTS
Can rarely cause extrapyramidal symptoms.

## ADMINISTRATION
**Adult:**
4 mg IV/IM or ODT (Orally Dissolving Tablet)

**Pediatric (1 month to 12 years):**
0.1mg/kg IV/IM or ODT MAX dose 4 mg (Cat B) 🌟
PHARMACOLOGY AND ACTIONS
Oxygen added to the inspired air raises the amount of oxygen in the blood and, therefore, the amount delivered to the tissues.

INDICATIONS
- Hypoxia or respiratory distress from any cause.
- Acute chest pain in which Acute Coronary Syndrome.
- Shock (decreased oxygenation of tissues) from any cause.
- Major trauma.
- Carbon monoxide poisoning.

CONTRAINDICATIONS
None in prehospital setting.

PRECAUTIONS AND SIDE EFFECTS
- If the patient is not breathing adequately, the EMSP must assist their ventilations. Provision of oxygen alone is not enough.
- A small percentage of patients with chronic lung disease breathe because they are hypoxic. Administration of oxygen may abolish their respiratory drive. Do not withhold oxygen because of this possibility, however, be prepared to assist ventilations. Monitor oxygen saturation with a pulse oximeter and, if available, monitor ventilations using capnography. Use just enough oxygen to maintain pulse oximeter reading of ≥95%.
- Restlessness may be an important sign of hypoxia.

ADMINISTRATION

<table>
<thead>
<tr>
<th>Method</th>
<th>Flow Rate</th>
<th>O₂% Inspired Air</th>
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</thead>
<tbody>
<tr>
<td>Room Air</td>
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<td>21%</td>
</tr>
<tr>
<td>Nasal Cannula (prongs)</td>
<td>1 L/min</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td>2 L/min</td>
<td>28%</td>
</tr>
<tr>
<td>Face Mask</td>
<td>6 L/min</td>
<td>44%</td>
</tr>
<tr>
<td>Oxygen Reservoir (mask)</td>
<td>10-12 L/min</td>
<td>90%</td>
</tr>
<tr>
<td>Bag-Valve Mask with 100% valve and reservoir</td>
<td>High glow regulated to inflate reservoir at proper rate</td>
<td>90%+</td>
</tr>
</tbody>
</table>
### PHARMACOLOGY AND ACTIONS

- Reduces subglottic edema via vasoconstriction.
- Bronchodilation.

### INDICATIONS

- Stridor
- Croup

### CONTRAINDICATIONS

Known hypersensitivity.

### PRECAUTIONS AND SIDE EFFECTS

- Patient may have a rebound of worsening distress.
- Tachycardia.

### ADMINISTRATION

**Adult:**

Single unit dose 0.5ml of 2.25% diluted in 3ml of NS via nebulizer.

If Racemic Epinephrine is not available, consider diluting 0.3 mg Epinephrine 1:1000 in 3 ml of NS via nebulizer.

**Pediatric:**

Single unit dose 0.5ml of 2.25% diluted in 3 ml of NS via nebulizer.

If Racemic Epinephrine is not available, consider diluting 0.3 mg Epinephrine 1:1000 in 3 ml of NS via nebulizer.
**Sodium Bicarbonate**

<table>
<thead>
<tr>
<th>PHARMACOLOGY AND ACTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium bicarbonate is an alkaline solution which neutralizes acids found in the blood. Acids are increased when body tissues become hypoxic due to cardiac or respiratory arrest.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INDICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Cardiac Arrest, particularly when hyperkalemia is suspected, with prolonged resuscitation efforts, or when there is suspected cocaine, aspirin, or tricyclic antidepressant overdose.</td>
</tr>
<tr>
<td>- Tricyclic Antidepressant overdose.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONTRAINDICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>None in prehospital setting.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PRECAUTIONS AND SIDE EFFECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addition of too much Sodium Bicarbonate may result in alkalosis which is difficult to reverse and can cause as many problems in resuscitation as acidosis.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADMINISTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cardiac Arrest:</strong></td>
</tr>
<tr>
<td>Adult: 1 mEq/kg IV/IO</td>
</tr>
<tr>
<td><strong>Pediatric:</strong> 1 mEq/kg (dilute 50% with Normal Saline)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Tricyclic Antidepressant overdose</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult: 1 mEq/kg (Cat B) 🗨</td>
</tr>
<tr>
<td><strong>Pediatric: Contact OLMD (Cat B) 🗨</strong></td>
</tr>
</tbody>
</table>
### PHARMACOLOGY AND ACTIONS

Thiamine is an important vitamin commonly referred to as Vitamin B1 and is required for conversion of glucose into energy. Chronic alcohol intake interferes with the absorption, intake, and utilization of thiamine. Patients who are malnourished, or have chronic alcohol abuse, may develop Wernicke's encephalopathy if given IV glucose without concomitant administration of thiamine.

### INDICATIONS

Thiamine should precede the administration of Dextrose or Glucagon in any adult patient if there is any evidence of malnutrition or alcohol abuse.

### CONTRAINDICATIONS

None in prehospital setting.

### PRECAUTIONS AND SIDE EFFECTS

None in prehospital setting.

### ADMINISTRATION

**Adult:**
- 100 mg IV/IM

**Pediatric: Not Indicated**
Tranexamic Acid (TXA)

**PHARMACOLOGY AND ACTIONS**

An antifibrinolytic which works by inhibiting the activation of plasminogen to plasmin, which aids in preventing blood clots from breaking down too quickly, in an attempt to reduce excessive bleeding. TXA is a competitive inhibitor of plasminogen activation, and at high concentrations a noncompetitive inhibitor of plasmin.

**INDICATIONS**

- Less than 3 hours from time of injury.
- Evidence of traumatic injury with hemodynamic instability to include traumatic head injuries.
- MOI or Hx of present illness consistent with excessive blood loss, including menstruation.
- GCS<13, SBP<90m, HR>110, and association with penetrating trauma, two or more long bone fractures, mangled or crushed extremities, amputation proximal to the wrist or ankle, or pelvic fracture.

**CONTRAINDICATIONS**

- Defective color vision.
- Pregnancy.
- Greater than 3 hours from time of injury.
- <18 years old.

**PRECAUTIONS AND SIDE EFFECTS**

- Allergy to medication or ingredients.
- History of blood clots (especially in the lung, heart, or brain), history of AFib, or irregular heartbeat.
- Should not be administered via IVP (may cause significant hypotension).
- Other side effects include dizziness, headache, abdominal pain, muscle spasms, or pain.
- Monitor for signs and symptoms of clots.

**ADMINISTRATION**

Adult >18 years old:

- 2 g over 20 mins, MAX 100mg per min.
- Mix 2g in 100 mL (NS, D5W, or LR) and administer by IV flow regulator or pump infusion (300mL/hr) over 20 mins. (Cat B for non-traumatic events)

**Pediatric:** Not Indicated.
CRISIS PROTOCOL IMPLEMENTATION

When the Governor proclaims a state of emergency, the ADPH OEMS will activate a protocol to provide authorization for the adjustment in the prehospital standard of care. Depending upon the Governor’s proclamation or the State Health Officer’s declaration, ADPH OEMS may activate a protocol statewide or on a regional or local basis.
STRUCTURE MARKING SYSTEM

Begin by using orange spray paint or lumber crayon to draw a 2-foot box. Then use the box to alert subsequent rescuers to building conditions or earlier findings.

☐ Damage is minor with little danger of further collapse. Structure is safe for search and rescue operations.

☐ Damage is significant. Shoring, bracing or removal of hazards is necessary.

☒ Structure is not safe for search and rescue operations. Remote search operations may proceed at significant risk. Safe havens and evacuation routes should be established.

↑ ← Direction to safely enter building.

HM Hazardous material is present. Type of hazard may also be noted.

9/1/95 0800
HM-CHLORINE
CATF-2

Write date, time, hazardous materials present and team identification on the right-hand side of the box. For example, this building was searched Sept. 1, 1995, at 8a.m., chlorine was found, and the search was conducted by Los Angeles County CATF-2.

SEARCH MARKING SYSTEM

/\ Search operations are currently in progress. (ORANGE)

\_/ Personnel have exited the structure. (ORANGE)

9/1/95
CATF-2
HM-CHLORINE
1-LIVE
1-DEAD

Left quadrant – Team identifier.
Top quadrant – Time and date team left the structure.
Right quadrant – Hazards found.
Bottom Quadrant - Number of live and dead victims still inside the structure. *Written in Black Marker or lumber crayon/chalk*

**GUIDELINE**

This protocol is to be implemented only when there is a mass casualty incident where the number of patients exceeds the capabilities of the EMS providers on the scene. As situations change and resources vary, periodic re-triage may be appropriate.

This protocol is only meant to be a guideline. If desired, the EMSP may use a different mass casualty triage algorithm if it has been approved by his/her EMS agency.
Triage of Mass Casualties (Adult)
Triage of Mass Casualties (Pediatric)

JumpSTART Pediatric Multiple Casualty Incident Triage

Able to walk?
- Yes: MINOR
- No: Spontaneous breathing
  - No: Position airway
  - APNEA
  - No: Spontaneous breathing
  - EXPECTANT
  - Yes: Spontaneous breathing
  - APNEA
  - EXPECTANT

Spontaneous breathing
- Yes: Respiratory Rate
  - <15 or >45
    - No: INAPPROPRIATE "P" (e.g., posturing or "U"
      - No: INAPPROPRIATE "P" (e.g., withdrawal from painful stimulus)
      - Yes: Neurological Assessment
        - "A," "V," or Appropriate "P"
          - Yes: IMMEDIATE
          - No: IMMEDIATE

Respiratory Rate
- 15-45
  - No: IMMEDIATE
  - Yes: Palpable Pulse?
    - No: IMMEDIATE
    - Yes: Neurological Assessment [AVPU]
      - INAPPROPRIATE "P" (e.g., posturing) or "U"
        - "A," "V," or Appropriate "P"
          - Yes: IMMEDIATE
          - No: DELAYED

Neurological Assessment
- A: Alert
- V: Responds to Verbal Stimulation
- P: Responds to Painful Stimuli
- U: Unresponsive to Noxious Stimuli

Triage Categories

- **EXPECTANT** (Black Triage Tag Color)
  - Victim unlikely to survive given severity of injuries, level of available care, or both
  - Palliative care and pain relief should be provided

- **IMMEDIATE** (Red Triage Tag Color)
  - Victim can be helped by immediate intervention and transport
  - Requires medical attention within minutes for survival (up to 60)
  - Includes compromises to patient's Airway, Breathing, Circulation

- **MINOR** (Green Triage Tag Color)
  - Victim with relatively minor injuries
  - Status unlikely to deteriorate over days
  - May be able to assist in own care: "Walking Wounded"

- **DELAYED** (Yellow Triage Tag Color)
  - Victim's transport can be delayed
  - Includes serious and potentially life-threatening injuries, but status not expected to deteriorate significantly over several hours

Use JumpSTART if the Patient appears to be a child.
Use an adult system, such as START, if the patient appears to be a young adult.
PURPOSE

This form should be used when a patient requests transport to a hospital that is on diversion. The patient should be informed of the diversion and what the diversion means. If the patient is adamant that he/she be transported to the hospital on diversion, complete this form and have the patient sign the Statement of Understanding below.

EMS TRANSPORT PROVIDER: MARK ALL THAT APPLY

☐ Patient transported to a hospital that was on “diversion.”
☐ Patient was informed and voiced understanding that an extended wait is possible.
☐ Patient was informed and voiced understanding that transfer to another hospital is possible.
☐ Patient was diverted to this hospital because ____________________________ hospital is on Emergency Department, Critical Care, Med/Surg, Psych, CT, Labor & Delivery diversion. (Enter hospital name and circle appropriate reason for diversion).

STATEMENT OF UNDERSTANDING

It has been explained to me that ____________________________ hospital is on diversion, and that I may have an extended wait to see the doctor, get a bed, or may need to be transferred to another hospital. I still wish to be transported to this hospital.

_______________________________________________________         ________________
Signature of Patient                                      Date

Witness (optional)

________________________________________________________
Print Name

________________________________________________________
Signature
**Thrombolytic Checklist (STEMI)**

Complete this checklist for any patient with a STEMI

<table>
<thead>
<tr>
<th>EVENT INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
</tr>
<tr>
<td>Destination:</td>
</tr>
<tr>
<td>Patient Name:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12-LEAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chief Complaint/Reason for 12-Lead:</td>
</tr>
<tr>
<td>12-Lead Acquired: Yes____ No____</td>
</tr>
<tr>
<td>Number of Transmission Attempts: ______</td>
</tr>
<tr>
<td>EMSP Assessment of 12-Lead:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DOES PATIENT HAVE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Chest pain or equivalent characteristic of myocardial ischemia, for at least 30 minutes.</td>
</tr>
<tr>
<td>Pain has not lapsed and is not relieved by NTG or position changes</td>
</tr>
<tr>
<td>ECG ST segment elevation of at least 1 mm in at least two contiguous leads reflecting a single myocardial region (Q waves are not a contraindication)</td>
</tr>
<tr>
<td>Elapsed time from onset of ischemia to evaluation less than twelve hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXCLUSION CRITERIA: POTENTIAL ABSOLUTE CONTRAINDICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Active internal bleeding</td>
</tr>
<tr>
<td>Past of present bleeding disorder</td>
</tr>
<tr>
<td>History of any stroke, intracranial neoplasm, arteriovenous malformations or aneurysm</td>
</tr>
<tr>
<td>Intracranial or intraspinal surgery or trauma in the last 2 months</td>
</tr>
<tr>
<td>Intracranial neoplasm, arteriovenous malformation, or aneurysm</td>
</tr>
<tr>
<td>Uncontrolled hypertension - systolic &gt; 180 mm Hg, diastolic &gt; 110 mm Hg</td>
</tr>
<tr>
<td>Pregnancy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXCLUSION CRITERIA: POTENTIAL RELATIVE CONTRAINDICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Diabetic hemorrhagic retinopathy or other hemorrhagic ophthalmic conditions</td>
</tr>
<tr>
<td>Prolonged CPR (longer than 10 minutes)</td>
</tr>
<tr>
<td>Major surgery at non-compressible site (eg. CABG) within 10 days</td>
</tr>
<tr>
<td>Documented cerebrovascular disease</td>
</tr>
<tr>
<td>Gastrointestinal or genitourinary bleeding within last 7 days</td>
</tr>
<tr>
<td>Significant liver dysfunction</td>
</tr>
<tr>
<td>PHYSICALLY advanced age (&gt;75 years with multiple disease states beyond AMI).</td>
</tr>
<tr>
<td>Patients currently receiving oral anticoagulants</td>
</tr>
<tr>
<td>Previous thrombolytic therapy</td>
</tr>
<tr>
<td>Trauma to the head in the last two weeks</td>
</tr>
<tr>
<td>Any trauma in the last two weeks</td>
</tr>
<tr>
<td>Surgery in the last two weeks</td>
</tr>
</tbody>
</table>
Leave a copy with the patient.

Complete this checklist when treating any patient with acute stroke.

### EVENT INFORMATION

<table>
<thead>
<tr>
<th>Date:</th>
<th>ATCC Number:</th>
<th>Time:</th>
<th>AM PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Destination:</td>
<td>Historian Cell Phone #:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient Name:</td>
<td>Patient DOB:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### F-A-S-T ASSESSMENT

**Face:** Assess facial droop: have pt show teeth or smile
- Normal: both sides of face move equally.
- Abnormal: one side of face does not move as well as the other.

**Arm:** Assess arm drift: have pt close eyes and hold both arms straight out (palms up) for 10 seconds.
- Normal: both arms move the same or both arms do not move at all.
- Abnormal: one arm does not move or one arm drifts down compared to the other.

**Speech:** Assess speech: have the pt say: “You can’t teach an old dog new tricks.”
- Normal: pt uses correct words with no slurring.
- Abnormal: pt slurs words, uses the wrong words, or is unable to speak.

**Time:** Estimated time symptoms began (Last time seen normal)

________ Exact time __4.5 hours or less ___4.5-6 hours ___>6 hours ___Unknown

Level of consciousness:
Alert_______ Responds to Voice______ Responds to Pain______ Unresponsive______

**GLUCOMETER READING:** ________ mg/dL  Was bolus given? Yes____ No_____ Unknown_____

### QUESTIONS

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of: stroke, brain tumor, aneurysm, arteriovenous malformations</td>
<td></td>
</tr>
<tr>
<td>Patient Pregnant</td>
<td></td>
</tr>
<tr>
<td>Past or Present Bleeding disorders</td>
<td></td>
</tr>
<tr>
<td>Surgery in last two weeks</td>
<td></td>
</tr>
<tr>
<td>Anticoagulant medications taken  Last Taken:</td>
<td></td>
</tr>
<tr>
<td>Intracranial or intraspinal surgery or trauma in the last 2 months</td>
<td></td>
</tr>
<tr>
<td>Gastrointestinal or genitourinary bleeding within last 7 days</td>
<td></td>
</tr>
</tbody>
</table>

Leave a copy with the patient.

Received by: ____________________________  Date: ____________________________
A paramedic endorsed by the OEMS, certified by the International Board of Specialty Certifications (IBSC) as a Tactical Paramedic-Certified (TP-C), and has been validated by the provider service Medical Director. This certification grants all protocols to be category A, an expanded scope of practice, and medication formulary only when the individual receives the current endorsement on their EMSP license issued by the OEMS and they are actively engaged in a tactical operation with a Law Enforcement agency.
**DESCRIPTION**

Surgical cricothyroidotomy involves passing a tube through an incision in the cricothyroid membrane in order to provide an airway to oxygenate and ventilate a patient when less invasive airway management techniques cannot be accomplished or have failed.

**INDICATIONS**

Management of an airway when standard airway procedures cannot be accomplished or have failed.

**PRECAUTIONS**

Caution should be used in patients with:
- Laryngeal injury.
- Tracheal rupture.
- Anterior neck swelling that obscures anatomical landmarks.
- Anatomic anomalies or distortion of the larynx and trachea.
- Bleeding disorder.

**PROCEDURE**

**Adult**
- Have suction supplies available and ready.
- Locate the cricothyroid membrane utilizing anatomical landmarks.
- Use the non-dominant hand to secure the membrane.
- Prepare the site for incision. Quickly cleanse the site with antiseptic solution. Start from the membrane and wipe in widening circles until a broad margin around the site is cleansed.
- Make a vertical incision in the skin 1.5 to 2.5 cm in length over the cricothyroid membrane.
- Use blunt dissection to expose the cricothyroid membrane.
- Once the membrane is exposed, make a horizontal incision through the membrane.
- Insert the endotracheal tube until the cuff is in the trachea, inferior to the incision site. Consider the use of a Bougie as a guide into the trachea.
- Inflate the cuff.
- Secure the tube with a commercial tube holder if available or prepackaged tube securing tie.
- Confirm placement as you would an ETT.
- Note the depth on insertion.

**Pediatric**

Not Recommended.