**Treatment Protocol: TABLE OF CONTENTS** **Ref. No. 1200**


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| Assessment | 1201 | | Provider Impression:<br>No Medical Complaint (NOMC) |

**G E N E R A L  M E D I C A L**

| | | | |
|---|---|---|---|
| General Medical | 1202 | 1202-P | Provider Impressions:<br>Body Pain Non-traumatic (BPNT)<br>Chest Pain – Not Cardiac (CPNC)<br>Cold / Flu Symptoms (COFL)<br>Extremity Pain/Swelling-Non-traumatic (EXNT)<br>Headache – Non-traumatic (HPNT)<br>Hypertension (HYTN)<br>Palpitations (PALP)<br>Weakness – General (WEAK) |
| Diabetic Emergencies | 1203 | 1203-P | Provider Impressions:<br>Hyperglycemia (HYPR)<br>Hypoglycemia (HYPO) |
| Fever / Sepsis | 1204 | 1204-P | Provider Impression:<br>Fever (FEVR)<br>Sepsis (SEPS) |
| GI / GU Emergencies | 1205 | 1205-P | Provider Impressions:<br>Abdominal Pain/Problems (ABOP)<br>Diarrhea (DRHA)<br>Genitourinary Disorder-Unspecified (GUDO)<br>Lower GI Bleeding (LOGI)<br>Upper GI Bleeding (UPGI)<br>Nausea / Vomiting (NAVM)<br>Vaginal Bleeding (VABL) |
| Medical Device Malfunction | 1206 | 1206-P[1] | Provider Impression:<br>Medical Device Malfunction (FAIL) |
| Shock/Hypotension | 1207 | 1207-P | Provider Impression:<br>Hypotension (HOTN)<br>Shock (SHOK) |

**B E H A V I O R A L**

| | | | |
|---|---|---|---|
| Agitated Delirium | 1208 | 1208-P | Provider Impressions:<br>Agitated Delirium (AGDE) |

| | | | |
|---|---|---|---|
| Behavioral / Psychiatric Crisis | 1209 | 1209-P | Provider Impressions:<br>Behavioral / Psychiatric Crisis (PSYC) |

**C A R D I O V A S C U L A R / C H E S T P A I N**

| | | | |
|---|---|---|---|
| Cardiac Arrest | 1210 | 1210-P | Provider Impressions:<br>Cardiac Arrest – Non-Traumatic (CANT)<br>DOA – Obvious Death[2] (DEAD) |
| Cardiac Chest Pain | 1211 | - | Provider Impressions:<br>Chest Pain – Suspected Cardiac[3] (CPSC)<br>Chest Pain – STEMI (CPMI) |
| Cardiac Dysrhythmia - Bradycardia | 1212 | 1212-P | Provider Impression:<br>Cardiac Dysrhythmia (DYSR) |
| Cardiac Dysrhythmia - Tachycardia | 1213 | 1213-P | Provider Impression:<br>Cardiac Dysrhythmia (DYSR) |
| Pulmonary Edema / CHF | 1214 | - | Provider Impression:<br>Respiratory Distress / Pulmonary Edema / CHF (CHFF) |

**C H I L D B I R T H / P R E G N A N C Y**

| | | | |
|---|---|---|---|
| Childbirth (Mother) | 1215 | 1215-P | Provider Impression:<br>Childbirth (Mother) [4] (BRTH) |
| Newborn / Neonatal Resuscitation | - | 1216-P | Provider Impression:<br>Newborn (BABY) |
| Pregnancy Complication | 1217 | 1217-P | Provider Impression:<br>Pregnancy Complication[4] (PREG) |
| Pregnancy Labor | 1218 | 1218-P | Provider Impression:<br>Pregnancy / Labor[4] (LABR) |

**E N V I R O N M E N T A L**

| | | | |
|---|---|---|---|
| Allergy | 1219 | 1219-P | Provider Impression:<br>Allergic Reaction (ALRX)<br>Anaphylaxis (ANPH) |
| Burns | 1220 | 1220-P | Provider Impression:<br>Burn (BURN) |

| | | | |
|---|---|---|---|
| Electrocution | 1221 | 1221-P | Provider Impression: Electrocution (ELCT) |
| Hyperthermia (Environmental) | 1222 | 1222-P | Provider Impression: Hyperthermia – Environmental[5] (HEAT) |
| Hypothermia / Cold Injury | 1223 | 1223-P | Provider Impression: Hypothermia / Cold Injury (COLD) |
| Stings / Venomous Bites | 1224 | 1224-P | Provider Impression: Stings / Venomous Bites (STNG) |
| Submersion (Drowning and Decompression Emergency) | 1225 | 1225-P | Provider Impression: Submersion / Drowning (DRWN) |

**E N T E M E R G E N C I E S**

| | | | |
|---|---|---|---|
| ENT / Dental Emergencies | 1226 | 1226-P | Provider Impression: ENT / Dental Emergencies (ENTP) Epistaxis (NOBL) |
| | 1227 (omitted) | | |
| Eye Problem | 1228 | 1228-P | Provider Impression: Eye Problem – Unspecified (EYEP) |

**N E U R O L O G Y**

| | | | |
|---|---|---|---|
| ALOC | 1229 | 1229-P | Provider Impression: ALOC – Not Hypoglycemia or Seizure (ALOC) |
| Dizziness / Vertigo | 1230 | 1230-P | Provider Impression: Dizziness / Vertigo (DIZZ) |
| Seizure | 1231 | 1231-P | Provider Impression: Seizure – Active (SEAC) Seizure – Postictal (SEPI) |
| Stroke / CVA / TIA | 1232 | 1232-P | Provider Impression: Stroke / CVA / TIA (STRK) |
| Syncope / Near Syncope | 1233 | 1233-P | Provider Impression: Syncope / Near Syncope (SYNC) |

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## R E S P I R A T O R Y


| | | | |
|---|---|---|---|
| Airway Obstruction | 1234 | 1234-P | Provider Impression:<br>Airway Obstruction (CHOK) |
| BRUE (ALTE) | - | 1235-P | Provider Impression:<br>BRUE (BRUE) |
| Inhalation Injury | 1236 | 1236-P | Provider Impressions:<br>Inhalation Injury (INHL)<br>Smoke Inhalation (SMOK) |
| Respiratory Distress | 1237 | 1237-P | Provider Impressions:<br>Respiratory Distress / Bronchospasm (SOBB)<br>Respiratory Distress / Other (RDOT)<br>Respiratory Arrest/Respiratory Failure (RARF) |


## T O X I C O L O G Y


| | | | |
|---|---|---|---|
| Carbon Monoxide Exposure | 1238 | 1238-P | Provider Impression:<br>Carbon Monoxide (COMO) |
| Dystonic Reaction | 1239 | 1239-P | Provider Impression:<br>Dystonic Reaction (DYRX) |
| HAZMAT<br>(*Nerve Agent, organophosphate, radiological)* | 1240 | 1240-P | Provider Impression:<br>HAZMAT Exposure (DCON) |
| Overdose / Poisoning / Ingestion | 1241 | 1241-P | Provider Impressions:<br>Alcohol Intoxication (ETOH)<br>Overdose / Poisoning / Ingestion (ODPO) |


## T R A U M A


| | | | |
|---|---|---|---|
| Crush Injury/Syndrome | 1242 | 1242-P | Provider Impression:<br>Traumatic Injury (TRMA) |
| Traumatic Arrest | 1243 | 1243-P | Provider Impression:<br>Traumatic Arrest - Blunt (CABT)<br>Traumatic Arrest – Penetrating (CAPT) |
| Traumatic Injury<br>*(Multisystem, Isolated head, isolated extremity)* | 1244 | 1244-P[6] | Provider Impression:<br>Traumatic Injury (TRMA) |

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**C O M M U N I C A B L E D I S E A S E**

Potential COVID-19 Patients 1245 -

Provider Impressions:
Cold / Flu Symptoms (COFL)
Fever (FEVR)
Respiratory Distress / Bronchospasm (SOBB)
Respiratory Distress / Other (RDOT)
Respiratory Arrest/Respiratory Failure (RARF)
Sepsis (SEPS)

**MEDICAL CONTROL GUIDELINES** 1300

## Notes

1 Medical Device Malfunction for children may include but is not limited to: Ventriculoperitoneal shunts, vagal nerve stimulators, G-tubes, central lines, and LVADs
2 Cardiac Arrest Obvious Death for children includes SIDS
3 Chest pain that is concerning for cardiac cause in children is rare – and treatment provided in General Medical 1202-P
4 Protocols for labor, childbirth and pregnancy complications if the Mother is a pediatric patient (adolescent) are no different than the adult protocols but are listed here for ease of accessing the correct protocol
5 Hyperthermia for children includes child trapped in vehicle
6 Traumatic injury – Multisystem/Torso Trauma includes suspected child maltreatment

## Treatment Protocol: GENERAL INSTRUCTIONS — Ref. No. 1200.1

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The Treatment Protocols were developed to be consistent with EMS Provider Impressions as approved by the California EMS Authority. The foundations for the revised guidelines are the EMT and paramedic scope of practice, medical research, and community standards in medical practice.

### GENERAL INFORMATION

1. Patients with the same disease may have differing symptoms and presentations, and conversely, patients with similar signs and symptoms may have very different diagnoses.

2. The Treatment Protocols guide treatment of "classic" presentations based on evidence-based practice. EMTs, Paramedics, mobile intensive care nurses (MICNs) and Base hospital physicians must utilize their medical knowledge, expertise and critical thinking to determine appropriate treatment for each patient.

3. The protocols were not developed with the intent that all therapies be done on scene. Transport of patients with treatment en route is left to the discretion of the field unit and the base hospital.

4. The protocols incorporate EMS policies that address EMT and Paramedic Scope of Practice, Procedures Prior to Base Contact, Base Hospital Contact, and Standing Field Treatment Protocols. Assessments and treatments recommended would be carried out by an EMT and/or a paramedic based on their scope of practice.

5. Treatments may be ordered by Mobile Intensive Care Nurses (MICNs) providing online medical direction as indicated in the protocols. In addition, MICNs may provide orders for pain management per their clinical judgement up to a maximum adult total dose of Fentanyl 250mcg or Morphine 20mg or, for pediatrics, Fentanyl or Morphine up to a maximum of 4 total doses per *MCG 1309*.

### PROTOCOL FORMAT

1. Pharmacologic agents are in **BOLD** typeface.

2. In general, each protocol will have a corresponding pediatric specific protocol. The pediatric protocols are identified with a letter "P" at the end of the protocol number and have the Los Angeles County teddy bear symbol.

3. In preparation for an on-line mobile application, the protocols were developed to provide linkages to additional helpful information specific to the provider impression and/or specific patient population, such as the Medical Control Guidelines (MCG) and patient destination policies. These are indicated in **BLUE** in the protocols as hyperlinks.

### USING THE TREATMENT PROTOCOLS

1. Utilize *Ref. No. 1201*, Assessment as a starting point until a Provider Impression is established.

2. If more than one treatment protocol applies, begin by using the one most closely associated with the patient's symptoms and prioritize interventions based on you judgement.

Based on the patient's presentation and the assessment, the EMT or Paramedic determines his/her Provider Impression. In general, Provider Impressions are categorized according to body systems. Each Provider Impression has a corresponding Treatment Protocol.

**BODY SYSTEM**
└→ Provider Impression/Protocol Name ——————→ Protocol Number

A Treatment Protocol may be applicable to more than one Provider Impression. Also, rarely, a Provider Impression may be further divided into more than one Treatment Protocol, e.g. management for the Provider Impression 'Cardiac Dysrhythmia' is guided by *TP 1212, Cardiac Dysrhythmia - Bradycardia* or *TP 1213, Cardiac Dysrhythmia - Tachycardia* depending on the dysrhythmia.

3. Refer to the appropriate Treatment Protocol(s) to guide patient treatment. The treatment protocol sequence is intended to guide the priority in which interventions are administered but not to imply a strict order as priorities in an individual patient may differ.

4. If the patient's status changes, a different treatment protocol might be needed. When using the new treatment protocol, take into account the treatments already performed.

5. These protocols are designed for the Paramedic however, the EMT provider may use these protocols based on their scope of practice and should contact ALS when indicated by their assessment as per *Ref. 802, Emergency Medical Technician (EMT) Scope of Practice* and *Ref. 1200.4 BLS Upgrade to ALS Assessment*.

6. All pediatric patients must be measured using a length-based resuscitation tape (e.g., Broselow) and the identified color code and weight in kilograms must be reported when contacting the Base hospital. The color code and weight in kilograms must be documented for all pediatric patients in the weight section of the EMS Patient Care Record (ePCR or EMS Report Form). Medication dosages are determined by correlating the length-based resuscitation tape color code with the appropriate weight on the Medical Control Guideline (*MCG 1309), Color Code Drug Doses/L.A. County Kids* chart. If the child is longer than the length-based resuscitation tape, use adult dosing.

7. A full patient report must be given: 1) If Base hospital contact is made to obtain patient care orders or 2) if the patient meets trauma criteria or guidelines but is being transported to a non-trauma hospital. Once Base hospital contact is made for medical control the overall authority for the patient's medical care lies with the Base. The treatment plan should be developed collaboratively by EMS and Base personnel. Treatments outlined in the applicable protocol may be administered by EMS personnel and communicated to the Base.

8. Paramedic verbal report to the Base hospital and/or receiving hospital shall be in accordance with *Ref. 1340, Medical Control Guideline: Online Medical Control and Receiving Hospital Notification.*

CONTACT BASE HOSPITAL as specified in *Ref. 1200.2, Base Contact Requirements*

TRANSPORT ALS when either of the following conditions apply:

**Treatment Protocol: GENERAL INSTRUCTIONS** **Ref. No. 1200.1**

1. Need for immediate and ongoing ALS intervention (excluding single administration of medication for symptomatic relief, e.g., morphine, fentanyl, ondansetron)

2. Potential for deterioration en route including but not limited to abnormal vital signs

NOTIFY THE RECEIVING HOSPITAL to expedite care of ALL ALS patients to ensure 9-1-1 receiving facilities are prepared with the appropriate resources to receive the patient and to reduce ambulance patient offload time (APOT).

1. When operating on treatment protocols without online medical control, paramedics will notify the receiving hospital directly.

2. When Base Contact is made, Base personnel will notify the receiving hospital.

## Treatment Protocol: BASE CONTACT REQUIREMENTS — Ref. No. 1200.2

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PRINCIPLES:

1. Base Contact is made by paramedics to establish online medical direction for additional guidance on field care beyond what is contained in the offline treatment protocols.

2. Base Contact for all patients shall be made according to the requirements below and at the judgment of the treating paramedic. Access to online medical direction is not limited to those conditions listed below.

3. For children 13 to 36 month of age, Base Contact and/or transport is required, except those with no medical complaint or with isolated minor extremity injury. Children less than or equal to 12 month of age must be transported in accordance with *Ref. No. 510*, regardless of provider impression or field treatment rendered.

4. Base Contact criteria below still apply if the patient is refusing transport (AMA). This includes parents or legal guardians who refuse transport of a pediatric patient.

5. This document provides a quick reference list for Base Contact requirements; it does not replace the treatment protocols or the guidance there within, which shall be followed at all times unless otherwise directed by online medical direction.

GUIDELINES:

1. Base Contact is required when consultation with the base would be helpful such as:

    a. Patient presentation renders the provider impression and appropriate treatment protocol unclear

    b. Additional or unlisted treatments are required

2. Base Contact is required when five or more patients require transport (contacting the Medical Alert Center constitutes Base Contact).

3. Base Contact is required for children who meet transport guidelines to a Pediatric Medical Center *(Ref. 510)*

4. Base Contact is required for patients in traumatic full arrest who do not meet criteria for determination of death per *Ref. 814*. In these instances, Base Contact shall be made with the Trauma Center.

5. Base contact is required for the following provider impressions in all patients:

    a. Agitated Delirium

    b. Anaphylaxis

    c. Cardiac Arrest – Non-traumatic (unless patient meets determination of death by *Ref 814*)

d. Childbirth

e. Dystonic Reaction

f. Hypotension

g. Respiratory Failure

h. Shock

i. Stroke/ CVA/ TIA

6. Additionally, Base Contact is required for the following provider impressions in pediatric patients:

   a. BRUE

   b. Chest Pain – Suspected Cardiac / Chest Pain - STEMI
   c. Pregnancy/Labor

   d. Newborn

7. Base Contact is required for the following provider impressions under the specified conditions:

   a. Airway Obstruction
      - Severe respiratory distress or respiratory arrest

   b. Altered Level of Consciousness (ALOC)
      - Persistent ALOC of unclear etiology

   c. Cardiac Dysrhythmia
      - Rapid atrial fibrillation with poor perfusion
      - Symptomatic bradycardia
      - Wide complex tachycardia

   d. Medical Device Malfunction
      - Ventricular Assist Device (VAD) malfunction

   e. Overdose / Poisoning / Ingestion
      - If signing out AMA

   f. Pregnancy Complication
      - >20 weeks with vaginal bleeding

   g. Respiratory Distress (of any etiology e.g. Bronchospasm, Pulmonary Edema, Other)
      - Severe respiratory distress unresponsive or not amenable to CPAP
      - Unmanageable airway

h. Seizure
- Pregnant patient
- Status epilepticus

i. Submersion / Drowning
- ALOC
- Decompression illness

j. Traumatic Injury
- Crush syndrome
- Prolonged entrapment >30 minutes
- Trauma criteria or guidelines met
- Traumatic arrest not meeting criteria for determination of death per *Ref 814*

8. Base Contact is required concurrently when the following treatments are initiated:

   a. Adenosine in pediatric patients

   b. Cardioversion

   c. Push-dose epinephrine

   d. Transcutaneous pacing

9. Base Contact is required prior to initiating the following treatments:

   a. Additional dosing of normal saline or medications (e.g., midazolam, opiate analgesia, etc) after the maximum dose is administered per protocol

   b. Calcium chloride for patients with calcium channel blocker overdose

   c. Cardioversion of a patient with adequate perfusion, or awake with a narrow complex tachycardia, or any atrial fibrillation

   d. Midazolam for sedation of a patient with behavioral/psychiatric crisis

   e. IO placement beyond the indications listed in *MCG 1375*

   f. Sodium bicarbonate for symptomatic bradycardia with suspected hyperkalemia or for dysrhythmia due to possible tricyclic antidepressant or other toxic overdose

   g. Transcutaneous pacing if HR >40

**Treatment Protocol: PROVIDER IMPRESSIONS** **Ref. No. 1200.3**

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GENERAL RULES:

1. This is a list of all the provider impressions (PI) in alphabetical order by PI name.
2. The following columns list the associated Treatment Protocol (TP) name and number. Use the corresponding "__-P" protocol if patient ≤ 14 years of age.
3. The last column provides guideline about the use of the PI.

| Provider Impression (PI) Name | PI Code | Treatment Protocol (TP) | TP Code | Guidelines for use of PI |
|---|---|---|---|---|
| Abdominal Pain/Problems (GI/GU) | ABOP | GI/GU Emergencies | 1205<br>1205-P | For any pain or problem in the abdominal/flank region that does not have a more specific PI, includes post-surgical complications. |
| Agitated Delirium | AGDE | Agitated Delirium | 1208<br>1208-P | For Agitated Delirium only. NOT for psychiatric emergencies or other causes of agitation without delirium. |
| Airway Obstruction/ Choking | CHOK | Airway Obstruction | 1234<br>1234-P | For any upper airway emergency including choking, foreign body, swelling, stridor, croup, and obstructed tracheostomy |
| Alcohol Intoxication | ETOH | Overdose/ Poisoning/ Ingestion | 1241<br>1241-P | For alcohol intoxication if it is the primary problem. Use of secondary PI if the patient has another acute emergency. |
| Allergic Reaction | ALRX | Allergy | 1219<br>1219-P | For any simple allergic reaction that is isolated to the skin (hives/ urticarial only) and does not meet definition of anaphylaxis |
| ALOC - Not Hypoglycemia or Seizure | ALOC | ALOC | 1229<br>1229-P | For altered mental status not attributed to a more specific PI (i.e., cause unknown). Use as secondary PI when cause known. |
| Anaphylaxis | ANPH | Allergy | 1219<br>1219-P | For anaphylaxis. |
| Behavioral/ Psychiatric Crisis | PSYC | Behavioral/ Psychiatric Crisis | 1209<br>1209-P | For psychiatric crisis that is the primary problem. NOT for anxiety/agitation secondary to medical etiology, use PI related to medical issue. |
| Body Pain – Non Traumatic | BPNT | General Medical | 1202<br>1202-P | For pain not related to trauma that is not localized to chest, abdomen, head, or extremity. |
| BRUE | BRUE | BRUE | 1235-P | For a brief resolved unexplained event (BRUE). Patient must be ≤12 months of age and back to baseline on assessment. |
| Burns | BURN | Burns | 1220<br>1220-P | For any burn injury to skin. For inhalation injury use PI Inhalation Injury. Use with PI Traumatic Injury if other trauma present. |
| Carbon Monoxide | COMO | Carbon Monoxide Exposure | 1238<br>1238-P | For suspected or known carbon monoxide exposure. |
| Cardiac Arrest – Non-traumatic | CANT | Cardiac Arrest | 1210<br>1210-P | For non-traumatic cardiac arrest in which any resuscitation is initiated, NOT dead on arrival. |

**Treatment Protocol: PROVIDER IMPRESSIONS** **Ref. No. 1200.3**

| Provider Impression (PI) Name | PI Code | Treatment Protocol (TP) | TP Code | Guidelines for use of PI |
|---|---|---|---|---|
| Cardiac Dysrhythmia | DYSR | Cardiac Dysrhythmia – Bradycardia | 1212<br>1212-P | For any bradycardic rhythm <60bpm. |
| Cardiac Dysrhythmia | DYSR | Cardiac Dysrhythmia – Tachycardia | 1213<br>1213-P | For any tachydysrhythmia and for sinus tachycardia (ST) of unclear etiology. NOT for ST secondary to known cause – use more specific PI (e.g., Fever) |
| Chest Pain – Not Cardiac | CPNC | General Medical | 1202<br>1202-P | For musculoskeletal and pleuritic pain and any chest pain that is NOT of possible cardiovascular etiology. |
| Chest Pain – STEMI | CPMI | Cardiac Chest Pain | 1211 | For any suspected STEMI, with or without chest pain. |
| Chest Pain – Suspected Cardiac | CPSC | Cardiac Chest Pain | 1211 | For any chest pain that is of possible cardiovascular etiology but NOT STEMI (e.g., NSTEMI, pericarditis, dissection). |
| Childbirth (Mother) | BRTH | Childbirth (Mother) | 1215<br>1215-P | For delivery or imminent delivery of a fetus beyond the first trimester (12 weeks). For <12 weeks use PI Pregnancy Complications. |
| Cold / Flu Symptoms | COFL | General Medical | 1202<br>1202-P | For minor respiratory illness in a patient without shortness of breath or wheezing; must have normal respiratory rate and $O_2$ sat (if available). |
| Diarrhea | DRHA | GI/GU Emergencies | 1205<br>1205-P | For diarrhea without bleeding. NOT for melena, use PI Upper GI Bleeding. |
| Dizziness/Vertigo | DIZZ | Dizziness/Vertigo | 1230<br>1230-P | For lightheadedness or vertigo, without syncope. |
| DOA – Obvious Death | DEAD | Cardiac Arrest | 1210<br>1210-P | For non-traumatic cardiac arrest found dead on arrival such that no resuscitation is initiated. |
| Dystonic Reaction | DYRX | Dystonic Reaction | 1239<br>1239-P | For suspected dystonic reaction (i.e., reaction, typically from antipsychotic medications, causing abnormal contraction of head and neck muscles.) |
| Electrocution | ELCT | Electrocution | 1221<br>1221-P | For any electrocution injury. |
| ENT / Dental Emergencies | ENTP | ENT / Dental Emergencies | 1226<br>1226-P | For a problem located in the ear, nose, throat area, except NOT epistaxis – use PI Epistaxis, NOT airway obstruction – use PI Airway Obstruction. |
| Epistaxis | NOBL | ENT / Dental Emergencies | 1226<br>1226-P | For any bleeding from the nares. |
| Extremity Pain/ Swelling – Non-Traumatic | EXNT | General Medical | 1202<br>1202-P | For pain, swelling, or other non-traumatic problem of an extremity, includes rashes and non-traumatic bleeding (e.g., varicose vein bleed). |
| Eye Problem – Unspecified | EYEP | Eye Problem | 1228<br>1228-P | For any pain or problem of the eye or periorbital region, use with PI Traumatic Injury if a traumatic mechanism. |

**Treatment Protocol: PROVIDER IMPRESSIONS** **Ref. No. 1200.3**

| Provider Impression (PI) Name | PI Code | Treatment Protocol (TP) | TP Code | Guidelines for use of PI |
|---|---|---|---|---|
| Fever | FEVR | Fever | 1204<br>1204-P | For reported or tactile fever that is NOT suspected sepsis. For sepsis use PI Sepsis. |
| Genitourinary Disorder – Unspecified | GUDO | GI/GU Emergencies | 1205<br>1205-P | For urinary or genital related complaints, or for sexual assault, except NOT vaginal bleeding – use PI Vaginal Bleeding, NOT trauma-related – use PI Traumatic Injury. |
| HazMat Exposure | DCON | HAZMAT | 1240<br>1240-P | For any hazardous material (chemical) exposure. May use with another PI (e.g., Inhalation Injury or Burns) when applicable. |
| Headache – Non-Traumatic | HPNT | General Medical | 1202<br>1202-P | For non-traumatic headache or head pain. |
| Hyperglycemia | HYPR | Diabetic Emergencies | 1203<br>1203-P | For patients with primary concern for hyperglycemia and/or associated symptoms (blurred vision, frequent urination or thirst) without more specific PI and those requiring field treatment. DO NOT list for incidental finding of hyperglycemia related to another illness. |
| Hypertension | HYTN | General Medical | 1202<br>1202-P | For patients with primary concern for hypertension without symptoms related to a more specific PI. For symptomatic patients, use related PI as primary (e.g., Headache – Non-traumatic) and Hypertension as secondary. DO NOT list for incidental finding of hypertension. |
| Hyperthermia | HEAT | Hyperthermia (Environmental) | 1222<br>1222-P | For environmental exposure causing hyperthermia, e.g., heat exhaustion and heat stroke, drugs may also be a contributing factor. |
| Hypoglycemia | HYPO | Diabetic Emergencies | 1203<br>1203-P | For glucose <60mg/dL. |
| Hypotension | HOTN | Shock / Hypotension | 1207<br>1207-P | For SBP <90mmHg in adults or <70mmHg in children with transient low BP or rapidly responds to fluid resuscitation and without signs of shock. |
| Hypothermia / Cold Injury | COLD | Hypothermia / Cold Injury | 1223<br>1223-P | For environmental exposures causing hypothermia and/or frostbite injury. |
| Inhalation Injury | INHL | Inhalation Injury | 1236<br>1236-P | For any signs/symptoms related to inhaling a gas or substance other than smoke or carbon monoxide. |
| Lower GI Bleeding | LOGI | GI/GU Emergencies | 1205<br>1205-P | For bleeding from the rectum and/or bright red bloody stools. |

**Treatment Protocol: PROVIDER IMPRESSIONS** **Ref. No. 1200.3**

| Provider Impression (PI) Name | PI Code | Treatment Protocol (TP) | TP Code | Guidelines for use of PI |
|---|---|---|---|---|
| Medical Device Malfunction – Fail | FAIL | Medical Device Malfunction | 1206<br>1206-P | For a medical device that fails, including VADs, insulin pumps, and shunts. Usually for internal devices, may be used for vent failure if patient is asymptomatic. For symptomatic patients, use PI related to symptoms (e.g., Automated Internal Defibrillator firing – use PI associated with complaint such as Cardiac Dysrhythmia – Tachycardia). |
| Nausea / Vomiting | NAVM | GI/GU Emergencies | 1205<br>1205-P | For any nausea or vomiting without blood. Not for adverse reaction to opiate administration by EMS, manage with primary PI/TP. |
| Newborn | BABY | Newborn/Neonatal | 1216-P | For any newborn deliveries in the field. |
| No Medical Complaint | NOMC | Assessment | 1201 | For patients without any medical, psychiatric or traumatic complaint and no signs of illness on assessment. Usually reserved for non-transports. |
| Overdose/ Poisoning/Ingestion | ODPO | Overdose/ Poisoning/ Ingestion | 1241<br>1241-P | For any intentional or unintentional overdose/poisoning by any route, includes illicit substances and prescription medications, overdose and/or adverse reactions. |
| Palpitations | PALP | General Medical | 1202<br>1202-P | For any patient complaint of palpitations (e.g., rapid heart rate beat, skipped beats, chest fluttering) with normal rate and rhythm on the ECG. |
| Pregnancy Complications | PREG | Pregnancy Complication | 1217<br>1217-P | For any pregnancy-related condition that is not labor. Includes vaginal bleeding in pregnancy, hypertension, and complications of delivery. |
| Pregnancy / Labor | LABR | Pregnancy Labor | 1218<br>1218-P | For contractions without imminent childbirth. |
| Respiratory Arrest / Failure | RARF | Respiratory Distress | 1237<br>1237-P | For patients requiring positive-pressure ventilation and/or hypoxia despite 100% oxygen. |
| Respiratory Distress / Bronchospasm | SOBB | Respiratory Distress | 1237<br>1237-P | For COPD/asthma exacerbations and any bronchospasms/wheezing not from pulmonary edema. |
| Respiratory Distress / Other | RDOT | Respiratory Distress | 1237<br>1237-P | For patients with pulmonary disease that is not edema or bronchospasm, includes suspected pneumonia, PE, pneumothorax and non-pulmonary and unknown causes of respiratory distress. |
| Respiratory Distress / Pulmonary Edema / CHF | CHFF | Pulmonary Edema / CHF | 1214 | For congestive heart failure exacerbation. |
| Seizure – Active | SEAC | Seizure | 1231<br>1231-P | For seizure witnessed by EMS, whether treated or not. |
| Seizure – Postictal | SEPI | Seizure | 1231<br>1231-P | For any seizure that stopped prior to EMS arrival and there is no further seizure activity during EMS contact. |

**Treatment Protocol: PROVIDER IMPRESSIONS** **Ref. No. 1200.3**

| Provider Impression (PI) Name | PI Code | Treatment Protocol (TP) | TP Code | Guidelines for use of PI |
|---|---|---|---|---|
| Sepsis | SEPS | Fever / Sepsis | 1204<br>1204-P | For patients with suspected sepsis (i.e., signs suggestive of sepsis including fever, tachycardia, suspected infection). |
| Shock | SHOK | Shock / Hypotension | 1207<br>1207-P | For patients with poor perfusion not rapidly responsive to IV fluids. |
| Smoke Inhalation | SMOK | Inhalation Injury | 1236<br>1236-P | For patients with smoke inhalation. |
| Stings / Venomous Bites | STNG | Stings / Venomous Bites | 1224<br>1224-P | For snakes, scorpion, insects, and marine envenomations (stingrays, jelly fish). NOT for animal bites, use PI traumatic injury. |
| Stroke / CVA / TIA | STRK | Stroke / CVA / TIA | 1232<br>1232-P | For suspected stroke or transient ischemic attack (stroke symptoms that resolve rapidly). |
| Submersion / Drowning | DRWN | Submersion | 1225<br>1225-P | For any submersion injury, including drowning and dive (decompression) emergencies. |
| Syncope / Near Syncope | SYNC | Syncope / Near Syncope | 1233<br>1233-P | For syncope (transient loss of consciousness). NOT for cardiac arrest, use PI Cardiac Arrest – Non-traumatic only. |
| Traumatic Arrest – Blunt | CABT | Traumatic Arrest | 1243<br>1243-P | For cardiac arrest with blunt traumatic mechanism, including those declared deceased in the field by Ref. 814. NOT for trauma sustained after cardiac arrest, use PI Cardiac Arrest – Non- traumatic. |
| Traumatic Arrest – Penetrating | CAPT | Traumatic Arrest | 1243<br>1243-P | For cardiac arrest with penetrating traumatic mechanism, including those declared deceased in the field by Ref. 814. |
| Traumatic Injury | TRMA | Traumatic Injury | 1242<br>1242-P<br>1244<br>1244-P | For any trauma-related injury including crush injury and conducted electrical weapons (CEW). May use in addition to another PI when medical condition also present (e.g., for syncope with trauma – use PI Syncope and PI Traumatic Injury; for CEW use in patient with agitated delirium – use PI Agitated Delirium and PI Traumatic Injury. |
| Upper GI Bleeding | UPGI | GI/GU Emergencies | 1205<br>1205-P | For vomiting blood or coffee ground emesis, and for melena (i.e., black, tarry stools). |
| Vaginal Bleeding | VABL | GI/GU Emergencies | 1205<br>1205-P | For vaginal bleeding in the NON-pregnant patient. For vaginal bleeding in pregnancy use PI Pregnancy Complications. |
| Weakness – General | WEAK | General Weakness | 1202<br>1202-P | For nonfocal weakness, general malaise, and any nonspecific ‘sick’ symptoms. |

## Treatment Protocol: BLS UPGRADE TO ALS ASSESSMENT Ref. No. 1200.4

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DEFINITIONS:

**Emergency Medical Condition:** A condition or situation in which an individual has an immediate need for medical attention. The presence of abnormal vital signs (heart rate and rhythm, respiratory rate, blood pressure – except isolated asymptomatic hypertension, oxygen saturation) are also indications of an emergency medical condition. Patients who meet any criteria for Base Contact or Receiving Hospital Notification are also considered to have an emergency medical condition.

**Extremis:** A life-threatening, time-critical situation (e.g., unmanageable airway, uncontrollable hemorrhage) that, without immediate stabilization, could result in serious and immediate jeopardy to the health of an individual (in the case of a pregnant woman, the health of the woman or her unborn child), such that the patient's life would be jeopardized by transportation to any destination but the most accessible receiving facility (MAR) or for pediatrics the closest Emergency Department Approved for Pediatrics (EDAP).

PRINCIPLES:

1. ALS providers, as compared to BLS providers, have additional assessment skills and equipment that allow a more thorough evaluation of patients in the field to determine whether an emergency medical condition is present.

2. Patients with an emergency medical condition require transport to the emergency department and may benefit from ALS care prehospital.

3. Patients released on scene are at risk of having a bad outcome.

4. BLS providers should always use their judgment when considering need for an ALS assessment. While this document lists when ALS assessment is required prior to transport or release at the scene, BLS providers need not be limited by this list and should request an ALS response whenever they feel it necessary.

5. For patients in extremis or for those patients for which waiting for ALS may be longer than transport to the ED, BLS providers may transport to the closest facility if, in their judgment, this will provide the most rapid ALS care for the patient.

GUIDELINES:

1. If the patient has an emergency medical condition as defined above and a BLS unit is alone on scene, the BLS unit should immediately consider whether an ALS assessment is required. If en route, the ALS unit should not be cancelled.

2. Any adult or pediatric patient with a provider impression requiring Base Contact as defined in Ref. 1200.2 requires ALS assessment and transport unless otherwise directed by online medical control.

3. Additionally, an ALS assessment is required for pediatric patients who meet transport guidelines to a Pediatric Medical Center and pediatric patient in labor. An ALS assessment with Base Contact is required for patients 13-36 months of age and who are not transported (unless no medical complaint or with isolated minor extremity injury). Patients ≤ 12 months require transport.

4. Finally, patients with the following high-risk features also require an ALS assessment regardless of provider impression. The ALS assessment will determine the provider impression and the level of transport required.

    a. The following abnormal vital signs sustained or deteriorating over two measurements 5 minutes apart:

        i. For adults:
            a. HR ≥ 120
            b. SBP < 90
            c. RR ≥ 24
            d. $O_2$ Sat < 94% (<88% for COPD patients) - If patient on home $O_2$, as measured on usual $O_2$ flow rate (if pulse oximetry is available)

        ii. For pediatrics, as per *MCG 1309*

    b. Chief complaints including:

        i. Acute focal neurologic symptoms

        ii. Altered mental status

        iii. Chest pain (medical cause)

        iv. Shortness of breath

        v. Syncope/Near syncope

        vi. Vaginal bleeding in pregnancy greater than or equal to 20 weeks

## Treatment Protocol: ASSESSMENT — Ref. No. 1201

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1. Use appropriate PPE precautions – gloves for all patients and additional protective equipment prn
2. Assess scene for potential hazards and number of adult and pediatric patients
3. Activate additional resources prn (e.g. EMS personnel, HAZMAT, law enforcement)
4. Perform patient assessment to determine Provider Impression. Refer to appropriate Treatment Protocol(s) to guide patient management *(Ref.1200, Treatment Protocols Table of Contents)*
5. For pediatric patients, assessment should be performed per *MCG 1350* and include determination of patient's weight in kg *(MCG 1309)* ❶
6. If after complete assessment there is no medical or psychiatric complaint and no signs of trauma or illness – document *No Medical Complaint* ❷
7. **CONTACT BASE** if difficulty determining Provider Impression or appropriate protocol to use
8. Continue assessment and treat per *TP 1202, General Medical* until the Provider Impression is established, at which point the appropriate treatment protocol should be used

## SPECIAL CONSIDERATIONS

❶ EMS personnel are mandated reporters of child abuse and neglect, and a report should be made when suspected as per *Ref. 822*. Communicate suspicion for child abuse and/or neglect to accepting ED staff when home suggests children could be at risk for harm (e.g., unkempt home, evidence of drug or alcohol abuse, unsafe living conditions, known or suspected domestic violence), when the history does not match with the severity of physical findings (e.g., child posturing after a roll of the couch), when patterned injury or burns are noted (e.g., circular burns as from a cigarette, whip marks on the skin, burns of both hands or feet), or when child reports physical or sexual abuse. This must also be accompanied by notification to the Department of Children and Family Services (DCFS).

❷ Parents /caregivers can be concerned about signs and symptoms in children which may not show at the time of paramedic assessment. This does not exclude the possibility that an emergency exists. If there are not physical signs and the complaint does not otherwise have a provider impression associated with it – document No Medical Complaint.

If parents/caregivers have ongoing concerns these patients require transport to an EDAP for evaluation

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Control external hemorrhage/bleeding prn *(MCG 1370)*

3. Administer **Oxygen** prn *(MCG 1302)*

4. Assess for signs of trauma
   For traumatic injury, treat in conjunction with *TP 1244, Traumatic Injury*

5. Initiate cardiac monitoring prn *(MCG 1308)*
   Perform 12-lead ECG if cardiac ischemia suspected and treat per *TP 1211, Cardiac Chest Pain*

6. For patients with dysrhythmias, treat per *TP 1212, Cardiac Dysrhythmia - Bradycardia* or *TP 1213, Cardiac Dysrhythmia - Tachycardia*
   If patient with palpitations but normal sinus rhythm on 12-lead ECG – document Provider Impression as *Palpitations*

7. Establish vascular access prn *(MCG 1375)*

8. Assess and document pain *(MCG 1345)*
   Consider the following Provider Impressions:
   If chest pain present without suspicion of cardiac cause – document *Chest Pain – Not Cardiac* ❶
   If pain in neck or back without trauma – document *Body Pain – Non-traumatic*
   If headache and no report or signs of trauma – document *Headache – Non-traumatic*

9. For pain management: refer to *MCG 1345, Pain Management*

10. For nausea or vomiting:
    **Ondansetron 4mg ODT/IV/IM** treat in conjunction with *TP 1205, GI/GU Emergencies*

11. For patients with complaints of weakness
    Assess neurologic exam; if focal findings present or stroke suspected treat per *TP 1232, Stroke/CVA/TIA*
    If no focal weakness present and complaint of generalized weakness – document Provider Impression as *Weakness – General*

12. For patients with complaints of hypertension without other signs or symptoms – document Provider Impression as *Hypertension* ❷

13. Consider the following Provider Impressions:
    If cold/cough symptoms without respiratory distress or wheezing – document *Cold/Flu Symptoms*
    If isolated pain or swelling in one or more extremities – document
    *Extremity Pain/Swelling – Non-traumatic* ❸

## SPECIAL CONSIDERATIONS

❶ When evaluating a patient for chest pain consider age, previous history of cardiac disease or MI, risk factors, and signs and symptoms to determine if cardiac chest pain suspected. Obtain a 12-lead ECG if age ≥ 35 years and/or patient has risk factors (hypertension, diabetes mellitus, high cholesterol, personal history of cardiac disease, or family history of early cardiac disease – defined as CAD/MI at age <50 years old).

❷ Hypertension in a pregnant or recently post-partum patient is a sign or eclampsia, which requires immediate emergency and obstetric care. Additional signs of eclampsia are edema and seizures. Patients who are ≥ 20 weeks pregnant or ≤ 6 weeks post-partum with hypertension (BP ≥ 140/90mmHg should be transported to the ED for evaluation.

❸ For patients with bilateral swelling of lower extremities, evaluate for signs of congestive heart failure. Careful examination of breath sounds and vital signs, including respiratory rate and pulse oximetry, should be performed. If there are signs or symptoms of pulmonary edema, treat per *TP 1214, Pulmonary Edema / CHF*.

**Treatment Protocol: DIABETIC EMERGENCIES** **Ref. No. 1203**

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1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Advanced airway prn *(MCG 1302)*

4. Initiate cardiac monitoring prn *(MCG 1308)*
   Perform 12-lead ECG if cardiac ischemia suspected

5. Establish vascular access prn *(MCG 1375)*

6. Check blood glucose

7. For blood glucose < 60 mg/dL:
   **Oral glucose preparation** or **Glucopaste 15gm PO** if patient awake and alert
   OR
   **Dextrose 10% 125 mL IV** and reassess
   If patient continues to be symptomatic, repeat 125 mL for a total of 250mL
   Document Provider Impression as *Hypoglycemia* ❶
   If unable to obtain venous access, **Glucagon 1mg (1mL) IM**, may repeat x1 in 20 min prn

   **CONTACT BASE** for persistent hypoglycemia for repeat dose of Dextrose 10% 250mL IV

8. For blood glucose > 200 mg/dL:
   Document Provider Impression as *Hyperglycemia*

   For blood glucose >200 mg/dL and <400 mg/dL with suspected related symptoms:
   **CONTACT BASE** for order for Normal Saline 1L IV rapid infusion

   For blood glucose > 400 mg/dL or reading "HIGH" ❷ or for poor perfusion:
   **Normal Saline 1L IV rapid infusion**
   Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

   For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

9. For nausea or vomiting:
   **Ondansetron 4mg ODT/IV/IM**, may repeat x1 in 15 min prn

## SPECIAL CONSIDERATIONS

❶ Patients with hypoglycemia who are successfully treated with oral glucose or Dextrose 10% IV and then wish to decline transport to the hospital should be discouraged to do so if they have abnormal vital signs, fever, are taking long acting hypoglycemic agents, history of alcohol abuse, possible ingestion or poisoning, or if they DO NOT have a history of diabetes mellitus as these patients are at high risk for recurrent hypoglycemic episodes. Patients at low risk are those with diabetes on short acting hypoglycemic agents who have someone with them and are able to tolerate oral intake. Los risk patients can be treated and referred for follow up as per *Ref. No. 834*. If a patient is not transported, he/she should be counseled to eat a high protein meal and to call his/her primary care physician.

Long acting hypoglycemic agents

- Sulfonylureas: gliclazide, glimepiride, glipizide, gliquidone, glyburide, glyclopyramide,
- Thiazolidinediones (TZDs): pioglitazone (Actos), rosiglitazone (Avandia), troglitazone (Rezulin)
- Alpha-glucosidase inhibitors: acarbose, miglitol, voglibose
- Meglitinides – nateglinide, repaglinide
- Combination drugs: glipizide and metformin (Metaglip), glyburide and metformin (Glucovance), pioglitazone and glimepiride (Duetact), pioglitazone and metformin (ACTOplus Met), rosiglitazone and metformin (Avandamet), rosiglitazone and glimepiride (Avandaryl)

❷ Patients with prolonged and/or severe hyperglycemia are at risk for significant volume losses leading to dehydration and electrolyte abnormalities. Fluid resuscitation with **Normal Saline** is recommended until their glucose can be lowered with medications. Hyperglycemia can also be associated with trauma, infection, or myocardial infarction.

**Treatment Protocol: FEVER / SEPSIS** **Ref. No. 1204**

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1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Advanced airway prn *(MCG 1302)*

4. Initiate cardiac monitoring prn *(MCG 1308)*
   Perform 12-lead ECG if cardiac ischemia suspected

5. Establish vascular access prn *(MCG 1375)*

6. If available, consider applying capnography for patients in whom you suspect sepsis *(MCG 1305)* ❶

7. For suspected sepsis with any **one** of the following: tactile fever, tachycardia, or poor perfusion *(MCG 1355)*:
   **Normal Saline 1L IV/IO rapid infusion**
   Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops
   Document Provider Impression of *Sepsis* ❷

   For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

8. Check blood glucose prn;
   If < 60 mg/dL or > 400 mg/dL treat in conjunction with *TP 1203, Diabetic Emergencies*

9. If fever present without signs of sepsis or poor perfusion:
   Perform passive cooling measures and cover with thermal blankets if shivering occurs
   Document Provider Impression of *Fever* ❸❹

10. For nausea or vomiting:
    **Ondansetron 4mg ODT/IV/IM**

11. For pain management: refer to *MCG 1345, Pain Management*

## SPECIAL CONSIDERATIONS

❶ An end-tidal $CO_2$ ($EtCO_2$) reading ≤ 25mmHg strongly supports the provider impression of sepsis in patients for whom sepsis is suspected.

❷ Sepsis is defined as the body's response to infection and *may* include fever, tachycardia or bradycardia, tachypnea, and signs of poor perfusion. Other signs of infection may be present such as cough (e.g., pneumonia), painful urination (e.g., urinary tract infection), abdominal pain (e.g., appendicitis), headache (e.g., meningitis), or a red swollen extremity (e.g., cellulitis, or necrotizing fasciitis). Septic shock is a continuum of signs and symptoms, which includes the presence of hypotension and/or evidence of poor perfusion. If infection is present and sepsis with or without shock is present document provider impression as *Sepsis*.

❸ Fever is a natural response of the body to fight infection and may be present without signs of sepsis. If fever is present without signs of sepsis (tachypnea, tachycardia, or obvious sign of infection) or septic shock (signs of poor perfusion), document the provider impression as *Fever*.

❹ For patients presenting with fever, obtain travel history, and if travel history positive contact the Medical Alert Center to determine risk for infectious disease requiring special isolation procedures or transport.

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Initiate cardiac monitoring prn *(MCG 1308)*
   Perform 12-lead ECG if cardiac ischemia suspected ❶

4. Establish vascular access prn *(MCG 1375)*

5. For poor perfusion:
   **Normal Saline 1L IV rapid infusion**
   Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

   For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

6. Assess and document pain *(MCG 1345)*
   If abdominal or pelvic pain during pregnancy, or vaginal bleeding with known or suspected pregnancy treat per *TP 1217, Pregnancy Complications*
   Consider the following Provider Impressions:
   If abdominal or pelvic pain – document *Abdominal Pain/Problems*
   If pain in penis, scrotum or testes in a male or complaints of vaginal symptoms in a female, or if for sexual assault – document *Genitourinary Disorder*

7. For pain management: refer to *MCG 1345, Pain Management*

8. For nausea or vomiting:
   **Ondansetron 4mg ODT/IV/IM**, may repeat x1 in 15 min prn

9. Consider the following Provider Impressions:
   If nausea or vomiting present in the absence of abdominal pain or diarrhea – document *Nausea/Vomiting*

   If vomiting blood or coffee ground material, and/or tarry/black stools – document *Upper GI Bleeding* ❷

   If vaginal bleeding without known pregnancy – document *Vaginal Bleeding*

   If complaint of diarrhea without hypotension – document *Diarrhea*

   If bleeding per rectum – document Lower GI Bleeding ❷

## SPECIAL CONSIDERATIONS

❶ When evaluating a patient with abdominal pain, note that abdominal pain may be a sign of cardiac disease. If age ≥ 35 years, previous history of cardiac disease or MI, or risk factors are present (hypertension, diabetes mellitus), consider obtaining a 12-lead ECG to evaluate for ischemia or STEMI.

❷ For both upper and lower GI bleeding, if abdominal pain is also present, document GI bleeding as primary provider impression and abdominal pain as secondary provider impression.

**Treatment Protocol: MEDICAL DEVICE MALFUNCTION** **Ref. No. 1206**

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1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Establish type of medical device inserted ❶

4. Establish vascular access prn *(MCG 1375)*

5. For poor perfusion:
   **Normal Saline 1L IV rapid infusion**
   Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

   For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

6. Assess and document pain *(MCG 1345)*

7. For pain management: refer to *MCG 1345, Pain Management*

8. For nausea or vomiting:
   **Ondansetron 4mg ODT/IV/IM**

9. Document *Medical Device Malfunction* as the Provider Impression if the patient's presentation suggests malfunction of the medical device, otherwise treat as per applicable protocol, for example:
   - Insulin Pump: Check blood glucose prn and treat in conjunction with *TP 1203, Diabetic Emergencies*
   - Vagal Nerve Stimulation devices: Treat presenting symptoms; for seizure treat per *TP 1231, Seizure*
   - Ventricular Assist Device: **CONTACT BASE** and refer to *MCG 1325*
   - Ventriculoperitoneal (VP) Shunt: Treat presenting symptoms ❷
   - Pacemaker or Automated Internal Defibrillator: Treat presenting symptoms and obtain 12-lead ECG prn *(MCG 1308)*

## SPECIAL CONSIDERATIONS

❶ Most patients with an inserted medical device have medical complaints that are not related to the device itself and should be treated as per standard protocols based on presenting signs and symptoms. It is important to obtain a history of when the medical device was inserted as different complications occur depending on time since insertion.

❷ Patients with ventriculoperitoneal shunts can have breakage of the shunt connections, obstruction, or infection of the shunt, which may present as ALOC, headache, nausea and vomiting, or fever.

**Treatment Protocol: SHOCK / HYPOTENSION** **Ref. No. 1207**

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**BASE HOSPITAL CONTACT REQUIRED.**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
   Continually assess patient's airway and ventilation status

2. Administer **Oxygen** prn *(MCG 1302)*
   **High flow Oxygen 15 L/min** for all patients in shock, regardless of $SpO_2$ ❶

3. Maintain supine if respiratory status allows ❷

4. Establish vascular access *(MCG 1375)*
   Large bore catheter (18G or 16G) preferred
   For patients with hypotension and clinical evidence of poor perfusion, establish IO catheter if unable to obtain peripheral venous access after 2 attempts

   For IO placement in alert patients administer Lidocaine 2% 40mg (20mg/mL) slow IO push, dose per *MCG1309*, may repeat once for infusion pain at half initial dose

5. Initiate cardiac monitoring *(MCG 1308)*

6. Apply blanket to keep patient warm ❸

7. Consider etiology ❹
   Perform 12-lead ECG if cardiac ischemia suspected
   For patients with dysrhythmia, treat in conjunction with *TP 1212, Cardiac Dysrhythmia-Bradycardia* or *TP 1213, Cardiac Dysrhythmia-Tachycardia*
   For patients with traumatic injury, treat per *TP 1244, Traumatic Injury*
   For concern of overdose or toxic exposure, treat in conjunction with *TP 1241, Overdose/Poisoning/Ingestion*
   For patients with suspected sepsis, treat in conjunction with *TP 1204, Fever/Sepsis*

8. **Normal Saline 1L IV/IO rapid infusion**
   Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

9. **CONTACT BASE** for shock despite initial fluid resuscitation, and for order of additional **Normal Saline 1L IV/IO**

10. For patients with isolated hypotension without signs of poor perfusion and those who rapidly improve with or without the initial normal saline 250mL document *Hypotension (HOTN)* as Provider Impression. For patients with hypotension and poor perfusion, as well as patients with poor perfusion who do not respond to an initial Normal Saline 250mL infusion and/or require additional Normal Saline beyond 1L or Push-dose Epinephrine, document as *Shock (SHOK).*

11. If clinical evidence of poor perfusion persists despite fluid infusion or pulmonary edema develops requiring cessation of fluid administration:
    **Push-dose Epinephrine** – mix 9mL Normal Saline with 1mL Epinephrine (0.1mg/mL) IV formulation in a 10mL syringe; administer **Push-dose Epinephrine (0.01mg/mL) 1mL IV/IO** every 1-5 minutes as needed to maintain SBP > 90mmHg until hospital arrival ❺
    **CONTACT BASE** concurrent with initial dose of **Push-dose Epinephrine**

**Treatment Protocol: SHOCK / HYPOTENSION** **Ref. No. 1207**

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## SPECIAL CONSIDERATIONS

❶ Shock is inadequate tissue perfusion, equivalent to poor perfusion for the purposes of this protocol.

❷ Maintaining a patient supine improves perfusion to vital organs; raising the lower limbs does not provide additional benefit. However, not all patients will tolerate a supine position, which can further compromise respiratory function and airway patency.

❸ Exposure to cold increases the likelihood of bleeding complications.

❹ There are many etiologies of shock. The treatment protocols referenced here contain guidance on specific interventions beyond what is contained in this treatment protocol. Consider Base contact if hypotension/shock of unclear etiology

❺ **Push-dose Epinephrine** is appropriate for non-traumatic shock including cardiogenic shock. Additional doses beyond 10mL may need to be prepared for prolonged transports.

## Treatment Protocol: AGITATED DELIRIUM — Ref. No. 1208

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**Base Hospital Contact Required.**

1. Assess situation for safety; Attain law enforcement assistance for physical restraint prior to approaching a patient if a weapon is visualized or the patient threatens violence towards EMS

2. Approach patient with caution and attempt verbal de-escalation

3. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
   Continually assess patient's airway and ventilation status ❶❷

4. Administer **Oxygen** prn *(MCG 1302)*

5. Patients with agitated delirium have agitation along with two or more of the following:
   - Confusion
   - Diaphoresis
   - Hot/flushed skin
   - Tachycardia

   Agitated and/or combative patients without these signs/symptoms are not suffering agitated delirium, treat per the appropriate treatment protocol.

6. For severe agitation and/or combative patient requiring restraint for patient or provider safety ❷**:**
   **Midazolam 5mg (1mL) IM/IN/IV**
   Repeat x1 in 5 min prn, maximum total dose prior to Base contact 10 mg ❸

   **CONTACT BASE** for additional sedation after maximum dose administered:
   May repeat as above up to a maximum total dose of 20mg ❸
   **Midazolam 5mg (1mL) IM/IN/IV**
   Repeat x1 in 5min prn, maximum total dose 20mg

7. If evidence of trauma, provide spinal motion restriction prn *(MCG 1360)*

8. Establish vascular access prn *(MCG 1375)*

9. Check blood glucose prn ❹
   If glucose < 60 mg/dL or > 400 mg/dL treat in conjunction with *TP 1203, Diabetic Emergencies*

10. Initiate cardiac monitoring after sedation *(MCG 1308)*
    Assess for dysrhythmia or interval widening
    **CONTACT BASE** for QRS > 0.12 sec, QT > 500ms, or heart rate > 150 or < 50 to discuss need to administer **Sodium Bicarbonate 50mEq IV** ❺

11. For suspected ingestions, treat in conjunction with *TP 1241, Overdose/Poisoning/Ingestion*

12. **Normal saline 1L IV rapid infusion**
    Reassess after each 250mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

13. If patient hot to touch or with suspected hyperthermia, initiate cooling measures

**Treatment Protocol: AGITATED DELIRIUM** **Ref. No. 1208**

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## SPECIAL CONSIDERATIONS

❶ Patients with Agitated/Excited Delirium are at risk for sudden cardiac arrest, often preceded by a brief, abrupt period of lethargy and decreased respirations. Careful observation of patient's activity level, vital signs, and airway are essential to patient safety. If patient develops cardiac arrest, treat in conjunction with *TP 1210, Cardiac Arrest – Non-traumatic*

❷ Use of restraints in patients with Agitated Delirium is associated with an increased risk of sudden death. Avoid using restraints in patients who do not present a threat to self or to EMS personnel. Never transport a patient in restraints in prone position. *(Ref. 838)*

❸ Midazolam onset is 2 minutes with maximum effect at 5 minutes.

❹ Agitation may be present after a seizure, or in the setting of hypo/hyperglycemia. Consider checking glucose early if the patient is a known diabetic, but only if safe to do so.

❺ Several drugs may cause life threatening cardiac arrhythmias after intentional or accidental overdose. These arrhythmias are often preceded by prolonged ECG intervals (particularly QRS > 0.12 sec or QT interval > 500ms). Cocaine intoxication is strongly associated with Agitated Delirium and may also produce cardiac effects similar to Tricyclic antidepressant (TCA) overdose (widened QRS progressing to malignant arrhythmia). These patients may require a large dose of sodium bicarbonate to prevent sudden cardiac death. Consult Base Physician immediately to discuss administration of Sodium Bicarbonate; may repeat x1 if QRS remains > 0.12 sec after initial sodium bicarbonate. Treat in conjunction with *TP 1241, Overdose/Poisoning/Ingestion*

**Treatment Protocol: BEHAVIORAL / PSYCHIATRIC CRISIS** **Ref. No. 1209**

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1. Assess situation for safety; Attain law enforcement assistance for physical restraint prior to approaching a patient if a weapon is visualized or the patient threatens violence towards EMS

2. Approach patient with caution and attempt verbal de-escalation ❶

3. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

4. Administer **Oxygen** prn *(MCG 1302)*

5. For combative patients requiring restraints for patient or provider safety ❷
   **CONTACT BASE** for orders for sedation
   **Midazolam 5mg (1mL) IM/IN/IV,** repeat every 5 min prn; maximum total dose 20mg ❸

6. If evidence of trauma, provide spinal motion restriction prn *(MCG 1360)*

7. Establish vascular access prn *(MCG 1375)*

8. Check blood glucose prn ❹
   If glucose < 60 mg/dL or > 400 mg/dL treat in conjunction with *TP 1203, Diabetic Emergencies*

9. Initiate cardiac monitoring prn *(MCG 1308)*
   Assess for dysrhythmia or interval widening
   **CONTACT BASE** for QRS > 0.12 sec, QT > 500 ms, or heart rate > 150 or < 50 to discuss need to administer **Sodium Bicarbonate 50mEq (50mL) IV** ❺

10. For suspected ingestions, treat in conjunction with *TP 1241, Overdose/Poisoning/Ingestion*

## SPECIAL CONSIDERATIONS

❶ It is important to assess for any evidence of suicide attempt. If there is concern for overdose, ask the patient to provide information on agents used (specifically what, when, and how much). Collect and transport any medication vials, additional pills, etc. This will assist in determining necessary antidote treatment and monitoring at the hospital. This information is often lost, if not obtained immediately on scene.

❷ Avoid applying restraints to patients who do not present a threat to self or EMS personnel. Never transport a patient in restraints in prone position. *(Ref. 838)*

❸ Midazolam onset is 2 minutes with maximum effect at 5 minutes.

❹ Agitation may be present after a seizure, or in the setting of hypo/hyperglycemia. Consider checking glucose early if the patient is a known diabetic or demonstrates clinical evidence of hypoglycemia, but only if safe to do so.

❺ Several drugs that may cause agitation and present similarly to a psychiatric crisis may also cause life threatening cardiac arrhythmias after intentional or accidental overdose. These arrhythmias are often preceded by prolonged ECG intervals (particularly QRS > 0.12 sec or QT interval > 500 ms). Cocaine intoxication is strongly associated with Agitated Delirium and may also produce cardiac effects similar to Tricyclic antidepressant (TCA) overdose (widened QRS progressing to malignant arrhythmia). These patients may require a large dose of sodium bicarbonate to prevent sudden cardiac death. Consult Base Physician immediately to discussion administration of Sodium Bicarbonate; may repeat x1 if QRS remains > 0.12 sec after initial sodium bicarbonate. Treat in conjunction with *TP 1241, Overdose/Poisoning/Ingestion*

**Treatment Protocol: CARDIAC ARREST** **Ref. No. 1210**

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**Base Hospital Contact: Required prior to transport for all patients in cardiac arrest who do not meet criteria for determination of death per *Ref. 814*.**

1. For patients meeting *Ref. 814* Section I criteria for determination of death in the field – document Provider Impression as *DOA – Obvious Death*

2. Resuscitate cardiac arrest patients on scene ❶

3. Initiate chest compressions at a rate of 100-120 per min, depth 2-3 inches ❷
   Minimize interruptions in chest compressions

4. Assess airway and initiate basic and/or advanced airway maneuvers prn ❸ ❹ *(MCG 1302)*
   Monitor waveform capnography throughout resuscitation ❺

5. Administer high-flow **Oxygen** (15L/min) *(MCG 1302)*

6. Initiate cardiac monitoring *(MCG 1308)*
   Briefly assess rhythm every 2 minutes, minimizing pauses, or continuously via rhythm display technology ❻

V-FIB/PULSELESS V-TACH: ❼

7. **Defibrillate biphasic at 200J** immediately or per manufacturer's instructions
   Repeat at each 2-minute cycle as indicated

8. Establish vascular access *(MCG 1375)*
   Establish IO if any delay in obtaining IV access

9. Begin **Epinephrine** after defibrillation x2:
   **Epinephrine (0.1mg/mL) administer 1mg (10mL) IV/IO**
   Repeat every 5 min x2 additional doses; maximum total dose 3mg ❽

   **CONTACT BASE** to discuss additional epinephrine doses in cases where it may be indicated due to recurrent arrest or conversion to PEA

10. After defibrillation x3 (for refractory or recurrent V-Fib/V-Tach without pulses):
    **Amiodarone 300mg (6mL) IV/IO**
    Repeat **Amiodarone 150mg (3mL) IV/IO** x1 prn after additional defibrillation x2, maximum total dose 450mg

ASYSTOLE/PEA:

11. **Epinephrine (0.1mg/mL) administer 1mg (10mL) IV/IO**
    Repeat every 5 min x2; administer first dose as early as possible; maximum total dose 3mg ❽

    **CONTACT BASE** to discuss additional epinephrine doses in cases where it may be indicated due to recurrent arrest or conversion to PEA

12. Consider and treat potential causes ❾

13. **Normal Saline 1L IV/IO rapid infusion**
    Repeat x1 for persistent cardiac arrest
    For suspected hypovolemia, administer both liters simultaneously

14. For patients with renal failure or other suspected hyperkalemia: ❿
    **Calcium Chloride 1gm (10mL) IV/IO**
    **Sodium Bicarbonate 50mEq (50mL) IV/IO**

TERMINATION OF RESUSCITATION:

15. If resuscitative efforts are unsuccessful and the patient does not meet ALL criteria for Termination of Resuscitation in *Ref. 814, Section II.A.*, **CONTACT BASE** to consult with Base Physician ❼

RETURN OF SPONTANEOUS CIRCULATION (ROSC): ⓫⓬

16. Establish advanced airway prn ⓭

17. Raise head of stretcher to 30 degrees if blood pressure allows, otherwise maintain supine

18. Continue low volume ventilations at 10-12 per minute ⓮

19. Perform 12-lead ECG and transmit to the SRC ⓯

20. Immediately resume CPR if patient re-arrests

21. For SBP < 90 mmHg:
    **Normal Saline 1L IV/IO rapid infusion**

    If no response after **Normal Saline 250mL,** or worsening hypotension and/or bradycardia:
    **Push-dose Epinephrine** – mix 9mL Normal Saline with 1mL Epinephrine 0.1mg/mL (IV formulation) in a 10mL syringe. Administer **Push-dose Epinephrine (0.01mg/mL) 1mL IV/IO** every 1-5 minutes as needed to maintain SBP > 90mmHg ⓰
    **CONTACT BASE** concurrent with initial dose of **Push-dose Epinephrine**

22. Check blood glucose
    For blood glucose < 60mg/dL
    **Dextrose 10% 125mL IV** and reassess
    If glucose remains < 60mg/dL, repeat 125mL for a total of 250mL

23. For suspected narcotic overdose: ⓱
    **Naloxone 2-4mg (2-4mL) IV/IO/IM/IN** (For IN, 1mg per nostril or 4mg/0.1mL IN if formulation available)
    Maximum dose all routes 8mg

## SPECIAL CONSIDERATIONS

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❶ Maintaining perfusion with continuous high-quality CPR throughout resuscitation is essential to ensuring good patient outcome. Transporting the patient in cardiac arrest causes interruptions in CPR and reduces CPR quality.

❷ Chest compressions are the most important aspect of cardiac arrest resuscitation. Maintaining continuous chest compressions should take priority over any medication administration or transport.

❸ Hyperventilation reduces venous return and worsens patient outcomes. Both continuous and interrupted (30:2) compressions/ventilations are acceptable. Regardless of ventilation method used, ventilations should be no more frequent than 10 per minute with a volume approximately 1/3 of the bag, just enough to see chest rise.

❹ Bag-mask ventilation (BMV) is the preferred method of airway management during cardiac arrest resuscitation and has been associated with improved patient outcomes. Advanced airway placement should be deferred until after return of spontaneous circulation (ROSC) unless BMV is inadequate. If a decision is made to transport the patient in refractory cardiac arrest and inability to maintain effective ventilations with BMV is anticipated, consider advanced airway prior to transport.

❺ $ETCO_2$ should be > 10 with a “box-shaped” waveform during effective CPR. A flat or wavy waveform or $ETCO_2$ < 10 may indicate ineffective compressions or airway obstruction. A sudden increase in $ETCO_2$ is suggestive of ROSC. The waveform can also be used to confirm ventilation rate if an advanced airway or asynchronous ventilation with continuous compressions is used.

❻ If you are able to observe the underlying rhythm display during compressions via rhythm display technology, do not pause for the rhythm check. In order to minimize pauses in chest compressions, pulse checks should only be performed during rhythm checks when there is an organized rhythm with signs of ROSC, such as normal capnography or sudden rise in capnography.

❼ Strongly consider transport to SRC for patients in persistent cardiac arrest with refractory V-Fib (3 unsuccessful shocks) or EMS-witnessed arrest of presumed cardiac etiology, since these patients may have good outcome with early coronary angiography despite prolonged resuscitation. For these patients, **resuscitation should be continued on scene for at least 40 minutes PRIOR to transport** to maximize the chances for field ROSC, which is strongly associated with improved survival with good neurologic outcome. Earlier transport may be initiated for providers using a mechanical compression device who are transporting a patient to a STEMI Receiving Center for extracorporeal membrane oxygenation (ECMO) initiation.

❽ Epinephrine may improve outcomes if given early in non-shockable rhythms, but can worsen outcomes early in shockable rhythms, where defibrillation is the preferred initial treatment. Epinephrine is most likely to be effective if it is given early and after chest compressions have begun. The likelihood of meaningful survival declines after three (3) doses of epinephrine. Resuscitation should continue focused on quality CPR, defibrillation, and identifying reversible causes. Additional doses of epinephrine should only be administered with Base order, if indicated.

❾ Potential causes that can be treated in the field include hypoxia, hypovolemia, hyperkalemia, hypothermia, toxins, and tension pneumothorax. Hypoglycemia is a very rare cause of cardiac arrest and should not be assessed until after ROSC. If hypothermia is suspected, resuscitation efforts should not be abandoned until the patient is re-warmed, or after consultation with the Base Physician.

**Treatment Protocol: CARDIAC ARREST** **Ref. No. 1210**

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⑩ Treat suspected hyperkalemia with calcium and sodium bicarbonate as soon as possible. The sooner it is administered, the more likely it is to be effective. Flush the line between medication administration.

⑪ Post cardiac arrest patients are at high risk for re-arrest during transport. Fluid resuscitation, vasopressor support, and avoidance of hyperventilation are recommended to decrease the risk of re-arrest.

⑫ All patients with ROSC shall be transported to the most accessible open SRC if ground transport is 30 minutes or less, as initiation of targeted temperature management and early coronary angiography in a specialty center have been shown to improve outcomes.

⑬ In the ROSC patient, ETT is strongly preferred to King LT placement.

⑭ $ETCO_2$ can help guide your ventilation rate; target $ETCO_2$ 35-40 mmHg. Just after ROSC, the $ETCO_2$ may be transiently elevated. This will decrease appropriately with ventilation and does not require hyperventilation to normalize. Persistently elevated $ETCO_2$ and/or “sharkfin” waveform may indicate respiratory failure as cause of the cardiac arrest. Falsely low $ETCO_2$ measurements can occur if there is a leak with BMV or shock.

⑮ An ECG with STEMI after ROSC requires pre-notification of ECG findings to the SRC.

⑯ Push-dose Epinephrine is appropriate for non-traumatic shock including cardiogenic shock. Additional doses beyond 10mL may need to be prepared for prolonged transports.

⑰ Narcotic overdose should be suspected in cases where there is drug paraphernalia on scene or there is a witness report. Pinpoint pupils may be present, but hypoxia during cardiac arrest can cause mydriasis (dilated pupils) instead.

**Treatment Protocol: CARDIAC CHEST PAIN** **Ref. No. 1211**

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**Notify the closest STEMI Receiving Center (SRC) as soon as STEMI is identified. Notification shall be in accordance with *MCG 1303* and include immediate ECG transmission initiated prior to contact.**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Initiate cardiac monitoring *(MCG 1308)* ❶
   Assess cardiac rhythm and obtain 12-lead ECG ❷
   Transmit the ECG to the receiving SRC if STEMI is suspected *(MCG 1303)*

4. For patients with dysrhythmias, treat in conjunction with *TP 1212, Bradycardia* or *TP 1213, Tachycardia*

5. **Aspirin 325mg chewable tablets PO** if alert ❸

6. For chest pain after 12-lead ECG:
   **Nitroglycerin 0.4mg SL** prn ❹❺
   Repeat every 5 min prn x2, total of 3 doses
   Hold if SBP < 100mmHg or patient has taken sexually enhancing medication within 48hrs

7. Establish vascular access prn *(MCG 1375)*

8. For persistent chest pain after, or contraindication to, nitroglycerin: refer to *MCG 1345, Pain Management*

9. For nausea or vomiting:
   **Ondansetron 4mg ODT/IV/IM**, may repeat x1 in 15 min prn

10. For poor perfusion:
    **Normal Saline 1L IV rapid infusion**
    Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

    For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

## SPECIAL CONSIDERATIONS

❶ Patients may have a myocardial infarction (MI) with or without ST elevations on the ECG. You should review and interpret the ECG; the software interpretation is not always accurate. Include your impression of the patient and interpretation of the ECG when discussing destination decision with the base. Patients with ST elevation myocardial infarction (STEMI) require emergent treatment with percutaneous coronary intervention (PCI) in the catheterization lab to improve survival, so they require field routing directly to a STEMI center (SRC). If artifact inhibits your ability to interpret the ECG, the software cannot read it either. ECGs of such poor quality as to inhibit interpretation should not be used to determine destination and should be repeated.

❷ Obtain the ECG as soon as possible with initial vital signs. For patients in whom you have a high clinical suspicion for STEMI and the initial ECG does not meet STEMI criteria, you should repeat the ECG prior to transport and at any point that the patient's clinical status changes. Repeating the ECG increases your chances of detecting an evolving STEMI. Consider repeating the ECG in cases where you have a low clinical suspicion and the initial ECG software interpretation is STEMI, particularly if there is artifact present that may affect the interpretation.

❸ Aspirin is the most important medication for patients with acute myocardial infarction to improve outcomes and should be administered as soon as possible. All patients with cardiac chest pain should receive aspirin unless contraindicated due to active gastrointestinal bleeding or allergy, even if they already took aspirin at home or are prescribed anticoagulant medications. While there are other causes of chest pain that can present similarly to an MI, including aortic dissection, these causes are rare and the benefit of aspirin for patients with MI outweighs the risks of administration.

❹ Nitroglycerin can cause a severe drop in blood pressure in some patients and, while useful for treatment of pain, it has not been shown to improve survival. Use caution in patients with borderline or relative hypotension (patients with history of hypertension or taking antihypertensive medications and SBP < 110) and/or patients with abnormal heart rate < 50 or > 120. It is acceptable to hold nitroglycerin in these patients. Inferior MI alone is not a contraindication to nitroglycerin.

❺ Morphine or fentanyl is preferred over nitroglycerin to treat pain in patients with suspected aortic dissection. The classic presentation of acute aortic dissection is acute onset "tearing" chest pain radiating to the back. Other findings that raise concern for aortic dissection are chest pain associated with new focal neurologic abnormalities or with a difference in SBP of 20mmHg or more between arms. The primary treatment goal in the alert patient is to decrease heart rate by alleviating pain and anxiety. These patients are most often hypertensive. Treat hypotension only if SBP is < 90mmHg in both arms or if patient has other signs of poor perfusion.

## Treatment Protocol: CARDIAC DYSRHYTHMIA - BRADYCARDIA Ref. No. 1212

*1200 Table of Contents*

**Base Hospital Contact: Required for all patients with symptomatic bradycardia.**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Initiate cardiac monitoring *(MCG 1308)*
   Assess cardiac rhythm and obtain 12-lead ECG

4. If cardiac chest pain/STEMI suspected as cause of bradycardia, treat in conjunction with *TP 1211, Cardiac Chest Pain*

5. Maintain supine for patients with signs of poor perfusion, if respiratory status allows

6. Establish vascular access *(MCG 1375)*
   Do not delay transcutaneous pacing (TCP) if indicated for vascular access

7. For suspected hyperkalemia: ❹
   **Calcium Chloride 1gm (10mL) slow IV/IO push**, may repeat x1 for persistent symptoms
   **Albuterol 5mg (6mL) via neb,** repeat continuously until hospital arrival
   **CONTACT BASE** for obtain order for **Sodium Bicarbonate 50mEq (50mL) slow IVP** ❺

8. For poor perfusion:
   **Atropine 0.5mg (5mL) IV/IO push**, repeat every 3-5 min prn, maximum total dose 3mg
   If IV cannot be rapidly established or if HR ≤ 40bpm in 2nd degree type II or 3rd degree heart block, proceed immediately to transcutaneous pacing ❶
   If no improvement after initial dose of **Atropine**, proceed to TCP

9. **TCP** for HR ≤ 40 with continued poor perfusion *(MCG 1365)*
   Recommended initial settings: rate 70bpm/0mA, slowly increase mAs until capture is achieved ❷
   **CONTACT BASE** concurrent with initiation of TCP

   If TCP will be utilized for the awake patient, consider sedation and analgesia
   For sedation:
   **Midazolam 2mg (0.4mL) slow IV/IO push or IM/IN**
   May repeat every 5 min, maximum total dose prior to Base contact 6mg
   For pain management: refer to *MCG 1345, Pain Management*

   **CONTACT BASE** for additional sedation and/or pain management after maximum dose administered: May repeat as above to a maximum dose of Midazolam 10mg, and Fentanyl 250mcg or Morphine 20mg

10. For signs of poor perfusion with HR > 40:
    **CONTACT BASE** to discuss appropriateness of TCP

11. For persistent poor perfusion after initiating TCP:
    **CONTACT BASE** to obtain order for **Normal Saline 1L IV/IO rapid infusion** and/or **Push-dose Epinephrine**

While infusing **Normal Saline**, reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

**Push-dose Epinephrine** – mix 9mL Normal Saline with 1mL Epinephrine 0.1mg/mL (IV formulation) in a 10mL syringe. Administer **Push-dose Epinephrine (0.01mg/mL) 1mL IV/IO** every 1-5 min as needed to maintain SBP > 90mmHg ❸

12. For suspected overdose, treat in conjunction with *TP 1241, Overdose/Poisoning/Ingestion*

13. For nausea or vomiting:
**Ondansetron 4mg ODT/IV/IM**, may repeat x1 in 15 min prn ❻

**Treatment Protocol: CARDIAC DYSRHYTHMIA - BRADYCARDIA** **Ref. No. 1212**

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## SPECIAL CONSIDERATIONS

❶ In patients with 2nd degree type II or 3rd degree heart block, atropine is unlikely to produce clinical improvement, therefore TCP should not be delayed for atropine administration.

❷ Electrical capture can occur without mechanical capture. Assess for electrical capture by reviewing the rhythm strip for a QRS complex and a T wave after each pacer spike. Assess for mechanical capture by palpating a pulse with each QRS complex.

❸ Push-dose Epinephrine is appropriate for non-traumatic shock including cardiogenic shock. Additional doses beyond 10mL may need to be prepared for prolonged transports.

❹ Patients at increased risk for hyperkalemia include those with history or clinical evidence of renal failure, missed dialysis or patients taking potassium-sparing diuretics such as spironolactone. ECG signs of hyperkalemia included peaked T-waves, wide QRS, bradycardia, long PR interval and absent P-waves.

❺ Sodium Bicarbonate is another rapid-acting treatment for suspected hyperkalemia. Due to the risk of adverse pulmonary edema, contact Base to discuss administration.

❻ Nausea and vomiting cause vagal stimulation, which can worsen bradycardia. Ondansetron may be administered to reduce potential for nausea or vomiting.

**Treatment Protocol: CARDIAC DYSRHYTHMIA - TACHYCARDIA** **Ref. No. 1213**

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**Base Hospital Contact: Required for all patients with wide complex tachycardia.**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
2. Administer **Oxygen** prn *(MCG 1302)*
3. Initiate cardiac monitoring *(MCG 1308)*
   Assess cardiac rhythm and obtain 12-lead ECG
4. If cardiac chest pain/STEMI suspected, treat in conjunction with *TP 1211, Cardiac Chest Pain*
5. Maintain supine for patients with signs of poor perfusion, if respiratory status allows
6. Establish vascular access prn *(MCG 1375)*
7. Advanced airway prn *(MCG 1302)*

SINUS TACHYCARDIA ❶

8. Consider possible underlying cause and treat as per applicable protocol ❷
9. For sinus tachycardia of unclear etiology and suspected hypovolemia or signs of poor perfusion:
   **Normal Saline 1L IV/IO rapid infusion**
   Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

   For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

   Continue to assess for underlying cause ❷

SVT – NARROW COMPLEX ≥ 150bpm ❸

10. For adequate perfusion:
    Attempt **Valsalva maneuver**

    **Adenosine 6 or 12mg (2 or 4mL) rapid IV push** ❹
    Immediately follow with Normal Saline rapid IV flush

    If no conversion:
    **Adenosine 12mg (4mL) rapid IV push** ❹
    Immediately follow with Normal Saline rapid IV flush
11. For alert patients with poor perfusion:
    **Adenosine 12mg (4mL) rapid IV push** ❹
    Immediately follow with Normal Saline rapid IV flush, may repeat x1 if persistent SVT

**CONTACT BASE** if no conversion after adenosine or if adenosine contraindicated to discuss order for **Synchronized Cardioversion at 120J**

12. For poor perfusion with ALOC:
    **Synchronized Cardioversion at 120J**, may repeat x2 with escalating doses of 150J followed by 200J, or per manufacturer's guidelines
    **CONTACT BASE** concurrent with initial cardioversion

    Consider sedation prior to cardioversion:
    **Midazolam 2mg (0.4mL) slow IV/IO push or IM/IN**
    May repeat every 5min prn X 2, maximum total dose prior to Base contact 6mg

    **CONTACT BASE** for additional sedation after maximum dose administered:
    May repeat as above to a maximum total dose of Midazolam 10mg

ATRIAL FIBRILLATION

13. Consider possible underlying cause and treat as per applicable protocol ❷

14. For poor perfusion:

    **CONTACT BASE** for treatment guidance ❺

WIDE COMPLEX (WCT) – REGULAR/MONOMORPHIC

15. For adequate perfusion:
    **Adenosine 6 or 12mg (2 or 4mL) rapid IV push** ❹ ❻
    Immediately follow with Normal Saline rapid IV flush

    If WCT persists:
    **Adenosine 12mg (4mL) rapid IV push** ❹ ❻
    Immediately follow with Normal Saline rapid IV flush

16. For alert patients poor perfusion:
    If vascular access available, **Adenosine 12mg (4mL) rapid IV push** ❹ ❻
    Immediately follow with Normal Saline rapid IV flush
    May repeat x1 for persistent WCT if mental status normal, or proceed directly to cardioversion

    If no conversion with adenosine or no vascular access:
    **Synchronized Cardioversion at 120J**, may repeat x2 with escalating doses of 150J followed by 200J, or per manufacturer's guidelines
    **CONTACT BASE** concurrent with cardioversion

17. For poor perfusion with ALOC

    **Synchronized Cardioversion at 120J**, may repeat x2 with escalating doses of 150J followed by 200J, or per manufacturer's guidelines
    **CONTACT BASE** concurrent with cardioversion

Consider sedation prior to cardioversion:
**Midazolam 2mg (0.4mL) slow IV/IO push or IM/IN**
May repeat every 5min prn x2, maximum total dose prior to Base contact 6mg

**CONTACT BASE** for additional sedation after maximum dose administered
May repeat as above to a maximum total dose of Midazolam 10mg

WIDE-COMPLEX – IRREGULAR

18. For adequate perfusion:
    **CONTACT BASE** for treatment guidance ❻

19. For poor perfusion:
    **Synchronized Cardioversion at 120J**, may repeat x2 with escalating doses of 150J followed by 200J, or per manufacturer's guidelines
    **CONTACT BASE** concurrent with cardioversion ❻

    Consider sedation prior to cardioversion:
    **Midazolam 2mg (0.4mL) slow IV/IO push or IM/IN**
    May repeat every 5min prn x2, maximum total dose prior to Base contact 6mg

    **CONTACT BASE** for additional sedation after maximum dose administered
    May repeat as above to a maximum total dose of Midazolam 10mg

**Treatment Protocol: CARDIAC DYSRHYTHMIA - TACHYCARDIA** **Ref. No. 1213**

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## SPECIAL CONSIDERATIONS

❶ Treatment of sinus tachycardia should be directed at the underlying cause. Sinus tachycardia due to conditions such as hypovolemia, sepsis, or GI bleed can present as a wide complex tachycardia in patients with left or right bundle branch blocks. P waves should be visible before each QRS and a typical bundle branch block pattern noted on the ECG.

❷ Tachycardia is often a response to an underlying illness including but not limited to: sepsis, GI bleeding, respiratory distress, anaphylaxis, hyperthermia, and toxic ingestions. Sinus tachycardia may be a manifestation of pain and/or anxiety, but these should not be considered until other, more dangerous etiologies, are evaluated.

❸ Sinus tachycardia can occur at a rate above 150 bpm. Sinus tachycardia does not respond to Adenosine, so it should not be administered, and treatment should be directed at the underlying cause.

❹ Adenosine is contraindicated in patients with history of Wolf-Parkinson-White (WPW) Syndrome and atrial fibrillation, Sick Sinus Syndrome, or heart transplant; or if the patient's medications include carbamazepine (Tegretol) for seizure disorder. In these patients, adenosine may cause degeneration to a fatal dysrhythmia.

❺ Patients with atrial fibrillation (or flutter) have abnormal impulses generated by the atria. Adenosine is not effective to slow or terminate the rhythm and, in the presence of Wolf-Parkinson-White (WPW) Syndrome, can cause ventricular fibrillation. Further, these rhythms cause abnormal contraction of the atria that can lead to clot formation. Cardioversion increases the risk for stroke as these clots can be forced out of the atria into circulation after cardioversion. Consider and treat underlying causes of rapid atrial fibrillation (e.g. dehydration, sepsis) prior to cardioversion. Cardioversion is appropriate for cases of acute onset (<48 hours) atrial fibrillation with hemodynamic instability and without other apparent cause.

❻ Regular monomorphic wide complex tachycardia may be supraventricular rhythm with a bundle branch block or aberrancy. In this case, Adenosine may convert the rhythm to sinus and AHA guidelines recommend its use for regular monomorphic wide complex tachycardia. Adenosine should not be used for irregular wide complex tachycardia, because this may represent atrial fibrillation with WPW and lead to degeneration to a fatal dysrhythmia (see ❹ above).

## Treatment Protocol: PULMONARY EDEMA / CHF — Ref. No. 1214

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**Base Hospital Contact: Required for severe respiratory distress unresponsive or not amenable to CPAP.**

1. Assess airway and initiate basic and advanced airway maneuvers prn *(MCG 1302)*

2. Maintain patient in position of comfort ❶

3. Administer **Oxygen** prn *(MCG 1302)*
   **High flow Oxygen 15 L/min** for patients with impending respiratory failure

4. CPAP for all alert patients with moderate or severe respiratory distress, SBP ≥ 90mmHg, and no other contraindications *(MCG 1315)* ❷

5. Initiate cardiac monitoring *(MCG 1308)*

6. For associated chest pain and/or suspected cardiac ischemia ❸
   Perform 12-lead ECG
   **Aspirin 325mg chewable tablets PO** if alert
   Treat in conjunction with *TP 1211, Cardiac Chest Pain*

7. Establish vascular access *(MCG 1375)*

8. For SBP > 100 with no sexually enhancing drugs within 48 hours: ❹
   **Nitroglycerin, 0.4mg SL**, for SBP ≥ 100mmHg
   **0.8mg SL**, for SBP ≥ 150mmHg
   **1.2mg SL**, for SBP ≥ 200mmHg
   Repeat every 3-5min prn x2 for persistent dyspnea
   Assess blood pressure prior to each administration and determine subsequent dose based on SBP as listed above
   Hold Nitroglycerin if SBP < 100mmHg ❺

9. If wheezing despite CPAP
   **Albuterol 5mg (6mL) via neb**
   May be given simultaneously with nitroglycerin based on clinical assessment of patient
   If patient reports history of COPD or asthma, treat in conjunction with *TP 1237, Respiratory Distress*

10. For patients who progress to respiratory failure and/or shock
    Assist ventilations and **CONTACT BASE**
    Treat in conjunction with *TP 1207, Shock/Hypotension*

**Treatment Protocol: PULMONARY EDEMA / CHF** **Ref. No. 1214**

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## SPECIAL CONSIDERATIONS

❶ Fowler's or Semi-Fowler's positioning is likely to be most comfortable for awake patients with pulmonary edema.

❷ Early use of CPAP has been shown to decrease hospital length of stay and risk of intubation for patients with pulmonary edema. Unless contraindicated, it should be initiated for all patients in moderate or severe respiratory distress from pulmonary edema regardless of $SpO_2$.

Contraindications to CPAP include: ALOC with inability to follow commands or hold head up independently, active vomiting, facial trauma, or inability to protect airway.

❸ Cardiac ischemia should be suspected in patients complaining of chest pain or with new onset pulmonary edema without history of CHF/Heart failure. CHF is a common cause of ECG abnormalities that do not require transport to a SRC.

❹ In patients with recent use of sexually enhancing drugs, or systolic murmur and pulmonary edema due to critical aortic stenosis, nitroglycerin may precipitate significant hypotension and cardiovascular collapse. If patient with systolic murmur on exam, consider discussion with Base Physician prior to NTG administration.

❺ Sudden significant decreases in blood pressure may cause stroke symptoms in patients with previously uncontrolled hypertension. If blood pressure decreases > 40mmHg or patient develops neurologic abnormalities (stroke symptoms or ALOC) after nitroglycerin, hold additional doses. Reassess blood pressure after 5 minutes.

**Treatment Protocol: CHILDBIRTH (MOTHER)** **Ref. No. 1215**

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**Base Hospital Contact Required.** ❶

1. Assess the mother's airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Establish vascular access prn *(MCG 1375)*
   Vascular access should not take precedence over controlled delivery or emergency transport

4. Place mother in Semi-Fowler's or Lateral Sims position

5. If mother has the urge to push or crowning is evident, prepare for delivery
   Prepare OB kit

6. If crown is showing with amniotic sac intact, pinch the sac and twist the membrane to rupture

7. If maternal hypertension, breech presentation, shoulder dystocia, or prolapsed or nuchal cord treat in conjunction with *TP 1217, Pregnancy Complication*

8. Once delivered, dry newborn with a towel, clamp and cut the cord ❷
   Treat newborn per *TP 1216-P, Newborn/Neonate Resuscitation*

9. For management of the placenta:
   The placenta may deliver spontaneously; do not pull on cord but allow placenta to separate naturally
   Place placenta in plastic bag from the OB kit and bring to the hospital with the mother

10. Massage the mother's lower abdomen (fundus) after the placenta delivers

11. For signs of poor perfusion in mother:
    **Normal Saline 1L IV rapid infusion**
    Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops
    **CONTACT BASE** for persistent poor perfusion to obtain order for additional **Normal Saline 1L IV**

12. If delivery occurs in the field, determine destination based on stated or estimated gestational age and **CONTACT BASE**: ❶
    Transport both patients to a Perinatal Center with an EDAP if newborn ≥ 34 weeks gestation
    Transport both patients to a Perinatal Center with an EDAP and a NICU if < 34 weeks gestation

**Treatment Protocol: CHILDBIRTH (MOTHER)** **Ref. No. 1215**

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## SPECIAL CONSIDERATIONS

❶ Any delivery after the first trimester (12 weeks) should be considered childbirth for the purpose of this treatment protocol and paramedics should contact Base to discuss the management and transport. In general, delivery prior to 20 weeks gestation is nonviable and does not required resuscitation. However, dates can be incorrectly estimated, therefore, Base contact is strongly encouraged. Any *potentially viable birth* should be resuscitated in the field transportation to a perinatal center that is also an EDAP (with a NICU if <34 weeks gestation. Births prior to 20 weeks do not necessarily require specialty care center care and can be transported to the MAR.

❷ Delay in clamping and cutting the cord for up 30 to 60 seconds is recommended unless newborn needs immediate resuscitation

**Treatment Protocol: PREGNANCY COMPLICATION** **Ref. No. 1217**

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**Base Hospital Contact: Required for vaginal bleeding at > 20 weeks pregnancy or newborn delivery.** ❶❷❸

1. Do not delay transport for treatment if suspected eclampsia; Manage delivery en route
2. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
3. Administer **Oxygen** prn *(MCG 1302)*
4. Establish vascular access *(MCG 1375)*
   Vascular access should not take precedence over controlled delivery or emergency transport
5. For poor perfusion:
   **Normal Saline 1L IV rapid infusion**
   Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops
   **CONTACT BASE** for persistent poor perfusion to obtain order for additional **Normal Saline 1L IV**
6. If crown is showing with amniotic sac intact, pinch sac and twist the membrane to rupture

BREECH DELIVERY

7. Support presenting part and allow newborn to deliver
8. If head does not deliver, place gloved hand inside mother and form “V” formed with fingers by baby’s face to provide an opening for the airway

PROLAPSED CORD

9. Position mother face down and hips elevated
10. Check cord for pulses
11. If no cord pulsation, manually displace presenting fetal part off the umbilical cord until pulsations are felt; maintain elevation of the presenting part until transfer of care
12. Wrap cord with moist gauze

NUCHAL CORD

13. If nuchal cord is loose attempt slipping the cord over the head prior to delivery
14. If the cord is too tight to easily slip over the head, clamp the cord in two places 1 inch apart and cut the cord with scissors

SHOULDER DYSTOCIA

15. Perform McRoberts maneuver in order to deliver the anterior shoulder ❹

MATERNAL HYPERTENSION (BP ≥ 140/90mmHg) / ECLAMPSIA ❺

16. Place mother in left lateral decubitus position

17. For seizure, treat in conjunction with *TP 1231, Seizure*

## SPECIAL CONSIDERATIONS

❶ This protocol was intended for complications of pregnancy at the time of delivery; if patient is known to be pregnant and has complaints not associated with labor or delivery treat per *TP 1202, General Medical* or most applicable protocol.

❷ If the patient has vaginal bleeding associated with known pregnancy > 20 weeks, Contact Base and communicate signs and symptoms so that the receiving hospital can pre-notify OB consultants as needed.

❸ Any delivery after the first trimester (12 weeks) should be considered childbirth for the purposes of this treatment protocol and paramedics should contact Base to discuss the management and transport. In general, delivery prior to 20 weeks gestation is nonviable and does not require resuscitation. However, dates can be incorrectly estimated, therefore, Base Contact is strongly encouraged. Any *potentially viable birth* should be resuscitated in the field and transported to a perinatal center that is also an EDAP (with a NICU if <34 weeks gestation). Births prior to 20 weeks do not necessarily require specialty center care and can be transported to the MAR.

❹ Shoulder dystocia is inability to deliver the anterior shoulder, which usually occurs in large newborns. If delivery fails to progress after head delivers, hyperflex mother's hips tightly in knee to chest position and apply firm suprapubic pressure in attempt to dislodge anterior shoulder (McRoberts maneuver).

❺ HTN in a pregnant or recently post-partum patient is a sign of eclampsia, which required immediate emergency and obstetric care. Additional signs of eclampsia are edema and seizures. Patients who are ≥ 20 weeks pregnant or ≤ 6 weeks post-partum with hypertension (BP ≥ 140/90mmHg) should be transported to a Perinatal Center for evaluation.

**Treatment Protocol: PREGNANCY LABOR** **Ref. No. 1218**

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1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
2. Administer **Oxygen** prn *(MCG 1302)*
3. Establish vascular access prn *(MCG 1375)*
4. Monitor frequency and duration of contractions ❶
5. If delivery is imminent ❷, treat per *TP 1215, Childbirth (Mother)*
6. If breech presentation, shoulder dystocia, nuchal cord or prolapsed cord treat per *TP 1215, Childbirth (Mother)* in conjunction with *TP 1217, Pregnancy Complication*
7. Opiate and Ketorolac analgesia is contraindicated *(MCG 1345)*

## SPECIAL CONSIDERATIONS

❶ The more frequent the contractions, the closer the patient is to delivery; if the contractions are < 2 minutes apart or last > 60 seconds prepare for delivery. Women who have had prior vaginal deliveries can progress through labor very rapidly.

❷ Crowning, urge to push, or presentation of a presenting part indicate imminent delivery.

**Treatment Protocol: ALLERGY** **Ref. No. 1219**

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**Base Hospital Contact: Required for anaphylaxis.**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
   Continually assess patient's airway and ventilation status

2. Administer **Oxygen** prn *(MCG 1302)*
   **High flow Oxygen 15 L/min** for anaphylaxis with poor perfusion or airway compromise

3. Initiate cardiac monitoring prn *(MCG 1308)*

4. For anaphylaxis:
   **Epinephrine (1mg/mL) administer 0.5mg (0.5mL) IM** in the lateral thigh ❶
   CONTACT BASE: Repeat as above every 10 min x2 prn persistent symptoms, maximum total 3 doses

5. Establish vascular access prn *(MCG 1375)*
   Vascular access for all patients with anaphylaxis

6. For poor perfusion:
   **Normal Saline 1L IV rapid infusion**
   Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops.

   For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

7. If wheezing: ❸
   **Albuterol 5mg (6mL) via neb**
   Repeat x2 prn, maximum total prior to Base contact 3 doses

8. For itching/hives:
   **Diphenhydramine 50mg (1mL) slow IV push** one time ❷
   If unable to obtain venous access, **Diphenhydramine 50mg (1mL) deep IM**

## SPECIAL CONSIDERATIONS

❶ Epinephrine is the drug of choice for allergic reactions with any angioedema, respiratory compromise or poor perfusion. It should be given IM into a large muscle group, lateral thigh preferred or alternatively the lateral gluteus.

❷ Diphenhydramine does not treat anaphylaxis. For patients in anaphylaxis, Epinephrine administration is the first priority. Diphenhydramine may be considered once other treatments are complete or in stable patients with discomfort for isolated hives.

❸ Patients with wheezing due to allergic reaction should be treated with Epinephrine IM. Albuterol may be administered in addition to Epinephrine IM if wheezing persists.

## Treatment Protocol: BURNS — Ref. No. 1220

*1200 Table of Contents*

**Base Hospital Contact: Required for burns meeting Trauma Center criteria, 2nd or 3rd degree burns ≥ 20% TBSA.**

1. Assess airway and initiate basic and advanced airway maneuvers prn *(MCG 1302)*
   If evidence of inhalation injury, treat in conjunction with *TP 1236, Inhalation Injury*

2. Administer **Oxygen** prn *(MCG 1302)*
   If carbon monoxide exposure suspected, provide **high flow Oxygen 15 L/min** and treat in conjunction with *TP 1238, Carbon Monoxide Poisoning* ❶

3. Assess for signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244, Traumatic Injury*

4. Remove jewelry and clothing from involved area

5. Apply blanket to keep patient warm

6. For ELECTRICAL burns:
   Cover with dry dressing or sheet, treat in conjunction with *TP 1221, Electrocution*

7. For THERMAL burns:
   Cover with dry dressing or sheet
   Consider cooling with water for burns isolated to less than 5% BSA

8. For CHEMICAL burns:
   If dry, brush and flush with copious amounts of water
   If liquid, flush with large amounts of water ❷
   If eye involvement, irrigate eye with **Normal Saline 1L** during transport; allow patient to remove contact lenses if possible, treat in conjunction with *TP 1240, HAZMAT*

9. Establish vascular access prn *(MCG 1375)*
   For IO placement in alert patients administer, **Lidocaine 2% 40mg (20mg/mL) slow IO push**, may repeat once for infusion pain at half initial dose

10. For partial/full thickness burn > 10% body surface area or poor perfusion:
    **Normal Saline 1L IV/IO rapid infusion**
    Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops
    **CONTACT BASE** for persistent poor perfusion to obtain order for additional **Normal Saline 1L IV/IO**

11. Elevate burned extremities as able for comfort

12. For pain management: refer to *MCG 1345, Pain Management*

## SPECIAL CONSIDERATIONS

❶ Consider potential for carbon monoxide and/or cyanide toxicity in closed space fires. Pulse oximetry is not accurate in carbon monoxide poisoning *(TP 1238, Carbon Monoxide Poisoning)*

❷ Observe for hypothermia; cooling large surface area burns (greater than 10% body surface area) may result in hypothermia.

## Treatment Protocol: ELECTROCUTION — Ref. No. 1221

*1200 Table of Contents*

1. Ensure source of electricity is turned off ❶
2. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
3. For cardiac arrest, treat per *TP 1210 Cardiac Arrest* ❷
4. Administer **Oxygen** prn *(MCG 1302)*
5. Initiate cardiac monitoring *(MCG 1308)*
   Perform 12-Lead ECG prn
   If cardiac dysrhythmia present, treat in conjunction with *TP 1212, Bradycardia* or *TP 1213, Tachycardia* ❸
6. Assess for signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244, Traumatic Injury*
7. Remove jewelry and clothing from involved areas
8. Establish vascular access prn *(MCG 1375)*
9. For burns, treat in conjunction with *TP 1220, Burns*
   Cover affected areas with dry dressing or sheet ❹
10. For poor perfusion:
    **Normal Saline 1L IV rapid infusion**
    Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

    For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*
11. For pain management: refer to *MCG 1345, Pain Management*
12. For nausea or vomiting:
    **Ondansetron 4mg ODT/IV/IM**, May repeat x1 in 15 min prn

**Treatment Protocol: ELECTROCUTION** **Ref. No. 1221**

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## SPECIAL CONSIDERATIONS

❶ Do not touch the patient unless you have removed the source of the electricity. An electrical current can be conducted through water and skin. Ensure that area surrounding the patient is dry before approaching him/her.

❷ For young, healthy patients, especially in lightning injuries, consider prolonged cardio-pulmonary resuscitation.

❸ Electrocution may result in ventricular tachycardia, ventricular fibrillation, asystole or other dysrhythmias. However, if the patient is in a regular rhythm on evaluation, they are unlikely to develop a dysrhythmia.

❹ Superficial skin findings do not correlate with the severity of an electrical burn. As the electrical current passes through tissue, it can cause more damage than is superficially present.

## Treatment Protocol: HYPERTHERMIA (ENVIRONMENTAL) Ref. No. 1222

*1200 Table of Contents*

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Initiate cardiac monitoring *(MCG 1308)*
   For patients with dysrhythmias, treat in conjunction with *TP 1212, Bradycardia* or *TP 1213, Tachycardia*

4. Provide cooling measures ❶

5. For patients with fever due to presumed infection/sepsis, treat per *TP 1204, Fever/Sepsis* ❷

6. Establish vascular access prn *(MCG 1375)*

7. For altered level of consciousness, treat in conjunction with *TP 1229, ALOC*

8. For adequate perfusion and normal mental status, encourage oral hydration

9. For poor perfusion or if unable to take fluids orally:
   **Normal Saline 1L IV rapid infusion**
   Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

   For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

**Treatment Protocol: HYPERTHERMIA (ENVIRONMENTAL)** **Ref. No. 1222**

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## SPECIAL CONSIDERATIONS

1. Cooling measures should include moving patient to a cooler environment (e.g. ambulance with air conditioner), removing clothing, applying wet towels, and fanning/blowing cool air from air conditioning vents.

2. This protocol is intended for hyperthermia due to environmental exposures and toxic ingestions.

## Treatment Protocol: HYPOTHERMIA / COLD INJURY — Ref. No. 1223

*1200 Table of Contents*

1. Assess airway and initiate basic and/or advance airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Initiate cardiac monitoring *(MCG 1308)*
   For patients with dysrhythmias, treat in conjunction with *TP 1212, Bradycardia* or *TP 1213, Tachycardia*

4. Provide warming measures ❶

5. For frostbite:
   Handle affected area gently, remove jewelry, cover and protect the area ❷

6. Establish vascular access prn *(MCG 1375)*

7. For altered level of consciousness, treat in conjunction with *TP 1229, ALOC*

8. For poor perfusion:
   **Normal Saline 1L IV rapid infusion**; use warm saline if available
   Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

   For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

9. For cardiac arrest, treat in conjunction with *TP 1210, Cardiac Arrest*
   Initiate rewarming while resuscitation is ongoing ❸

## SPECIAL CONSIDERATIONS

1. Warming measures should include moving the patient to a warm environment as quickly as possible, removing wet clothing/items, covering with an emergency/rescue blanket or blanket/sheets, and using warm normal saline if available.

2. Do not allow an area of frostbite to thaw and then refreeze as this causes more tissue damage.

3. Follow usual protocols for resuscitation of patients with hypothermic cardiac arrest while rewarming. Patients with hypothermia may have good neurologic outcome despite prolonged resuscitation; resuscitative efforts should continue until the patient is rewarmed. Consultation with the Base Physician is required before consideration of termination of resuscitation.

## Treatment Protocol: STINGS / VENOMOUS BITES — Ref. No. 1224

*1200 Table of Contents*

1. Assess airway and initiate basic and advanced airway maneuvers prn *(MCG 1302)*

2. Prioritize treatment of systemic symptoms
   For signs or symptoms of allergic reaction, treat in conjunction with *TP 1219, Allergy*
   For poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

3. Keep patient calm and limit activity
   Position affected extremity at or below level of the heart

4. For SNAKE bites:
   Splint the affected area
   Elevate affected extremity to the level of the heart

5. For INSECT (bee, wasp, ant), spider and scorpion stings:
   Remove stinger if visualized ❶
   Apply cold pack

6. For MARINE envenomation (e.g., jelly fish, stingrays and scorpion fish):
   Remove barb when applicable
   Soak area in hot water if available ❷

7. Establish vascular access prn *(MCG 1375)*

8. For continued pain after specific measures above: refer to *MCG 1345, Pain Management*

9. For nausea or vomiting:
   **Ondansetron 4mg ODT/IV/IM**, may repeat x1 in 15 min prn

**Treatment Protocol: STINGS / VENOMOUS BITES** **Ref. No. 1224**

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## SPECIAL CONSIDERATIONS

1. Remove stinger by scraping patient's skin with the edge of a flat surface (credit card or similar). Do not attempt to pull the stinger out with fingernails or tweezers, as this may cause release of additional venom.

2. Do not use vinegar given the type of jellyfish endemic to California.

## Treatment Protocol: SUBMERSION — Ref. No. 1225

*1200 Table of Contents*

**Base Hospital Contact: Required for ALOC and decompression emergencies *(Ref. 518)*.**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. For cardiac arrest, treat per *TP 1211, Cardiac Arrest* ❶

3. Administer **Oxygen** prn *(MCG 1302)*
   For suspected decompression illness ❷, provide **high flow Oxygen 15 L/min** and **CONTACT BASE**

4. Maintain supine if suspected decompression illness

5. Advanced airway prn *(MCG 1302)*

6. Initiate cardiac monitoring *(MCG 1308)*

7. Provide warming measures ❸

8. Establish vascular access prn *(MCG 1375)*

9. For altered level of consciousness, treat in conjunction with *TP 1229, Altered Level of Consciousness (ALOC)*

10. For respiratory distress, treat in conjunction with *TP 1237, Respiratory Distress* ❹

11. For poor perfusion or for suspected decompression illness:
    **Normal Saline 1L IV rapid infusion**; use warm saline if available
    Reassess after each 250 mL increment for evidence of worsening respiratory distress and if noted **CONTACT BASE** to discuss need to continue or hold Normal Saline based on patient condition ❹

    For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

**Treatment Protocol: SUBMERSION** **Ref. No. 1225**

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## SPECIAL CONSIDERATIONS

❶ Cardiac arrest from drowning should be treated per *TP 1210, Cardiac Arrest*. Ventilation is particularly important as the cardiac arrest is almost always due to respiratory failure. In cases of cold water drowning follow usual protocols for resuscitation while simultaneously rewarming the patient. Patients with hypothermia due to cold water drowning, may have good neurologic outcome despite prolonged resuscitation; resuscitative efforts should continue until the patient is rewarmed. Consultation with the Base Physician is required before consideration of termination of resuscitation in patients with suspected hypothermia.

❷ Decompression illness includes arterial gas embolism from barotrauma and decompression sickness (aka “the bends”) due to dissolved nitrogen in the blood coming out of solution. Decompression illness most frequently occurs in scuba divers after breathing compressed air at depth. While arterial gas embolism presents almost immediately after ascent, decompression sickness is often delayed and should be considered in any patient with symptoms (e.g. respiratory distress, ALOC, chest or body pain) within 24 hours of completing a dive. All patients with possible decompression illness need immediate evaluation for possible hyperbaric treatment. Per *Ref. 518*, contact Base immediately to discuss.

❸ Warming measures should include moving the patient to a warm environment as quickly as possible, removing wet clothing/items, covering with an emergency/rescue blanket or other blankets/sheets, and using warm Normal Saline if available.

❹ Rales may be present in patients after submersion/drowning due to direct lung injury and/or aspiration of water. This is not an indication of cardiogenic pulmonary edema (such as from congestive heart failure) and does not prohibit administration of IV fluids. IV fluids should be initiated and continued unless respiratory status worsens during administration.

**Treatment Protocol: ENT / DENTAL EMERGENCIES** **Ref. No. 1226**

***1200 Table of Contents***

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Assess for signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244, Traumatic Injury*

4. Control bleeding with direct pressure ❶

5. For epistaxis:
   Control bleeding by pinching nose just distal to nasal bone with head in neutral position and patient sitting forward ❷
   Document Provider Impression – *Epistaxis*

6. For tooth avulsion:
   Handle it by the enamel (crown) and do not touch the root
   Place in container with **Normal Saline**

7. For complaints of throat irritation and/or foreign body sensation:
   Assess for airway obstruction, if present treat as per *TP 1234, Airway Obstruction*
   For throat complaints without airway obstruction, document Provider Impression – *ENT/Dental Emergencies*

8. Establish vascular access prn *(MCG 1375)*

9. For pain management: refer to *MCG 1345, Pain Management*

10. For nausea or vomiting:
    **Ondansetron 4mg ODT/IV/IM**, may repeat x1 in 15 min prn

## SPECIAL CONSIDERATIONS

1. If unable to sit upright due to poor perfusion or concerns for trauma with possible thoracic or lumbar spinal injury, consider log rolling on side to prevent airway compromise.

2. To prevent aspiration and for patient comfort, sit patient in high Fowler's position leaning forward and suction prn

## Treatment Protocol: EYE PROBLEM — Ref. No. 1228

*1200 Table of Contents*

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Assess for additional signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244, Traumatic Injury*

3. If penetrating globe injury present/suspected, shield the eye and position patient at 45 degrees ❶
   Do not put any pressure on the eye

4. Do not remove any impaled foreign bodies from eye; secure them in place

5. If contacts lenses are present and the patient is unable to remove them, leave in place

6. Establish vascular access prn *(MCG 1375)*

7. Burns to eye:
   Chemical Burn – Irrigate with **Normal Saline 1L**
   Thermal Burn – Cover with dry dressing
   Treat in conjunction with *TP 1220, Burns*

8. For eye pain: refer to *MCG 1345, Pain Management*

9. For nausea or vomiting:
   **Ondansetron 4mg ODT/IV/IM**, may repeat x1 in 15 min prn

## SPECIAL CONSIDERATIONS

❶ Consider a penetrating globe injury with any eye trauma, especially penetrating trauma, large subconjunctival hemorrhage, abnormal shaped pupil or iris, or the appearance of fluid or tissue coming from the eye.

## Treatment Protocol: ALTERED LEVEL OF CONSCIOUSNESS (ALOC) Ref. No. 1229

*1200 Table of Contents*

**Base Hospital Contact: Required for persistent ALOC of unclear etiology.** ❶

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Assess level of consciousness per *MCG 1320*

4. Initiate cardiac monitoring *(MCG 1308)*
   Perform 12-lead ECG if cardiac ischemia suspected and treat in conjunction with *TP 1211, Cardiac Chest Pain*

5. Establish vascular access *(MCG 1375)*

6. Check blood glucose
   If < 60mg/dL or > 400mg/dL, treat in conjunction with *TP 1203, Diabetic Emergencies*

7. For poor perfusion:
   **Normal Saline 1L IV rapid infusion**
   Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

   For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

8. Assess for signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244, Traumatic Injury*

9. Perform mLAPSS
   If stroke is suspected, treat per *TP 1232, Stroke/CVA/TIA*

10. For suspected drug overdose or alcohol intoxication, treat in conjunction with *TP 1241, Overdose/Poisoning/Ingestion* ❷

11. For suspected carbon monoxide exposure, treat in conjunction with *TP 1238, Carbon Monoxide Exposure*

12. **CONTACT BASE** if the etiology of the ALOC remains unclear

**Treatment Protocol: ALTERED LEVEL OF CONSCIOUSNESS (ALOC)** **Ref. No. 1229**

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## SPECIAL CONSIDERATIONS

❶ Consider all causes of ALOC using a mnemonic AEIOUTUIPS:

- **A** – Alcohol, abuse, atypical migraine
- **E** – Epilepsy, electrolytes
- **I** – Insulin (hypoglycemia)
- **O** – Oxygen, overdose
- **U** – Uremia (kidney failure)
- **T** – Trauma, tumor
- **I** – Infection
- **P** – Psych, poisoning
- **S** – Seizure, Subarachnoid hemorrhage, Sepsis, Stroke

Once the cause for ALOC is determined, switch to the more specific protocol.

❷ Consider narcotic overdose for patients with hypoventilation (bradypnea), and pinpoint pupils, drug paraphernalia, or strong suspicion of narcotic use.

## Treatment Protocol: DIZZINESS / VERTIGO — Ref. No. 1230

*1200 Table of Contents*

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Initiate cardiac monitoring prn *(MCG 1308)*

4. For poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

5. Establish vascular access prn *(MCG 1375)*

6. Check blood glucose
   If < 60mg/dL or > 400mg/dL, treat in conjunction with *TP 1203, Diabetic Emergencies*

7. For vertigo: ❶
   Perform and document mLAPSS
   If mLAPSS positive and/or stroke suspected, treat per *TP 1232, Stroke/CVA/TIA* ❷❸

8. For nausea or vomiting:
   **Ondansetron 4mg ODT/IV/IM**, may repeat x1 in 15 min prn

**Treatment Protocol: DIZZINESS / VERTIGO** **Ref. No. 1230**

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## SPECIAL CONSIDERATIONS

❶ Dizziness is often used to descried two different feelings; vertigo and lightheadedness. Vertigo is the sensation of a person or their surroundings moving when no actual movement is occurring. People often describe the feeling of spinning, falling, tilting, or being off balance. This is often associated with nausea/vomiting. Lightheadedness can lead to feeling faint or syncope, and the patient often reports improvement with supine position.

❷ Using a stroke scale, such as mLAPSS, increases the chances of diagnosing a stroke. However, stroke scales do not identify all strokes. Vertigo may be a symptom of a cerebellar stroke. If patient's coordination or gait is abnormal with complaint of vertigo, strongly consider stroke.

❸ Last known well time (LKWT) determines the patient's eligibility for TPA and/or interventional procedures for clot removal. Document the name and contact information of the family member, caregiver, or witness who can verify the patient's LKWT and report this information to ED providers. If possible, transport the witness with the patient.

## Treatment Protocol: SEIZURE — Ref. No. 1231

*1200 Table of Contents*

**Base Hospital Contact: Required for status epilepticus or pregnant patients.**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Assess for signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244, Traumatic Injury*

4. Initiate cardiac monitoring prn *(MCG 1308)*

5. Establish vascular access prn *(MCG 1375)*

6. For suspected eclampsia,
   **CONTACT BASE**, do not delay transport ❶

7. If seizure stops spontaneously prior to EMS arrival and no seizure witnessed by EMS:
   Document Provider Impression – *Seizure - Post*

8. For active seizure witnessed by EMS:
   **Midazolam 5mg (1mL) IM/IN/IV**
   Repeat x1 in 2 min prn, maximum total dose prior to Base contact 10mg all routes ❹
   Document Provider Impression – *Seizure - Active*, even if seizure spontaneously resolves ❷❸

   **CONTACT BASE** for persistent seizure and additional medication orders
   **Midazolam 5mg (1mL) IM/IN/IV**
   May repeat as above for a maximum total dose 20mg

9. For persistent seizure or persistent ALOC:
   Check blood glucose
   If < 60mg/dL or > 400mg/dL, treat in conjunction with *TP 1203, Diabetic Emergencies*

## SPECIAL CONSIDERATIONS

❶ Preeclampsia and eclampsia may develop anytime between 20 weeks gestation and 6 weeks after delivery (postpartum). Signs/symptoms of preeclampsia include systolic blood pressure > 140, edema, changes in vision, headache and/or right upper quadrant pain. Treat seizures from eclampsia with Midazolam.

❷ Active seizures may include tonic and/or clonic activity or focal seizure with altered level of consciousness. Eye deviation, clenched jaw, lip smacking or focal twitching may be subtle signs of seizure.

❸ Midazolam onset is 2 minutes with maximum effect at 5 minutes.

❹ Seizures may occur as a result of underlying medical problems or toxic ingestions. Make every effort to obtain medical history and determine all medications/drugs that the patient may have taken.

**Treatment Protocol: STROKE / CVA / TIA** **Ref. No. 1232**

*1200 Table of Contents*

**Base Hospital Contact: Required prior to transport for all patients with suspected Stroke or TIA.**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Initiate cardiac monitoring *(MCG 1308)*
   Perform 12-lead ECG if concern for cardiac ischemia or dysthythmia

4. Establish vascular access prn *(MCG 1375)* ❶
   Establish IV in all patients with LAMS 4 or 5, large bore catheter (16g or 18g) preferred

5. Check blood glucose
   If < 60mg/dL or > 400mg/dL, treat in conjunction with *TP 1203, Diabetic Emergencies*

6. Assess for signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244, Traumatic Injury*

7. Perform Modified Los Angeles Prehospital Stroke Screen (mLAPSS) on all patients exhibiting local neurologic signs. ❷
   The mLAPSS is positive if **all** of the following criteria are met:
   i. No history of seizures or epilepsy
   ii. Age 40 years or older
   iii. At baseline, patient is not wheelchair bound or bedridden
   iv. Blood glucose between 60 and 400 mg/dL
   v. Obvious asymmetry-unilateral weakness with any of the following motor exams:
      a. Facial Smile/Grimace
      b. Arm Strength
      c. Grip Strength

8. If mLAPSS is positive, or your primary impression remains stroke despite negative mLAPSS❷, calculate Los Angeles Motor Score (LAMS) from the mLAPSS motor items:
   i. Facial Droop
      a. Absent = 0
      b. Present = 1
   ii. Arm Drift
      a. Absent = 0
      b. Drifts down = 1
      c. Falls rapidly = 2
   iii. Grip Strength
      a. Normal = 0
      b. Weak grip = 1
      c. No grip = 2

9. Verify and document date and time of Last Known Well Time (LKWT) ❸

**Treatment Protocol: STROKE / CVA / TIA** **Ref. No. 1232**

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10. Determine patient destination based on mLAPSS, LAMS and LKWT: ❹
    mLAPSS positive, LAMS 4-5, LKWT < 24 hours → Transport to Comprehensive Stroke Center (CSC) if within 30 min
    mLAPSS positive, LAMS < 4, LKWT < 24 hours → Transport to closest Stroke Center
    mLAPSS negative but acute stroke suspected → **CONTACT BASE** for destination

11. Transport with head of bed elevated 30-45 degrees ❺

## SPECIAL CONSIDERATIONS

❶ If LAMS is 4 or greater, place 18 gauge IV if possible to facilitate advanced imaging studies at CSC.

❷ The Modified LAPSS is a validated tool that helps to identify stroke mimics and excludes patients that will not benefit from stroke care. However, it does not identify all strokes and some patients with stroke will be mLAPSS negative. For patients in whom you suspect stroke but are mLAPSS negative, calculate the LAMS and contact the Base to discuss the destination decision. History of prior stroke does not exclude the need to evaluate for possible new deficits. New findings in a patient with prior stroke should be managed similarly to first-time strokes and such patients should be routed to the closest appropriate approved stroke center as per Ref. 521.

❸ LKWT determines the patient's eligibility for TPA and/or interventional procedures for clot removal. Document the name and contact information of the family member, caregiver, or witness who can verify the patient's LKWT and report this information to ED providers. If possible, transport the witness with the patient.

❹ Using a stroke scale, such as mLAPSS, increases the chances of diagnosing strokes. However, stroke scales do not catch all strokes, including presentations such as aphasia, ataxia and vertigo.

❺ Whenever possible transport patients with suspected stroke with head of bed elevated 30-45 degrees. This reduces risk of aspiration and also reduces elevation in intracranial pressure.

## Treatment Protocol: SYNCOPE / NEAR SYNCOPE — Ref. No. 1233

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1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Establish vascular access prn *(MCG 1375)*

4. For orthostasis signs of dehydration or fluid losses, or for poor perfusion: ❶ ❷
   **Normal Saline 1L IV rapid infusion**
   Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

   For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

5. Initiate cardiac monitoring *(MCG 1308)*
   Perform 12-Lead ECG and assess cardiac rhythm for patients >35 years of age and/or for those for which cardiac ischemia or dysrhythmia is suspected
   If cardiac dysrhythmia is present, treat per *TP 1212, Cardiac Dysrhythmia – Bradycardia* or *TP 1213, Cardiac Dysrhythmia – Tachycardia*
   If STEMI on 12-Lead ECG, treat per *TP 1211, Cardiac Chest Pain*

6. Assess for signs of trauma ❸
   If traumatic injury suspected, treat in conjunction with *TP 1244, Traumatic Injury*

7. For persistent ALOC, treat in conjunction with *TP 1229, ALOC*

**Treatment Protocol: SYNCOPE / NEAR SYNCOPE** **Ref. No. 1233**

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## SPECIAL CONSIDERATIONS

❶ Patients who are lightheaded and/or tachycardic when sitting and/or standing compared to lying down, referred to as orthostatic, are likely dehydrated and in need for fluid resuscitation. Orthostatic vital signs provide little information and may result in harm so should not be performed. Syncope can result from a lack of adequate perfusion to the brain, and in the setting of suspected dehydration or fluid losses, this can be a sign of poor perfusion. Therefore, for patients who present with syncope with orthostasis and/or dehydration, fluid resuscitation is appropriate unless contraindicated. Use caution in patients with history or congestive heart failure or renal insufficiency.

❷ In a female with syncope, ask about possible pregnancy and any history of vaginal bleeding. One cause of syncope in females is a ruptured ectopic pregnancy. This can be life threatening and may present with poor perfusion and require fluid resuscitation with **Normal Saline**. Alert Base if patient known to be pregnant.

❸ Elderly patients should be evaluated carefully for traumatic injuries resulting from ground level falls. Common injuries include blunt head trauma and extremity fractures.

## Treatment Protocol: AIRWAY OBSTRUCTION — Ref. No. 1234

*1200 Table of Contents*

**Base Hospital Contact: Required for patients with severe respiratory distress and/or respiratory arrest.**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)* ❶

2. Administer **Oxygen** prn *(MCG 1302)*
   **High flow Oxygen 15 L/min** for all patients with impending respiratory arrest due to severe airway obstruction

3. For physical obstruction from foreign body:
   If patient unable to speak but is conscious, perform 5 abdominal thrusts; reassess, if patient becomes unconscious lower to ground and begin chest compressions

   If patient is unconscious, initiate CPR X 2 minutes
   Perform direct laryngoscopy to visualize potential obstruction when indicated
   Remove visible foreign body with Magill forceps

4. If patient has an Unmanageable Airway *(MCG 1302)*:
   Initiate immediate transport to MAR and **CONTACT BASE** en route

5. Initiate cardiac monitoring *(MCG 1308)*

6. If patient is conscious and spontaneous ventilation is adequate:
   Monitor in position of comfort

7. Consider specific presentation:
   For suspected anaphylaxis treat per *TP 1219, Allergy*

   For stridor:
   **Epinephrine (1mg/mL solution) administer 5mg (5mL) via neb**
   Repeat x1 in 10 min prn
   Prepare to manage airway if patient's condition deteriorates

   For visible airway/tongue swelling:
   **Epinephrine (1mg/mL) administer 0.5mg (0.5mL) IM**
   Repeat every 10 min prn x2, maximum total 3 doses

   For patients with a tracheostomy and suspected obstruction: ❷
   Attempt suctioning
   Remove and clean inner cannula with saline if present; replace if positive-pressure ventilation required ❸
   If the obstruction is not relieved, remove entire tracheostomy tube and replace with a new tracheostomy or 6.0mm endotracheal tube ❹
   If a new tube cannot be placed, cover stoma and attempt BMV first via the mouth. If no chest rise attempt BMV over stoma with a small mask

8. Establish vascular access prn *(MCG 1375)*

## SPECIAL CONSIDERATIONS

❶ In evaluation of patient with suspected airway obstruction, assessment of the airway should include the tongue and posterior oropharynx, including uvula and tonsillar pillars.

❷ Common tracheostomy emergencies include obstruction of the tracheostomy tube and bleeding. There are different types of tracheostomy tubes, some with an inner cannula and/or obturator. The obturator obstructs airflow and is only used during insertion. The inner cannula allows for connection to a ventilator or bag mask for positive pressure ventilation. There are both cuffed and uncuffed tracheostomy tubes. If the tracheostomy does not have a cuff (balloon inflated in the trachea indicated by a side port), the airway is not protected against aspiration and air can leak out through the mouth during positive-pressure ventilation. If respiratory failure occurs in a patient with an uncuffed tracheostomy tube, it should be replaced with a cuffed endotracheal tube if feasible in order to facilitate positive-pressure ventilation. For bleeding direct pressure should be applied and suctioning as needed to reduce aspiration of blood.

❸ The inner cannula is required to attach a ventilator or bag mask to a tracheostomy for positive-pressure ventilation. It may become obstructed with secretions; remove, clean with saline, and replace once obstruction relieved.

❹ Removal and reinsertion of the tracheostomy tube is contraindicated if the tracheostomy is < 1 week old because the stoma has not fully formed and a false tract may be created. Once the stoma has matured, a tracheostomy can be safely removed and replaced when necessary. If a flexible intubation guide (e.g., Bougie) can be inserted, it may be used to guide the removal and reinsertion of the tracheostomy or endotracheal tube.

## Treatment Protocol: INHALATION INJURY — Ref. No. 1236

*1200 Table of Contents*

**Base Hospital Contact: Required for severe respiratory distress unresponsive or not amenable to CPAP.**

1. Assess scene for safety

2. Use appropriate PPE

3. Remove patient from environment if potential for ongoing exposure

4. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

5. If patient awake and alert, place in position of comfort

6. Administer **Oxygen** prn *(MCG 1302)*
   **High flow Oxygen 15 L/min** for all patients with smoke inhalation, carbon monoxide exposure, or severe respiratory distress due to airway injury, regardless of $SpO_2$ ❶

7. If patient has an Unmanageable Airway *(MCG 1302)*
   Initiate immediate transport to the MAR and **CONTACT BASE** en route

8. Assess for signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244, Traumatic Injury*

9. For airway burns, treat in conjunction with *TP 1220, Burns*

10. For suspected carbon monoxide exposure, treat in conjunction with *TP 1238, Carbon Monoxide Poisoning*

11. For suspected exposure to hazardous materials, treat in conjunction with *TP 1240, HAZMAT*

12. For airway edema and/or stridor:
    **Epinephrine (1mg/mL solution) administer 5mg (5mL) via neb**
    Repeat x1 in 10 min prn

13. For wheezing/bronchospasm (consider also for cough):
    **Albuterol 5mg (6mL) via neb**
    Repeat x2 prn, maximum total dose prior to Base contact 15mg

14. Initiate CPAP for patients with moderate or severe respiratory distress and SBP ≥ 90mmHg
    Hold CPAP for patients with suspected pneumothorax, upper airway edema/obstruction, or other contraindications *(MCG 1315)* ❷

15. Initiate cardiac monitoring prn *(MCG 1308)*

16. Perform 12-lead ECG if cardiac ischemia suspected *(MCG 1308)*

17. Establish vascular access prn *(MCG 1375)*

18. For poor perfusion:
    **Normal Saline 1L IV rapid infusion**
    Reassess after each 250mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

    For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

**Treatment Protocol: INHALATION INJURY** **Ref. No. 1236**

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## SPECIAL CONSIDERATIONS

❶ Suspect smoke inhalation and carbon monoxide exposure in setting of closed-space fires, carbonaceous sputum in mouth/nose, elevated carbon monoxide levels (if point of care testing available), and facial burns. For patients with ALOC or seizure after industrial or closed space fire, also consider cyanide toxicity; contact Base and ensure notification of the receiving hospital.

❷ CPAP is appropriate for undifferentiated respiratory distress and may be used if patient does not improve after initial albuterol. Contraindications to CPAP include: ALOC with inability to follow commands or hold head up independently, active vomiting, facial trauma, or inability to protect airway.

**Treatment Protocol: RESPIRATORY DISTRESS** **Ref. No. 1237**

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**Base Hospital Contact: Required for respiratory failure, severe respiratory distress unresponsive or not amenable to CPAP.**

1. Use appropriate PPE ❶

2. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)* ❷

3. Maintain patient in position of comfort ❸

4. Administer **Oxygen** prn *(MCG 1302)*
   **High flow Oxygen 15 L/min** for all patients with impending respiratory failure, suspected pneumothorax, inhalation injury, or carbon monoxide exposure

5. If patient with stridor or concern for airway obstruction, treat per *TP 1234, Airway Obstruction*

6. If pulmonary edema/CHF exacerbation suspected, treat per *TP 1214, Pulmonary Edema/CHF*

7. If anaphylaxis suspected, treat in conjunction with *TP 1219, Allergy*

8. Initiate CPAP for alert patients with moderate or severe respiratory distress and SBP ≥ 90mmHg ❹
   Hold CPAP for patients with suspected pneumothorax, upper airway edema/obstruction, or other contraindications *(MCG 1315)*

9. Capnography is encouraged for patients with moderate or severe respiratory distress *(MCG 1305)* ❺

10. Initiate cardiac monitoring prn *(MCG 1308)*
    Perform 12-lead ECG if cardiac ischemia suspected and treat in conjunction with *TP 1211, Cardiac Chest Pain*

11. Consider the following etiologies of respiratory distress without pulmonary edema:
    Bronchospasm (asthma or COPD) – document Provider Impression as *Respiratory Distress / Bronchospasm*
    Pneumonia – document Provider Impression as *Respiratory Distress / Other*
    Pulmonary embolism – document Provider Impression as *Respiratory Distress / Other*
    Spontaneous pneumothorax – document Provider Impression as *Respiratory Distress / Other*

12. For bronchospasm, COPD or asthma exacerbation:
    **Albuterol 5mg (6mL) via neb** ❻
    May repeat x2 prn wheezing
    May be administered in-line with CPAP for patients with moderate or severe respiratory distress
    Document Provider Impression as *Respiratory Distress / Bronchospasm*

    For deteriorating respiratory status despite albuterol:
    **Epinephrine (1mg/mL) administer 0.5mg (0.5mL) IM**
    Consider early in asthma exacerbation with poor perfusion or severe respiratory distress ❼
    Unlikely to benefit patients with COPD exacerbation

13. Establish vascular access prn *(MCG 1375)*

14. For poor perfusion:
    **Normal Saline 1L IV rapid infusion**
    Reassess after each 250mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

    For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

15. If sepsis suspected, treat in conjunction with *TP 1204, Fever/Sepsis*

16. If overdose is suspected, treat in conjunction with *TP 1241, Overdose/Poisoning/Ingestion*

17. If inhalation injury suspected, treat in conjunction with *TP 1236, Inhalation Injury*

18. Perform needle thoracostomy for suspected tension pneumothorax *(MCG 1335)*

## SPECIAL CONSIDERATIONS

❶ Consider wearing surgical mask when caring for patients with respiratory distress of unclear etiology, which may be infectious.

❷ If BMV or endotracheal intubation performed, document Provider Impression as Respiratory Arrest / Respiratory Failure.

❸ Fowler's or Semi-Fowler's positioning is likely to be most comfortable for awake patients with respiratory distress.

❹ Early use of CPAP has been shown to decrease ICU length of stay and risk of intubation for patients with severe respiratory distress. It should be strongly considered for patients in moderate-to-severe respiratory distress, based on assessment of work of breathing, regardless of $SpO_2$.

CPAP is appropriate for undifferentiated respiratory distress. It is the treatment of choice for patients with COPD exacerbation and may be used in conjunction with albuterol or if patient does not improve after initial albuterol.

Contraindications to CPAP include: ALOC with inability to follow commands or hold head up independently, active vomiting, facial trauma, or inability to protect airway.

❺ Persistently high or increasing end-tidal $CO_2$ ($EtCO_2$) readings above normal in a spontaneously ventilating patient with reduced respiratory rate indicates bradypneic hypoventilation; whereas low $EtCO_2$ readings with a slow respiratory rate represents hypopneic hypoventilation; consider the need for assisted ventilation in these cases. In a patient with respiratory distress of unclear etiology, a "shark-fin" capnography waveform indicates likely Bronchospasm/COPD exacerbation. Gradually elevating $EtCO_2$ waveforms ("stacking") in a patient with BMV indicates excessive ventilation by the provider, resulting in inadequate exhalation; in this case, decrease ventilation rate significantly to avoid progression to cardiopulmonary arrest.

❻ Wheezing may also be caused by pulmonary edema; reassess breath sounds frequently for patients without history of asthma or with other concerns for volume overload (edema, etc.), because as air entry improves with treatment, rales may be more easily heard. If pulmonary edema/CHF exacerbation suspected, treat per *TP 1214, Pulmonary Edema/CHF.*

❼ Epinephrine may be administered prior to albuterol as initial drug therapy in patients with Respiratory Failure due to bronchospasm.

## Treatment Protocol: CARBON MONOXIDE EXPOSURE — Ref. No. 1238

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1. Assess scene for potential hazards and number of patients
2. Remove patient from the source of carbon monoxide ❶
3. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
4. Administer **high flow Oxygen 15 L/min** *(MCG 1302)*
5. Initiate cardiac monitoring prn *(MCG 1308)*
   Perform 12-lead ECG to assess for cardiac ischemia ❷
6. If carbon monoxide monitor available, consider measuring CO level ❸
   Report and document results
7. Establish vascular access prn *(MCG 1375)*
8. For altered level of consciousness, treat in conjunction with *TP 1229, ALOC*
9. Assess for signs of trauma
   For traumatic injury, treat in conjunction with *TP 1244, Traumatic Injury*
10. For poor perfusion:
    **Normal Saline 1L IV rapid infusion**
    Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

    For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*
11. For suspected exposure to hazardous materials, treat in conjunction with *TP 1240, HAZMAT* ❹

**Treatment Protocol: CARBON MONOXIDE EXPOSURE** **Ref. No. 1238**

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## SPECIAL CONSIDERATIONS

❶ Symptoms of carbon monoxide poisoning include headache, altered level of consciousness, malaise, nausea, dizziness and unresponsiveness. Consider carbon monoxide when multiple persons in same location present with any of these symptoms.

❷ Patients with carbon monoxide poisoning have impaired oxygen delivery and are at high risk for cardiac ischemia.

❸ The measured CO level should not impact the transport decision. It will be helpful for hospital treatment of the exposure.

❹ Exposures to certain chemicals can be associated with carbon monoxide poisoning. For example, methylene chloride (dichloromethane) is an industrial solvent and a component of paint remover. It is metabolized to carbon monoxide by the liver and may cause carbon monoxide toxicity if inhaled or ingested.

## Treatment Protocol: DYSTONIC REACTION — Ref. No. 1239

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**Base Hospital Contact Required.**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
2. Establish vascular access prn *(MCG 1375)*
3. Assess for medication exposure as the potential cause of the dystonic reaction ❶ ❷
4. **CONTACT BASE** to confirm Provider Impression of Dystonic Reaction
5. **Diphenhydramine 50mg (1mL) slow IV push**
   If unable to obtain venous access, **Diphenhydramine 50mg (1mL) deep IM**
   Repeat in 15 min x1 prn, maximum total dose 100mg

**Treatment Protocol: DYSTONIC REACTION** **Ref. No. 1239**

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## SPECIAL CONSIDERATIONS

❶ The table below shows common medications that can cause an acute dystonic reaction.

| Generic Name | Trade Name | General Use |
|---|---|---|
| Prochlorperazine | Compazine | Antiemetic, migraine headache |
| Hydroxyzine | Vistaril, Atarax | Antiemetic, antipruritic |
| Promethazine | Phenergan | Antiemetic, antipsychotic |
| Haloperidol | Haldol | Antipsychotic, Tourette's syndrome |
| Thioridazine | Mellaril | Antipsychotic |
| Alprazolam | Xanax | Antianxiety |
| Metoclopramide | Reglan | Antiemetic |
| Droperidol | Inapsine | Antiemetic, antipsychotic |
| Fluphenazine | Prolixin | Neuralgia, antipsychotic |

❷ Signs and symptoms of a dystonic reaction include anxiety, agitation and associated involuntary muscle spasms of the head, neck, face, eyes or trunk. This often results in an inability to retract the tongue into the mouth, forced jaw opening, facial grimacing, and/or eye deviation.

**Treatment Protocol: HAZMAT** **Ref. No. 1240**

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**Contact Medical Alert Center (MAC) for all MCIs prior to transport otherwise notify the receiving hospital.** ❶

1. Secure area, establish incident site, and don protective equipment/gear appropriate for hazardous material exposure according to the provider agency protocol

2. If MCI, begin triage *(Ref. 519.2 and Ref. 519.5)*
   Provide MAC with the following incident information: properties of contaminant, type of decontamination performed, signs/symptoms, and smells

3. Remove patient from source if safe to do so, and move to decontamination area prn

4. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

5. Administer **Oxygen** prn *(MCG 1302)*

6. Remove patient's clothing

7. Flush skin, eyes and mucous membranes with copious amounts of water
   For eye involvement, irrigate with **Normal Saline 1L** during transport; allow patient to remove contact lenses if possible.

8. Initiate cardiac monitoring *(MCG 1308)*
   Perform 12-lead ECG prn
   For patients with dysrhythmias, treat in conjunction with *TP 1212, Cardiac Dysrhythmia-Bradycardia* or *TP 1213, Cardiac Dysrhythmia- Tachycardia*

9. Establish vascular access prn *(MCG 1375)*

10. Assess for signs of trauma
    If traumatic injury suspected, treat in conjunction with *TP 1244, Traumatic Injury*

11. For poor perfusion:
    **Normal Saline 1L IV rapid infusion**
    Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

    For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

12. Consider contacting the Poison Control Center in conjunction with the Base Hospital for assistance with management of toxins *(Ref. 805)*

NERVE AGENT EXPOSURE

13. If multiple symptomatic patients with > 50 victims involved, request EMS Chempack from the MAC *(Ref. 1108)*

14. For SEVERE EXPOSURE: ❷
    Begin treatment immediately (concurrent with decontamination) and transport after decontamination procedures are completed
    **DuoDote (Atropine 2.1mg and Pralidoxime Chloride 600mg) IM x3**
    **(Atropine 2mg and Pralidoxime Chloride 600mg) IM x3**, one after another

    For seizure, treat in conjunction with *TP 1231, Seizure*

15. For MODERATE EXPOSURE: ❷
    Ensure decontamination procedures are completed before treatment or transport to facility
    **DuoDote IM x2, one after another**

16. For MILD EXPOSURE: ❷
    Ensure decontamination procedures are completed before treatment or transport to facility
    **DuoDote IM x1**

17. If symptoms in MILD or MODERATE exposures progress after initial evaluation, administer additional **DuoDote IM for a total of 3 doses**

ORGANOPHOSPHATE EXPOSURE

18. For heart rate < 60bpm, hypotension, respiratory depression and/or extreme salivation
    **Atropine 2mg (20mL) IV/IO** ❸
    May be repeated every 5 min until patient is asymptomatic

    For seizure, treat in conjunction with *TP 1231, Seizure*

RADIOLOGIC EXPOSURE

19. If radiation contamination is suspected, confirm by using appropriate detection devices available through Department of Public Health (DPH), Radiation Management at (213) 989-7140

20. If radiation contamination present, identify the cause of the contamination ❹
    Internal Radiation is exposure through open wound, ingestion or inhalation of radioactive materials
    External Radiation is exposure through a Radiological Dispersal Device (RDD), Radiological Material Release (RMR) or Radiological Exposure Device (RED)

21. For External Radiation:
    If a RDD is used and in the absence of any other information, evacuate 1,650 feet in all directions from the detonation site and then contact the MAC ❹
    Notify DPH Radiation Management at (213) 989-7140 if departmental HAZMAT team is not available and prolonged exposures are expected ❺

22. For patients with a life threatening condition:
    Treat using appropriate treatment protocol based on complaints in conjunction with decontamination
    Remove the outer clothing and utilize containment mitigation techniques before transport

23. For patients without a life threatening condition:
    Decontaminate using departmental protocols
    Treat using appropriate treatment protocol based on complaints

24. Asymptomatic and minimal exposure suspected:
    Decontaminate and release patient if appropriate ❻

## SPECIAL CONSIDERATIONS

❶ If MCI, MAC should be contacted for 5 or more patients and coordinate all destination decisions otherwise the Base Hospital should be notified as specified in this protocol, and if no Base Hospital required then the receiving hospital will be notified.

❷ Nerve agent exposure symptom severity:
SEVERE: severe respiratory distress, respiratory arrest, cyanosis, extreme SLUDGE (salivation, lacrimation, urination, defecation, gastrointestinal distress and emesis) seizures, unconsciousness
MODERATE: miosis, rhinorrhea, shortness of breath, vomiting, diarrhea
MILD**:** miosis, rhinorrhea and increased salivation

❸ High cumulative doses may be required, maximum single dose 2mg.

❹ Radiation Exposure Safety:
Exposure to victims with internal radiation poses low-to-no risk to EMS personnel
Exposure to victims with external radiation exposure poses low-to-moderate risk to EMS personnel
Remember the following principles:
*Time:* limit time with the victim to a minimum
*Distance:* the further away from the source, the smaller the dose received.
*Shielding:* "Turnouts" will protect from alpha and beta emitters, wear respiratory protection if particulate matter (i.e., dust or powder) present

❺ The HazMat team, MAC, or DPH Radiation Management will be able to redefine boundaries, establish radiation dose guidelines, assist with monitoring and decontamination procedures, and provide support to on-scene responders. These resources may also refer to *Emergency Response Guidebook* for other recommended scene precautions.

❻ If number of patients exceeds available resources, asymptomatic patients with minimal exposure may be released for home decontamination.

**Treatment Protocol: OVERDOSE / POISONING / INGESTION** **Ref. No. 1241**

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1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Establish vascular access prn *(MCG 1375)* ❶

4. For suspected opioid overdose with altered mental status and hypoventilation/apnea:
   **Naloxone 2-4 mg IN** (1mg per nostril or 4mg/0.1 mL IN if formulation available) or
   **Naloxone 2mg IM** or
   **Naloxone 0.8-2mg IV push**, maximum dose all routes 8 mg
   Titrate to adequate respiratory rate and tidal volume ❶

5. If partial response to Naloxone and strong suspicion for opioid overdose:
   **CONTACT BASE** for additional doses of **Naloxone**

6. If available, consider capnography to monitor ventilations *(MCG 1305)* ❷

7. For respiratory distress, treat in conjunction with *TP 1237, Respiratory Distress*

8. Initiate cardiac monitoring prn *(MCG 1308)*
   For suspected cardiac ischemia, treat in conjunction with *TP 1211, Cardiac Chest Pain*
   For patients with dysrhythmias, treat in conjunction with *TP 1212, Cardiac Dysrhythmia - Bradycardia* or *TP 1213, Cardiac Dysrhythmia - Tachycardia*

9. Evaluate for other causes of altered level of consciousness *(MCG 1320)*

10. Assess for signs of trauma
    If traumatic injury suspected, treat in conjunction with *TP 1244, Traumatic Injury*

11. Check blood glucose
    If < 60mg/dL or > 200mg/dL, treat in conjunction with *TP 1203, Diabetic Emergencies*

12. For alcohol intoxication, document Provider Impression – *Alcohol Intoxication*
    For other intoxications, including overdose or ill effects of prescription medications and illicit substance, document Provider Impression – *Overdose/Poisoning/Ingestion*

13. For poor perfusion:
    **Normal Saline 1L IV rapid infusion**
    Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

    For persistent poor perfusion, treat in conjunction with *TP 1207, Shock/Hypotension*

14. **CONTACT BASE** to discuss antidote administration

    Calcium channel blocker overdose: **Calcium chloride 1g (10mL) IV push over 60 seconds**
    Tricyclic antidepressant overdose: **Sodium bicarbonate 50mEq (50mL) IV push over 60 seconds**

15. Assess for co-ingestion of other substances

16. Consider contacting the Poison Control Center (1-800-222-1222) in conjunction with Base for assistance with identification and management of unknown medications/toxins *(Ref. 805)*

17. Bring containers of ingested substances to the Emergency Department with patient

18. If patient refuses treatment or transport, **CONTACT BASE**
    Patient must demonstrate decision making capacity (*Ref. 834*)
    If EMS personnel or Base Hospital determines it is necessary to transport the patient against their will, contact law enforcement for assistance

## SPECIAL CONSIDERATIONS

❶ The first priority for apneic patients after narcotic overdose is to begin positive pressure ventilation. Once ventilations are established, naloxone should be administered with the goal of restoring spontaneous ventilations. Vascular access should not take priority over initial treatment with Naloxone (IN or IM) for patients with suspected opiate overdose. Patients who are awake and alert with normal respirations after naloxone therapy may not require IV access or additional doses of naloxone.

❷ Persistently high or increasing end-tidal $CO_2$ ($EtCO_2$) readings above normal in a spontaneously ventilating patient with reduced respiratory rate indicates bradypneic hypoventilation; whereas low $EtCO_2$ readings with a slow respiratory rate represents hypopneic hypoventilation; consider the need for assisted ventilations in these cases.

## Treatment Protocol: CRUSH INJURY / SYNDROME — Ref. No. 1242

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**Base Hospital Contact: Required for patients at risk for crush syndrome ❶ or prolonged entrapment > 30 minutes. ❷**

1. For multi-system trauma, treat in conjunction with *TP 1244, Traumatic Injury*

2. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

3. Provide spinal motion restriction (SMR) if indicated *(MCG 1360)*
   For alert patients, logroll patient off backboard (if used during extrication) and onto gurney prior to transport ❸

4. Administer **Oxygen** prn *(MCG 1302)*

5. For anticipated prolonged extrication (> 30 minutes)
   Consider activating the Hospital Emergency Response Team (HERT), *Ref. 817*

6. Establish vascular access immediately *(MCG 1375)*
   **CONTACT BASE** to discuss placement of an IO if unable to establish IV access ❹

7. **Normal Saline 1L IV/IO rapid infusion** as soon as possible and prior to release of compressive force
   Repeat x1 for a **total of 2 liters**
   Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops
   **CONTACT BASE** to obtain order for additional **Normal Saline** if persistent entrapment ❹

8. Initiate cardiac monitoring *(MCG 1308)*
   Assess for signs of hyperkalemia

9. Apply blanket to keep patient warm

10. If evidence of hyperkalemia (peaked T-waves in multiple leads, absent p-waves, and/or widened QRS complex) administer: ❺
    **Calcium Chloride 1gr (10mL) slow IV/IO push**, repeat x1 for persistent ECG abnormalities
    **Sodium Bicarbonate 50mEq (50mL) slow IV/IO push**, repeat x1 for persistent ECG abnormalities
    **Albuterol 5mg (6mL) via neb**, repeat continuously until hospital arrival
    **CONTACT BASE** for persistent ECG abnormalities to obtain order for additional medications ❻

11. For pain management: refer to *MCG 1345, Pain Management*

12. For CRUSH INJURY without risk of crush syndrome
    Release compression and extricate patient
    Monitor cardiac rhythm for signs of hyperkalemia

13. Consider pre-positioning a tourniquet prior to extrication in order to prevent hemorrhage upon release of compression

**Treatment Protocol: CRUSH INJURY / SYNDROME** **Ref. No. 1242**

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14. For patients at risk for CRUSH SYNDROME ❶, administer the following medications 5 minutes prior to extrication: ❺ ❻ ❼
    **Calcium Chloride 1gm (10mL) slow IV/IO push**
    **Sodium Bicarbonate 50mEq (50mL) slow IV/IO push**
    **Albuterol 5mg (6mL) via mask nebulization** x2 for a total dose of 10mg

    If unable to establish vascular access while entrapped
    Place tourniquet PRIOR to extrication ❽

**Treatment Protocol: CRUSH INJURY / SYNDROME** **Ref. No. 1242**

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## SPECIAL CONSIDERATIONS

❶ Crush syndrome is a systemic illness characterized by dysrhythmias and shock. It results from toxins released from crushed muscle tissue into the blood stream. Patients are at risk for crush syndrome if they have all of the following: 1) circumferential compression causing crush injury; AND 2) involvement of a large muscle group (lower extremity including the thigh(s) and/or pelvic girdle or upper extremity including the pectoral girdle); AND 3) entrapment for at least 1 hour. The risk of crush syndrome increases with the amount of muscle involved and the duration of the entrapment.

❷ For patients requiring transport to a Trauma Center per *Ref. 506*, contact the receiving Trauma Center for Base Medical Direction and notification. If the Base Hospital is contacted and the Base redirects transport to a Trauma Center, Base personnel will notify the Trauma Center.

❸ A backboard is not required for spinal motion restriction (SMR) and may cause harm as well as increased pain. Patients should not be transported on a backboard for the purpose of SMR. If a backboard is used for extrication, patients who are alert should then be logrolled onto the gurney prior to transport. The backboard may be used during patient transport for splinting of multiple simultaneous extremity fractures or to assist with maneuvering the unconscious patient. In all cases, the backboard should be removed immediately if causing respiratory compromise.

❹ Patients with crush injury require large volumes of fluid resuscitation. Patients with prolonged entrapment will require maintenance fluids. IO access should be considered when attempts at IV access are not successful if: 1) prolonged entrapment is likely (> 30 minutes) and/or 2) there are signs of hyperkalemia and/or 3) there is risk of crush syndrome requiring medication administration.

❺ Flush the IV line with normal saline after each medication. Administration of Calcium and Bicarbonate together will cause precipitation of the medication.

❻ The duration of action of the medications is approximately 30 minutes. Contact Base to discuss re-dosing the medications if persistent signs of hyperkalemia or if the patient will not arrive at the hospital within 30 minutes.

❼ These medications should be administered prior to release of the compressive force to prevent complications from the cellular toxins that enter the circulation upon extrication of the patient. Calcium stabilizes the cardiac muscle and should be administered first.

❽ Tourniquet placement PRIOR to extrication is a last resort for patients who are at risk for crush syndrome in whom vascular access cannot be established or when transport time is anticipated to be > 30 minutes. The tourniquet must completely occlude venous and arterial flow in order to protect the patient from crush syndrome. Establish vascular access and cardiac monitoring immediately after extrication and be prepared to treat symptoms of crush syndrome.

**Treatment Protocol: TRAUMATIC ARREST** **Ref. No. 1243**

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**Base Hospital Contact: Contact the Trauma Center for patients not meeting criteria for determination of death per *Ref 814*.**

1. Prioritize rapid transport for patients who do not meet *Ref. 814* ❶

2. Immediately control major bleeding *(MCG 1370)*
   Apply tourniquet prn

3. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)* ❷
   Ventilate with **high flow Oxygen 15 L/min**

4. Begin chest compressions

5. Perform bilateral needle thoracostomy for suspected tension pneumothorax *(MCG 1335)*

6. Initiate cardiac monitoring *(MCG 1308)*
   Assess cardiac rhythm

7. If shockable rhythm (V-Fib/V-Tach) identified:
   Defibrillate V-Fib/V-Tach at 200J or per manufacturer's instructions

8. Provide spinal motion restriction (SMR) if indicated *(MCG 1360)*
   Do not delay transport for SMR ❸

9. Establish vascular access en route *(MCG 1375)*
   Two large bore IV catheters (16 or 18 gauge) preferred
   Establish IO if unable to establish IV access

10. **Normal Saline 2L IV/IO rapid infusion**
    Administer through two sites simultaneously if possible

## SPECIAL CONSIDERATIONS

❶ Rapid transport after hemorrhage control is the priority for all patients with severe trauma. With the exception of hemorrhage control, needle thoracostomy, and initiation of CPR, all other procedures may be deferred for immediate ambulance loading of patient and performed en route.

❷ Bag-mask ventilation is the preferred airway in all cardiac arrest patients. Advanced airway should be placed if there is an inability to maintain adequate ventilation despite basic airway maneuvers.

❸ For patients in traumatic arrest, spinal motion restriction (SMR) using a backboard causes harmful delays in care. However, a backboard may be helpful to assist in patient movement and to support chest compressions.

**Treatment Protocol: TRAUMATIC INJURY** **Ref. No. 1244**

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**Base Hospital Contact: Required for patients who meet Trauma Center criteria or guidelines. ❶ Notify the receiving Trauma Center as soon as possible for all patient transports.**

1. Immediately control major bleeding *(MCG 1370)*
   Apply tourniquet prn

2. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

3. For traumatic arrest, treat per *TP 1243, Traumatic Arrest*

4. Provide spinal motion restriction (SMR) if indicated *(MCG 1360)*
   For alert patients, logroll off the backboard (if used during extrication) and onto gurney prior to transport ❷

5. Administer **Oxygen** prn *(MCG 1302)*
   **High flow Oxygen 15 L/min** for all patients with shock or with suspected traumatic brain injury

6. If patient has an Unmanageable Airway *(MCG 1302)***:**
   Initiate immediate transport to MAR and **CONTACT BASE** en route

7. For anticipated prolonged extrication (> 30 minutes)
   Consider activating the Hospital Emergency Response Team (HERT), *Ref. 817*

8. For crush injury, treat in conjunction with TP 1214, Crush Injury/Syndrome

9. Initiate cardiac monitoring prn *(MCG 1308)*

10. Establish vascular access prn *(MCG 1375)*

11. Apply blanket to keep patient warm

12. Consider medical condition preceding accident and refer to appropriate treatment protocol prn ❸

MULTI-SYSTEM TRAUMA

13. Perform needle thoracostomy for suspected tension pneumothorax *(MCG 1335)*

14. For an open or sucking chest wound, cover with a commercially available vented chest seal or vented (3-sided) occlusive dressing ❹

15. For poor perfusion with hypotension:
    **Normal Saline 250mL IV/IO rapid infusion** ❺
    **CONTACT BASE** to discuss further fluid resuscitation

16. Cover eviscerated organs with a moist non-adhering dressing

17. For pain management: refer to *MCG 1345, Pain Management*

18. For nausea or vomiting: ❻
    **Ondansetron 4mg ODT/IV/IM**, may repeat x1 in 15 min prn

ISOLATED HEAD INJURY

19. Administer **high flow Oxygen 15 L/min** ❼
    Continually assess patient's airway and ventilation status, assist prn ❽

20. For SBP ≤ 90mmHg:
    **Normal Saline 1L IV/IO rapid infusion** ❾
    Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops
    **CONTACT BASE** for persistent poor perfusion after **Normal Saline 1L**

21. For nausea or vomiting: ❻
    **Ondansetron 4mg ODT/IV/IM**, may repeat x1 in 15 min prn

22. Transport with head of gurney elevated to 30 degrees when possible ❿

23. If patient develops seizure activity, treat in conjunction with *TP 1231, Seizure*

24. For pain management of an alert and oriented patient with GCS 15: refer to *MCG 1345, Pain Management*

ISOLATED EXTREMITY INJURY

25. For pain management: refer to *MCG 1345, Pain Management*

26. For poor perfusion:
    **Normal Saline 1L IV/IO rapid infusion**
    Reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops
    **CONTACT BASE** for persistent poor perfusion to obtain order for additional **Normal Saline 1L IV/IO**

27. Splint and dress injuries prn
    Poor neurovascular status distal to injury – realign and stabilize extremity
    Mid-shaft femur – apply traction splint per manufacturer guidelines ⓫
    All other fractures/dislocations – splint in position of comfort

## SPECIAL CONSIDERATIONS

❶ For patients requiring transport to a Trauma Center per *Ref. 506*, contact the receiving Trauma Center for Base Medical Direction and notification. If the Base Hospital is contacted and the Base redirects transport to a Trauma Center, Base personnel will notify the Trauma Center.

❷ A backboard is not required for spinal motion restriction (SMR) and may cause harm as well as increased pain. Patients should not be transported on a backboard for the purpose of SMR. If a backboard is used for extrication, patients who are alert should then be logrolled onto the gurney prior to transport. The backboard may only be used during patient transport for splinting of multiple simultaneous extremity fractures or to assist in maneuvering the unconscious patient. In all cases, the backboard should be removed immediately if causing respiratory compromise.

❸ Traumatic events may be due to a medical emergency, particularly single-vehicle accidents and unexplained falls.

❹ Placement of a vented dressing can prevent conversion of an open pneumothorax to a tension pneumothorax. However, tension pneumothorax may still develop in the presence of a vented dressing and should be treated with needle thoracostomy. Furthermore, needle thoracostomy in a patient with evidence of tension pneumothorax should not be delayed for placement of dressing.

❺ Fluid resuscitation increases vascular pressure and dilutes clotting factors, which may increase internal bleeding. For patients at risk of internal hemorrhage, fluids should only be administered for SBP < 90mmHg **and** other signs of poor perfusion, titrated to maintain SBP ≥ 90mmHg. In patients with penetrating trauma, permissive hypotension (withholding fluids for SBP ≥ 70mmHg if patient has normal mental status) is preferred to reduce ongoing blood loss. Patients with ALOC or SBP < 70mmHg should receive fluids until their mental status and SBP improve. Permissive hypotension is contraindicated in patients with possible traumatic brain injury.

❻ Vomiting should be prevented and/or immediately treated in patients with head injury, since it increases intra-cranial pressure and can compromise the patient's airway.

❼ Any hypoxic episode, even brief, is associated with worse patient outcome for patients with traumatic brain injury.

❽ Hyperventilation reduces blood flow to the brain by reducing $CO_2$ and is associated with worse outcomes in severe head injuries. The exception to this is presence of elevated intra-cranial pressure (ICP) with signs of impending herniation (severe ALOC without motor response or with posturing and a unilateral 'blown pupil'). In this case, **mild** hyperventilation of approximately 20 breaths per minute should be used to maintain an $ETCO_2$ of 30-35mmHg. This mild hyperventilation reduces blood flow to the brain to decrease ICP until the patient receives definitive surgical care. For patients without elevated ICP, hyperventilation is harmful.

❾ Any hypotension increases mortality in patients with traumatic brain injury. Normal Saline should be initiated to maintain SBP ≥ 90mmHg at all times but can be withheld if the blood pressure is normal.

❿ A head-elevated position at about 30 degrees reduces intra-cranial pressure and improves respiratory status. Patients in a cervical collar may have their head elevated if there is no concern for

thoracic or lumbar spine injury. Reverse Trendelenburg is another option for patients that cannot be seated. Patients who are hypotensive should be maintained supine unless airway compromise requires repositioning.

⓫ Open femur fracture is not a contraindication to apply the traction splint. If the bone is protruding and there is gross contamination, wash with saline prior to applying the splint.

## Treatment Protocol: POTENTIAL COVID-19 PATIENTS — Ref. No. 1245

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Step 1-4 apply to all patient contacts. For patients that have a prehospital screen for potential COVID-19 infection, the remainder of this protocol should be used in addition to the appropriate Treatment Protocol(s) based on Provider Impression(s).

**Base Hospital Contact: Required for severe respiratory distress and respiratory failure.**

1. Assume that all patients, regardless of dispatch complaint, may have COVID-19 ❶
   Minimum recommended Personal Protective Equipment (PPE) for ALL patient encounters is a surgical mask, eye protection, and gloves ❷

2. Providers shall utilize this TP in addition to the appropriate TPs based on provider impression(s)

3. Perform initial assessment of all patients, including COVID-19 screen, form at least 6 feet away if possible ❸ ❹

4. Hand the patient a surgical mask to self-apply prior to approaching the patient ❺

5. If approaching the patient is required to complete the screening, have a single provider don PPE (including at minimum a surgical mask, eye protection, and gloves, and gown if available) and approach the patient to perform an initial assessment and mask the patient ❺ ❻

6. All providers shall don PPE prior to approaching the patient, including surgical mask or N95 as appropriate, eye protection, and gloves, and gown if available ❻ ❼

7. For patients in cardia arrest, an N95 or P100 mask is required along with eye protection and gloves, and gown if available, prior to approaching the patient ❻

8. Limit interventions to essential procedures only
   Routine administration of nebulized medications and use of CPAP is discouraged except as outlined below

9. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
   Aerosol-generating procedures (including suctioning, CPAP, bag-mask ventilation, and advanced airway placement) require N95 masks and gowns for all providers ❻
   If advanced airway is required, King Airway is preferred to endotracheal intubation
   Use of a viral filter is encouraged for all positive-pressure ventilation

10. Administer **Oxygen** for $O_2$ sat <90% at the lowest flow possible to achieve $O_2$ sat ≥90%
    Place a surgical mask on the patient over the oxygen delivery device

11. For hypoxic patients without severe distress provide supplemental oxygen, consider positioning right or left lateral decubitus or prone during transport if tolerated

12. For none to mild respiratory distress
    Do no perform any field treatment

13. For moderate respiratory distress
    Do not administer nebulized medications or apply CPAP

For bronchospasm, assist patient with use of their own metered-dose inhaler (MDI) or administer albuterol via MDI if available (Adults: 5 puffs, Pediatrics: 2 puffs, may repeat in 15 minutes prn) ❽

14. For severe respiratory distress
    Utilize CPAP with appropriate PPE and viral filter when available ❺
    For bronchospasm, administer albuterol via nebulizer with appropriate PPE or MDI with spacer preferred if available and tolerated by patient (Adults: 5 puffs, Pediatrics: 2 puffs, may repeat in 15 minutes prn) ❺❽

    For patients with known asthma presenting with severe bronchospasm, Epinephrine IM is the preferred treatment as the initial intervention, in addition to MDI; dosing as per *TP 1237* and *MCG 1309*

    **CONTACT BASE** for guidance on use of CPAP and nebulized medications for patients with severe respiratory distress

15. For poor perfusion:
    **Normal Saline 1L IV rapid infusion** ❾
    Reassess after each 250mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

16. During transport, restrict the number of providers in the patient compartment to only essential personnel to minimize possible exposures and, if possible, adjust the ventilation system air changes/hour to the highest rate and consider opening windows ❿

17. Notify the receiving hospital for any patient who screens positive for possible COVID-19
    Provide notification for all patients, including those who are transported BLS
    Prior to entry into the hospital, unless transitioning care outside of ED, one provider should doff any contaminated PPE (gloves/gown) to enter and discuss plan for handoff with the triage RN
    You may be directed to an alternative triage area or handoff may occur outside the hospital

18. Discontinue all aerosol-generating procedures (including nebulized medication and/or CPAP prior to entry into the hospital triage area); discuss with the triage RN before entry for patients in severe distress requiring these interventions so that appropriate handoff can be arranged ⓫

19. For documentation:
    1) Document positive COVID-19 screening and level of PPE worn in your narrative summary
    2) Consider the following Provider Impressions and document as appropriate:

    Cold / Flu Symptoms (COFL) – For minor respiratory illness in a patient without shortness of breath or wheezing; must have normal respiratory rate and $O_2$ sat.

    Respiratory Distress / Bronchospasm (SOBB) – For COPD/asthma exacerbations and any bronchospasms/wheezing not from pulmonary edema.

    Respiratory Distress / Other (RDOT) – For patients with pulmonary disease that is not edema or bronchospasm, includes suspected pneumonia, PE, pneumothorax and non-pulmonary and unknown causes of respiratory distress.

Respiratory Arrest / Failure (RARF) – For patients requiring positive-pressure ventilation and/or hypoxia despite 100% oxygen.

Fever (FEVR) – For reported or tactile fever that is NOT suspected sepsis. For sepsis use PI Sepsis.

Sepsis (SEPS) – For patients with suspected sepsis (i.e., signs suggestive of sepsis including fever, tachycardia, suspected infection).

Other Provider Impressions may apply for patents with other primary complaints who also have signs and symptoms potentially consistent with COVID-19.

## SPECIAL CONSIDERATIONS

❶ Do not rely on dispatch pre-arrival screening to catch all possible screened positive patients, repeat screening yourself. Patients with COVID-19 may present with complaints other than shortness of breath or fever. Travel or contact with a known case is NOT required for a positive screen.

❷ This PPE is recommended as the supply chain allows. It is preferable to change the mask after every encounter with a patient who screens positive. Masks, including surgical masks and N95 masks, may be considered for limited reuse on up to 5 patient encounters unless it is visibly soiled, contaminated with bodily fluids, or used in a high-risk situation (i.e., aerosolizing procedures). More information on reuse and extended use can be found at: https://www.cdc.gov/niosh/topics/hcwcontrols/recommendedguidanceextuse.html

❸ A positive screen is any patient with any ONE of the following:

Any symptom suggestive of COVID-19: fever (reported or tactile), chills, cough, shortness of breath, body aches, nausea, vomiting, or diarrhea OR

Under quarantine/isolation for potential or confirmed COVID-19, OR

Had any contact with a person who is undergoing testing or confirmed to have COVID-19, OR

Living in a Skilled Nursing Facility or other congregate living situation, OR

Any domestic or international travel in the last 21 days; travel is **NOT** required to have a positive screen.

❹ If the patient is ambulatory in a home or residential building, consider asking them to come out to you to reduce exposure to surfaces in the home.

❺ Patients may be contagious and transmit COVID-19 even before developing symptoms, mask ALL patients, not just those who have a positive COVID-19 screen, **if the supply chain allows**. For patients requiring supplemental oxygen, place a surgical mask over the oxygen delivery device. This does not apply to patients requiring positive-pressure ventilation.

❻ Droplet and contact precautions should be taken for all potential COVID-19 patients. Airborne and contact precautions should be taken for all aerosolizing procedures including suctioning, CPAP, nebulized medications, bag-mask ventilation, advanced airway placement and chest compression, this includes an N95 or P100 respiratory and gown, in addition to the eye protection and gloves required for all patients screening positive for potential COVID-19. Goggles are the preferred eyewear. For airway management, a face shield worn over the eyewear of the operator can provide additional protection during this high-risk procedure. If no gowns are available, wear EMS issued raincoat; doff it in ambulance bay into a bio-container bag; prior to reuse, wipe it down with the same cleaners used to decon the ambulance and then rinse with water.

❼ There are no data to suggest that N95 masks are more effective than surgical masks for routine care of COVID-19 patients. Therefore, N95 masks should be reserved for use during high-risk aerosolizing procedures unless there is adequate supply.

❽ Administration of albuterol via a metered-dose inhaler (MDI) with spacer is considered equivalent to nebulized albuterol; a spacer is typically required for this route to be effective in novice users. MDIs are single use and should be left with the hospital staff upon handoff of the patient; be sure to leave it with the hospital since MDIs are in short supply.

❾ Although COVID-19 patients can quickly develop pulmonary edema, potential COVID-19 patients should receive IVF if they have signs of poor perfusion. Patients with suspected sepsis should continue to managed with IVF per TP 1204, Sepsis. Patients remain undifferentiated in the field. If in doubt, it is reasonable to administer Normal Saline up to 1L.

❿ Family members and other contacts of patients with possible COVID-19 should NOT ride in the transport vehicle, if possible. Consider allowing one parent or caregiver of an infant or child to be transported. If riding in the transport vehicle, they should wear a surgical mask. All areas of the transport cabin are exposed (as well as the driver compartment if connected). The higher air changes/hour may reduce the concentration of infectious particles, but does not eliminate risk.

⓫ All aerosol generating procedures must be discontinued while moving through the ED hallways, except in the case of an intubated patient with use of a viral filter, in which case chest compressions and ventilations may continue.

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Control external hemorrhage/bleeding prn *(MCG 1370)*

3. Administer **Oxygen** prn *(MCG 1302)*

4. Assess for signs of trauma
   For traumatic injury, treat in conjunction with *TP 1244-P, Traumatic Injury*

5. Initiate cardiac monitoring prn *(MCG 1308)*
   For suspected cardiac ischemia or dysrhythmia, perform 12-lead ECG and **CONTACT BASE** ❶
   For patients with dysrhythmias, treat per *TP 1212-P, Cardiac Dysrhythmia - Bradycardia* or *TP 1213-P, Cardiac Dysrhythmia - Tachycardia*
   If patient with palpitations but normal sinus rhythm on 12-lead ECG – document Provider Impression as *Palpitations*

6. Establish vascular access prn *(MCG 1375)*

7. Assess and document pain *(MCG 1345)*
   Consider the following Provider Impressions:
   If chest pain present without suspicion of cardiac cause – document *Chest Pain – Not Cardiac*
   If pain in neck or back without trauma – document *Body Pain – Non-traumatic*
   If headache and no report or signs of trauma and normal physical assessment – document *Headache – Non-traumatic*

8. For pain management: refer to *MCG 1345, Pain Management*
   Dose per *MCG 1309*

9. For nausea or vomiting in patients ≥ 4 years old:
   **Ondansetron 4mg ODT** and treat in conjunction with *TP 1205-P, GI/GU Emergencies*

10. For patients with complaints of weakness
    Assess neurologic exam; if focal findings present or stroke suspected, treat in conjunction with *TP 1232-P, Stroke/ CVA/ TIA.* **CONTACT BASE** and transport to a PMC ❷
    If no focal weakness present and complaint of generalized weakness – document *Weakness – General*

11. Consider the following Provider Impressions:
    If cold/cough symptoms without respiratory distress or wheezing – document *Cold/Flu Symptoms*
    If isolated pain or swelling in extremity – document *Extremity Pain/Swelling – Non-traumatic*

## SPECIAL CONSIDERATIONS

❶ Chest pain in pediatrics is **rarely** due to cardiac ischemia. Children at risk are those with history of Kawasaki's Disease or with congenital heart conditions. Young athletes often show slow heart rates and ST-elevation which is normal and not a result of ischemia. If there is a concern for cardiac ischemia contact the Base and consider transport to a PMC or to a PMC that is also an SRC - document *Chest Pain-Suspected Cardiac*

❷ Children with focal neurologic signs may have a stroke mimic or a stroke. These are specialized problem often requiring subspecialists at PMCs. Contact the Base hospital for transport of these patients to a PMC.

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Initiate cardiac monitoring prn *(MCG 1308)*

4. Establish vascular access prn *(MCG 1375)*

5. Check blood glucose

6. For blood glucose < 60 mg/dL:
   **Oral glucose preparation** or **Glucopaste 15gm PO (4 years or older)** if patient awake and alert
   OR
   **Dextrose 10% 5mL/kg IV in 1mL/kg increments** per *MCG 1309* and reassess
   Recheck glucose prn after 3mL/kg infused

   **CONTACT BASE** for persistent hypoglycemia for repeat dose of Dextrose 10% 5mL/kg IV in 1ml/kg increments

   Document Provider Impression as *Hypoglycemia* ❶ ❷
   If unable to obtain venous access, **Glucagon (1mg/mL) IM** per *MCG 1309*
   <1 year of age: **Glucagon 0.5mL IM**, may repeat x1 in 20 min prn
   ≥1 year of age: **Glucagon 1.0mL IM**, may repeat x1 in 20 min prn

7. For blood glucose > 200 mg/dL:
   Document Provider Impression as *Hyperglycemia* ❸

   For blood glucose > 250 mg/dL:
   **Normal Saline 10mL/kg IV rapid IV infusion** per *MCG 1309*

8. For poor perfusion:
   **Normal Saline 20mL/kg IV/IO rapid infusion** per *MCG 1309*
   For persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*

9. For nausea or vomiting in patients ≥ 4 years old:
   **Ondansetron 4mg ODT**

## SPECIAL CONSIDERATIONS

❶ In pediatric patients with hypoglycemia consider causes such as medication error or medication given without appropriate oral intake, infection, or toxins. Survey scene and ask family for types of medications in the home including those in various forms (e.g., pill, patch, drops, salves, inhaled or herbal). Caretakers of pediatric patients should always be encouraged to have patient be transported to the hospital for evaluation as hypoglycemia in this population is rare as compared to adults and is often caused by serious disease or poisonings. Glucagon may not work well in young infants because in these patients there are few glycogen stores, therefore IV dextrose is preferred.

❷ Pediatric patients with hyperglycemia who are successfully treated with oral glucose or Dextrose 10% IV and then their parent wishes to decline transport to the hospital should be discourage to do so, especially if they have abnormal vital signs, fever, are taking long acting hypoglycemic agents, possible ingestion or poisoning, or if they DO NOT have a history of diabetes mellitus as these patients are at risk for recurrent hypoglycemic episodes.

Long Acting hypoglycemic agents

- Sulfonylureas: gliclazide, glimepiride, glipizide, gliquidone, glyburide, glyclopyramide,
- Thiazolidinediones (TZDs): pioglitazone (Actos), rosiglitazone (Avandia), troglitazone (Rezulin)
- Alpha-glucosidase inhibitors: acarbose, miglitol, voglibose
- Meglitinides – nateglinide, repaglinide
- Combination drugs: glipizide and metformin (Metaglip), glyburide and metformin (Glucovance), pioglitazone and glimepiride (Duetact), pioglitazone and metformin (ACTOplus Met), rosiglitazone and metformin (Avandamet), rosiglitazone and glimepiride (Avandaryl)

❸ Patients with hyperglycemia are at risk for significant volume losses leading to dehydration and electrolyte abnormalities. Fluid resuscitation with **Normal Saline** is recommended until their glucose can be lowered with medications. Hyperglycemia can also be associated with trauma, infection, or other serious illness. For patients with elevated glucose requiring fluids IV Normal Saline should be given – only those patients who show signs of poor perfusion and an IV cannot be obtained would have an IO placed for fluid resuscitation.

**Treatment Protocol: FEVER / SEPSIS** **Ref. No. 1204-P**

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1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
2. Administer **Oxygen** prn *(MCG 1302)*
3. Advanced airway prn *(MCG 1302)*
4. Initiate cardiac monitoring prn *(MCG 1308)*
5. Establish vascular access prn *(MCG 1375)*
6. For suspected sepsis: ❶
   **Normal Saline 20mL/kg IV/IO rapid infusion** per *MCG 1309*
   **CONTACT BASE** to obtain order for additional **Normal Saline 20mL/kg IV/IO** per *MCG 1309*
   Document Provider Impression of *Sepsis* ❶
   For persistent poor perfusion *(MCG 1355)*, treat in conjunction with *TP 1207-P, Shock/Hypotension*
7. Check blood glucose prn;
   < 60mg/dL or >250mg/dL treat in conjunction with *TP 1203-P, Diabetic Emergencies*
8. If fever present without signs of sepsis or poor perfusion:
   Perform passive cooling measures and cover with blankets if shivering occurs
   Document Provider Impression of *Fever* ❷❸❹
9. For nausea or vomiting in patients ≥ 4 years old:
   **Ondansetron 4mg ODT**
10. For pain management: refer to *MCG 1345, Pain Management*
    Dose per *MCG 1309*

## SPECIAL CONSIDERATIONS

❶ Sepsis is defined as the body's response to infection and *may* include fever, tachycardia or bradycardia, tachypnea, and signs of poor perfusion. Other signs of infection may be present such as cough (e.g., pneumonia), painful urination (e.g., urinary tract infection), abdominal pain (e.g., appendicitis), headache (e.g., meningitis), or a red swollen extremity (e.g., cellulitis, or necrotizing fasciitis). Septic shock is a continuum of signs and symptoms which includes the presence of hypotension or evidence of poor perfusion. If infection is present and sepsis with or without shock is present document provider impression as *Sepsis*.

❷ Fever is a natural response of the body to fight infection and may be present without signs of sepsis. Often children with a fever have tachycardia, however if tachycardia is greater than that explained by the fever (>180 in infants and >140 in children) consider sepsis. If fever is present without signs of sepsis (skin hot to touch and tachycardia) or septic shock (signs of poor perfusion), document the provider impression as *Fever*.

❸ For patients presenting with fever, obtain travel history, and if travel history positive contact the Medical Alert Center to determine risk for infectious disease requiring special isolation procedures or transport.

❹ Infants and small children are at high risk for hypothermia due to their large surface area to body mass ratio, reduced ability to shiver, and limited body fat. Infants with sepsis may present with fever or hypothermia.

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Initiate cardiac monitoring prn *(MCG 1308)*

4. Establish vascular access prn *(MCG 1375)*

5. For poor perfusion:
   **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309*
   For persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*

6. Assess and document pain *(MCG 1345)*
   If abdominal or pelvic pain during pregnancy, or vaginal bleeding with known or suspected pregnancy treat per *TP 1217-P, Pregnancy Complications*
   Consider the following Provider Impressions:
   If abdominal or pelvic pain – document *Abdominal Pain/Problems*
   If pain in penis, scrotum or testes in a male or complaints of vaginal symptoms in a female, or if for sexual assault – document *Genitourinary Disorder*

7. For pain management: refer to *MCG 1345, Pain Management*
   Dose per *MCG 1309*

8. For nausea or vomiting in patients ≥ 4 years old:
   **Ondansetron 4mg ODT**

9. Consider the following Provider Impressions:

   - If nausea or vomiting present in the absence of abdominal pain or diarrhea – document *Nausea/Vomiting* ❶
   - If vomiting blood or coffee ground material and/or tarry/black stools – document *Upper GI Bleeding* ❷
   - If vaginal bleeding without known pregnancy – document *Vaginal Bleeding*
   - If diarrhea without hypotension – document *Diarrhea*
   - If bleeding per rectum, or tarry/black stools – document *Lower GI Bleeding* ❷

## SPECIAL CONSIDERATIONS

❶ When evaluating an infant or child with vomiting, the presence of bile (green vomitus) in the vomit is a surgical emergency and must be taken as a sign of a life-threatening condition. These patients need rapid transport to the closest EDAP.

❷ For both upper and lower GI bleeding, if abdominal pain is also present, document GI bleeding as primary provider impression and abdominal pain as secondary provider impression.

**Treatment Protocol: MEDICAL DEVICE MALFUNCTION** **Ref. No. 1206-P**

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1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
2. Administer **Oxygen** prn *(MCG 1302)*
3. Establish type of medical device inserted ❶
4. Establish vascular access prn *(MCG 1375)*
5. For poor perfusion:
   **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309*
   For persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*
6. Assess and document pain *(MCG 1345)*
7. For pain management: refer to *MCG 1345, Pain Management*
   Dose per *MCG 1309*
8. For nausea or vomiting in patients ≥ 4 years old:
   **Ondansetron 4mg ODT**
9. Document *Medical Device Malfunction* as the Provider Impression if the patient's presentation suggests malfunction of the medical device, otherwise treat as per applicable protocol
   - Insulin Pump: Check blood glucose prn and treat in conjunction with *TP 1203-P, Diabetic Emergencies*
   - Vagal Nerve Stimulation devices: Treat presenting symptoms; for seizure treat per *TP 1231-P, Seizure – Active*
   - Ventricular Assist Device: **CONTACT BASE** and refer to *MCG 1325*
   - Ventriculoperitoneal (VP) Shunt: Treat presenting symptoms ❷
   - Pacemaker or Automated Internal Defibrillator: Treat presenting symptoms and obtain 12-lead ECG prn *(MCG 1308)*

## SPECIAL CONSIDERATIONS

❶ Most patients with an inserted medical device have medical complaints that are not related to the device itself and should be treated as per standard protocols based on presenting signs and symptoms. It is important to obtain a history of when the medical device was inserted as different complications occur depending on time since insertion.

❷ Patients with ventriculoperitoneal shunts can have breakage of the shunt connections, obstruction, or infection of the shunt, which may present as ALOC, headache, nausea and vomiting, or fever. History should include last shunt revision date as shunt infections are most likely if a shunt revision is recent.

**Treatment Protocol: SHOCK / HYPOTENSION** **Ref. No. 1207-P**

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**BASE HOSPITAL CONTACT REQUIRED.**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
   Continually assess patient's airway and ventilation status

2. Administer **Oxygen** prn *(MCG 1302)*
   **High-flow Oxygen 15L/min** for all patients in shock, regardless of $SpO_2$ ❶

3. Maintain supine if respiratory status allows ❷

4. Establish vascular access *(MCG 1375)*
   For patients with hypotension and clinical evidence of poor perfusion, establish IO catheter if unable to obtain peripheral venous access after 2 attempts ❸

   For IO placement in alert patients administer **Lidocaine 2% 0.5mg/kg (20mg/mL) slow IO push**, dose per *MCG 1309*, may repeat once for infusion pain at half initial dose

5. Initiate cardiac monitoring *(MCG 1308)*

6. Apply blanket to keep patient warm ❹

7. Consider etiology ❺
   For neonates, treat in conjunction with *TP 1216-P, Newborn/Neonatal Resuscitation*
   For patients with dysrhythmia, treat in conjunction with *TP 1212-P, Cardiac Dysrhythmia – Bradycardia* or *TP 1213-P, Cardiac Dysrhythmia – Tachycardia*
   For patients with traumatic injury, treat per *TP 1244-P, Traumatic Injury*
   For concern of overdose or toxic exposure, treat in conjunction with *TP 1241-P, Overdose/Poisoning/Ingestion*
   For patients with suspected sepsis, treat in conjunction with *TP 1204-P, Fever/Sepsis*

8. **Normal Saline 20mL/kg IV/IO rapid infusion** per *MCG 1309*

9. For patients with isolated hypotension without signs of poor perfusion and those who rapidly respond without intervention or to <20mL/kg Normal Saline document *Hypotension (HOTN)* as Provider Impression. For patients with hypotension with poor perfusion that require additional Normal Saline or Push-dose Epinephrine document as *Shock (SHOK)*

10. **CONTACT BASE** for shock and for additional **Normal Saline 20mL/kg IV/IO** per *MCG1309*

11. If clinical evidence of poor perfusion persists despite fluid infusion or pulmonary edema develops requiring cessation of fluid administration:
    **Push-dose Epinephrine** – mix 9mL Normal Saline with 1mL Epinephrine (0.1mg/mL) IV formulation in a 10mL syringe; administer **Push-dose Epinephrine (0.01mg/mL)**, dose per *MCG 1309* every 1-5 minutes as needed to maintain SBP > 70mmHg until hospital arrival ❻
    **CONTACT BASE** concurrent with initial dose of **Push-dose Epinephrine**

## SPECIAL CONSIDERATIONS

1. Shock is inadequate tissue perfusion, equivalent to poor perfusion for the purposes of this protocol. Consider Base Hospital Contact if hypotension/shock of unclear etiology. Use caution if the patient has known cyanotic congenital heart disease. Newborns requiring positive-pressure ventilation should receive 90 seconds of room air, and then start oxygen 15L/min if heart rate remains < 100 beats per minute and/or persistent shock.

2. Maintaining a patient supine improves perfusion to vital organs; raising the lower limbs does not provide additional benefit. However, not all patients will tolerate a supine position, which can further compromise respiratory function and airway patency.

3. Peripheral venous access may be difficult to obtain in infants and small children. Consider IO placement as primary vascular access in extremis patients for whom venous access is unlikely to be achieved rapidly. For older children, make two attempts at venous access and, if unsuccessful, place an IO for vascular access.

4. Exposure to cold increases the likelihood of bleeding complications.

5. There are many etiologies of shock. The treatment protocols referenced here contain guidance on specific interventions beyond what is contained in this treatment protocol. Although <70 mmHg is used as a generic cut-off for hypotension in pediatric patients the level of systolic blood pressure varies by age and those thresholds are found in *MCG 1309* and can be used in decisions for fluid resuscitation. Consider Base Hospital Contact if hypotension/shock of unclear etiology.

6. Push-dose Epinephrine is appropriate for non-traumatic shock including cardiogenic shock. Additional doses beyond 10mL may need to be prepared for prolonged transports. For patients < 10kg, transfer the diluted Push-dose Epinephrine to a smaller (1mL or 3mL) syringe in order to administer the dose accurately.

## Treatment Protocol: AGITATED DELIRIUM — Ref. No. 1208-P

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**Base Hospital Contact Required.**

1. Assess situation for safety; Attain law enforcement assistance for physical restraint prior to approaching a patient if a weapon is visualized or the patient threatens violence towards EMS

2. Approach patient with caution and attempt verbal de-escalation

3. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
   Continually assess patient's airway and ventilation status ❶❷

4. Administer **Oxygen** prn *(MCG 1302)*

5. Patients with agitated delirium have agitation along with one or more or the following:
   - Confusion
   - Diaphoresis
   - Hot/flushed skin
   - Tachycardia

   Agitated and/or combative patients without these signs/symptoms are not suffering from agitated delirium, treat per the appropriate treatment protocol

6. For severe agitation and/or combative patient requiring restraints for patient or provider safety
   **CONTACT BASE** for **Midazolam (5mg/mL) 0.1 mg/kg IM/IN/IV**, dose per *MCG 1309*
   Repeat dosing every 5 min prn per Base order ❶❸

7. If evidence of trauma, provide spinal motion restriction prn *(MCG 1360)*

8. Establish vascular access prn *(MCG 1375)*

9. Check blood glucose prn ❹
   If glucose < 60 mg/dL or > 250 mg/dL treat in conjunction with *TP 1203-P, Diabetic Emergencies*

10. Initiate cardiac monitoring after sedation *(MCG 1308)*
    Assess for dysrhythmia or interval widening
    **CONTACT BASE** for QRS >0.12 sec, QT >500 ms, or heart rate >150 or <50 to discuss need to administer **Sodium Bicarbonate (1mEq/mL) 1mEq/kg IV**, dose per *MCG 1309* ❺

11. For suspected ingestions, treat in conjunction with *TP 1241-P, Overdose / Poisoning / Ingestion*

12. **Normal saline 20mL/kg IV rapid infusion** per *MCG 1309*

13. If patient hot to touch or with suspected hyperthermia, initiate cooling measures

## SPECIAL CONSIDERATIONS

❶ Pediatric patients with Agitated/Excited Delirium are infrequently encountered by EMS personnel and therefore Base Contact is required. These patients are at risk for sudden cardiac arrest, often preceded by a brief, abrupt period of lethargy and decreased respirations. Careful observation of patient's activity level, vital signs, and airway are essential to patient safety. If patient develops cardiac arrest, treat in conjunction with *TP 1210-P, Cardiac Arrest – Non-traumatic*

❷ Use of restraints in patients with Agitated Delirium is associated with an increased risk of sudden death. Avoid using restraints in patients who do not present a threat to self or to EMS personnel. Never transport a patient in restraints in prone position. *(Ref. 838)*

❸ Midazolam onset is 2 minutes with maximum effect at 5 minutes. IM or IN route is preferred unless an IV has previously been established.

❹ Agitation may be present after a seizure, or in the setting of hypoglycemia. Consider checking glucose early if the patient is a known diabetic, but only if safe to do so.

❺ Several drugs may cause life threatening cardiac arrhythmias after intentional or accidental overdose. These arrhythmias are often preceded by prolonged ECG intervals (particularly QRS > 0.12 sec or QT interval > 500ms). Cocaine intoxication is strongly associated with Agitated Delirium and may also produce cardiac effects similar to Tricyclic antidepressant (TCA) overdose (widened QRS progressing to malignant arrhythmia). These patients may require a large dose of sodium bicarbonate to prevent sudden cardiac death. Consult Base Physician immediately to discussion administration of Sodium Bicarbonate; may repeat x1 if QRS remains > 0.12 sec after initial sodium bicarbonate. Treat in conjunction with *TP 1241-P, Overdose/Poisoning/Ingestion*

**Treatment Protocol: BEHAVIORAL / PSYCHIATRIC CRISIS** **Ref. No. 1209-P**

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1. Assess situation for safety; Attain law enforcement assistance for physical restraint prior to approaching a patient if a weapon is visualized or the patient threatens violence towards EMS

2. Approach patient with caution and attempt verbal de-escalation ❶

3. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

4. Administer **Oxygen** prn *(MCG 1302)*

5. For combative patients requiring restraints for patient or provider safety: ❷
   **CONTACT BASE** for **Midazolam (5mg/mL) 0.1 mg/kg IM/IN/IV,** dose per *MCG 1309* ❸
   Repeat dosing every 5 min prn per Base order

6. If evidence of trauma, provide spinal motion restriction prn *(MCG 1360)*

7. Establish vascular access prn *(MCG 1375)*

8. Check blood glucose prn ❹
   If glucose < 60mg/dL or > 250mg/dL treat in conjunction with *TP 1203-P, Diabetic Emergencies*

9. Initiate cardiac monitoring prn *(MCG 1308)*
   Assess for dysrhythmia or interval widening
   **CONTACT BASE** for QRS > 0.12 sec, QT > 500ms, or heart rate > 150 or < 50 to discuss need to administer **Sodium Bicarbonate (1mEq/mL) 1mEq/kg IV** per *MCG 1309* ❺

10. For suspected ingestions, treat in conjunction with *TP 1241-P, Overdose/Poisoning/Ingestion*

## SPECIAL CONSIDERATIONS

❶ It is important to assess for any evidence of suicide attempt. If there is concern for overdose, ask the patient to provide information on agents used (specifically what, when, and how much). Collect and transport any medication vials, additional pills, etc. This will assist in determining necessary antidote treatment and monitoring at the hospital. This information is often lost, if not obtained immediately on scene.

❷ Avoid applying restraints to patients who do not present a threat to self or EMS personnel. Never transport a patient in restraints in prone position. *(Ref. 838)*

❸ Midazolam onset is 2 minutes with maximum effect at 5 minutes. IM or IN routes are preferred unless an IV has previously been established.

❹ Agitation may be present after a seizure, or in the setting of hypo/hyperglycemia. Consider checking glucose early if the patient is a known diabetic or demonstrates clinical evidence of hypoglycemia.

❺ Several drugs that may cause agitation and present similarly to a psychiatric crisis may also cause life threatening cardiac arrhythmias after intentional or accidental overdose. These arrhythmias are often preceded by prolonged ECG intervals (particularly QRS > 0.12 sec or QT interval > 500ms). Cocaine intoxication is strongly associated with Agitated Delirium and may also produce cardiac effects similar to Tricyclic antidepressant (TCA) overdose (widened QRS progressing to malignant arrhythmia). These patients may require a large dose of sodium bicarbonate to prevent sudden cardiac death. Consult Base Physician immediately to discussion administration of Sodium Bicarbonate; may repeat x1 if QRS remains >0.12 sec after initial sodium bicarbonate. Treat in conjunction with *TP 1241-P, Overdose / Poisoning / Ingestion*

**Base Hospital Contact Required.** ❶

1. For patients meeting *Ref. 814* Section I criteria for determination of death in the field – document *DOA – Obvious Death*

2. Assess airway and initiate basic airway maneuvers *(MCG 1302)*

3. Assist respirations with bag-mask-ventilations (BMV) using **high-flow Oxygen 15L/min**
   Squeeze bag just until chest rise and then release; state "Squeeze, release, release" to avoid hyperventilation ❷

4. For suspected foreign body (no chest rise with BMV): ❸
   Perform direct laryngoscopy and use pediatric Magill forceps to remove visible obstruction(s)

5. Initiate chest compressions at a rate of 100-120 compressions per minute with a compression to ventilation rate of 15:2 ❹❺

6. Initiate cardiac monitoring *(MCG 1308)*
   Briefly assess rhythm every 2 minutes, minimizing pauses, or continuously via rhythm display technology ❻❼

7. Establish vascular access *(MCG 1375)* ❽

8. **CONTACT BASE** concurrent with ongoing management

ASYSTOLE/PEA

9. **Epinephrine (0.1mg/mL) 0.01mg/kg IV/IO**, dose per *MCG 1309*
   May repeat every 5 min x2, maximum single dose 1mg; and maximum total dose 3mg ❾

   **CONTACT BASE** for additional epinephrine doses

10. Consider and treat potential causes ❿

11. **Normal Saline 20mL/kg IV/IO** per *MCG 1309*
    May repeat x2

V-FIB/PULSELESS V-TACH

12. **Defibrillate at 2J/kg**, dose per *MCG 1309*
    Repeat at **4J/kg** at each 2-minute cycle as indicated

13. **Epinephrine (0.1mg/mL) 0.01mg/kg IV/IO**, dose per *MCG 1309*
    Begin after second defibrillation ❾
    May repeat every 5 min x2, maximum single dose 1mg; and maximum total dose 3mg

    **CONTACT BASE** for additional epinephrine doses

14. For persistent or recurrent V-Fib/V-Tach without pulses:
    **Amiodarone (50mg/mL) 5 mg/kg IV/IO**, dose per *MCG 1309*

RETURN OF SPONTANEOUS CIRCULATION ⓫⓬

15. Establish advanced airway prn ⓭

16. Raise head of stretcher to 30 degrees if blood pressure allows, otherwise maintain supine

17. Continue ventilation at 10-20 breaths per minute ⓭

18. For SBP < 70mmHg:
    **Normal Saline 20mL/kg IV/IO rapid infusion** per *MCG 1309*
    Repeat x1 for persistent poor perfusion

    If no response after **Normal Saline 20mL/kg,** or worsening hypotension and/or bradycardia:
    **Push-dose Epinephrine** – mix 9mL Normal Saline with 1mL Epinephrine (0.1mg/mL) IV formulation in a 10mL syringe; administer **Push-dose Epinephrine (0.01mg/mL)** per *MCG 1309* every 1-5 minutes as needed to maintain SBP > 70mmHg ⓮

19. Check blood glucose ⓯
    For blood glucose < 60mg/dL
    **Dextrose 10% 5mL/kg IV/IO** per *MCG 1309*

20. For suspected narcotic overdose: ⓰
    **Naloxone (1mg/mL) 0.1mg/kg IM/IN/IO/IV**, dose per *MCG 1309*

## SPECIAL CONSIDERATIONS

❶ EMS Personnel are mandated reporters of child abuse and neglect, and a report should be made when suspected as per *Ref. 822*. Communicate suspicion for child abuse and/or neglect to accepting ED staff when home suggests children could be at risk for harm (e.g., unkept home, evidence of drug or alcohol abuse, unsafe living conditions, known or suspected domestic violence), when the history does not match with the severity of physical findings (e.g., child posturing after a roll off the couch), when patterned injury or burns or noted (e.g., circular burns as from a cigarette, whip marks on the skin, burns of both hands or feet), or when child reports physical or sexual abuse. Children < 3 years of age and those with developmental delay are at increased risk of abuse. This must also be accompanied by notification to the Department of Children and Family Services (DCFS).

❷ Bag-mask ventilation (BMV) is the preferred method of airway management during cardiac arrest resuscitation and has been associated with improved patient outcomes. Advanced airway placement should be deferred until after return of spontaneous circulation (ROSC).

❸ Children < 3 years of age are at high risk for foreign body aspiration. Foreign body aspiration should be suspected if there is a history of possible aspiration or when there is no chest rise with BMV after repositioning of the airway.

❹ Maintaining perfusion with continuous high-quality CPR throughout resuscitation is essential to ensuring good patient outcome. Chest compressions are the most important aspect of cardiac arrest resuscitation. Maintaining continuous chest compressions should take priority over any medication administration or transport.

❺ Hyperventilation reduces venous return and worsens patient outcomes. Both continuous and interrupted (15:2) compressions/ventilations are acceptable. Regardless of ventilation method used, ventilations should be no more frequent than 10 per minute with a volume just enough to see chest rise.

❻ If you are able to observe the underlying rhythm during compressions via rhythm display technology, do not pause for the rhythm check.

❼ $ETCO_2$ should be > 10 with a “box-shaped” waveform during effective CPR. A flat or wavy waveform or $ETCO_2$ < 10 may indicate ineffective compressions or airway obstruction. A sudden increase in $ETCO_2$ is suggestive of ROSC. The waveform can also be used to confirm ventilation rate if an advanced airway or asynchronous ventilation with continuous compressions is used.

❽ Peripheral venous access may be difficult to obtain in infants and small children. Consider IO placement as primary vascular access in patients for whom venous access is unlikely to be achieved rapidly. For older children, make two attempts at venous access and, if unsuccessful, place and IO for vascular access.

❾ Epinephrine may improve outcomes if given early in non-shockable rhythms, but can worsen outcomes early in shockable rhythms, where defibrillation is the preferred initial treatment. Epinephrine is most likely to be effective if it is given early and after chest compressions have begun. The likelihood of meaningful survival declines after three (3) doses of epinephrine. Resuscitation should continue focused on quality CPR, defibrillation, and identifying reversible causes. Additional

doses of epinephrine should only be administered with Base order, if indicated.

⓾ Potential causes that can be treated in the field include hypoxia, hypovolemia, hyperkalemia, hypothermia, toxins, and tension pneumothorax. Hypoxia and Hypovolemia are common causes of PEA arrest in children. Hypoglycemia is a very rare cause of cardiac arrest and should not be assessed until after ROSC.

⓫ Post cardiac arrest patients are at high risk for re-arrest during transport. Fluid resuscitation, vasopressor support, and avoidance of hyperventilation are recommended to decrease the risk of re-arrest.

⓬ $ETCO_2$ can help guide your ventilation rate; target $ETCO_2$ 35-40 mmHg. Just after ROSC, the $ETCO_2$ may be transiently elevated. This will decrease appropriately with ventilation and does not require hyperventilation to normalize. Persistently elevated $ETCO_2$ and/or “sharkfin” waveform may indicate respiratory failure as cause of the cardiac arrest. Falsely low $ETCO_2$ measurements can occur if there is a leak with BMV or shock.

⓭ In the ROSC patient, BMV is preferred method for ventilation; in a patient longer than the Broselow tape or > 40 kg body weight ETT is strongly preferred to King LT placement.

⓮ **Push-dose Epinephrine** is appropriate for non-traumatic shock including cardiogenic shock. Additional doses beyond 10mL may need to be prepared for prolonged transports. For patients < 10kg, transfer the diluted **Push-dose Epinephrine** to a smaller (1mL or 3mL) syringe in order to administer the dose accurately.

⓯ In pediatric patients, post-arrest hypoglycemia should be treated with Dextrose 10% half-the dose delivered (2.5 mL/kg) and then blood glucose rechecked, and if measured glucose > 60 mg/dL no additional dextrose should be delivered.

If the rechecked blood glucose is < 60 mg/dL then administer an additional Dextrose 10% 2.5 mL/kg IV/IO; Hyperglycemia > 180 mg/dL should be avoided to optimize outcome.

⓰ Narcotic overdose should be suspected in cases where there is drug paraphernalia on scene or there is a witness report. Pinpoint pupils may be present, but hypoxia during cardiac arrest more often causes mydriasis (dilated pupils) instead.

## Treatment Protocol: CARDIAC DYSRHYTHMIA - BRADYCARDIA — Ref. No. 1212-P

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**Base Hospital Contact: Required for all patients with symptomatic bradycardia**

1. Assess patient's airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. If foreign body suspected, perform direct laryngoscopy for foreign body removal and treat in conjunction with *TP 1234-P, Airway Obstruction*

3. Administer **Oxygen** prn *(MCG 1302)*
   **High-flow Oxygen 15L/min** for poor perfusion ❶

4. Initiate cardiac monitoring *(MCG 1308)*
   Perform 12-lead ECG if dysrhythmia suspected prn

5. For poor perfusion:
   Begin bag-mask-ventilation (BMV) ❶❷

6. Establish vascular access prn *(MCG 1375)*

7. For persistent poor perfusion:
   Begin chest compression if bradycardia (< 60 bpm) persists
   **Epinephrine (0.1mg/1mL) 0.01mg/kg slow IV/IO push**, dose per *MCG 1309*
   Repeat every 3-5 min
   **CONTACT BASE** for Physician Consultation concurrent with above treatment

8. If suspected AV Block or patient unresponsive to epinephrine: ❸
   **Atropine (0.1mg/mL) 0.02 mg/kg IV/IO push**, dose per *MCG 1309*
   May repeat x1 in 5 min

9. Consider **Transcutaneous Pacing (TCP)** for HR ≤ 40 with continued poor perfusion *(MCG 1365)*
   For infants and young children place pacing pads anterior and posterior chest; for older children place as per adult patients ❹
   Recommended initial settings: rate 70bpm/0mA, slowly increase mAs until capture is achieved
   **CONTACT BASE** concurrent with initiation of TCP

   If TCP will be utilized for the awake patient, consider sedation and analgesia
   For sedation:
   **Midazolam (5mg/mL) 0.1mg/kg IM/IN/IV/IO**, dose per *MCG 1309*
   Repeat x1 in 2 min prn, maximum two doses prior to Base contact
   For pain management: refer to *MCG 1345, Pain Management*
   Dose per *MCG 1309*

10. For nausea or vomiting in patients ≥ 4 years old:
    **Ondansetron 4mg ODT**

11. For signs of poor perfusion with HR > 40:
    **Normal Saline 20mL/kg IV/IO rapid infusion** per *MCG 1309*

12. For suspected overdose, treat in conjunction with *TP 1241-P, Overdose/Poisoning/Ingestion*

## SPECIAL CONSIDERATIONS

❶ Management of oxygenation and ventilation is most important aspect of treatment of bradycardia in children. Squeeze the bag mask device just until chest rise is initiated and then release; state "Squeeze, Release, Release" to prevent hyperventilation.

❷ Young athletes, typically adolescents may have normal resting heart rates < 60 bpm, treat only if signs of poor perfusion.

❸ Potential causes of unresponsiveness to epinephrine in children include increased intracranial pressure, beta blocker/calcium channel overdose, hypothyroidism, infection, congenital heart disease, and sleep apnea where administration of atropine could be theoretically benefit.

❹ There are minimal data on the use of TCP in infants and children in the out-of-hospital setting. Patients unresponsive to BMV and epinephrine may be candidates. Base Physician consultation is recommended in these patients.

**Treatment Protocol: CARDIAC DYSRHYTHMIA - TACHYCARDIA** **Ref. No. 1213-P**

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**Base Hospital Contact: Required for patients with wide complex tachycardia**

1. Assess airway and initiate basic and advanced airway maneuvers *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Initiate cardiac monitoring *(MCG 1308)*
   Document cardiac rhythm and obtain12-lead ECG if dysrhythmia suspected

4. Maintain supine for patients with signs of poor perfusion, if respiratory status allows

5. Establish vascular access prn *(MCG 1375)*

SINUS TACHYCARDIA (Infants: heart rate < 220bpm, Children: heart rate < 180bpm) ❶

6. For adequate perfusion:
   Monitor closely for potential deterioration, rapid transport

7. For poor perfusion:
   **Normal Saline 20mL/kg IV** per *MCG 1309*

SVT - NARROW COMPLEX (Infants: heart rate ≥ 220bpm, Children: heart rate ≥ 180bpm)

8. **Adenosine (3mg/mL) 0.1mg/kg rapid IV push**, dose per *MCG 1309*, maximum 6mg ❷
   Immediately follow with 10mL Normal Saline rapid IV flush

   If SVT persists:
   **Adenosine (3mg/mL) 0.2mg/kg rapid IV push**, dose per *MCG 1309*, maximum 12mg

   **CONTACT BASE** concurrent with adenosine treatment

9. For persistent poor perfusion after adenosine:
   **CONTACT BASE** to discuss order for synchronized cardioversion:
   Synchronized cardioversion 1.0J/kg, dose per *MCG 1309* ❹
   May repeat x2 at 2.0J/kg, dose per *MCG1309*

   Consider sedation prior to cardioversion:
   **Midazolam (5mg/mL) 0.1mg/kg slow IV/IO push or IM/IN**, dose per *MCG 1309*
   May repeat in 5 min prn x1, maximum 2 doses all routes

WIDE COMPLEX (WCT) – REGULAR/MONOMORPHIC

10. For adequate perfusion:
    **Adenosine (3mg/mL) 0.1mg/kg rapid IV push**, dose per *MCG 1309*, maximum 6mg ❷ ❸
    Immediately follow with 10mL Normal Saline rapid IV flush

If WCT persists:
**Adenosine (3mg/mL) 0.2mg/kg rapid IV push**, dose per *MCG 1309*, maximum 12mg ❸

11. For poor perfusion:
    **CONTACT BASE** to discuss order for:
    **Adenosine (3mg/mL) 0.2mg/kg rapid IV push**, dose per *MCG 1309*, maximum 12mg and/or
    **Synchronized cardioversion 1.0J/kg**, dose per *MCG 1309* ❸ ❹
    May repeat x2 at **2.0J/kg**, dose per *MCG 1309*

    Consider sedation prior to cardioversion:
    **Midazolam (5mg/mL) 0.1mg/kg IV push**, dose per *MCG 1309*
    If unable to obtain venous access, **Midazolam (5mg/mL) 0.1mg/kg IM/IN**, dose per *MCG 1309*
    May repeat in 5 min prn x1, maximum 2 doses all routes

WIDE-COMPLEX – IRREGULAR

12. For adequate perfusion:
    **CONTACT BASE** and monitor closely for potential deterioration, rapid transport

13. For poor perfusion:
    **CONTACT BASE** to discuss order for synchronized cardioversion 1.0J/kg, dose per *MCG 1309* ❹
    May repeat x2 at 2.0J/kg, dose per *MCG1309*

    Consider sedation prior to cardioversion:
    **Midazolam (5mg/mL) 0.1mg/kg slow IV/IO push or IM/IN**, dose per *MCG1309*
    May repeat in 5 min prn x1, maximum 2 doses all routes

## SPECIAL CONSIDERATIONS

❶ Sinus tachycardia is common and SVT is rare. Consider sinus tachycardia in patients with history of fever, volume loss (e.g., vomiting or diarrhea), or congenital heart disease. An indication of sinus tachycardia is narrow complex and beat-to-beat variability seen on the ECG. Vital signs vary by age and normal ranges can be found in MCG 1309. Any pediatric patient with vital signs outside the normal range for age should be considered potentially ill and transported to an EDAP or PMC if criteria are met.

❷ Contraindications: 2nd and 3rd Degree Heart Blocks; history of Sick Sinus Syndrome

❸ Regular monomorphic wide complex tachycardia may be a supraventricular rhythm with a bundle branch or aberrancy. In this case, Adenosine may convert the rhythm to sinus and AHA guidelines recommend its use for regular monomorphic wide complex tachycardia.

❸ For failure to convert or transient conversion to normal sinus rhythm, consider expedited transport.

**Treatment Protocol: CHILDBIRTH MOTHER** **Ref. No. 1215-P**

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**Base Hospital Contact Required** ❶

1. Assess the mother's airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Establish vascular access prn *(MCG 1375)*
   Vascular access should not take precedence over controlled delivery or emergency transport

4. Place mother in Semi-Fowler's or Lateral Sims position

5. If mother has the urge to push or crowning is evident, prepare for delivery
   Prepare OB kit

6. If crown is showing with amniotic sac intact, pinch the sac and twist the membrane to rupture

7. If maternal hypertension, breech presentation, shoulder dystocia, or prolapsed or nuchal cord treat in conjunction with *TP 1217-P, Pregnancy Complication*

8. Once delivered, dry newborn with a towel, clamp and cut the cord ❷
   Treat newborn per *TP 1216-P, Newborn/Neonate Resuscitation*

9. For management of the placenta:
   The placenta may deliver spontaneously; do not pull on cord but allow placenta to separate naturally
   Place placenta in plastic bag from the OB kit and bring to the hospital with the mother

10. Massage the mother's lower abdomen (fundus) after the placenta delivers

11. For poor perfusion:
    **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309*
    **CONTACT BASE** for persistent poor perfusion to obtain order for additional **Normal Saline 20mL/kg IV** per *MCG 1309*

12. If delivery occurs in the field, determine destination based on stated or estimated gestational age and **CONTACT BASE**: ❶
    Transport both patients to a Perinatal Center with an EDAP if newborn ≥ 34 weeks gestation
    Transport both patients to a Perinatal Center with an EDAP and a NICU if < 34 weeks gestation

## SPECIAL CONSIDERATIONS

❶ Any delivery after the first trimester (12 weeks) should be considered childbirth for the purposes of this treatment protocol and paramedics should contact Base to discuss the management and transport. In general, delivery prior to 20 weeks gestation is nonviable and does not require resuscitation. However, dates can be incorrectly estimated, therefore, Base Contact is strongly encouraged. Any *potentially viable birth* should be resuscitated in the field and transported to a perinatal center that is also an EDAP (with a NICU if <34 weeks gestation). Births prior to 20 weeks do not necessarily require specialty center care and can be transported to the MAR.

❷ Delay in clamping and cutting the cord for up 30 to 60 seconds is recommended unless newborn needs immediate resuscitation.

**Treatment Protocol: NEWBORN / NEONATAL RESUSCITATION** **Ref. No. 1216-P**

*1200 Table of Contents*

**Base Hospital Contact required for all newborn deliveries**

1. Assist delivery; if amniotic sac intact and crown is presenting part, pinch sac and twist membrane to rupture and continue with delivery. Treat mother per *TP 1215-P, Childbirth (Mother)*

2. Dry, warm and stimulate newborn by drying with towel ❶

3. Assess airway and initiate basic airway management *(MCG 1302)*
   Monitor pulse oximetry on right hand of newborn ❷
   For airway obstruction present suction prn; mouth first then nostrils ❸

4. Clamp and cut cord ❹

5. If newborn is vigorous, after drying and warming with a towel place on mother's chest skin-to-skin to ensure heat transfer to the newborn; cover mother and newborn with a blanket.

6. Transport newborn and mother to same facility (EDAP and Perinatal Center)

7. Reassess every 30 sec the need for assisted ventilation or CPR intervention

8. Check pulse at the precordium (auscultation), the base of the umbilical cord or at the brachial artery

**IF PULSE < 100bpm OR poor respiratory rate, effort, or persistent central cyanosis** ❺

9. Perform BMV with room air for 90 secs, squeeze the bag just enough to see chest rise then release; state "Squeeze, release, release" to avoid hyperventilation.

10. Recheck pulse every 30 secs
    For persistent poor respiratory rate, effort or central cyanosis, add **high flow Oxygen 15L/min** to BMV
    Assess the need for chest compressions

11. Establish vascular access *(MCG 1375)*
    If unable to obtain peripheral vascular access, place IO (if available); should not take precedence over emergency transport ❻

**IF PULSE < 60bpm after BMV with high-flow Oxygen** ❼

12. Begin chest compressions at a rate of 120/min, maintain 3:1 compression to ventilation ratio (90 compressions to 30 ventilations per minute); continue for 2 minutes before pulse check

13. **Epinephrine (0.1mg/1mL) 0.01 mg/kg IV/IO push** dose per *MCG 1309*
    May repeat every 5 min

14. **Normal Saline 20mL/kg IV/IO rapid infusion** per *MCG 1309*
    **CONTACT BASE** for persistent poor perfusion to obtain order for additional **Normal Saline**

**20mL/kg IV/IO** per *MCG 1309*

15. Once pulse is > 60bpm, chest compressions should be discontinued

16. Transport newborn and mother to the same facility which is an EDAP or PMC and Perinatal Center with a NICU ❽

## SPECIAL CONSIDERATIONS

❶ The most important intervention for a resuscitation of the newly born is the field is to “Dry, Warm and Stimulate” – this allows for reversal of apnea after delivery.

❷ ”Dry, Warm, and Stimulate then you have to Ventilate” – If respiratory effort poor or HR < 100bmp then Ventilate using BMV. The most important signs to monitor are respiratory effort, pulse oximetry and heart rate. Measuring the pulse oximetry on the right hand provides the most accurate oxygen saturation in infants that are transitioning from fetal to normal circulation. At 60 seconds, 60% is the target with an increase of 5% every minute until 5 minutes of life when oximetry is 80-85%.

| Time Since Birth | Projected Increase in Pulse Oximeter Over Time |
|---|---|
| 1 minute | 60-65% |
| 2 minutes | 65-70% |
| 3 minutes | 70-75% |
| 4 minutes | 75-80% |
| 5 minutes | 80-85% |
| 10 minutes | 85-90% |

**Assessments that are used to initiate BMV and chest compressions.**

| Heart Rate (bpm) | Respiratory Distress/Apnea | Central Cyanosis Present | Intervention |
|---|---|---|---|
| > 100 | No | Yes | Blow-by Oxygen |
| <100 | Yes | Yes/No | BMV |
| 60-100 | - | - | BMV |
| <60 | - | - | Chest compression |

❸ Suction prior to delivery is no longer recommended for presence of meconium (thick or thin). Suctioning should occur only if there is airway obstruction present and the mouth should be suctioned first followed by the nose.

❹ Delay in clamping and cutting the cord for up to 30-60 seconds is recommended unless the newborns needs immediate resuscitation.

❺ Assessing pulse at the base of the umbilical cord is preferred, pulse rate <100 bpm is a sign of newborn distress and requires BMV.

❻ In placing an IO in a newborn use light pressure as the bone cortices are soft and the needle can easily penetrate both cortices of the bone.

❼ Chest compressions should be initiated in newborns with a pulse < 60 bpm and continued until the pulse increases > 60 bpm

❽ Newborns requiring field resuscitation are at high risk for complications and will require critical care by neonatologists; consider stability of both patients for destination decisions (Mother and Newborn).

**Treatment Protocol: PREGNANCY COMPLICATION** **Ref. No. 1217-P**

*1200 Table of Contents*

**Base Hospital Contact: Required for vaginal bleeding at > 20 weeks pregnancy and newborn delivery ❶ ❷ ❸ ❹**

1. Do not delay transport for treatment if suspected eclampsia; Manage delivery en route
2. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
3. Administer **Oxygen** prn *(MCG 1302)*
4. Establish vascular access *(MCG 1375)*
   Vascular access should not take precedence over controlled delivery or emergency transport
5. For poor perfusion:
   **Normal Saline 20mL/kg IV/IO rapid infusion** per *MCG 1309*
   **CONTACT BASE** for persistent poor perfusion to obtain order for additional **Normal Saline 20mL/kg IV/IO** per *MCG 1309*
6. If crown is showing with amniotic sac intact, pinch sac and twist the membrane to rupture

BREECH DELIVERY

7. Support presenting part and allow newborn to deliver
8. If head does not deliver, place gloved hand inside mother and form “V” formed with fingers by baby’s face to provide an opening for the airway

PROLAPSED CORD

9. Position mother face down and hips elevated
10. Check cord for pulses
11. If no cord pulsation, manually displace presenting fetal part off the umbilical cord until pulsations are felt; maintain elevation of the presenting part until transfer of care
12. Wrap cord with moist gauze

NUCHAL CORD

13. If nuchal cord is loose attempt slipping the cord over the head prior to delivery
14. If the cord is too tight to easily slip over the head, clamp the cord in two places 1 inch apart and cut the cord with scissors

SHOULDER DYSTOCIA

15. Perform McRobert’s maneuver in order to deliver the anterior shoulder ❺

MATERNAL HYPERTENSION (BP ≥ 140/90mmHg) / ECLAMPSIA ❻

16. Place mother in left lateral decubitus position
17. For seizure, treat in conjunction with *TP 1231-P, Seizure*

## SPECIAL CONSIDERATIONS

1. Pediatric patients who are pregnant must be evaluated for child maltreatment and are at high risk for complications during delivery for the mother and the newborn.

2. This protocol was intended for complications of pregnancy at the time of delivery; if patient is known to be pregnant and has complaints not associated with labor or delivery treat per *TP 1202-P, General Medical* or most applicable protocol.

3. If the patient has vaginal bleeding associated with known pregnancy >20 weeks, contact Base and communicate signs and symptoms so that the receiving hospital can pre-notify OB consultants as needed.

4. Any delivery after the first trimester (12 weeks) should be considered childbirth for the purposes of this treatment protocol and paramedics should contact Base to discuss the management and transport. In general, delivery prior to 20 weeks gestation is nonviable and does not require resuscitation. However; dates can be incorrectly estimated; therefore, Base Contact is strongly encouraged. Any *potentially viable birth* should be resuscitated in the field and transported to a perinatal center that is also an EDAP (with a NICU if <34 weeks gestation). Births prior to 20 weeks do not necessarily require specialty center care and can be transported to the MAR.

5. Shoulder dystocia is inability to deliver the anterior shoulder, which usually occurs in large newborns. If delivery fails to progress after head delivers, hyperflex mother's hips tightly in knee to chest position and apply firm suprapubic pressure in attempt to dislodge anterior shoulder (McRobert's maneuver).

6. Hypertension in a pregnant or recently post-partum is a sign of eclampsia, which required immediate emergency and obstetric care. Additional signs of eclampsia are edema and seizures. Patients who are ≥ 20 weeks pregnant or ≤ 6 weeks post-partum with hypertension (BP ≥ 140/90mmHg should be transported to a Perinatal Center for evaluation.

**Treatment Protocol: PREGNANCY / LABOR** **Ref. No. 1218-P**

*1200 Table of Contents*

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
2. Administer **Oxygen** prn *(MCG 1302)*
3. Establish vascular access prn *(MCG 1375)*
4. Monitor frequency and duration of contractions ❶
5. If delivery is imminent ❷, treat per *TP 1215-P, Childbirth (Mother)*
6. If breech presentation, shoulder dystocia, nuchal cord or prolapsed cord treat per *TP 1215-P, Childbirth (Mother)* in conjunction with *TP 1217-P, Pregnancy Complication*
7. Opiate or Ketoralac analgesia is contraindicated *(MCG 1345)*

## SPECIAL CONSIDERATIONS

❶ The more frequent the contractions, the closer the patient is to delivery; if the contractions are < 2 minutes apart or last > 60 seconds prepare for delivery. Women who have had prior vaginal deliveries can progress through labor very rapidly.

❷ Crowning, urge to push, or presentation of a presenting part indicate imminent delivery.

**Treatment Protocol: ALLERGY** **Ref. No. 1219-P**

*1200 Table of Contents*

**Base Hospital Contact: Required for anaphylaxis.**

1. Assess airway and initiate basic airway maneuvers *(MCG 1302)*
   Continually assess patient's airway and ventilation status

2. Administer **Oxygen** prn *(MCG 1302)*
   **High-flow Oxygen 15L/min** for anaphylaxis with poor perfusion or airway compromise

3. Advanced airway prn *(MCG 1302)*

4. Initiate cardiac monitoring prn *(MCG 1308)*

5. For anaphylaxis:
   **Epinephrine (1mg/mL) 0.01mg/kg IM**, dose per *MCG 1309*, in the lateral thigh ❶
   **CONTACT BASE**: Repeat Epinephrine (1mg/mL) 0.01mg/kg IM every 10 min x2 prn persistent symptoms, maximum total 3 doses

6. Establish vascular access prn *(MCG 1375)*
   Vascular access for all patients with anaphylaxis

7. For poor perfusion:
   **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309*
   For persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*

8. If wheezing: ❷
   < 1 year of age: **Albuterol 2.5mg (3mL) via neb** per *MCG 1309* ❸
   ≥ 1 year of age: **Albuterol 5mg (6mL) via neb** per *MCG 1309* ❸
   Repeat x2 prn, maximum 3 total doses prior to Base contact

9. For itching/hives:
   **Diphenhydramine (50mg/mL) 1mg/kg slow IV push** one time, dose per *MCG 1309* ❹
   If unable to obtain venous access, **Diphenhydramine (50mg/mL) 1mg/kg deep IM**, dose per *MCG 1309*

## SPECIAL CONSIDERATIONS

❶ Epinephrine is the drug of choice for allergic reactions with any angioedema, respiratory compromise or poor perfusion. It should be given IM into a large muscle group, lateral thigh preferred or alternatively the lateral gluteus. Vital signs vary by age and normal ranges can be found in *MCG 1309*. Any pediatric patient with vital signs outside the normal range for age should be considered potentially ill and transported to an EDAP or PMC if criteria are met.

❷ Patients with wheezing due to allergic reaction should be treated with Epinephrine IM. Albuterol may be administered in addition to Epinephrine IM if wheezing persists.

❸ Consider blow-by to avoid agitation in pediatric patients if a mask cannot be tolerated (e.g., infants and toddlers).

❹ Diphenhydramine does not treat anaphylaxis. For patients in anaphylaxis, Epinephrine administration is the first priority. Diphenhydramine may be considered once other treatments are complete or in stable patients with discomfort for isolated hives.

## Treatment Protocol: BURNS — Ref. No. 1220-P

*1200 Table of Contents*

**Base Hospital Contact: Required for burns meeting Trauma Center criteria, 2nd or 3rd degree burns ≥ 10% TBSA.**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
   If evidence of inhalation injury, treat in conjunction with *TP 1236-P, Inhalation Injury*

2. Administer **Oxygen** prn *(MCG 1302)*
   If carbon monoxide exposure suspected, provide **high-flow Oxygen 15 L/min** and treat in conjunction with *TP 1238-P, Carbon Monoxide Poisoning* ❶

3. Assess for signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244-P, Traumatic Injury*

4. Remove jewelry and clothing from involved area

5. Apply blanket to keep patient warm ❷

6. For ELECTRICAL burns
   Cover with dry dressing or sheet, treat in conjunction with *TP 1221-P, Electrocution*

7. For THERMAL burns ❸
   Cover with dry dressing or sheet
   Consider cooling with water for burns isolated to less than 5% BSA

8. For CHEMICAL burns
   If dry, brush and flush with copious amounts of water
   If liquid, flush with large amounts of water ❹
   If eye involvement, irrigate eye with **Normal Saline 1L** during transport; allow patient to remove contact lenses if possible, treat in conjunction with *TP 1240-P, HAZMAT*

9. Establish vascular access prn *(MCG 1375)*
   For IO placement in alert patients administer, **Lidocaine 2% 0.5mg/kg (20mg/mL) slow IO push**, dose per *MCG 1309*, may repeat once for infusion pain at half initial dose

10. For partial/full thickness burn involves >10% body surface area or poor perfusion:
    **Normal Saline 20mL/kg IV/IO rapid infusion** per *MCG 1309*
    **CONTACT BASE** for persistent poor perfusion to obtain order for additional **Normal Saline 20mL/kg IV/IO**

11. Elevate burned extremities as able for comfort

12. For pain management: refer to *MCG 1345, Pain Management*
    Dose per *MCG 1309*

## SPECIAL CONSIDERATIONS

❶ Consider potential for carbon monoxide and/or cyanide toxicity in closed space fires. Pulse oximetry is not accurate in carbon monoxide poisoning. (*TP 1238-P, Carbon Monoxide Poisoning*)

❷ Infants and small children are at high risk for hypothermia due to their large surface area to body mass ratio, reduced ability to shiver, and limited body fat.

❸ EMS Personnel are mandated reporters of child abuse and neglect, and a report should be made when suspected as per *Ref. 822*. Communicate suspicion for child abuse and/or neglect to accepting ED staff when home suggests children could be at risk for harm (e.g., unkept home, evidence of drug or alcohol abuse, unsafe living conditions, known or suspected domestic violence), when the history does not match with the severity of physical findings (e.g., child posturing after a roll off the couch), when patterned injury or burns or noted (e.g., circular burns as from a cigarette, whip marks on the skin, burns of both hands or feet), or when child reports physical or sexual abuse. Children < 3 years of age and those with developmental delay are at increased risk of abuse. This must also be accompanied by notification to the Department of Children and Family Services (DCFS).

❹ Observe for hypothermia; cooling large surface area burns (>10% body surface area) may result in hypothermia.

## Treatment Protocol: ELECTOCUTION — Ref. No. 1221-P

*1200 Table of Contents*

1. Ensure source of electricity is turned off ❶
2. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
3. For cardiac arrest, treat per *TP 1210-P Cardiac Arrest* ❷
4. Administer **Oxygen** prn *(MCG 1302)*
5. Advanced airway prn *(MCG 1302)*
6. Initiate cardiac monitoring *(MCG 1308)*
   Perform 12-Lead ECG prn
   If cardiac dysrhythmia present, treat in conjunction with *TP 1212-P, Cardiac Dysrhythmia-Bradycardia* or *TP 1213-P, Cardiac Dysrhythmia-Tachycardia* ❸
7. Assess for signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244-P, Traumatic Injury*
8. Remove jewelry and clothing from involved areas
9. Establish vascular access prn *(MCG 1375)*
10. For burns, treat in conjunction with *TP 1220-P, Burns*
    Cover affected areas with dry dressing or sheet ❹
11. For poor perfusion:
    **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309*
    For persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*
12. For pain management: refer to *MCG 1345, Pain Management*
    Dose per *MCG 1309*
13. For nausea or vomiting in patients ≥ 4 years old:
    **Ondansetron 4mg ODT**

## SPECIAL CONSIDERATIONS

1. Do not touch the patient unless you have removed the source of the electricity. An electrical current can be conducted through water and skin. Ensure that area surrounding the patient is dry before approaching him/her.
2. Consider prolonged cardio-pulmonary resuscitation.
3. Electrocution may result in ventricular tachycardia, ventricular fibrillation, asystole or other dysrhythmias. However, if the patient is in a regular rhythm on evaluation, they are unlikely to develop a dysrhythmia.
4. Superficial skin findings do not correlate with the severity of an electrical burn. As the electrical current passes through tissue, it can cause more damage than is superficially present.

## Treatment Protocol: HYPERTHERMIA (ENVIRONMENTAL) Ref. No. 1222-P

*1200 Table of Contents*

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Initiate cardiac monitoring *(MCG 1308)*
   For patients with dysrhythmias, treat in conjunction with *TP 1212-P, Cardiac Dysrhythmia-Bradycardia* or *TP 1213-P, Cardiac Dysrhythmia-Tachycardia*

4. Provide cooling measures ❶ ❷

5. For patients with fever due to presumed infection/sepsis, treat per *TP 1204-P, Fever/Sepsis* ❸

6. Establish vascular access prn *(MCG 1375)*

7. For altered level of consciousness, treat in conjunction with *TP 1229-P, ALOC*

8. For adequate perfusion and normal mental status, encourage oral hydration

9. For poor perfusion or if unable to take fluids orally:
   **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309*
   For persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*

## SPECIAL CONSIDERATIONS

❶ Cooling measures should include moving patient to a cooler environment (e.g. ambulance with air conditioner), removing clothing, applying wet towels, and fanning/blowing cool air from air conditioning vents. If shivering occurs, stop and cover with a dry blanket.

❷ Children left in vehicles are at significant risk of hyperthermia even with normal external ambient temperatures, because of the greenhouse effect. Entrapped children should be immediately extricated; this may require breaking the window.

❸ This protocol is intended for hyperthermia due to environmental exposures and toxic ingestions.

## Treatment Protocol: HYPOTHERMIA / COLD INJURY — Ref. No. 1223-P

*1200 Table of Contents*

1. Assess airway and initiate basic and/or advanced airway maneuvers *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Initiate cardiac monitoring *(MCG 1308)*
   For patients with dysrhythmias, treat in conjunction with *TP 1212-P, Cardiac Dysrhythmia-Bradycardia* or *TP 1213-P, Cardiac Dysrhythmia-Tachycardia*

4. Provide warming measures ❶ ❷

5. For frostbite:
   Handle affected area gently, remove jewelry, cover and protect the area ❸

6. Establish vascular access prn *(MCG 1375)*

7. For altered level of consciousness, treat in conjunction with *TP 1229-P, ALOC*

8. For poor perfusion:
   **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309*; use warm saline if available
   For persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*

9. For cardiac arrest, treat in conjunction with *TP 1210-P, Cardiac Arrest*
   Initiate rewarming while resuscitation is ongoing ❹

## SPECIAL CONSIDERATIONS

1. Warming measures should include moving the patient to a warm environment as quickly as possible, removing wet clothing/items, covering with an emergency/rescue blanket or blanket/sheets, and using warm normal saline if available.
2. Infants and small children are at high risk for hypothermia due to their large surface area to body mass ratio, reduced ability to shiver, and limited body fat.
3. Do not allow an area of frostbite to thaw and then refreeze as this causes more tissue damage.
4. Follow usual protocols for resuscitation of patients with hypothermic cardiac arrest while rewarming. Patients with hypothermia may have good neurologic outcome despite prolonged resuscitation; resuscitative efforts should continue until the patient is rewarmed. Consultation with the Base Physician is required before consideration of termination of resuscitation.

## Treatment Protocol: STINGS / VENOMOUS BITES — Ref. No. 1224-P

*1200 Table of Contents*

1. Assess airway and initiate basic and/or advanced airway maneuvers *(MCG 1302)*

2. Prioritize treatment of systemic symptoms
   For signs or symptoms of allergic reaction, treat with *TP 1219-P, Allergy*
   For poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*

3. Keep patient calm and limit activity
   Position affected extremity at or below level of the heart

4. For SNAKE BITES
   Splint the affected area
   Elevate the extremity to the level of the heart

5. For INSECT (bee, wasp, ant), SPIDER and SCORPION STINGS:
   Remove stinger if visualized ❶
   Apply cold pack

6. For MARINE ENVENOMATIONS (e.g., jelly fish, stingrays and scorpion fish):
   Remove barb when applicable:
   Soak area in hot water if available ❷

7. Establish vascular access prn *(MCG 1375)*

8. For continued pain after specific measures above: refer to *MCG 1345, Pain Management*
   Dose per *MCG 1309*

9. For nausea or vomiting in patients ≥ 4 years old:
   **Ondansetron 4mg ODT**

## SPECIAL CONSIDERATIONS

❶ Remove stinger by scraping patient's skin with the edge of a flat surface (credit card or similar). Do not attempt to pull the stinger out with fingernails or tweezers, as this may cause release of additional venom.

❷ Do not use vinegar given the type of jellyfish endemic to California.

## Treatment Protocol: SUBMERSION — Ref. No. 1225-P

*1200 Table of Contents*

**Base Hospital Contact: Required for ALOC and decompression emergencies *(Ref. 518)*.**

1. Assess airway and initiate basic and/or advanced airway maneuvers *(MCG 1302)*
2. For cardiac arrest, treat per *TP 1210-P, Cardiac Arrest* ❶
3. Administer **Oxygen** prn *(MCG 1302)*
   For suspected decompression illness ❷, provide **high-flow Oxygen 15L/min** and **CONTACT BASE**
4. Maintain supine if suspected decompression illness
5. Advanced airway prn *(MCG 1302)*
6. Initiate cardiac monitoring *(MCG 1308)*
7. Provide warming measures ❸ ❹
8. Establish vascular access prn *(MCG 1375)*
9. For altered level of consciousness, treat in conjunction with *TP 1229-P, Altered Level of Consciousness (ALOC)*
10. For respiratory distress, treat in conjunction with *TP 1237-P, Respiratory Distress* ❺
11. For poor perfusion or for suspected decompression illness:
    **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309*; use warm saline if available ❺
    For persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*

## SPECIAL CONSIDERATIONS

❶ Cardiac arrest from drowning should be treated per *TP 1210-P, Cardiac Arrest*. Ventilation is particularly important as the cardiac arrest is almost always due to respiratory failure. In cases of cold water drowning follow usual protocols for resuscitation while simultaneously rewarming the patient. Patients with hypothermia due to cold water drowning, may have good neurologic outcome despite prolonged resuscitation; resuscitative efforts should continue until the patient is rewarmed. Consultation with the Base Physician is required before consideration of termination of resuscitation in patients with suspected hypothermia.

❷ Decompression illness includes arterial gas embolism from barotrauma and decompression sickness (aka “the bends”) due to dissolved nitrogen in the blood coming out of solution. Decompression illness most frequently occurs in scuba divers after breathing compressed air at depth. While arterial gas embolism presents almost immediately after ascent, decompression sickness is often delayed and should be considered in any patient with symptoms (e.g. respiratory distress, ALOC, chest or body pain) within 24 hours of completing a dive. All patients with possible decompression illness need immediate evaluation for possible hyperbaric treatment. Per *Ref. 518*, contact Base immediately to discuss.

❸ Warming measures should include moving the patient to a warm environment as quickly as possible, removing wet clothing/items, covering with an emergency/rescue blanket or other blankets/sheets, and using warm Normal Saline if available.

❹ Infants and small children are at high risk for hypothermia due to their large surface area to body mass ratio, reduced ability to shiver, and limited body fat.

❺ Rales may be present in patients after submersion/drowning due to direct lung injury and/or aspiration of water. This is not an indication of cardiogenic pulmonary edema (such as from congestive heart failure), which is extremely rare in children, and does not prohibit administration of IV fluids. IV fluids should be initiated and continued unless respiratory status worsens during administration.

**Treatment Protocol: ENT / DENTAL EMERGENCIES** **Ref. No. 1226-P**

*1200 Table of Contents*

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Assess for signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244-P, Traumatic Injury*

4. Control bleeding with direct pressure ❶

5. For epistaxis:
   Control bleeding by pinching nose just distal to nasal bone with head in neutral position and patient sitting forward ❷
   Document Provider Impression - *Epistaxis*

6. For tooth avulsion:
   Handle it by the enamel (crown) and do not touch the root
   Place in container with **Normal Saline**

7. For complaints of throat irritation and/or foreign body sensation:
   Assess for airway obstruction, if present treat per *TP 1234, Airway Obstruction*
   For throat complaints without airway obstruction, document Provider Impression – *ENT/Dental Emergencies*

8. Establish vascular access prn *(MCG 1375)*

9. For pain management: refer to *MCG 1345, Pain Management*
   Dose per *MCG 1309*

10. For nausea or vomiting in patients ≥ 4 years old:
    **Ondansetron 4mg ODT**

## SPECIAL CONSIDERATIONS

❶ In unable to sit upright due to poor perfusion or concerns for trauma with possible thoracic or lumbar spinal injury, consider log rolling on side to prevent airway compromise.

❷ To prevent aspiration and for patient comfort, sit patient in high Fowler's position leaning forward and suction prn.

**Treatment Protocol: EYE PROBLEM** **Ref. No. 1228-P**

*1200 Table of Contents*

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Assess for additional signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244-P, Traumatic Injury*

3. If penetrating globe injury present/suspected, shield the eye and position patient at 45 degrees ❶
   Do not put any pressure on the eye

4. Do not remove any impaled foreign bodies from eye; secure them in place

5. If contacts lenses are present and the patient is unable to remove them, leave in place

6. Establish vascular access prn *(MCG 1375)*

7. Burns to eye:
   Chemical Burn – Irrigate with **Normal Saline 1L**
   Thermal Burn – Cover with dry dressing
   Treat in conjunction with *TP 1220-P, Burns*

8. For eye pain: refer to *MCG 1345, Pain Management*
   Dose per *MCG 1309*

9. For nausea or vomiting in patients ≥ 4 years old:
   **Ondansetron 4mg ODT**

## SPECIAL CONSIDERATIONS

❶ Consider a penetrating globe injury with any eye trauma, especially penetrating trauma, large subconjunctival hemorrhage, abnormal shaped pupil or iris, or the appearance of fluid or tissue coming from the eye.

## Treatment Protocol: ALTERED LEVEL OF CONSCIOUSNESS (ALOC) Ref. No. 1229-P

*1200 Table of Contents*

**Base Hospital Contact: Required for persistent ALOC of unclear etiology ❶ ❷**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Initiate cardiac monitoring *(MCG 1308)*
   Perform 12-lead ECG if cardiac dysrhythmia detected and treat in conjunction with *TP 1212-P, Cardiac Dysrhythmia - Bradycardia* or *TP 1213-P, Cardiac Dysrhythmia - Tachycardia*

4. Establish vascular access *(MCG 1375)*

5. Check blood glucose
   If < 60mg/dL or > 250mg/dL, treat in conjunction with *TP 1203-P, Diabetic Emergencies*

6. For poor perfusion:
   **Normal Saline 20mL/kg IV/IO rapid infusion** per *MCG 1309*
   For patients with persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*

7. Assess for signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244-P, Traumatic Injury*

8. Perform neurological exam
   If stroke or stroke mimic suspected **CONTACT BASE** and transport to PMC

9. For suspected overdose or alcohol intoxication, treat in conjunction with *TP 1241-P, Overdose/Poisoning/Ingestion* ❸

10. For suspected carbon monoxide exposure, treat in conjunction with *TP 1238-P, Carbon Monoxide Exposure*

11. **CONTACT BASE** if the etiology of ALOC remains unclear

## SPECIAL CONSIDERATIONS

❶ Once the cause for ALOC is determined, switch to the more specific protocol. Consider the following differential using the mnemonic AEIOU-TIPS:

- **A** – Alcohol, abuse, atypical migraine
- **E** – Epilepsy, electrolytes
- **I** – Insulin (hypoglycemia)
- **O** – Oxygen, overdose
- **U** – Uremia (kidney failure)
- **T** – Trauma, tumor
- **I** – Infection
- **P** – Psych, poisoning
- **S** – Seizure, Subarachnoid hemorrhage, Sepsis

❷ EMS Personnel are mandated reporters of child abuse and neglect, and a report should be made when suspected as per *Ref. 822*. Communicate suspicion for child abuse and/or neglect to accepting ED staff when home suggests children could be at risk for harm (e.g., unkempt home, evidence of drug or alcohol abuse, unsafe living conditions, known or suspected domestic violence), when the history does not match with the severity of physical findings (e.g., child posturing after a roll off the couch), when patterned injury or burns or noted (e.g., circular burns as from a cigarette, whip marks on the skin, burns of both hands or feet), or when child reports physical or sexual abuse. Children < 3 years of age and those with developmental delay are at increased risk of abuse. This must also be accompanied by notification to the Department of Children and Family Services (DCFS).

❸ Consider narcotic overdose for patients with hypoventilation (bradypnea), and pinpoint pupils, drug paraphernalia, or strong suspicion of narcotic use.

## Treatment Protocol: DIZZINESS / VERTIGO — Ref. No. 1230-P

*1200 Table of Contents*

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
2. Administer **Oxygen** prn *(MCG 1302)*
3. Initiate cardiac monitoring prn *(MCG 1308)*
4. Establish vascular access prn *(MCG 1375)*
5. For poor perfusion:
   **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309*
   For persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*
6. Check blood glucose
   If < 60mg/dL or > 250mg/dL, treat in conjunction with *TP 1203-P, Diabetic Emergencies*
7. For vertigo: ❶
   **CONTACT BASE** if focal neurologic findings present and transport to PMC
8. For nausea or vomiting in patients ≥ 4 years old:
   **Ondansetron 4mg ODT**

## SPECIAL CONSIDERATIONS

❶ Dizziness is often used to describe two different feelings; vertigo and lightheadedness. Vertigo is the sensation of a person or their surroundings moving when no actual movement is occurring. People often describe the feeling of spinning, falling, tilting, or being off balance. This is often associated with nausea/vomiting. Lightheadedness can lead to feeling faint or syncope, and the patient often reports improvement with supine position. Vertigo is an unusual complaint for children and should be taken as a possible sign of serious disease.

**Treatment Protocol: SEIZURE** **Ref. No. 1231-P**

*1200 Table of Contents*

**Base Hospital Contact: Required for status epilepticus or pregnant patients**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)* ❶
2. Administer **Oxygen** prn *(MCG 1302)*
3. Assess for signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244-P, Traumatic Injury*
4. Initiate cardiac monitoring prn *(MCG 1308)*
5. Establish vascular access prn *(MCG 1375)*
6. If seizure stops spontaneously prior to EMS arrival and no seizure witnessed by EMS:
   Document Provider Impression – *Seizure - Post*
7. For active seizure witnessed by EMS:
   **Midazolam (5mg/mL) 0.1mg/kg IM/IV**, dose per *MCG 1309* or
   **Midazolam (5mg/mL) 0.2mg/kg IN**, dose per *MCG 1309*
   Repeat x1 in 2 min prn, maximum two doses prior to Base contact ❹
   Document Provider Impression – *Seizure - Active*, even if seizure spontaneously resolves ❷❸

   **CONTACT BASE** for persistent seizure and for additional medication orders: ❺
   May repeat **Midazolam** as above, maximum four total doses
8. For persistent seizure or persistent ALOC:
   Check blood glucose
   If < 60mg/dL or > 250mg/dL, treat in conjunction with *TP 1203-P, Diabetic Emergencies*

## SPECIAL CONSIDERATIONS

1. Children with seizure may develop apnea; therefore, monitor oxygenation and ventilation including continuous pulse oximetry during seizure and after treatment with midazolam. Be prepared to initiate BMV.

2. Active seizures, including febrile seizures, may include tonic and/or clonic activity or focal seizure with altered level of consciousness. Eye deviation, clenched jaw, lip smacking or focal twitching may be subtle signs of seizure.

3. Seizures may occur as a result of underlying medical problems or toxic ingestions. Please make every effort to obtain a medical history and determine all medications/drugs that the patient may have taken.

4. Midazolam onset is 2 minutes with maximum effect at 5 minutes.

5. Vital signs vary by age and normal ranges can be found in *MCG 1309*. Any pediatric patient with vital signs outside the normal range for age should be considered potentially ill and transported to an EDAP or PMC if criteria are met. Pediatric patients who continue to seize after administration of midazolam should be transported to a PMC.

**Treatment Protocol: STROKE / CVA / TIA** **Ref. No. 1232-P**

*1200 Table of Contents*

**Base Hospital Contact: Required prior to transport for all patients with suspected Stroke or TIA**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
2. Administer **Oxygen** prn *(MCG 1302)*
3. Advanced airway prn *(MCG 1302)*
4. Initiate cardiac monitoring *(MCG 1308)*
   Perform 12-lead ECG if dysrhythmia suspected prn
5. Establish vascular access prn *(MCG 1375)*
6. Check blood glucose
   If < 60mg/dL or > 250mg/dL, treat in conjunction with *TP 1203-P, Diabetic Emergencies*
7. Assess for signs of trauma ❶
   If traumatic injury suspected, treat in conjunction with *TP 1244-P, Traumatic Injury*
8. Document focal neurologic deficits, and date and time of Last Known Well Time (LKWT) ❷
9. **CONTACT BASE** and transport to PMC

## SPECIAL CONSIDERATIONS

❶ EMS Personnel are mandated reporters of child abuse and neglect. Communicate concerns about child abuse and/or neglect to accepting ED staff when home suggests children could be at risk for harm (e.g., unkempt home, evidence of drug or alcohol abuse, unsafe living conditions, known or suspected domestic violence), when the history does not match with the severity of physical findings (e.g., child posturing after a roll off the couch), when patterned injury or burns or noted (e.g., circular burns as from a cigarette, whip marks on the skin, burns of both hands or feet), or when child reports physical or sexual abuse. Children < 3 years of age and those with developmental delay are at increased risk of abuse. This must also be accompanied by notification to the Department of Children and Family Services (DCFS).

❷ Stroke is rare in children as compared to adults. Children with focal neurologic deficits could have a stroke (rare) or a stroke mimic such as confusional migraine or petit mal seizures. LKWT for children determines time course of the disease and may have an impact on treatment. PMC is the best destination for these patients as subspecialty consultation will assist in establishing the diagnosis.

## Treatment Protocol: SYNCOPE / NEAR SYNCOPE — Ref. No. 1233-P

*1200 Table of Contents*

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Establish vascular access prn *(MCG 1375)*

4. For orthostasis (in older children), signs of dehydration or fluid losses, or for poor perfusion:
   **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309*
   For persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension* ❶ ❷

5. Initiate cardiac monitoring *(MCG 1308)*
   Perform 12-Lead ECG if dysrhythmia suspected
   If cardiac dysrhythmia is present, treat per *TP 1212-P, Cardiac Dysrhythmia-Bradycardia* or *TP 1213-P, Cardiac-Dysrhythmia-Tachycardia*

6. Assess for signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244-P, Traumatic Injury*

7. For persistent ALOC, treat in conjunction with *TP 1229-P, ALOC* ❸

## SPECIAL CONSIDERATIONS

❶ Patients who are lightheaded and/or tachycardic when sitting and/or standing compared to lying down, referred to as orthostatic, are likely dehydrated and in need for fluid resuscitation. Syncope can result from a lack of adequate perfusion to the brain, and in the setting of suspected dehydration or fluid losses, this can be a sign of poor perfusion. Therefore, for patients who present with syncope with orthostasis and/or dehydration, fluid resuscitation is appropriate unless contraindicated.

❷ In females of child-bearing age with syncope, ask about possible pregnancy and any history of vaginal bleeding. One cause of syncope in females is a ruptured ectopic pregnancy. This can be life threatening and may present with poor perfusion and require fluid resuscitation with **Normal Saline**. Contact Base if patient known to be pregnant.

❸ Syncope in children is most often a result of vasovagal syncope and transport to an EDAP is appropriate. However, syncope associated with a dysrhythmia or ALOC indicates a serious underlying disease and patients should be transported to a PMC.

**Treatment Protocol: AIRWAY OBSTRUCTION** **Ref. No. 1234-P**

*1200 Table of Contents*

**Base Hospital Contact: Required for patients with severe respiratory distress and/or respiratory arrest.**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)* ❶

2. Administer **Oxygen** prn *(MCG 1302)*
   **High flow Oxygen 15L/min** for all patients with impending respiratory arrest/failure ❷

3. For airway obstruction due to foreign body:
   If patient unable to speak but is conscious, perform 5 abdominal thrusts or, if <1 year, alternate 5 back blows and 5 chest thrusts
   If patient becomes unconscious lower to ground and begin chest compressions

   If patient is unconscious, initiate CPR x 2 min
   Perform direct laryngoscopy to visualize potential obstruction when indicated
   Remove visible foreign body with Magill forceps

4. If patient has an Unmanageable Airway *(MCG 1302)*:
   Initiate immediate transport to EDAP and **CONTACT BASE** en route

5. Advanced airway prn for patients of appropriate age and size *(MCG 1302)*

6. Initiate cardiac monitoring *(MCG 1308)*

7. If patient is conscious and spontaneous ventilation is adequate:
   Monitor in position of comfort

8. Consider specific presentation:
   For suspected anaphylaxis treat per *TP 1219-P, Allergy*

   For stridor concerning for croup or tracheitis:
   < 1 year old: **Epinephrine (1mg/mL) 2.5mL via neb**, dose per *MCG 1309* ❷
   ≥ 1 year of age: **Epinephrine (1mg/mL) 5mL via neb**, dose per *MCG 1309* ❷
   Repeat x1 in 10 min prn, maximum 2 total doses prior to Base contact
   Prepare to manage airway if patient's condition deteriorates

   For visible airway/tongue swelling:
   **Epinephrine (1mg/mL) 0.01mg/kg IM** dose per *MCG 1309*
   Repeat every 10 min prn x2, maximum 3 total doses prior to Base contact

   For patients with a tracheostomy and suspected obstruction: ❸
   Attempt suctioning

Remove and clean inner cannula with saline; replace if positive-pressure ventilation required ❹

If obstruction is not relieved by above maneuvers:

For children ≥ 7 years of age consider placing a 6.0mm endotracheal tube in the stoma and attempt BMV ❺

For children < 7 years of age remove entire tracheostomy tube and cover stoma and attempt BMV first via the mouth. If no chest rise attempt BMV over stoma with a small mask.

## SPECIAL CONSIDERATIONS

❶ In evaluation of patient with suspected airway obstruction, assessment of the airway should include the tongue and posterior oropharynx, including uvula and tonsillar pillars.

❷ Consider blow-by to avoid agitation in pediatric patients if a mask cannot be tolerated (e.g., infants and toddlers).

❸ Common tracheostomy emergencies include obstruction of the tracheostomy tube and bleeding. There are different types of tracheostomy tubes, some with an inner cannula and/or obturator. The obturator obstructs airflow and is usually only used during insertion. The inner cannula allows for connection to a ventilator or bag mask for positive pressure ventilation. Tracheostomy tubes may be cuffed (balloon inflated in the trachea as indicated by a side port) or uncuffed. If the tracheostomy does not have a cuff, the airway is not protected against aspiration and air can leak out through the mouth during positive-pressure ventilation. If respiratory failure occurs in a patient with an uncuffed tracheostomy tube, it should be replaced with a cuffed endotracheal tube (if the appropriate size is available) if feasible in order to facilitate positive-pressure ventilation. For bleeding, direct pressure should be applied and suctioning as needed to reduce aspiration of blood.

❹ The inner cannula is required to attach a ventilator or bag mask to a tracheostomy for positive-pressure ventilation. It may become obstructed with secretions; remove, clean with saline, and replace once obstruction is relieved. If it cannot be replaced, cover the stoma with gauze and begin BMV via the mouth. If no chest rise, place a small mask over the stoma and begin stoma-mask ventilation.

❺ Removal and reinsertion of the tracheostomy tube is contraindicated if the tracheostomy is < 1 week old because the stoma has not fully formed and a false tract may be created. Once the stoma has matured, a tracheostomy can be safely removed and replaced when necessary. If a flexible intubation guide (e.g., Bougie) can be inserted, it may be used to guide the removal and reinsertion of the tracheostomy or endotracheal tube.

## Treatment Protocol: Brief Resolved Unexplained Event (BRUE) Ref. No. 1235-P

*1200 Table of Contents*

**Base Hospital Contact: Required prior to transport for all patients with BRUE ❶ ❷ ❸**

1. Assess patient's airway and initiate basic and/or airway management prn *(MCG 1302)* ❹
2. Administer **Oxygen** prn *(MCG 1302)*
3. For suspected foreign body aspiration treat per *TP 1234-P, Airway Obstruction*
4. Initiate cardiac monitoring *(MCG 1308)*
   Perform 12-lead ECG if dysrhythmia suspected
   For bradycardia treat per *TP 1212-P, Cardiac Dysrhythmia - Bradycardia*
5. Establish vascular access prn *(MCG 1375)*
6. For poor perfusion
   **Normal Saline 20mL/kg IV/IO rapid infusion** *(MCG 1309)* ❺
   For persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*
7. For persistent ALOC – treat per *TP 1229-P, ALOC*

## SPECIAL CONSIDERATIONS

❶ Obtain thorough history or physical examination that one or more of the following occurred and is resolved: cyanosis or pallor, absent, decreased, or irregular breathing, marked change in tone (hyper- or hypotonia), or altered level of responsiveness – document Provider Impression *BRUE*

❷ Patients with a brief resolved unexplained event or a BRUE require Base Contact and transport to a PMC. For patients with ongoing signs of serious illness Base Contact should be made for discussion on appropriate destination. Vital signs vary by age and normal ranges can be found in *MCG 1309*. Any pediatric patient with vital signs outside the normal range for age should be considered potentially ill and transported to an EDAP or PMC if criteria are met.

❸ EMS Personnel are mandated reporters of child abuse and neglect, and a report should be made when suspected as per *Ref. 822*. Communicate suspicion for child abuse and/or neglect to accepting ED staff when home suggests children could be at risk for harm (e.g., unkempt home, evidence of drug or alcohol abuse, unsafe living conditions, known or suspected domestic violence), when the history does not match with the severity of physical findings (e.g., child posturing after a roll off the couch), when patterned injury or burns or noted (e.g., circular burns as from a cigarette, whip marks on the skin, burns of both hands or feet), or when child reports physical or sexual abuse. Children < 3 years of age and those with developmental delay are at increased risk of abuse. This must also be accompanied by notification to the Department of Children and Family Services (DCFS).

❹ Support respiration prn with BMV using “squeeze-release-release” technique; hyperventilation has negative effects on coronary and cerebral perfusion and should be avoided.

❺ In infants < 1 month of age with increasing respiratory distress after fluid resuscitation, stop infusion as it may be a result of volume overload and contact Base for medical direction.

**Treatment Protocol: INHALATION INJURY** **Ref. No. 1236-P**

*1200 Table of Contents*

**Base Hospital Contact: Required for severe respiratory distress unresponsive or not amenable to CPAP**

1. Assess scene for safety
2. Use appropriate PPE
3. Remove from environment if potential for ongoing exposure
4. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
5. If patient awake and alert, place in position of comfort
6. Administer **Oxygen** prn *(MCG 1302)*
   **High-flow Oxygen 15L/min** for all patients with smoke inhalation, carbon monoxide exposure, or severe respiratory distress due to airway injury, regardless of $SpO_2$ ❶
7. Advanced airway prn *(MCG 1302)*
8. If patient has an Unmanageable Airway *(MCG 1302)*
   Initiate immediate transport to the EDAP and **CONTACT BASE**
9. Assess for signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244-P, Traumatic Injury*
10. For airway burns, treat in conjunction with *TP 1220-P, Burns*
11. For suspected carbon monoxide exposure, treat in conjunction with *TP 1238-P, Carbon Monoxide Poisoning*
12. For suspected exposure to hazardous materials, treat in conjunction with *TP 1240-P, HAZMAT*
13. For airway edema and/or stridor:
    < 1 year old: **Epinephrine (1mg/mL) 2.5mL via neb** per *MCG 1309* ❶
    ≥ 1 year of age: **Epinephrine (1mg/mL) 5mL via neb** per *MCG 1309* ❶
    Repeat x1 in 10 min prn
14. For wheezing/bronchospasm (consider also for cough):
    < 1 year of age: **Albuterol 2.5mg (3mL) via neb** per *MCG 1309* ❶
    ≥ 1 year of age: **Albuterol 5mg (6mL) via neb** per *MCG 1309* ❶
    Repeat x2 prn

    **CONTACT BASE** for additional Albuterol after maximum dose administered

15. Initiate CPAP for patients with moderate or severe respiratory distress, size longer than the length-based resuscitation tape (e.g., Broselow Tape™), and SBP ≥ 90mmHg
    Hold CPAP for patients with suspected pneumothorax, upper airway edema/obstruction, or other contraindications *(MCG 1315)* ❷

16. Initiate cardiac monitoring prn *(MCG 1308)*

17. Establish vascular access prn *(MCG 1375)*

18. For poor perfusion:
    **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309*
    For persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*

## SPECIAL CONSIDERATIONS

❶ Consider blow-by to avoid agitation in pediatric patients if a mask cannot be tolerated (e.g., infants and toddlers).

❷ Contraindications to CPAP include: ALOC with inability to follow commands or hold head up independently, active vomiting, facial trauma, or inability to protect airway. While CPAP may be used in pediatric patients, current ALS equipment does not support use of CPAP in pediatric patients who are not longer than the Broselow Tape™.

**Treatment Protocol: RESPIRATORY DISTRESS** **Ref. No. 1237-P**

*1200 Table of Contents*

**Base Hospital Contact: Required for respiratory failure, severe respiratory distress or hypoxia and for patients < 1 year old with moderate respiratory distress**

1. Use appropriate PPE ❶
2. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)* ❷ ❸
3. Maintain patient in position of comfort ❹
4. Administer **Oxygen** prn *(MCG 1302)* ❷
   **High flow Oxygen 15 L/min** for all patients with impending respiratory failure, suspected pneumothorax, inhalation injury, or carbon monoxide exposure
   Use **Oxygen** with caution in patients with known congenital heart disease
5. If patient with stridor or concern for airway obstruction, treat per *TP 1234-P, Airway Obstruction*
6. If allergic reaction suspected, treat per *TP 1219-P, Allergy*
7. Initiate cardiac monitoring prn *(MCG 1308)*
   For suspected dysrhythmia, perform 12-lead ECG and **CONTACT BASE**
   For patients with dysrhythmias, treat per *TP 1212-P, Cardiac Dysrhythmia - Bradycardia* or *TP 1213-P, Cardiac Dysrhythmia - Tachycardia* ❺
8. For bronchospasm, wheezing or asthma exacerbation:
   < 1 year of age: **Albuterol 2.5mg (3mL) via neb** per *MCG 1309* ❻
   ≥ 1 year of age: **Albuterol 5mg (6mL) via neb** per *MCG 1309* ❻
   May repeat x2 prn wheezing
   Document Provider Impression – *Respiratory Distress / Bronchospasm*
9. For deteriorating respiratory status despite albuterol:
   **Epinephrine (1mg/mL) 0.01mg/kg IM**, dose per *MCG 1309*
   Consider giving initially if wheezing with poor perfusion or severe respiratory distress ❼
   **CONTACT BASE** concurrent with **Epinephrine**
10. Establish vascular access prn *(MCG 1375)*
11. Initiate CPAP for alert patients with moderate or severe respiratory distress with length greater than the length-based resuscitation tape (Broselow Tape™) and SBP ≥ 90mmHg
    Hold CPAP for patients with suspected pneumothorax, upper airway edema/obstruction, or other contraindications *(MCG 1315)* ❽
12. For poor perfusion:
    **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309*
    For patients with persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*

13. Consider etiology ❾
    For bronchospasm, wheezing, bronchiolitis, or asthma exacerbation document Provider Impression – *Respiratory Distress / Bronchospasm*
    For other and unknown causes of respiratory distress document Provider Impression – *Respiratory Distress / Other*

14. If sepsis suspected, treat in conjunction with *TP 1204-P, Fever/Sepsis*

15. If accidental or intentional overdose or toxic exposure is suspected, treat in conjunction with *TP 1241-P, Overdose/Poisoning/Ingestion*

16. If inhalation injury suspected, treat in conjunction with *TP 1236-P, Inhalation Injury*

17. Perform needle thoracostomy for suspected tension pneumothorax *(MCG 1335)*

## SPECIAL CONSIDERATIONS

❶ Consider wearing surgical mask when caring for patients with respiratory distress of unclear etiology, which may be infectious.

❷ Patients with cyanotic congenital heart disease may be expected to have a measured SpO2 of 75-85%. Parents/caretakers may also know the patient's "normal" SpO2 range. It is important to ask caretakers and consider this possibility, as administration of Oxygen in these patients will worsen respiratory status.

❸ If BMV, CPAP or intubation performed, document Provider Impression as *Respiratory Arrest / Respiratory Failure.* BMV is the preferred method to support oxygenation and ventilation if the pediatric patient is in respiratory failure.

❹ Fowler's or Semi-Fowler's positioning is likely to be most comfortable for awake patients with respiratory distress. Avoid agitating children with suspected partial foreign body obstruction and/or impending airway failure. Allow parents/caretakers to handle/facilitate patient if safe to do so.

❺ In pediatric patients with respiratory distress, bradycardia is likely to represent a pre-terminal event, ensure that oxygenation and ventilation is adequate ; bradycardic dysrhythmia is persistent despite adequate oxygenation and ventilation before moving to *TP 1212-P, Cardiac Dysrhythmia – Bradycardia.* Respiratory rates vary by age and normal ranges can be found in *MCG 1309*.

❻ Consider blow-by to avoid agitation in pediatric patients if a mask cannot be tolerated (e.g., infants and toddlers).

❼ Epinephrine may be administered prior to albuterol as initial drug therapy in patients with Respiratory Failure due to bronchospasm.

❽ Contraindications to CPAP include: ALOC with inability to follow commands or hold head up independently, active vomiting, facial trauma, or inability to protect airway. While CPAP may be used in pediatric patients, current ALS equipment does not support use of CPAP in pediatric patients who are not longer than the length-based resuscitation tape (e.g., Broselow Tape™).

❾ Etiologies of respiratory distress in pediatrics are varied; etiologies may include the following:

- Bronchospasm due to asthma, bronchiolitis, reactive airway disease or viral illness – document Provider Impression as *Respiratory Distress / Bronchospasm*
- Pneumonia or Upper Respiratory Illness – document Provider Impression as *Respiratory Distress / Other*
- Croup or Bacterial Tracheitis – document Provider Impression as *Airway Obstruction*
- Spontaneous pneumothorax – document Provider Impression as *Respiratory Distress / Other*
- Acute Chest Syndrome in patients with Sickle Cell Disease – document Provider Impression as *Chest Pain – Not Cardiac.* For patients with history of Sickle Cell Disease presenting with chest pain, respiratory distress, and hypoxia, treat in conjunction with *TP 1202-P, General Medical.*

## Treatment Protocol: CARBON MONOXIDE EXPOSURE — Ref. No. 1238-P

*1200 Table of Contents*

1. Assess scene for potential hazards and number of patients
2. Remove patient from the source of carbon monoxide ❶
3. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
4. Administer **high-flow Oxygen 15 L/min** *(MCG 1302)*
5. Advanced airway prn *(MCG 1302)*
6. Initiate cardiac monitoring prn *(MCG 1308)*
7. If carbon monoxide monitor available, consider measuring CO level ❷
   Report and document results
8. Establish vascular access prn *(MCG 1375)*
9. For altered level of consciousness, treat in conjunction with *TP 1229-P, ALOC*
10. Assess for signs of trauma
    For traumatic injury, treat in conjunction with *TP 1244-P, Traumatic Injury*
11. For poor perfusion:
    **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309*
    For persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*
12. For suspected exposure to hazardous materials, treat in conjunction with *TP 1240-P, HAZMAT* ❸

## SPECIAL CONSIDERATIONS

❶ Symptoms of carbon monoxide poisoning include headache, altered level of consciousness, malaise, nausea, dizziness and unresponsiveness. Consider carbon monoxide when multiple persons in same location present with any of these symptoms.

❷ The measured carbon monoxide level should not impact the transport decision. It will be helpful for hospital treatment of the exposure.

❸ Exposure to certain chemicals can be associated with carbon monoxide poisoning. For example, methylene chloride (dichloromethane) is an industrial solvent and a component of paint remover. It is metabolized to carbon monoxide by the liver and may cause carbon monoxide toxicity if inhaled or ingested.

## Treatment Protocol: DYSTONIC REACTION — Ref. No. 1239-P

*1200 Table of Contents*

**Base Hospital Contact Required.**

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
2. Establish vascular access prn *(MCG 1375)*
3. Assess for medication exposure as the potential cause of the dystonic reaction ❶ ❷
4. **CONTACT BASE** to confirm Provider Impression of *Dystonic Reaction*
5. **Diphenhydramine (50mg/mL) 1mg/kg slow IV push**, dose per *MCG 1309*
   If unable to obtain venous access, **Diphenhydramine (50mg/mL) 1mg/kg deep IM**, dose per *MCG 1309*
   Repeat in 15 min x1 prn, maximum 2 total doses

## SPECIAL CONSIDERATIONS

❶ The table below shows common medications that can cause an acute dystonic reaction.

| Generic Name | Trade Name | General Use |
|---|---|---|
| Prochlorperazine | Compazine | Antiemetic, migraine headache |
| Hydroxyzine | Vistaril, Atarax | Antiemetic, antipruritic |
| Promethazine | Phenergan | Antiemetic, antipsychotic |
| Haloperidol | Haldol | Antipsychotic, Tourette's syndrome |
| Thioridazine | Mellaril | Antipsychotic |
| Alprazolam | Xanax | Antianxiety |
| Metoclopramide | Reglan | Antiemetic |
| Droperidol | Inapsine | Antiemetic, antipsychotic |
| Fluphenazine | Prolixin | Neuralgia, antipsychotic |

❷ Signs and symptoms of a dystonic reaction include anxiety, agitation and associated involuntary muscle spasms of the head, neck, face, eyes or trunk. This often results in an inability to retract the tongue into the mouth, forced jaw opening, facial grimacing, and/or eye deviation.

**Treatment Protocol: HAZMAT** **Ref. No. 1240-P**

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**Contact Medical Alert Center (MAC) for all MCIs prior to transport otherwise notify the receiving hospital ❶**

1. Secure area, establish incident site, and don protective equipment/gear appropriate for hazardous material exposure according to the provider agency protocol

2. If MCI, begin triage *(Ref. 519.2 and Ref. 519.5)*
   Provide MAC with the following incident information: properties of contaminant, type of decontamination performed, signs/symptoms, and smells

3. Remove patient from source if safe to do so, and move to decontamination area prn

4. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

5. Administer **Oxygen** prn *(MCG 1302)*

6. Remove patient's clothing

7. Flush skin, eyes and mucous membranes with copious amounts of water
   For eye involvement, irrigate with **Normal Saline 1L** during transport; allow patient to remove contact lenses if possible

8. Initiate cardiac monitoring *(MCG 1308)*
   Perform 12-lead ECG prn
   For patients with dysrhythmias, treat in conjunction with *TP 1212-P, Cardiac Dysrhythmia - Bradycardia* or *TP 1213-P, Cardiac Dysrhythmia - Tachycardia*

9. Establish vascular access prn *(MCG 1375)*

10. Assess for signs of trauma
    If traumatic injury suspected, treat in conjunction with *TP 1243-P, Traumatic Injury*

11. For poor perfusion:
    **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309*
    For persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*

12. Consider contacting the Poison Control Center in conjunction with the Base Hospital for assistance with management of toxins *(Ref. 805)*

NERVE AGENT EXPOSURE

13. If multiple symptomatic patients with > 50 victims involved, request EMS CHEMPACK from the MAC *(Ref. 1108)*

14. Pediatric patients **longer** than the length-based resuscitation tape (Broselow™) should be treated according to adult doses which are listed below and found in *TP 1240, HAZMAT* ❷
    Mild Exposure: **1 DuoDote IM**
    Moderate Exposure: **2 DuoDotes IM, one after the other**
    Severe Exposure: **3 DuoDotes IM, one after the other**

15. Pediatric patients between **3 – 36 kilograms** body weight based on measurement using the length-based resuscitation tape (Broselow™) should be treated as follows: ❷
    Mild Exposure: **Atropine (0.1mg/mL) 0.02mg/kg IV/IM**, dose as per *MCG 1309*
    Moderate Exposure: **1 DuoDote IM**
    Severe Exposure: **1 or 2 DuoDote(s) IM**, one after the other when applicable, based on the table below:

| Avg Wt (KG) | Color | Initial Emergency Dose |
|---|---|---|
| 4 | Grey | 1 DuoDote™ |
| 6.5 | Pink | |
| 8.5 | Red | |
| 10.5 | Purple | |
| 13 | Yellow | |
| 16.5 | White | |
| 20.5 | Blue | |
| 26 | Orange | 2 DuoDotes™ |
| 33 | Green | |

*Duodote (2.1mg Atropine/600 mg 2PAM Chloride)

16. For seizure, treat in conjunction with *TP 1231-P, Seizure*

17. For EMS CHEMPACK Deployment:
    EMS CHEMPACK may be utilized for repeat dosing as necessary
    Repeat dose prn 5 minutes after initial emergency DuoDote

| **Avg Wt (KG)** | **Color** | **Repeat Atropine Dose Multi-dose vial (0.4mg/mL) 0.1mg/kg IV or IM** | **2PAM Chloride* Multi-dose vial (50mg/mL) 50 mg/kg IM or IV** | **Diazepam** Multi-dose vial (5mg/mL) 0.1mg/kg IV or IM** prn seizure |
|---|---|---|---|---|
| 4 | Grey | 0.4mg, 1mL | 200mg, 4mL | 0.4 mg, 0.08mL |
| 6.5 | Pink | 0.7mg, 1.75mL | 325mg, 6.5mL | 0.6 mg, 0.12mL |
| 8.5 | Red | 0.9mg, 2.25mL | 425mg, 8.5mL | 0.8 mg, 0.16mL |
| 10.5 | Purple | 1mg, 2.5mL | 525mg, 10.5mL | 1 mg, 0.2mL |
| 13 | Yellow | 1.3mg, 3.25mL | 650mg, 13mL | 1.3 mg, 0.26mL |
| 16.5 | White | 1.6mg, 4mL | 825mg, 16.5mL | 1.6 mg, 0.32mL |
| 20.5 | Blue | 2mg, 5mL | 1000mg, 20mL | 2 mg, 0.4mL |
| 26 | Orange | 2.6mg, 6.5mL | 1000mg, 20mL | 2.6 mg, 0.52mL |
| 33 | Green | 3.3mg, 8.25mL | 1000mg, 20mL | 3.3 mg, 0.66mL |

Atropine multi-dose vials can provide closer to ideal dosages, if available
*Repeat dose 60 minutes after Initial Emergency DuoDote
** For seizure, if utilizing the CHEMPACK, treat seizure with Diazepam as per above table.
IV preferred route for Diazepam but can administer IM if not IV available
May repeat diazepam dose x1 in 5 min, maximum total dose 5mg
If diazepam not available treat in conjunction with *TP 1231-P, Seizure*

If the child is too tall for the pediatric resuscitation tape and adult size, treat per adult protocol *TP 1240, HAZMAT*

ORGANOPHOSPHATE EXPOSURE

18. For heart rate < 60bpm, hypotension, respiratory depression and/or extreme salivation
    **Atropine (0.1mg/mL) 0.05mg/kg IV/IO**
    May be repeated every 5 min, maximum total dose 5mg

    For seizure, treat in conjunction with *TP 1231-P, Seizure*

RADIOLOGIC EXPOSURE

19. If radiation contamination is suspected, confirm by using appropriate detection devices available through Department of Public Health (DPH), Radiation Management at (213) 989-7140

20. If radiation contamination present, identify the cause of the contamination ❸
    Internal Radiation is exposure through open wound, ingestion or inhalation of radioactive materials
    External Radiation is exposure through a Radiological Dispersal Device (RDD), Radiological Material Release (RMR) or Radiological Exposure Device (RED)

21. For External Radiation:
    If a RDD is used and in the absence of any other information, evacuate 1,650 feet in all directions from the detonation site and then contact the MAC ❸
    Notify DPH Radiation Management at (213) 989-7140 if departmental HAZMAT team is not available and prolonged exposures are expected ❹

22. For patients with a life-threatening condition:
    Treat using appropriate treatment protocol based on complaints in conjunction with decontamination
    Remove the outer clothing and utilize containment mitigation techniques before transport

23. For patients without a life-threatening condition:
    Decontaminate using departmental protocols
    Treat using appropriate treatment protocol based on signs and symptoms

24. Asymptomatic and minimal exposure suspected:
    Decontaminate and release patient if appropriate ❺

## SPECIAL CONSIDERATIONS

❶ If MCI, MAC should be contacted for 5 or more patients and coordinate all destination decisions otherwise the Base Hospital should be notified as specified in this protocol, and if no Base Hospital required then the receiving hospital will be notified.

❷ Nerve agent exposure symptom severity:
SEVERE: severe respiratory distress, respiratory arrest, cyanosis, extreme SLUDGE (salivation, lacrimation, urination, defecation, gastrointestinal distress and emesis) seizures, unconsciousness
MODERATE: miosis, rhinorrhea, shortness of breath, vomiting, diarrhea
MILD**:** miosis, rhinorrhea and increased salivation

❸ Radiation Exposure Safety:
Exposure to victims with internal radiation poses low-to-no risk to EMS personnel
Exposure to victims with external radiation exposure poses low-to-moderate risk to EMS personnel
Remember the following principles:
*Time:* limit time with the victim to a minimum
*Distance:* the further away from the source, the smaller the dose received.
*Shielding:* "Turnouts" will protect from alpha and beta emitters, wear respiratory protection if particulate matter (i.e., dust or powder) present

❹ The HAZMAT team, MAC, or Department of Public Health Radiation Management will be able to redefine boundaries, establish radiation dose guidelines, assist with monitoring and decontamination procedures, and provide support to on-scene responders. These resources may also refer to *Emergency Response Guidebook* for other recommended scene precautions.

❺ If number of patients exceeds available resources, asymptomatic patients with minimal exposure may be released for home decontamination.

**Treatment Protocol: OVERDOSE / POISONING / INGESTION** **Ref. No. 1241-P**

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1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Establish vascular access prn *(MCG 1375)* ❶

4. For suspected opioid overdose with altered mental status and hypoventilation/apnea:
   **Naloxone (1mg/mL) 0.1mg/kg IM/IN/IV**, dose per *MCG 1309* ❶
   Maximum dose all routes 8 mg
   Titrate to adequate respiratory rate and tidal volume

5. If partial response to Naloxone and strong suspicion for opioid overdose:
   **CONTACT BASE** for additional doses of **Naloxone**

6. For respiratory distress, treat in conjunction with *TP 1237-P, Respiratory Distress*

7. Initiate cardiac monitoring prn *(MCG 1308)*
   For suspected cardiac ischemia or dysrhythmia, perform 12-lead ECG and **CONTACT BASE**
   For patients with dysrhythmias, treat in conjunction with *TP 1212-P, Cardiac Dysrhythmia - Bradycardia* or *TP 1213-P, Cardiac Dysrhythmia - Tachycardia*

8. Evaluate for other causes of altered level of consciousness *(MCG 1320)*

9. Assess for signs of trauma
   If traumatic injury suspected, treat in conjunction with *TP 1244-P, Traumatic Injury*

10. Check blood glucose
    If < 60mg/dL or > 250mg/dL, treat in conjunction with *TP 1203-P, Diabetic Emergencies*

11. For alcohol intoxication, document Provider Impression – *Alcohol Intoxication*
    For other intoxications, including overdose or ill effects of prescription medications and illicit substances, document Provider Impression – *Overdose/Poisoning/Ingestion*

12. For poor perfusion: ❷
    **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309*
    For persistent poor perfusion, treat in conjunction with *TP 1207-P, Shock/Hypotension*

13. **CONTACT BASE** to discuss antidote administration

    Calcium channel blocker overdose: **Calcium chloride (100mg/mL) 20mg/kg slow IV push**, dose per *MCG 1309*
    Tricyclic antidepressant overdose: **Sodium bicarbonate (1mEq/mL) 1mEq/kg slow IV push**, dose per *MCG 1309*

14. Assess for co-ingestion of other substances

15. Consider contacting the Poison Control Center (1-800-222-1222) in conjunction with Base for assistance with identification and management of unknown medications/toxins *(Ref. 805)*

16. Bring container of ingested substance to the emergency department with patient

17. If patient refuses treatment or transport, **CONTACT BASE**
    Patient/parent must demonstrate decision-making capacity (*Ref. 834*)
    If EMS personnel or Base Hospital determines it is necessary to transport the patient against their will and/or the will of the parent, contact law enforcement for assistance ❷

## SPECIAL CONSIDERATIONS

❶ The first priority for apneic patients after narcotic overdose is to begin positive pressure ventilation. Once ventilations are established, naloxone should be administered with the goal of restoring spontaneous ventilations. Vascular access should not take priority over initial treatment with Naloxone (IN or IM) for patients with suspected opiate overdose. Patients who are awake and alert with normal respirations after naloxone therapy may not require IV access or additional doses of naloxone.

❷ EMS Personnel are mandated reporters of child abuse and neglect. Communicate concerns about child abuse and/or neglect to accepting ED staff when home suggests children could be at risk for harm (e.g., unkempt home, evidence of drug or alcohol abuse, unsafe living conditions, known or suspected domestic violence), when the history does not match with the severity of physical findings (e.g., child posturing after a roll off the couch), when patterned injury or burns or noted (e.g., circular burns as from a cigarette, whip marks on the skin, burns of both hands or feet), or when child reports physical or sexual abuse. Children < 3 years of age and those with developmental delay are at increased risk of abuse. This must also be accompanied by notification to Department of Children and Family Services (DCFS).

**Treatment Protocol: CRUSH INJURY / SYNDROME** **Ref. No. 1242-P**

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**Base Hospital Contact: Required for patients at risk for crush syndrome ❶ or prolonged entrapment > 30 minutes. ❷**

1. For multi-system trauma, treat in conjunction with *TP 1244-P, Traumatic Injury*

2. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

3. Provide spinal motion restriction (SMR) if indicated *(MCG 1360)*
   For alert patients, logroll patient off backboard (if used during extrication) and onto gurney prior to transport ❸

4. Administer **Oxygen** prn *(MCG 1302)*

5. For anticipated prolonged extrication (> 30 minutes)
   Consider activating the Hospital Emergency Response Team (HERT), *Ref. 817*

6. Establish vascular access immediately *(MCG 1375)*
   **CONTACT BASE** to discuss placement of an IO if unable to establish IV access ❹

7. **Normal Saline 20mL/kg IV/IO rapid infusion** per *MCG 1309* as soon as possible and prior to release of compressive force
   Repeat x1 for a **total of 40mL/kg IV/IO**, maximum prior to Base contact 2L
   **CONTACT BASE** to obtain order for additional **Normal Saline 20mL/kg IV/IO** if persistent entrapment ❹

8. Initiate cardiac monitoring *(MCG 1308)*
   Assess for signs of hyperkalemia

9. Apply blanket to keep patient warm ❺

10. If evidence of hyperkalemia (peaked T-waves in multiple leads, absent p-waves, and/or widened QRS complex) administer: ❻
    **Calcium Chloride (100mg/mL) 20mg/kg slow IV/IO push**, dose per *MCG 1309*
    Repeat x1 for persistent ECG abnormalities
    **Sodium Bicarbonate (1mEq/mL) 1 mEq/kg slow IV/IO push**, dose per *MCG 1309*
    Repeat x1 for persistent ECG abnormalities
    **Albuterol 5mg (6mL) via neb**, repeat continuously until hospital arrival ❼
    **CONTACT BASE** for persistent ECG abnormalities to obtain order for additional medications ❽

11. For pain management: refer to *MCG 1345, Pain Management*
    Dose per *MCG 1309*

12. For nausea or vomiting in patients ≥ 4 years old:
    **Ondansetron 4mg ODT**

13. For CRUSH INJURY without risk of crush syndrome
    Release compression and extricate patient
    Monitor cardiac rhythm for signs of hyperkalemia

14. Consider pre-position a tourniquet prior to extrication in order to prevent hemorrhage upon release of compression

15. For patients at risk for CRUSH SYNDROME ❶, administer the following medications 5 minutes prior to extrication: ❻ ❽ ❾
    **Calcium Chloride (100mg/mL) 20mg/kg slow IV/IO push**, dose per *MCG 1309*
    **Sodium Bicarbonate (1mEq/mL) 1mEq/kg slow IV/IO push**, dose per *MCG 1309*
    **Albuterol 5mg (6mL) via neb**, repeat immediately x1

    If unable to establish vascular access while entrapped
    Place tourniquet PRIOR to extrication ❿

## SPECIAL CONSIDERATIONS

❶ Crush syndrome is a systemic illness characterized by dysrhythmias and shock. It results from toxins released from crushed muscle tissue into the blood stream. Patients are at risk for crush syndrome if they have all of the following: 1) circumferential compression causing crush injury; AND 2) involvement of a large muscle group (lower extremity including the thigh(s) and/or pelvic girdle or upper extremity including the pectoral girdle); AND 3) entrapment for at least 1 hour. The risk of crush syndrome increases with the amount of muscle involved and the duration of the entrapment.

❷ For patients requiring transport to a Pediatric Trauma Center per *Ref. 506*, which is also a Base Hospital, contact receiving Pediatric Trauma Center for Base Medical Direction and notification. If the Base Hospital is contacted and the Base redirects transport to a Pediatric Trauma Center, Base personnel will notify the Pediatric Trauma Center.

❸ A backboard is not required for spinal motion restriction (SMR) and may cause harm as well as increased pain. Patients should not be transported on a backboard for the purpose of SMR. If a backboard is used for extrication, patients who are alert should then be logrolled onto the gurney prior to transport. The backboard may be used during patient transport for splinting of multiple simultaneous extremity fractures or to assist with maneuvering the unconscious patient. In all cases, the backboard should be removed immediately if causing respiratory compromise.

❹ Patients with crush injury require large volumes of fluid resuscitation. Patients with prolonged entrapment will require maintenance fluids. IO access should be considered when attempts at IV access are not successful if: 1) prolonged entrapment is likely (> 30 minutes) and/or 2) there are signs of hyperkalemia and/or 3) there is risk of crush syndrome requiring medication administration.

❺ Infants and small children are at high risk for hypothermia due to their large surface area to body mass ratio, reduced ability to shiver, and limited body fat.

❻ Flush the IV line with normal saline after each medication. Administration of Calcium and Bicarbonate together will cause precipitation of the medication.

❼ Dosing differs from MCG 1309; higher doses of albuterol are required to treat hyperkalemia. Consider blow-by to avoid agitation in pediatric patients if a mask cannot be tolerated (e.g., infants and toddlers).

❽ The duration of action of the medications is approximately 30 minutes. Contact Base to discuss re-dosing the medications if persistent signs of hyperkalemia or if the patient will not arrive at the hospital within 30 minutes.

❾ These medications should be administered prior to release of the compressive force to prevent complications from the cellular toxins that enter the circulation upon extrication of the patient. Calcium stabilizes the cardiac muscle and should be administered first.

❿ Tourniquet placement PRIOR to extrication is a last resort for patients who are at risk for crush syndrome in whom vascular access cannot be established or when transport time is anticipated to be > 30 minutes. The tourniquet must completely occlude venous and arterial flow in order to protect the patient from crush syndrome. Establish vascular access and cardiac monitoring immediately after extrication and be prepared to treat symptoms of crush syndrome.

**Treatment Protocol: TRAUMATIC ARREST** **Ref. No. 1243-P**

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**Base Hospital Contact: Contact the Trauma Center for patients not meeting criteria for determination of death per *Ref 814*.** ❶

1. Prioritize rapid transport for patients who do not meet *Ref. 814* ❷
2. Immediately control major bleeding *(MCG 1370)*
   Apply tourniquet prn
3. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)* ❸
   Ventilate with **high flow Oxygen 15L/min**
4. Begin chest compressions
5. Perform bilateral needle thoracostomy for suspected tension pneumothorax *(MCG 1335)*
6. Initiate cardiac monitoring *(MCG 1308)*
   Assess cardiac rhythm
7. If shockable rhythm (V-Fib/V-Tach) identified:
   Defibrillate V-Fib/V-Tach, dose per *MCG 1309*
8. Provide spinal motion restriction (SMR) if indicated *(MCG 1360)*
   Do not delay transport for SMR ❹
9. Establish vascular access en route *(MCG 1375)*
   Establish IO if unable to establish IV access
10. **Normal Saline 20mL/kg IV/IO rapid infusion** per *MCG 1309* x2**,** maximum 2L
    Administer through two sites simultaneously if possible

## SPECIAL CONSIDERATIONS

❶ EMS Personnel are mandated reporters of child abuse and neglect, and a report should be made when suspected as per *Ref. 822*. Communicate suspicion for child abuse and/or neglect to accepting ED staff when home suggests children could be at risk for harm (e.g., unkept home, evidence of drug or alcohol abuse, unsafe living conditions, known or suspected domestic violence), when the history does not match with the severity of physical findings (e.g., child posturing after a roll off the couch), when patterned injury or burns or noted (e.g., circular burns as from a cigarette, whip marks on the skin, burns of both hands or feet), or when child reports physical or sexual abuse. Children < 3 years of age and those with developmental delay are at increased risk of abuse. This must also be accompanied by notification to the Department of Children and Family Services (DCFS).

❷ Rapid transport after hemorrhage control is the priority for all patients with severe trauma. With the exception of hemorrhage control, needle thoracostomy, and initiation of CPR, all other procedures may be deferred for immediate ambulance loading of patient and performed en route.

❸ Bag-mask ventilation is the preferred airway in all cardiac arrest patients. Advanced airway should be placed in patients authorized per *MCG 1302* if there is an inability to maintain adequate ventilation despite basic airway maneuvers.

❹ For patients in traumatic arrest, spinal motion restriction (SMR) using a backboard causes harmful delays in care. However, a backboard may be helpful to assist in patient movement and to support chest compressions.

**Treatment Protocol: TRAUMATIC INJURY** **Ref. No. 1244-P**

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**Base Hospital Contact: Required for patients who meet Trauma Center criteria or guidelines.** ❶ ❷

**Notify the receiving Pediatric Trauma Center as soon as possible for all patient transports.**

1. Immediately control major bleeding *(MCG 1370)*
   Apply tourniquet prn
2. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*
3. For traumatic arrest, treat per *TP 1243-P, Traumatic Arrest*
4. Provide spinal motion restriction (SMR) if indicated *(MCG 1360)*
   For alert patients, logroll patient off the backboard (if used during extrication) and onto gurney prior to transport ❸
5. Administer **Oxygen** prn *(MCG 1302)*
   **High flow Oxygen 15L/min** for all patients with shock or with suspected traumatic brain injury
6. If patient has an Unmanageable Airway: *(MCG 1302)*
   Initiate immediate transport to EDAP and **CONTACT BASE** en route
7. For anticipated prolonged extrication (> 30 minutes)
   Consider activating the Hospital Emergency Response Team (HERT), *Ref. 817*
8. For crush injury, treat in conjunction with *TP 1242, Crush Injury/Syndrome*
9. Initiate cardiac monitoring prn *(MCG 1308)*
10. Establish vascular access prn *(MCG 1375)*
11. Apply blanket to keep patient warm ❹
12. Consider medical condition preceding accident and refer to appropriate treatment protocol prn ❺

MULTI-SYSTEM TRAUMA

13. Perform needle thoracostomy for suspected tension pneumothorax *(MCG 1335)*
14. For an open or sucking chest wound, cover with a commercially available vented chest seal or vented (3-sided) occlusive dressing ❻
15. For poor perfusion with hypotension:
    **Normal Saline 20mL/kg IV/IO rapid infusion** per *MCG 1309* ❼
    **CONTACT BASE** to discuss further fluid resuscitation
16. Cover eviscerated organs with a moist non-adhering dressing

17. For pain management: refer to *MCG 1345, Pain Management*
    Dose per *MCG 1309*

18. For nausea or vomiting in patients ≥ 4 years old: ❽
    **Ondansetron 4mg ODT**

ISOLATED HEAD INJURY

19. Administer **high flow Oxygen 15L/min** ❾
    Continually assess patient's airway and ventilation status, assist prn ❿

20. For SBP ≤ 70mmHg:
    **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309* to maintain SBP > 70mmHg ⓫
    **CONTACT BASE** for persistent poor perfusion to obtain order for additional **Normal Saline 20mL/kg IV**

21. For nausea or vomiting in patients ≥ 4 years old: ❽
    **Ondansetron 4mg ODT**

22. Transport with head of gurney elevated to 30 degrees when possible ⓬

23. If patient develops seizure activity, treat in conjunction with *TP 1231-P, Seizure*

24. For pain management: refer to *MCG 1345, Pain Management*
    Dose per *MCG 1309*

ISOLATED EXTREMITY INJURY

25. For pain management: refer to *MCG 1345, Pain Management*
    Dose per *MCG 1309*

26. For poor perfusion:
    **Normal Saline 20mL/kg IV rapid infusion** per *MCG 1309*
    **CONTACT BASE** for persistent poor perfusion to obtain order for additional **Normal Saline 20mL/kg IV**

27. Splint and dress injuries prn
    Poor neurovascular status distal to injury – realign and stabilize extremity
    Mid-shaft femur – apply traction splint per manufacturer guidelines ⓭
    All other fractures/dislocations – splint in position of comfort

## SPECIAL CONSIDERATIONS

❶ EMS Personnel are mandated reporters of child abuse and neglect, and a report should be made when suspected as per *Ref. 822*. Communicate suspicion for child abuse and/or neglect to accepting ED staff when home suggests children could be at risk for harm (e.g., unkept home, evidence of drug or alcohol abuse, unsafe living conditions, known or suspected domestic violence), when the history does not match with the severity of physical findings (e.g., child posturing after a roll off the couch), when patterned injury or burns or noted (e.g., circular burns as from a cigarette, whip marks on the skin, burns of both hands or feet), or when child reports physical or sexual abuse. Children < 3 years of age and those with developmental delay are at increased risk of abuse. This must also be accompanied by notification to the Department of Children and Family Services (DCFS).

❷ For patients requiring transport to a Pediatric Trauma Center per *Ref. 506*, which is also a Base Hospital, contact receiving Pediatric Trauma Center for Base Medical Direction and notification. If the Base Hospital is contacted and the Base redirects transport to a Pediatric Trauma Center, Base personnel will notify the Pediatric Trauma Center.

❸ A backboard is not required for spinal motion restriction (SMR) and may cause harm as well as increased pain. Patients should not be transported on a backboard for the purpose of SMR. If a backboard is used for extrication, patients who are alert should then be logrolled onto the gurney prior to transport. The backboard may be used during patient transport for splinting of multiple simultaneous extremity fractures or to assist with maneuvering the unconscious patient. In all cases, the backboard should be removed immediately if causing respiratory compromise.

❹ Infants and small children are at high risk for hypothermia due to their large surface area to body mass ratio, reduced ability to shiver, and limited body fat.

❺ Traumatic events may be due to a medical emergency, e.g. seizure.

❻ Placement of a vented dressing can prevent conversion of an open pneumothorax to a tension pneumothorax. However, tension pneumothorax may still develop in the presence of a vented dressing and should be treated with needle thoracostomy. Furthermore, needle thoracostomy in a patient with evidence of tension pneumothorax should not be delayed for placement of dressing.

❼ Fluid resuscitation increases vascular pressure and dilutes clotting factors, which may increase internal bleeding. For patients at risk of internal hemorrhage, fluids should only be administered for SBP < 70mmHg **and** other signs of poor perfusion, titrated to maintain SBP ≥ 70mmHg. In patients with penetrating trauma, permissive hypotension (withholding fluids if patient has normal mental status) is preferred to reduce ongoing blood loss. Patients with ALOC or SBP < 70mmHg should receive fluids until their mental status and SBP improve. Permissive hypotension is contraindicated in patients with possible traumatic brain injury.

❽ Vomiting should be prevented and/or immediately treated in patients with head injury, since it increases intra-cranial pressure and can compromise the patient's airway.

❾ Any hypoxic episode, even brief, is associated with worse patient outcome for patients with traumatic brain injury.

⑩ Hyperventilation reduces blood flow to the brain by reducing $CO_2$ and is associated with worse outcomes in severe head injuries. The exception to this is presence of elevated intra-cranial pressure (ICP) with signs of impending herniation (severe ALOC without motor response or with posturing and a unilateral 'blown pupil'). In this case, **mild** hyperventilation of approximately 20-30 breaths per minute, depending on the patient's age, should be used to maintain an $ETCO_2$ of 30-35mmHg. This mild hyperventilation reduces blood flow to the brain to decrease ICP until the patient receives definitive surgical care. For patients without elevated ICP, hyperventilation is harmful.

⑪ Any hypotension increases mortality in patients with traumatic brain injury. Normal Saline should be initiated to maintain SBP ≥ 70mmHg at all times but can be withheld if the blood pressure is normal. Although <70 mmHg is used as a generic cut-off for hypotension in pediatric patients the level of systolic blood pressure varies by age and those thresholds are found in *MCG 1309* and can be used in decisions for fluid resuscitation.

⑫ A head-elevated position at about 30 degrees reduces intra-cranial pressure and improves respiratory status. Reverse Trendelenburg is an option for patients that cannot be seated. Patients who are hypotensive should be maintained supine unless airway compromise requires repositioning.

⑬ Open femur fracture is not a contraindication to apply the traction splint. If the bone is protruding and there is gross contamination, wash with saline prior to applying the splint.

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| MEDICAL CONTROL GUIDELINES | Ref. No. | Date of Last Revision |
|---|---|---|
| Code of Ethics | 1301 | 07-01-18 |
| Airway Management and Monitoring | 1302 | 07-01-18 |
| Algorithm for Cath Lab Activation | 1303 | 06-01-18 |
| Cardiac Monitoring/12-Lead ECG | 1308 | 04-01-19 |
| Color Code Drug Doses LA County Kids | 1309 | 09-01-19 |
| Conducted Electrical Weapon | 1310 | 06-01-18 |
| Continuous Positive Airway Pressure | 1315 | 06-01-18 |
| Drug Reference | 1317 | 07-01-18 |
| Adenosine | 1317.1 | 01-01-20 |
| Albuterol | 1317.3 | 07-01-18 |
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| Glucagon | 1317.21 | 07-01-18 |
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| Morphine Sulfate | 1317.27 | 04-01-19 |
| Naloxone | 1317.29 | 01-01-20 |
| Nitroglycerin | 1317.31 | 07-01-18 |
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| Pralidoxime Chloride (DuoDote™) | 1317.37 | 07-01-18 |
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| Level of Consciousness | 1320 | 06-01-18 |
| Mechanical Circulatory Support (MCS) devices | 1325 | 06-01-18 |
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## Medical Control Guideline: PREHOSPITAL CODE OF ETHICS

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The Emergency Medical Services (EMS) System consists of health care professionals that include EMTs, paramedics, nurses, physicians, educators, and administrators. This Code defines our ethical responsibilities and beliefs in the following principles for guiding practice…

### RESPECT

- Recognize, acknowledge, listen, and encourage all members of the health care team
- Uphold and maintain patient confidentiality and privacy
- Honor the patient's rights and autonomy to make decisions regarding their medical care

### CARING

- Provide professional, compassionate, and competent care to all patients
- Advocate for the patient's care needs
- Participate and support the advancement of the EMS system through education, training, and continuous quality improvement
- Support prehospital care research to validate, improve and promote evidence-based practice

### FAIRNESS

- Provide competent medical care to all persons with compassion and respect for human dignity regardless of nationality, race, creed, religion, sex, status, or financial considerations
- Ensure justice by treating all individuals equally and fairly
- Encourage justice by treating all individuals equally and fairly
- Encourage and support impartiality in the delivery of patient care. Decisions should be absent of bias, prejudice or benefit one person over another for improper reasons but based on objective criteria

### INTEGRITY

- Promote honesty, truthfulness, and consistency in action and practice by all members of the health care team
- Demonstrate responsibility and accountability by maintaining licensure/certification, operating within one's scope of practice, and providing thorough documentation
- Inspire fidelity by adhering to professional code(s) of ethics, following policies and procedures, ensuring team members are respectful, competent and capable of performing duties, and honoring agreements with patients and colleagues
- Maintain trustworthiness and excellence in the delivery of patient care and medical practice

## Medical Control Guideline: AIRWAY MANAGEMENT AND MONITORING

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**DEFINITIONS:**

**Advanced Airway Maneuvers:** Use of a cuffed endotracheal tube or King LTS-D to facilitate ventilation and/or oxygenation in a patient who is unable to protect his/her own airway or maintain spontaneous respiration.

**Basic Airway Maneuvers:** Manual airway positioning, obstructed airway maneuvers, bag-mask-ventilation (BMV), and/or use of airway adjuncts (nasopharyngeal or oropharyngeal airways) to provide ventilation and/or to facilitate oxygenation in a patient who is unable to maintain adequate spontaneous ventilation.

**Hypoxia**: Lower than normal oxygen ($O_2$) concentration in the blood resulting in diminished availability of $O_2$ to the body tissues.

**Hyperoxia**: Exposure of cells, tissues and organs to an excess supply of oxygen

**Hypoventilation**: Ventilation that is inadequate to support gas exchange in the lung.

**Manageable Airway**: Ventilation is effective, such that one of the following holds true:

a. Patient is breathing adequately through a patent airway.
b. Patient is mechanically ventilated effectively via bag-mask-ventilation (BMV), King LTS-D or endotracheal tube (ET).

**Unmanageable Airway**: The patient is not able to breathe adequately and EMS personnel are not able to maintain the patient's airway and/or cannot ventilate the patient effectively via BMV, King LTS-D or ET.

**Unprotected Airway**: The patient is not able to protect his/her airway from the risk of aspiration and is not being ventilated via a cuffed ET in the trachea. Ventilation may be effective with BMV or with insertion of a King LTS-D, but the airway is not fully protected from risk of aspiration.

**PRINCIPLES:**

1. Signs and symptoms of hypoxia may include $O_2$ saturation ($SpO_2$) < 94% with respiratory distress, altered mental status or changes in skin signs.

2. Providing $O_2$ to emergency medical services (EMS) patients may be a lifesaving procedure. Both hypoxia and hyperoxia are potentially harmful; therefore, $O_2$ should be treated like any other drug and administered when indicated.

3. Hypoventilation results in high arterial carbon dioxide ($CO_2$). In general, this results in an end-tidal $CO_2$ > 45mmHg on capnography, but end-tidal $CO_2$ may not reflect arterial $CO_2$ when lung disease and/or increased dead space are present.

4. Basic airway maneuvers should be performed prior to advanced airway maneuvers on patients with hypoventilation.

5. Techniques and procedures utilized for airway management may vary based on operational environment, patient condition and the EMS personnel's level of training and expertise.

6. Patients with unmanageable airway shall be transported to the most accessible receiving facility.

7. Advanced airway tube placement must be verified and continually monitored.
   a. In Los Angeles County, Endotracheal intubation (ETI) is considered a definitive airway.
   b. King LTS-D tubes may not protect the patient from aspiration. It is recommended that this be used when prehospital personnel are unable to secure a definitive airway (ETI) or when patient's medical condition or anatomy predicts likely failure of ETI.

8. Pulse oximetry and capnography are essential tools for monitoring the effectiveness of airway management. While pulse oximetry monitors oxygenation, it does not assess adequacy of ventilation. Capnography is necessary to monitor ventilation. Capnography is most accurate with proper two-person BMV technique or advanced airway.

**GUIDELINES:**

1. If pulse oximetry is not available (BLS Unit) and the patient is in mild or moderate respiratory distress, provide $O_2$ with nasal cannula at 2-6 liters per minute.

2. When available, use pulse oximetry to guide oxygen therapy. The desired $SpO_2$ for most non-critical patients is 94-98%. Document pulse oximetry reading.

3. Initiate immediate high-flow $O_2$ (15 L/min) for the following conditions:
   a. Respiratory Arrest
   b. Cardiac Arrest
   c. Shock/Poor Perfusion
   d. Anaphylaxis
   e. Traumatic Brain Injury
   f. Carbon Monoxide Exposure
   g. Suspected Pneumothorax
   h. Hypoxia <94% not corrected with nasal cannula or simple mask

4. If high-flow $O_2$ is indicated, use one of the following $O_2$ delivery system based on the patient's condition:
   a. Non-rebreather mask
   b. BMV with reservoir
   c. Endotracheal tube
   d. King LTS-D airway
   e. CPAP per *MCG 1315*

5. For stable patients with mild hypoxia ($SpO_2$ less than 94%), start $O_2$ with nasal cannula at 2-6 L/min or basic mask at 8-10 L/min. If patient is unable to tolerate nasal cannula or basic mask, use blow-by technique with $O_2$ flowing at 15 L/min.

6. Consider the following special populations when titrating oxygen therapy:
   a. Chronic Obstructive Pulmonary Disease (COPD) – goal $SpO_2$ is 88 – 92%

b. Newborns in need of positive-pressure ventilation – ventilate for 90 seconds with room air, if heart rate remains less than 100 beats per minute, start $O_2$ at 15 L/min
c. Pediatric Congenital Heart Disease – use $O_2$ with caution if known history of low baseline $O_2$ saturation

7. Continue to monitor $SpO_2$ and titrate $O_2$ therapy as appropriate for the patient's clinical condition until transfer of patient care.

8. Document the $SpO_2$, $O_2$ delivery system used, and the liters per minute administered.

9. If suctioning is required, pre-oxygenate prior to suctioning and do not suction longer than 10 seconds per occurrence. For tracheal suctioning, maintain sterile procedures.

10. Considerations for oropharyngeal airway:
    a. Unresponsive patient requiring BMV – should be utilized in all such patients where gag reflex is absent
    b. In pediatric patients, placement may not be necessary to achieve adequate ventilation

11. Considerations for nasopharyngeal airway:
    a. Spontaneously breathing patients who require assistance in maintaining a patent airway (e.g., seizure patient, intoxication)
    b. Unresponsive patients requiring BMV in whom an oropharyngeal airway cannot be inserted

12. Considerations for BMV:
    a. Apnea or agonal respirations
    b. Altered level of consciousness with hypoventilation or hypoxia despite maximal supplemental $O_2$

13. Considerations for endotracheal intubation:
    Adults or Pediatrics 12 years or greater, or longer than the length-based resuscitation tape (e.g., Broselow Tape™)
    a. Ineffective ventilation with BMV
    b. Prolonged transport time
    c. Unprotected airway

14. Considerations for rescue airway (King LTS-D):
    Adults or Pediatrics longer than the length-based resuscitation tape (e.g., Broselow Tape™)
    a. Unsuccessful attempts (maximum three attempts) at endotracheal intubation (with or without the use of a flexible introducer guide)
    b. Suspected difficult airway based on assessment and anatomical features

| **Height** | **Size** | **Air** |
|---|---|---|
| Between 4 feet to 5 feet | 3 | 40-55mL |
| Between 5 feet to 6 feet | 4 | 50-70mL |
| 6 feet or greater | 6 | 60-80mL |

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15. Considerations for stoma intubation:
    Adult patients with obstruction unrelieved by suctioning and replacing inner cannula. For pediatric patients, and for adult patients in which a new tube cannot be placed, utilize bag mask ventilation via mouth (while covering the stoma) or stoma (if no chest rise with mask over mouth).

16. Verify endotracheal tube or rescue airway placement utilizing capnography. In case of device failure, use an End-tidal $CO_2$ detector or an Esophageal Detector Device (EDD). Document the method used for placement verification.

17. Additional confirmation of endotracheal tube placement shall include **all** of the following:
    a. Bilateral lung sounds
    b. Bilateral chest rise
    c. Absent gastric sounds
    d. Pulse oximetry

18. Continuously assess ventilation status and monitor capnography for all patients requiring BMV or advanced airway placement. Report capnography reading to the base hospital and document capnography reading as follows:
    a. Every five minutes during transport
    b. After any patient movement
    c. With any change in patient condition
    d. Upon transfer of care

19. Sedation may be administered by paramedics as needed during transport of intubated patients. This sedation may only be administered after the patient is intubated and may not be administered to facilitate intubation.
    Adult Dose:
    **Midazolam (5mg/mL) 5mg**, may repeat in 5 min x1, maximum total dose prior to Base contact 10mg
    Pediatric Dose:
    **Midazolam (5mg/mL) 0.1mg/kg** dose per *MCG 1309*, may repeat in 5 min prn x1, maximum 2 doses prior to Base contact

# Medical Control Guideline: ALGORITHM FOR CATH LAB ACTIVATION

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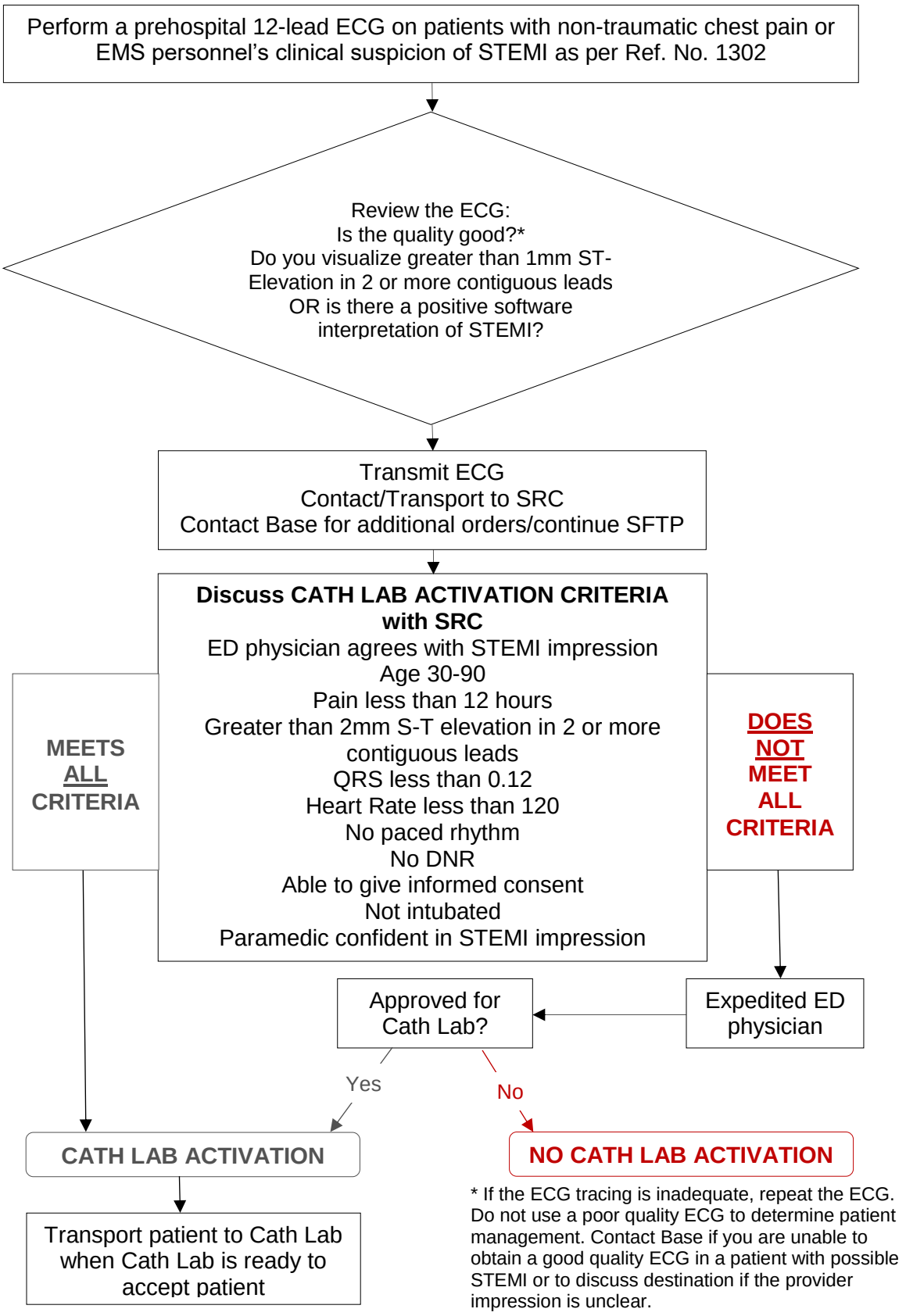


* If the ECG tracing is inadequate, repeat the ECG. Do not use a poor quality ECG to determine patient management. Contact Base if you are unable to obtain a good quality ECG in a patient with possible STEMI or to discuss destination if the provider impression is unclear.

# Medical Control Guideline: CAPNOGRAPHY

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**PURPOSE:** To describe use of capnography for 911 responses and for inter-facility transfers.

**DEFINITIONS:**

**Capnography:** Analysis and recording of carbon dioxide ($CO_2$) concentrations in respiratory gases via continuous waveform.

**Capnometry:** Measurement of the amount of carbon dioxide in exhaled air. This gives a specific value for the end-tidal $CO_2$ measurement.

**Colorimetric $CO_2$ device:** Device that changes color due to a chemical reaction in the presence of $CO_2$, which can be used to detect $CO_2$ in exhaled air in order to confirm placement of an advanced airway.

**End-Tidal $CO_2$ ($ETCO_2$)**: The amount of carbon dioxide measured at the end of exhalation.

**PRINCIPLES:**

1. Ventilation is an active process, which is assessed with end-tidal $CO_2$ measurement. End-tidal $CO_2$ measurement is an indication of air movement in and out of the lungs. The normal value of exhaled $CO_2$ is 35-45mmHg.

2. Oxygenation is a passive process, which occurs by diffusion of oxygen across the alveolar membrane into the blood. The amount of oxygen available in the bloodstream is assessed with pulse oximetry.

3. Capnography provides both a specific value for the end-tidal $CO_2$ measurement and a continuous waveform representing the amount of $CO_2$ in the exhaled air. A normal capnography waveform is square, with a slight upslope to the plateau phase during exhalation. (See figures below) The height of the waveform at its peak corresponds to the $ETCO_2$.

4. Capnography is necessary to monitor ventilation. For patients requiring positive pressure ventilation, capnography is most accurate with proper mask seal (two-hand mask hold for adults during bag-mask ventilation) or with an advanced airway.

5. Capnography can also be applied via a nasal cannula device to measure end-tidal $CO_2$ in the spontaneously breathing patient. It is useful to monitor for hypoventilation, in patients who are sedated either due to ingestion of substances or treatment with medication with sedative properties such as midazolam or opioids. In a patient with suspected sepsis, an $ETCO_2$ <25mmHg further supports this provider impression.

6. Capnography is standard of care for confirmation of advanced airway placement. Unlike simple colorimetric devices, capnography is also useful to monitor the airway position over time, for ventilation management, and for early detection of return of spontaneous circulation (ROSC) in patients in cardiac arrest.

7. Capnography is the most reliable way to immediately confirm advanced airway placement. Capnography provides an instantaneous measurement of the amount of $CO_2$ in the exhaled air and absence of waveform and/or values <10mmHg suggest possible advanced airway placement. However, patients in cardiac arrest or profound shock may also have end-tidal $CO_2$ values <10 despite proper airway placement.

8. Capnography provides the most reliable way to continuously monitor advanced airway position. The waveform provides a continuous assessment of ventilation over time. A normal waveform which becomes suddenly absent suggests dislodgement and requires clinical confirmation.

9. The value of exhaled $CO_2$ is affected by ventilation (effectiveness of $CO_2$ elimination), perfusion (transportation of $CO_2$ in the body) and metabolism (production of $CO_2$ via cellular metabolism). In addition to the end-tidal $CO_2$ value, the ventilation rate as well as the size and shape of the capnograph must be used to interpret the results.

10. Decreased perfusion will reduce the blood flow to the tissues, decreasing offload of $CO_2$ from the lungs. Therefore, patients in shock and patients in cardiac arrest will generally have reduced end-tidal $CO_2$ values.

11. A sudden increase in perfusion will cause a sudden rise in end-tidal $CO_2$ values and is a reliable indicator of ROSC. It is common to have an elevated $ETCO_2$ reading after ROSC. Hyperventilation is harmful and should not be done to attempt to normalize the $ETCO_2$.

12. Ventilation can have varied effect on $CO_2$ measurement. Hyperventilation will reduce end-tidal $CO_2$ by increasing offload from the lungs. Disorders of ventilation that reduce $CO_2$ elimination (e.g., COPD), will cause $CO_2$ to build up in the body, increasing the measured value once ventilation is restored. Generally, hypoventilation will increase measured end-tidal $CO_2$, values by decreasing offload from the lungs. However, in patients with decreased tidal volumes, hypoventilation can also reduce end-tidal $CO_2$, because of the relative increase in dead space.

9. End-tidal $CO_2$ can be detected using a colorimetric device ($ETCO_2$ detector). These devices provide limited information about $ETCO_2$ as compared to capnography. Colorimetric devices do not provide continuous measurement of the value of $CO_2$ in the exhaled air and cannot be used in ongoing monitoring. Colorimetric devices should only be used for confirmation of endotracheal tube placement if capnography is unavailable due to equipment failure.

**GUIDELINES:**

1. Capnography shall be used for ALL patients receiving positive-pressure ventilation (BMV or advanced airway). Utilize the capnography waveform to assess the patient's ventilation and perfusion status. Refer to the figures below for examples of typical waveform tracings.

2. Always attach the capnography device to the monitor first and wait for the capnography display to appear prior to applying the device to the patient. This zeros the device to ensure an accurate reading.

3. Apply the capnography device immediately upon initiating any positive-pressure ventilation, or as soon as feasible.

4. During bag-mask-ventilation, maintain a continuous seal in order to obtain accurate capnography readings.

5. When an advanced airway is place, the capnography device shall be applied/re-applied immediately to confirm airway placement, along with assessing bilateral breath sounds and absence of gastric sounds.

6. Visualization of a normally shaped waveform with a normal or elevated value confirms placement. Extremely low values (<10mmHg) without the typical waveform implies esophageal placement and the endotracheal tube should be removed. For patients in shock or cardiac arrest, the value (and height of the waveform) will likely be reduced but the shape of the waveform should be normal.

7. Continuously monitor the waveform, report the capnography reading to the base hospital and document capnography reading on the patient care record as follows:

    a. Immediately after placement of an advanced airway
    b. With any change in patient condition
    c. After any patient movement
    d. Every five minutes during transport
    e. Upon transfer of care

8. For patients in cardiac arrest, continuously monitor capnography during resuscitation. A sudden rise in $ETCO_2$, along with an organized rhythm, is a reliable sign of ROSC and should prompt a pulse check. Do not hyperventilate regardless of the $ETCO_2$ value; elevated values will normalize with proper ventilation. A drop in $ETCO_2$ below normal can signify progressive hypotension or re-arrest.

9. Consider use of capnography via nasal cannula, if available, in spontaneously ventilating patients who are:

    a. Sedated due to illicit substance ingestion
    b. Treated with medications with sedative properties (e.g., midazolam or opioids)
    c. In severe respiratory distress

10. In spontaneously breathing patients, monitor for significant hypoventilation or apnea as an indication to begin assisted ventilation. A “shark-fin” waveform on $EtCO_2$ monitoring indicates bronchospasm; treatment with albuterol is indicated.

11. During positive-pressure ventilation, if a “shark-fin” pattern and/or an elevating $EtCO_2$ waveform (“breath stacking”) is visualized, decrease ventilation rate to avoid increases in intrathoracic pressure which can lead to decrease in venous blood return to the heart and cardiopulmonary arrest.

Capnography Waveforms

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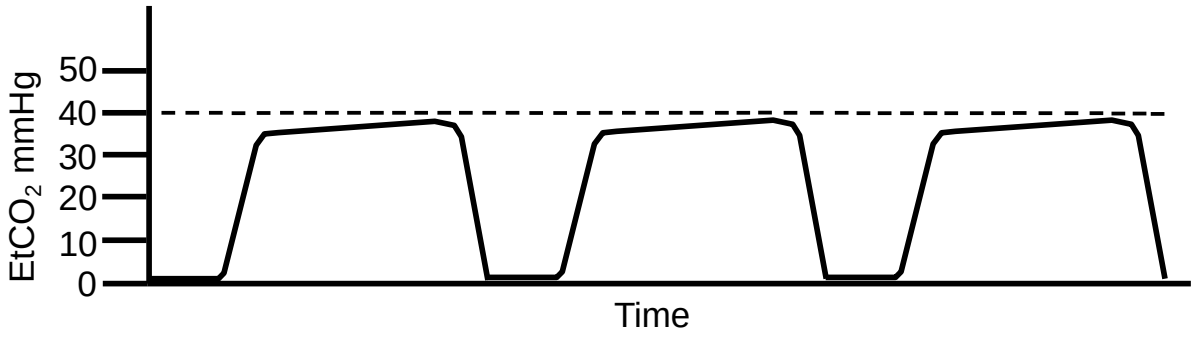
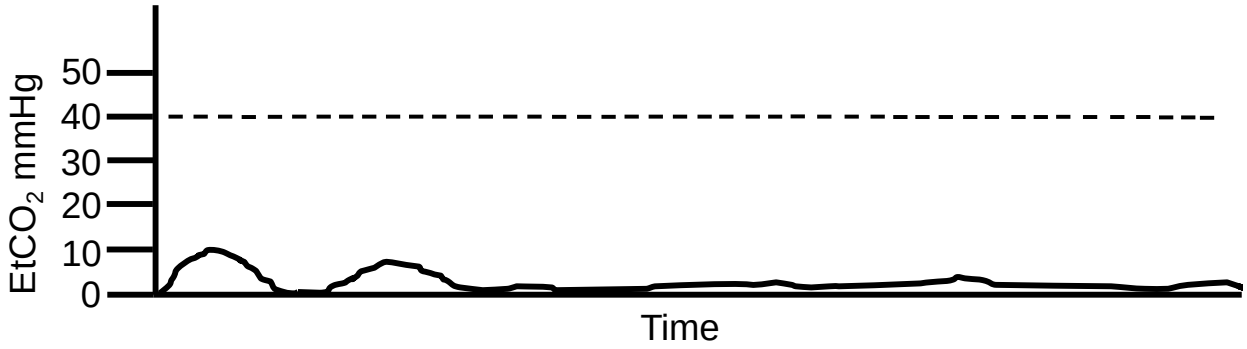
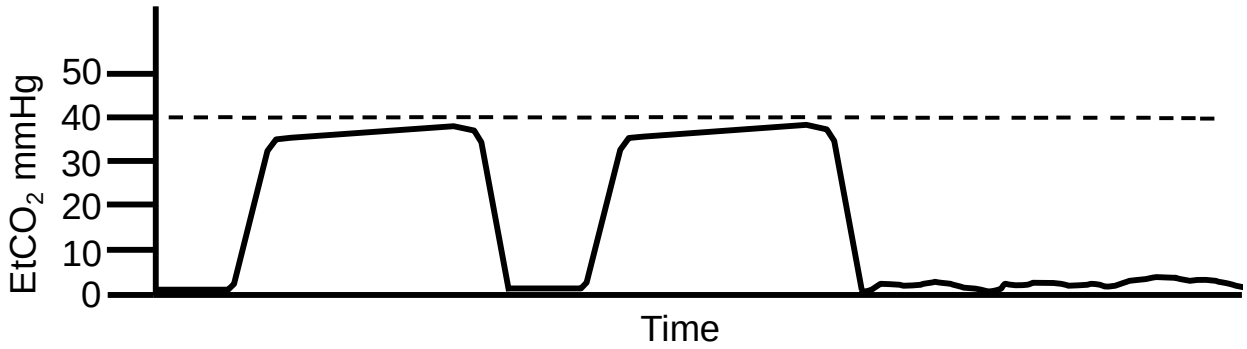
Normal shape of the capnograph (Normal waveform is depicted below)



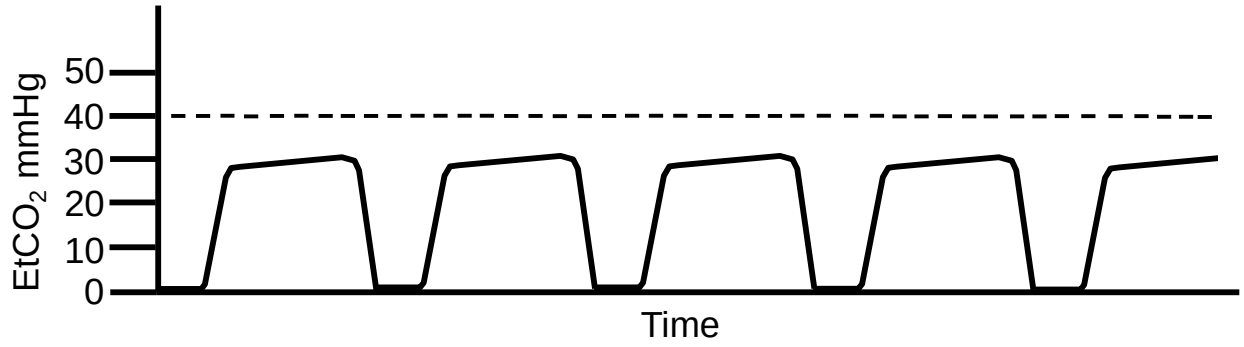

Esophageal Intubation (Low values <10 and irregular waveform or flat line)



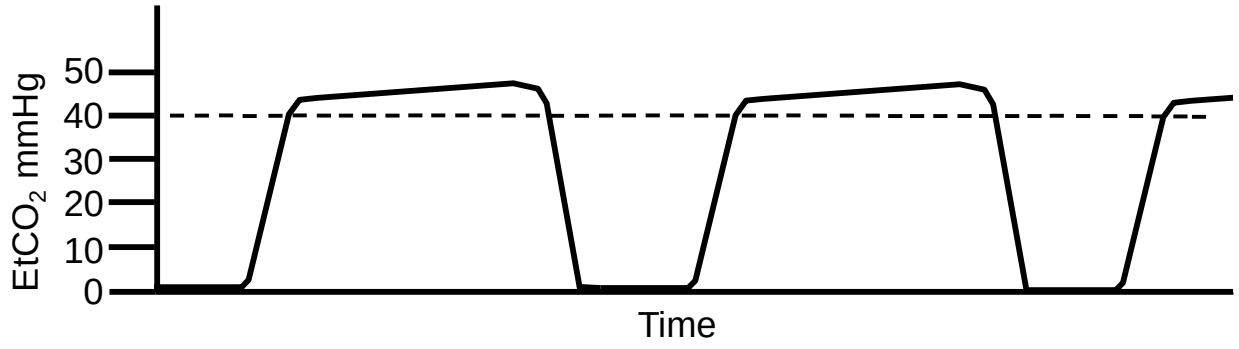

Obstructed or Dislodged Endotracheal Tube (Sudden loss of normal waveform followed by low irregular waveform or flat line)



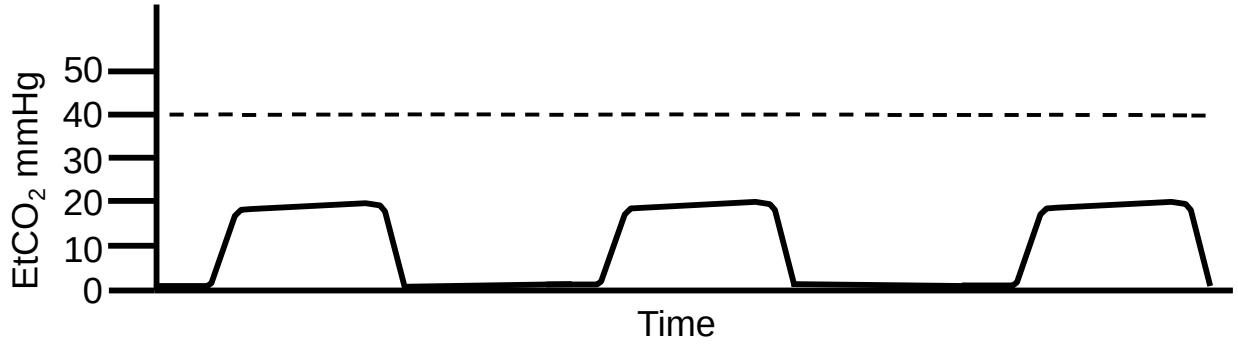

Hyperventilation (Normal waveform with reduced height, <35mmHg, and high ventilation rate)



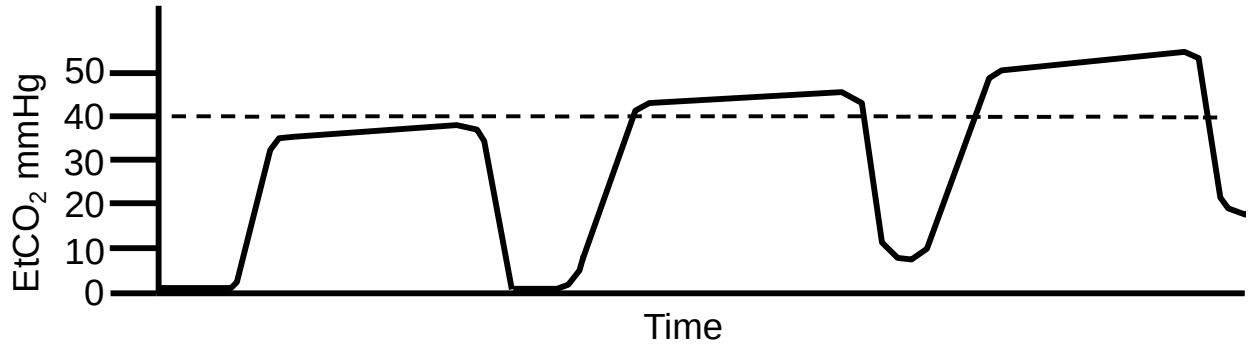
Hypoventilation / Bradypnea (Normal waveform with increased height, >45mmHg)



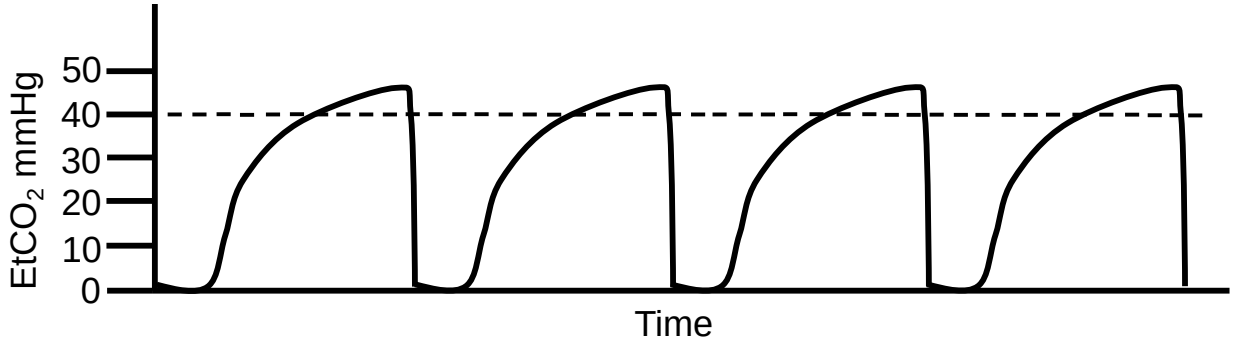

Hypoventilation / Low tidal volumes (Normal waveform with reduced height, <35mmHg, and slow ventilation rate; a similar reduced height waveform can also be seen with shock – see progressive hypotension below)




Air Trapping / Breath Stacking (Box waveforms that show increasing values with each successive breath)




Bronchospasm (“Shark Fin Pattern”)



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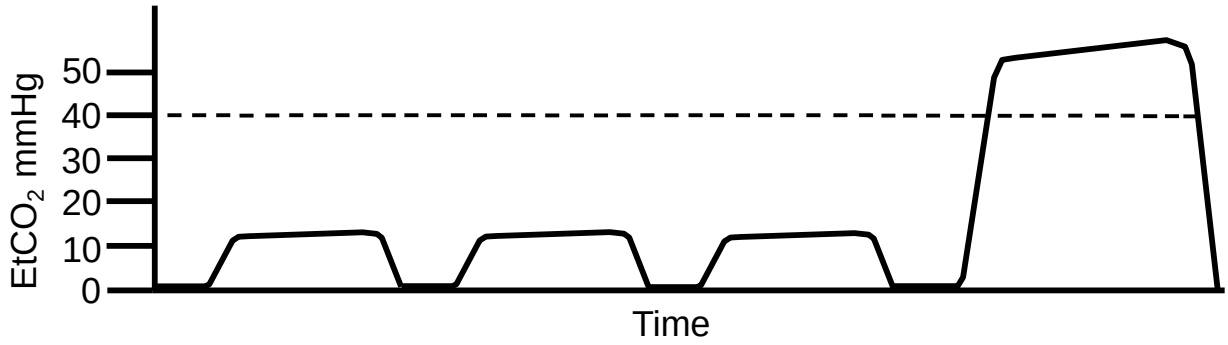
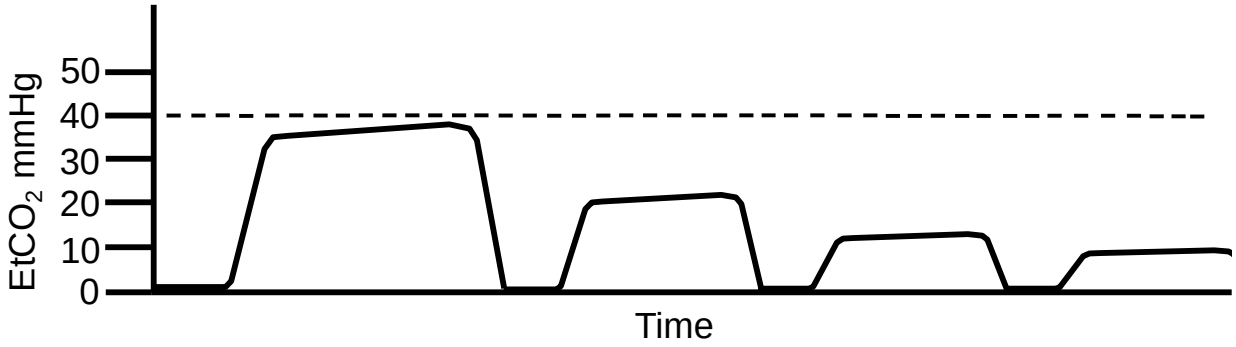
Return of Spontaneous Circulation (Sudden increase in values in a patient in cardiac arrest)




Progressive Hypotension or Re-arrest (Progressive decrease in values with each successive breath)



# Medical Control Guideline: CARDIAC MONITORING / 12 –LEAD ECG

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**PRINCIPLES:**

1. Continuous cardiac monitoring is a key component of a thorough patient assessment and treatment in the prehospital setting.

2. Continuous observation of a patient's cardiac rhythm ensures early identification of potentially lethal dysrhythmias and provides other information about the patient's condition to guide treatment and destination decisions.

3. The 12-lead electrocardiogram (ECG) in the prehospital care setting plays a key role in identifying STEMI and determining the most appropriate treatment and destination for patients with Chest Pain - Suspected Cardiac and STEMI.

4. Prehospital identification and communication of ST-elevation myocardial infarction (STEMI) reduces critical "door-to-intervention" times for STEMI patients and saves lives.

5. When a 12-lead ECG is indicated, it should be obtained as early as possible in the assessment.

6. A good quality 12-lead ECG is a key component of a thorough patient assessment. A good quality 12-lead ECG includes the presence of all 12-leads on the ECG tracing and absence of artifacts and/or wavy baseline.

7. Complete and accurate ECG documentation is essential for patient care and quality improvement purposes.

**GUIDELINES:**

1. Once cardiac monitoring is determined to be necessary, observe the rhythm continuously and leave the monitor in place until care has been transferred to appropriate hospital personnel or as directed by the base hospital.

2. Document the ECG interpretation on the appropriate section in the EMS Report Form or Electronic Patient Care Report (ePCR). If a dysrhythmia is identified, provide an ECG strip labeled with the patient's name, sequence number, date and time to the receiving facility (in either paper or electronic format) as part of the patient's prehospital medical record. Retain a copy per the provider agency's departmental policy.

3. Perform a prehospital 12-lead ECG on patients with any of the following:
   a. Chest pain or discomfort in all patients ≥35 years or any suspected cardiac etiology
   b. Dysrhythmia (in order to capture rhythm and possible etiology)
   c. Syncope in all patients ≥35 years or any suspected cardiac etiology
   d. Return of spontaneous circulation (ROSC) after a cardiac arrest
   e. Other symptoms with paramedic suspicion of cardiac etiology (e.g., non-traumatic shoulder, jaw or upper arm pain, shortness of breath, epigastric pain)

f. Vague or unexplained symptoms (e.g. general weakness, lightheadedness, nausea, malaise) in patients at high risk of acute cardiac ischemia (e.g. coronary artery disease, myocardial infarction, elderly diabetic patients, stroke, peripheral vascular disease)

4. To obtain a good quality ECG:
   a. Minimize electrode exposure to air prior to use; ideally they should be removed from the packaging immediately before application
   b. Ensure that all electrodes are in good contact with the patient's skin (wipe sweat with dry towel before applying and shave hair if necessary)
   c. Place electrodes according to the diagram in order to observe all aspects of the left heart
   d. For female patients or obese patients of either gender, electrodes should be attached in the same anatomic location; this may require placement on the breast if lifting the breast places the electrodes too low in the chest
   e. Attach the limb leads to the extremities (distal to the deltoid and to the inguinal line)
   f. Stabilize the ECG fan-out (i.e., cable management / junction point) on the patient
   g. Lay the patient supine or as recumbent as possible
   h. Instruct the patient relax, remain still, and close their eyes prior to acquisition
   i. Obtain the ECG prior to transport so that the ambulance is not in motion
   j. Leave the electrodes and leads in place for continuous monitoring and repeat ECGs

5. Treat symptoms and rhythms identified according to applicable treatment protocols.

6. Maintain the patient's privacy and dignity while performing the 12-lead ECG.

7. For patients in which at least two of the following are true:

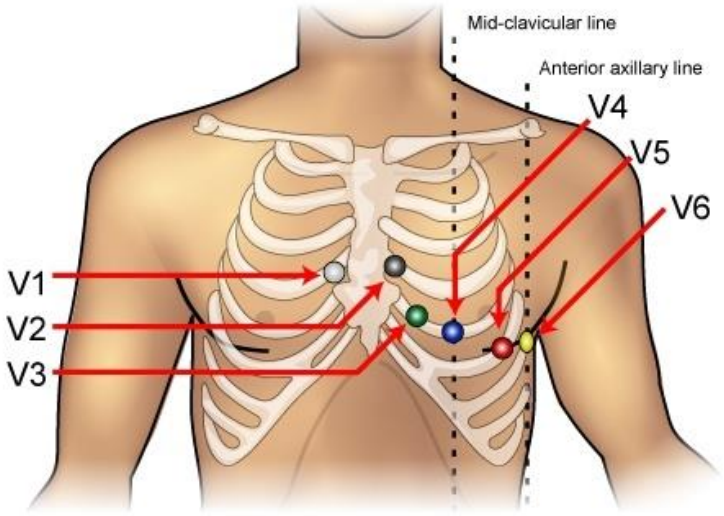
   a. Paramedic interpretation of the ECG is STEMI. The 12-lead ECG tracing has greater than 1mm ST-segment elevation in 2 or more contiguous leads
   b. The software interpretation indicates "**ST Elevation** Acute MI" or "STEMI".
   c. The patient's clinical condition is consistent with STEMI

   Transmit the ECG tracing to the SRC receiving the patient. Discuss with receiving SRC ED physician. Transport the patient to the closest SRC.

8. For software interpretations of STEMI for which the paramedic disagrees, due to the patient's clinical presentation and paramedic ECG interpretation, paramedics should contact the Base Hospital for online medical direction, to discuss destination decision.

9. Report to the SRC physician and/or Base Hospital shall include the software interpretation, paramedic interpretation, any quality issues, the rate on the ECG, whether the QRS is wide or narrow, and whether there is a paced rhythm. Document this information on the appropriate prehospital care record.

10. Provide prehospital 12-lead ECGs that are labeled with the patient's name, sequence number, date and time to the receiving facility (in either paper or electronic format) as part of the patient's prehospital medical record.


Mid-clavicular line
Anterior axillary line
V4
V5
V6
V1
V2
V3

# Medical Control Guideline: COLOR CODE DRUG DOSES

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**PRINCIPLES:**

1. Correct dosing of medications based on weight in kilograms is a safety concern for delivery of medications to children and adults in the prehospital setting.

2. To optimize safety in dosing medications for children and adults, a standard formulary has been created. This ***Color Code Drug Doses*** medical control guideline pre-calculates all doses based on kilogram weight for children and an adult dose including maximum dose is delineated.

3. EMS provider agencies shall procure medications and stock approved Assessment and ALS Units in accordance with the drug formulation specified in this medical control guideline.

4. The Color Code Drug Doses and the Treatment Protocols shall be used to determine drug doses.

**GUIDELINES:**

1. EMS providers shall utilize a length-based resuscitation tape (i.e., Broselow™) to determine weight in kilograms and color code of children less than or equal to 14 years of age.

2. EMS providers shall use this guideline to determine dose of medication for children 3 to 36 kilograms. Documentation of dose will be in mgs and mLs.

3. EMS providers contacting the base hospital shall report and document the appropriate color code and weight in kilograms utilizing a length-based resuscitation tape (i.e., Broselow™).

4. Base hospital personnel shall use this guideline to order dose of medication for children 3 to 36 kilograms; all doses will be given in mg and mLs.

5. Adult dosing will be used for children who are measured to be longer than the length-based resuscitation tape.

**DRUG FORMULATIONS:** *1200 Table of Contents*

| MEDICATION | FORMULATION | DOSAGE | Maximum Single Dose |
|---|---|---|---|
| Adenosine | 3mg/mL | 0.1mg/kg<br>Repeat dose 0.2mg/kg | 12mg |
| Albuterol | 2.5mg/3mL | 2.5mg <1 year;<br>5mg 1 year or older | 5mg |
| Amiodarone | 50mg/mL | 5mg/kg | 300mg |
| Atropine | 0.1mg/mL | 0.02mg/kg | 0.5mg |
| Calcium Chloride | 100mg/mL | 20mg/kg | 1gm |
| Dextrose 10% | 0.1gm/mL | 5mL/kg* | 250mL |
| Administer 1mL/kg then reassess, if patient still with altered level of consciousness, continue 1mL/kg doses until maximum of 5mL/kg; for patients >24 kg, administer 125mL D10 and reassess, if patient still symptomatic then continue D10 infusion to a maximum dose of 5mL/kg. | | | |
| Diphenhydramine | 50mg/mL | 1mg/kg | 50mg |
| DuoDote™<br>(Pralidoxime Chloride) | Auto injector | 1 DuoDote™ | 3 DuoDotes™ |
| Epinephrine (Push Dose)<br>0.1mg/mL IV | 0.01mg/mL | 0.1mL/kg every 1-5 mins | 10mcg (1 mL) |
| Mix 9mL of normal saline with 1mL of epinephrine 0.1mg/mL (IV epi) in a 10mL syringe to create epinephrine 0.01mg/mL, administer 0.1mL/kg (up to 1 mL at a time) every 1-5 mins to maintain adequate SBP. | | | |
| Epinephrine 0.1mg/mL IV | 0.1mg/mL | 0.01mg/kg | 1mg |
| Epinephrine 1mg/mL IM | 1mg/mL | 0.01mg/kg | 0.5mg |
| Epinephrine 1mg/mL<br>Nebulized (NEB) | 1mg/mL | 2.5mg <1 year;<br>5mg 1 year or older | 5mg (5mL) |
| Fentanyl IV/IM | 50mcg/mL | 1mcg/kg | 50mcg |
| Fentanyl IN | 50mcg/mL | 1.5mcg/kg | 50mcg |
| Glucagon | 1mg/mL | 0.5 mg <1 year;<br>1mg 1 year or older | 1mg |
| Glucopaste<br>(4 years or older) | 15gm | 15gm | 15gm |
| Ketorolac slow IV/IO push | 15mg/mL | 0.5mg/kg | 15mg |
| Ketorolac IM | 15mg/mL | 1mg/kg | 30mg |
| Lidocaine 2% (IO ONLY) | 20mg/mL | 0.5 mg/kg | 40mg |
| Midazolam IV/IM | 5mg/mL | 0.1mg/kg | 5mg |
| Midazolam IN | 5mg/mL | 0.2mg/kg | 5mg |
| Morphine Sulfate IV/IM/IO | 4mg/mL | 0.1mg/kg | 4mg |
| Naloxone | 1mg/mL | 0.1mg/kg | 2mg |
| Normal Saline | 0.9% Na Cl | 20mL/kg | 1L |

| MEDICATION | FORMULATION | DOSAGE | Maximum Single Dose |
|---|---|---|---|
| Nitroglycerin SL (adults only) | 0.4mg | 0.4mg | 1.2mg |
| Ondansetron ODT/IV/IM | 4mg tab or (4 years or older ODT only) 2mg/mL IV/IM (adults only) | 4mg | 4mg |
| Sodium Bicarbonate IV (dilute 1:1 with NS if <1year) | 1mEq/mL | 1mEq/kg | 50mEq |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 Kg | **Length 47 – 59.5 cm** | | | **Less than 3 months** | | | GREY |
| | Normal Vital Signs: | Heart Rate: 100-180 | | Respirations: 30-60 | Systolic BP: >60 | | |
| | Cardioversion: | 3 joules | | 6 joules | 6 joules | | |
| | Defibrillation: | 6 joules | | 12 joules | 12 joules | | |
| | Medication | Dose | mLs | Medication | Dose | mLs | |
| | Adenosine | 0.3mg | 0.1mL | Epinephrine 1mg/mL NEB | 2.5mg | 2.5mL | |
| | Albuterol NEB | 2.5mg | 3mL | Fentanyl IV/IM | 3mcg | 0.06mL | |
| | Amiodarone | 15mg | 0.3mL | Fentanyl IN | 4.5mcg | 0.09mL | |
| | Atropine | 0.06mg | 0.6mL | Glucagon IM | 0.5mg | 0.5mL | |
| | Calcium Chloride | 60mg | 0.6mL | Lidocaine 2% IO | 1.5mg | 0.08mL | |
| | Dextrose 10% slow IV | 15mL | 15mL | Midazolam IV/IM/IO | 0.3mg | 0.06mL | |
| | Diphenhydramine IV/IM | 3mg | 0.06mL | Midazolam IN | 0.6mg | 0.12mL | |
| | Duodote™ | 1 dose | NA | Morphine IV/IM/IO | 0.3mg | 0.08mL | |
| | Epinephrine Push Dose | 3mcg | 0.3mL | Naloxone IV/IM/IN | 0.3mg | 0.3mL | |
| | Epinephrine 0.1mg/mL IV | 0.03mg | 0.3mL | Normal Saline IV Bolus | 60mL | 60mL | |
| | Epinephrine 1mg/mL IM | 0.03mg | 0.03mL | Sodium Bicarbonate* | 3mEq | 3mL | |
| 4 Kg | Cardioversion: | 4 joules | | 8 joules | 8 joules | | GREY |
| | Defibrillation: | 8 joules | | 16 joules | 16 joules | | |
| | Medication | Dose | mLs | Medication | Dose | mLs | |
| | Adenosine | 0.4mg | 0.13mL | Epinephrine 1mg/mL NEB | 2.5mg | 2.5mL | |
| | Albuterol NEB | 2.5mg | 3mL | Fentanyl IV/IM | 4mcg | 0.08mL | |
| | Amiodarone | 20mg | 0.4mL | Fentanyl IN | 6mcg | 0.12mL | |
| | Atropine | 0.08mg | 0.8mL | Glucagon IM | 0.5mg | 0.5mL | |
| | Calcium Chloride | 80mg | 0.8mL | Lidocaine 2% IO | 2mg | 0.1mL | |
| | Dextrose 10% slow IV | 20mL | 20mL | Midazolam IV/IM/IO | 0.4mg | 0.08mL | |
| | Diphenhydramine IV/IM | 4mg | 0.08mL | Midazolam IN | 0.8mg | 0.16mL | |
| | Duodote™ | 1 dose | NA | Morphine IV/IM/IO | 0.4mg | 0.1mL | |
| | Epinephrine Push Dose | 4mcg | 0.4mL | Naloxone IV/IM/IN | 0.4mg | 0.4mL | |
| | Epinephrine 0.1mg/mL IV | 0.04mg | 0.4mL | Normal Saline IV Bolus | 80mL | 80mL | |
| | Epinephrine 1mg/mL IM | 0.04mg | 0.04mL | Sodium Bicarbonate* | 4mEq | 4mL | |
| 5 Kg | Cardioversion: | 5 joules | | 10 joules | 10 joules | | GREY |
| | Defibrillation: | 10 joules | | 20 joules | 20 joules | | |
| | Medication | Dose | mLs | Medication | Dose | mLs | |
| | Adenosine | 0.5mg | 0.17mL | Epinephrine 1mg/mL NEB | 2.5mg | 2.5mL | |
| | Albuterol NEB | 2.5mg | 3mL | Fentanyl IV/IM | 5mcg | 0.1mL | |
| | Amiodarone | 25mg | 0.5mL | Fentanyl IN | 7.5mcg | 0.15mL | |
| | Atropine | 0.1mg | 1mL | Glucagon IM | 0.5mg | 0.5mL | |
| | Calcium Chloride | 100mg | 1mL | Lidocaine 2% IO | 2.5mg | 0.12mL | |
| | Dextrose 10% slow IV | 25mL | 25mL | Midazolam IV/IM/IO | 0.5mg | 0.1mL | |
| | Diphenhydramine IV/IM | 5mg | 0.1mL | Midazolam IN | 1mg | 0.2mL | |
| | Duodote™ | 1 dose | NA | Morphine IV/IM/IO | 0.5mg | 0.12mL | |
| | Epinephrine Push Dose | 5mcg | 0.5mL | Naloxone IV/IM/IN | 0.5mg | 0.5mL | |
| | Epinephrine 0.1mg/mL IV | 0.05mg | 0.5mL | Normal Saline IV Bolus | 100mL | 100mL | |
| | Epinephrine 1mg/mL IM | 0.05mg | 0.05mL | Sodium Bicarbonate* | 5mEq | 5mL | |

*dilute 1:1 with NS

| 6 Kg | Length 59.5 – 62 cm | | | 3 – 4 months | | | PINK |
|---|---|---|---|---|---|---|---|
| | Normal Vital Signs: | Heart Rate: 100-160 | | Respirations: 25-40 | Systolic BP: >70 | | |
| | Cardioversion: | 6 joules | | 12 joules | 12 joules | | |
| | Defibrillation: | 12 joules | | 24 joules | 24 joules | | |
| | Medication | Dose | mLs | Medication | Dose | mLs | |
| | Adenosine | 0.6mg | 0.2mL | Epinephrine 1mg/mL NEB | 2.5mg | 2.5mL | |
| | Albuterol NEB | 2.5mg | 3mL | Fentanyl IV/IM | 6mcg | 0.12mL | |
| | Amiodarone | 30mg | 0.6mL | Fentanyl IN | 9mcg | 0.18mL | |
| | Atropine | 0.12mg | 1.2mL | Glucagon IM | 0.5mg | 0.5mL | |
| | Calcium Chloride | 120mg | 1.2mL | Lidocaine 2% IO | 3mg | 0.15mL | |
| | Dextrose 10% slow IV | 30mL | 30mL | Midazolam IV/IM/IO | 0.6mg | 0.12mL | |
| | Diphenhydramine IV/IM | 6mg | 0.12mL | Midazolam IN | 1.2mg | 0.24mL | |
| | Duodote™ | 1 dose | NA | Morphine IV/IM/IO | 0.6mg | 0.15mL | |
| | Epinephrine Push Dose | 6mcg | 0.6mL | Naloxone IV/IM/IN | 0.6mg | 0.6mL | |
| | Epinephrine 0.1mg/mL IV | 0.06mg | 0.6mL | Normal Saline IV Bolus | 120mL | 120mL | |
| | Epinephrine 1mg/mL IM | 0.06mg | 0.06mL | Sodium Bicarbonate* | 6mEq | 6mL | |

*dilute 1:1 with NS

| 7 Kg | Length 62 – 66 cm | | | 5 – 6 months | | | PINK |
|---|---|---|---|---|---|---|---|
| | Cardioversion: | 7 joules | | 14 joules | 14 joules | | |
| | Defibrillation: | 14 joules | | 28 joules | 28 joules | | |
| | Medication | Dose | mLs | Medication | Dose | mLs | |
| | Adenosine | 0.7mg | 0.23mL | Epinephrine 1mg/mL NEB | 2.5mg | 2.5mL | |
| | Albuterol NEB | 2.5mg | 3mL | Fentanyl IV/IM | 7mcg | 0.14mL | |
| | Amiodarone | 35mg | 0.7mL | Fentanyl IN | 10.5mcg | 0.21mL | |
| | Atropine | 0.14mg | 1.4mL | Glucagon IM | 0.5mg | 0.5mL | |
| | Calcium Chloride | 140mg | 1.4mL | Lidocaine 2% IO | 3.5mg | 0.18mL | |
| | Dextrose 10% slow IV | 35mL | 35mL | Midazolam IV/IM/IO | 0.7mg | 0.14mL | |
| | Diphenhydramine IV/IM | 7mg | 0.14mL | Midazolam IN | 1.4mg | 0.28mL | |
| | Duodote™ | 1 dose | NA | Morphine IV/IM/IO | 0.7mg | 0.18mL | |
| | Epinephrine Push Dose | 7mcg | 0.7mL | Naloxone IV/IM/IN | 0.7mg | 0.7mL | |
| | Epinephrine 0.1mg/mL IV | 0.07mg | 0.7mL | Normal Saline IV Bolus | 140mL | 140mL | |
| | Epinephrine 1mg/mL IM | 0.07mg | 0.07mL | Sodium Bicarbonate* | 7mEq | 7mL | |

*dilute 1:1 with NS

| 8 Kg | Length 66 – 69.5 cm | | | 7 - 8 months | | | RED |
|---|---|---|---|---|---|---|---|
| | Normal Vital Signs: | Heart Rate: 100-160 | | Respirations: 20-40 | Systolic BP: >70 | | |
| | Cardioversion: | 8 joules | | 16 joules | 16 joules | | |
| | Defibrillation: | 16 joules | | 32 joules | 32 joules | | |
| | Medication | Dose | mLs | Medication | Dose | mLs | |
| | Adenosine | 0.8mg | 0.27mL | Epinephrine 1mg/mL NEB | 2.5mg | 2.5mL | |
| | Albuterol NEB | 2.5mg | 3mL | Fentanyl IV/IM | 8mcg | 0.16mL | |
| | Amiodarone | 40mg | 0.8mL | Fentanyl IN | 12mcg | 0.24mL | |
| | Atropine | 0.16mg | 1.6mL | Glucagon IM | 0.5mg | 0.5mL | |
| | Calcium Chloride | 160mg | 1.6mL | Lidocaine 2% IO | 4mg | 0.2mL | |
| | Dextrose 10% slow IV | 40mL | 40mL | Midazolam IV/IM/IO | 0.8mg | 0.16mL | |
| | Diphenhydramine IV/IM | 8mg | 0.16mL | Midazolam IN | 1.6mg | 0.32mL | |
| | Duodote™ | 1 dose | NA | Morphine IV/IM/IO | 0.8mg | 0.2mL | |
| | Epinephrine Push Dose | 8mcg | 0.8mL | Naloxone IV/IM/IN | 0.8mg | 0.8mL | |
| | Epinephrine 0.1mg/mL IV | 0.08mg | 0.8mL | Normal Saline IV Bolus | 160mL | 160mL | |
| | Epinephrine 1mg/mL IM | 0.08mg | 0.08mL | Sodium Bicarbonate* | 8mEq | 8mL | |

*dilute 1:1 with NS

| 9 Kg | Length 69 – 73 cm | | | 9 – 10 months | | | RED |
|---|---|---|---|---|---|---|---|
| | Cardioversion: | 9 joules | | 18 joules | 18 joules | | |
| | Defibrillation: | 18 joules | | 36 joules | 36 joules | | |
| | Medication | Dose | mLs | Medication | Dose | mLs | |
| | Adenosine | 0.9mg | 0.3mL | Epinephrine 1mg/mL NEB | 2.5mg | 2.5mL | |
| | Albuterol NEB | 2.5mg | 3mL | Fentanyl IV/IM | 9mcg | 0.18mL | |
| | Amiodarone | 45mg | 0.9mL | Fentanyl IN | 13.5mcg | 0.27mL | |
| | Atropine | 0.18mg | 1.8mL | Glucagon IM | 0.5mg | 0.5mL | |
| | Calcium Chloride | 180mg | 1.8mL | Lidocaine 2% IO | 4.5mg | 0.22mL | |
| | Dextrose 10% slow IV | 45mL | 45mL | Midazolam IV/IM/IO | 0.9mg | 0.18mL | |
| | Diphenhydramine IV/IM | 9mg | 0.18mL | Midazolam IN | 1.8mg | 0.36mL | |
| | Duodote™ | 1 dose | NA | Morphine IV/IM/IO | 0.9mg | 0.22mL | |
| | Epinephrine Push Dose | 9mcg | 0.9mL | Naloxone IV/IM/IN | 0.9mg | 0.9mL | |
| | Epinephrine 0.1mg/mL IV | 0.09mg | 0.9mL | Normal Saline IV Bolus | 180mL | 180mL | |
| | Epinephrine 1mg/mL IM | 0.09mg | 0.09mL | Sodium Bicarbonate* | 9mEq | 9mL | |

*dilute 1:1 with NS

| 10 Kg | Length 73 – 78 cm | | | 11 – 14 months | | | PURPLE |
|---|---|---|---|---|---|---|---|
| | Normal Vital Signs: | Heart Rate: 90-140 | | Respirations: 24-40 | Systolic BP: >70 | | |
| | Cardioversion: | 10 joules | | 20 joules | 20 joules | | |
| | Defibrillation: | 20 joules | | 40 joules | 40 joules | | |
| | Medication | Dose | mLs | Medication | Dose | mLs | |
| | Adenosine | 1mg | 0.33mL | Epinephrine 1mg/mL NEB | 5mg | 5mL | |
| | Albuterol NEB | 5mg | 6mL | Fentanyl IV/IM | 10mcg | 0.2mL | |
| | Amiodarone | 50mg | 1mL | Fentanyl IN | 15mcg | 0.3mL | |
| | Atropine | 0.2mg | 2mL | Glucagon IM | 1mg | 1mL | |
| | Calcium Chloride | 200mg | 2mL | Lidocaine 2% IO | 5mg | 0.25mL | |
| | Dextrose 10% slow IV | 50mL | 50mL | Midazolam IV/IM/IO | 1mg | 0.2mL | |
| | Diphenhydramine IV/IM | 10mg | 0.2mL | Midazolam IN | 2mg | 0.4mL | |
| | Duodote™ | 1 dose | NA | Morphine IV/IM/IO | 1mg | 0.25mL | |
| | Epinephrine Push Dose | 10mcg | 1mL | Naloxone IV/IM/IN | 1mg | 1mL | |
| | Epinephrine 0.1mg/mL IV | 0.1mg | 1mL | Normal Saline IV Bolus | 200mL | 200mL | |
| | Epinephrine 1mg/mL IM | 0.1mg | 0.1mL | Sodium Bicarbonate* | 10mEq | 10mL | |

*dilute 1:1 with NS

| 11 Kg | Length 78 – 83 cm | | | 15 – 18 months | | | PURPLE |
|---|---|---|---|---|---|---|---|
| | Cardioversion: | 11 joules | | 22 joules | 22 joules | | |
| | Defibrillation: | 22 joules | | 44 joules | 44 joules | | |
| | Medication | Dose | mLs | Medication | Dose | mLs | |
| | Adenosine | 1.1mg | 0.37mL | Epinephrine 1mg/mL NEB | 5mg | 5mL | |
| | Albuterol NEB | 5mg | 6mL | Fentanyl IV/IM | 11mcg | 0.22mL | |
| | Amiodarone | 55mg | 1.1mL | Fentanyl IN | 16.5mcg | 0.33mL | |
| | Atropine | 0.22mg | 2.2mL | Glucagon IM | 1mg | 1mL | |
| | Calcium Chloride | 220mg | 2.2mL | Lidocaine 2% IO | 5.5mg | 0.28mL | |
| | Dextrose 10% slow IV | 55mL | 55mL | Midazolam IV/IM/IO | 1.1mg | 0.22mL | |
| | Diphenhydramine IV/IM | 11mg | 0.22mL | Midazolam IN | 2.2mg | 0.44mL | |
| | Duodote™ | 1 dose | NA | Morphine IV/IM/IO | 1.1mg | 0.28mL | |
| | Epinephrine Push Dose | 10mcg | 1mL | Naloxone IV/IM/IN | 1.1mg | 1.1mL | |
| | Epinephrine 0.1mg/mL IV | 0.11mg | 1.1mL | Normal Saline IV Bolus | 220mL | 220mL | |
| | Epinephrine 1mg/mL IM | 0.11mg | 0.11mL | Sodium Bicarbonate* | 11mEq | 11mL | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **12 Kg** | **Length 83 – 94.5 cm** | | | **19 -35 months** | | | **YELLOW** |
| | **Normal Vital Signs:** | Heart Rate: 90-140 | | Respirations: 20-30 | Systolic BP: >70 | |
| | **Cardioversion:** | 12 joules | | 24 joules | 24 joules | |
| | **Defibrillation:** | 24 joules | | 48 joules | 48 joules | |
| | **Medication** | **Dose** | **mLs** | **Medication** | **Dose** | **mLs** |
| | Adenosine | 1.2mg | **0.4mL** | Epinephrine **1mg/mL NEB** | 5mg | **5mL** |
| | Albuterol NEB | 5mg | **6mL** | Fentanyl **IV/IM** | 12mcg | **0.24mL** |
| | Amiodarone | 60mg | **1.2mL** | Fentanyl **IN** | 18mcg | **0.36mL** |
| | Atropine | 0.24mg | **2.4mL** | Glucagon IM | 1mg | **1mL** |
| | Calcium Chloride | 240mg | **2.4mL** | Lidocaine 2% IO | 6mg | **0.3mL** |
| | Dextrose 10% slow IV | 60mL | **60mL** | Midazolam **IV/IM/IO** | 1.2mg | **0.24mL** |
| | Diphenhydramine IV/IM | 12mg | **0.24mL** | Midazolam **IN** | 2.4mg | **0.48mL** |
| | Duodote™ | 1 dose | **NA** | Morphine IV/IM/IO | 1.2mg | **0.3mL** |
| | Epinephrine **Push Dose** | 10mcg | **1mL** | Naloxone IV/IM/IN | 1.2mg | **1.2mL** |
| | Epinephrine **0.1mg/mL IV** | 0.12mg | **1.2mL** | Normal Saline IV Bolus | 240mL | **240mL** |
| | Epinephrine **1mg/mL IM** | 0.12mg | **0.12mL** | Sodium Bicarbonate | 12mEq | **12mL** |
| **13 Kg** | **Cardioversion:** | 13 joules | | 26 joules | 26 joules | |
| | **Defibrillation:** | 26 joules | | 52 joules | 52 joules | |
| | **Medication** | **Dose** | **mLs** | **Medication** | **Dose** | **mLs** |
| | Adenosine | 1.3mg | **0.43mL** | Epinephrine **1mg/mL NEB** | 5mg | **5mL** |
| | Albuterol NEB | 5mg | **6mL** | Fentanyl **IV/IM** | 13mcg | **0.26mL** |
| | Amiodarone | 65mg | **1.3mL** | Fentanyl **IN** | 19.5mcg | **0.39mL** |
| | Atropine | 0.26mg | **2.6mL** | Glucagon IM | 1mg | **1mL** |
| | Calcium Chloride | 260mg | **2.6mL** | Lidocaine 2% IO | 6.5mg | **0.32mL** |
| | Dextrose 10% slow IV | 65mL | **65mL** | Midazolam **IV/IM/IO** | 1.3mg | **0.26mL** |
| | Diphenhydramine IV/IM | 13mg | **0.26mL** | Midazolam **IN** | 2.6mg | **0.52mL** |
| | Duodote™ | 1 dose | **NA** | Morphine IV/IM/IO | 1.3mg | **0.32mL** |
| | Epinephrine **Push Dose** | 10mcg | **1mL** | Naloxone IV/IM/IN | 1.3mg | **1.3mL** |
| | Epinephrine **0.1mg/mL IV** | 0.13mg | **1.3mL** | Normal Saline IV Bolus | 260mL | **260mL** |
| | Epinephrine **1mg/mL IM** | 0.13mg | **1.13mL** | Sodium Bicarbonate | 13mEq | **13mL** |
| **14 Kg** | **Cardioversion:** | 14 joules | | 28 joules | 28 joules | |
| | **Defibrillation:** | 28 joules | | 56 joules | 56 joules | |
| | **Medication** | **Dose** | **mLs** | **Medication** | **Dose** | **mLs** |
| | Adenosine | 1.4mg | **0.47mL** | Epinephrine **1mg/mL NEB** | 5mg | **5mL** |
| | Albuterol NEB | 5mg | **6mL** | Fentanyl **IV/IM** | 14mcg | **0.28mL** |
| | Amiodarone | 70mg | **1.4mL** | Fentanyl **IN** | 21mcg | **0.42mL** |
| | Atropine | 0.28mg | **2.8mL** | Glucagon IM | 1mg | **1mL** |
| | Calcium Chloride | 280mg | **2.8mL** | Lidocaine 2% IO | 7mg | **0.35mL** |
| | Dextrose 10% slow IV | 70mL | **70mL** | Midazolam **IV/IM/IO** | 1.4mg | **0.28mL** |
| | Diphenhydramine IV/IM | 14mg | **0.28mL** | Midazolam **IN** | 2.8mg | **0.56mL** |
| | Duodote™ | 1 dose | **NA** | Morphine IV/IM/IO | 1.4mg | **0.35mL** |
| | Epinephrine **Push Dose** | 10mcg | **1mL** | Naloxone IV/IM/IN | 1.4mg | **1.4mL** |
| | Epinephrine **0.1mg/mL IV** | 0.14mg | **1.4mL** | Normal Saline IV Bolus | 280mL | **280mL** |
| | Epinephrine **1mg/mL IM** | 0.14mg | **0.14mL** | Sodium Bicarbonate | 14mEq | **14mL** |

**15 Kg**

| **Length 94.5 – 107 cm** | | | **3 – 4 years** | | |
|---|---|---|---|---|---|
| Normal Vital Signs: | Heart Rate: 80-130 | | Respirations: 20-30 | Systolic BP: >75 | |
| Cardioversion: | 15 joules | | 30 joules | 30 joules | |
| Defibrillation: | 30 joules | | 60 joules | 60 joules | |
| Medication | Dose | mLs | Medication | Dose | mLs |
| Adenosine | 1.5mg | 0.5mL | Fentanyl IN | 22.5mcg | 0.45mL |
| Albuterol NEB | 5mg | 6mL | Glucagon IM | 1mg | 1mL |
| Amiodarone | 75mg | 1.5mL | Glucopaste* | 15gm | 1 dose |
| Atropine | 0.3mg | 3mL | Ketorolac slow IV/IO* | 7.5mg | 0.5mL |
| Calcium Chloride | 300mg | 3mL | Ketorolac IM* | 15mg | 1mL |
| Dextrose 10% slow IV | 75mL | 75mL | Lidocaine 2% IO | 7.5mg | 0.38mL |
| Diphenhydramine IV/IM | 15mg | 0.3mL | Midazolam IV/IM/IO | 1.5mg | 0.3mL |
| Duodote™ | 1 dose | NA | Midazolam IN | 3mg | 0.6mL |
| Epinephrine Push Dose | 10mcg | 1mL | Morphine IV/IM/IO | 1.5mg | 0.38mL |
| Epinephrine 0.1mg/mL IV | 0.15mg | 1.5mL | Naloxone IV/IM/IN | 1.5mg | 1.5mL |
| Epinephrine 1mg/mL IM | 0.15mg | 0.15mL | Normal Saline IV Bolus | 300mL | 300mL |
| Epinephrine 1mg/mL NEB | 5mg | 5mL | Ondansetron ODT* | 4mg | 1 tablet |
| Fentanyl IV/IM | 15mcg | 0.3mL | Sodium Bicarbonate | 15mEq | 15mL |

*4 years or older

**WHITE**

**16 Kg**

| **Length 94.5 – 107 cm** | | | **3 – 4 years** | | |
|---|---|---|---|---|---|
| Normal Vital Signs: | Heart Rate: 80-130 | | Respirations: 20-30 | Systolic BP: >75 | |
| Cardioversion: | 16 joules | | 32 joules | 32 joules | |
| Defibrillation: | 32 joules | | 64 joules | 64 joules | |
| Medication | Dose | mLs | Medication | Dose | mLs |
| Adenosine | 1.6mg | 0.53mL | Fentanyl IN | 24mcg | 0.48mL |
| Albuterol NEB | 5mg | 6mL | Glucagon IM | 1mg | 1mL |
| Amiodarone | 80mg | 1.6mL | Glucopaste* | 15gm | 1 dose |
| Atropine | 0.32mg | 3.2mL | Ketorolac slow IV/IO* | 8mg | 0.53mL |
| Calcium Chloride | 320mg | 3.2mL | Ketorolac IM* | 16mg | 1.07mL |
| Dextrose 10% slow IV | 80mL | 80mL | Lidocaine 2% IO | 8mg | 0.4mL |
| Diphenhydramine IV/IM | 16mg | 0.32mL | Midazolam IV/IM/IO | 1.6mg | 0.32mL |
| Duodote™ | 1 dose | NA | Midazolam IN | 3.2mg | 0.64mL |
| Epinephrine Push Dose | 10mcg | 1mL | Morphine IV/IM/IO | 1.6mg | 0.4mL |
| Epinephrine 0.1mg/mL IV | 0.16mg | 1.6mL | Naloxone IV/IM/IN | 1.6mg | 1.6mL |
| Epinephrine 1mg/mL IM | 0.16mg | 0.16mL | Normal Saline IV Bolus | 320mL | 320mL |
| Epinephrine 1mg/mL NEB | 5mg | 5mL | Ondansetron ODT* | 4mg | 1 tablet |
| Fentanyl IV/IM | 16mcg | 0.32mL | Sodium Bicarbonate | 16mEq | 16mL |

*4 years or older

**WHITE**

**17 Kg**

| **Length 94.5 – 107 cm** | | | **3 – 4 years** | | |
|---|---|---|---|---|---|
| Normal Vital Signs: | Heart Rate: 80-130 | | Respirations: 20-30 | Systolic BP: >75 | |
| Cardioversion: | 17 joules | | 34 joules | 34 joules | |
| Defibrillation: | 34 joules | | 68 joules | 68 joules | |
| Medication | Dose | mLs | Medication | Dose | mLs |
| Adenosine | 1.7mg | 0.57mL | Fentanyl IN | 25.5mcg | 0.51mL |
| Albuterol NEB | 5mg | 6mL | Glucagon IM | 1mg | 1mL |
| Amiodarone | 85mg | 1.7mL | Glucopaste* | 15gm | 1 dose |
| Atropine | 0.34mg | 3.4mL | Ketorolac slow IV/IO* | 8.5mg | 0.56mL |
| Calcium Chloride | 340mg | 3.4mL | Ketorolac IM* | 17mg | 1.13mL |
| Dextrose 10% slow IV | 85mL | 85mL | Lidocaine 2% IO | 8.5mg | 0.42mL |
| Diphenhydramine IV/IM | 17mg | 0.34mL | Midazolam IV/IM/IO | 1.7mg | 0.34mL |
| Duodote™ | 1 dose | NA | Midazolam IN | 3.4mg | 0.68mL |
| Epinephrine Push Dose | 10mcg | 1mL | Morphine IV/IM/IO | 1.7mg | 0.43mL |
| Epinephrine 0.1mg/mL IV | 0.17mg | 1.7mL | Naloxone IV/IM/IN | 1.7mg | 1.7mL |
| Epinephrine 1mg/mL IM | 0.17mg | 0.17mL | Normal Saline IV Bolus | 340mL | 340mL |
| Epinephrine 1mg/mL NEB | 5mg | 5mL | Ondansetron ODT* | 4mg | 1 tablet |
| Fentanyl IV/IM | 17mcg | 0.34mL | Sodium Bicarbonate | 17mEq | 17mL |

**WHITE**

*4 years or older

**18 Kg**

| **Length 94.5 – 107 cm** | | | **3 – 4 years** | | |
|---|---|---|---|---|---|
| Normal Vital Signs: | Heart Rate: 80-130 | | Respirations: 20-30 | Systolic BP: >75 | |
| Cardioversion: | 18 joules | | 36 joules | 36 joules | |
| Defibrillation: | 36 joules | | 72 joules | 72 joules | |
| Medication | Dose | mLs | Medication | Dose | mLs |
| Adenosine | 1.8mg | 0.6mL | Fentanyl IN | 27mcg | 0.54mL |
| Albuterol NEB | 5mg | 6mL | Glucagon IM | 1mg | 1mL |
| Amiodarone | 90mg | 1.8mL | Glucopaste* | 15gm | 1 dose |
| Atropine | 0.36mg | 3.6mL | Ketorolac slow IV/IO* | 9mg | 0.6mL |
| Calcium Chloride | 360mg | 3.6mL | Ketorolac IM* | 18mg | 1.2mL |
| Dextrose 10% slow IV | 90mL | 90mL | Lidocaine 2% IO | 9mg | 0.45mL |
| Diphenhydramine IV/IM | 18mg | 0.36mL | Midazolam IV/IM/IO | 1.8mg | 0.36mL |
| Duodote™ | 1 dose | NA | Midazolam IN | 3.6mg | 0.72mL |
| Epinephrine Push Dose | 10mcg | 1mL | Morphine IV/IM/IO | 1.8mg | 0.45mL |
| Epinephrine 0.1mg/mL IV | 0.18mg | 1.8mL | Naloxone IV/IM/IN | 1.8mg | 1.8mL |
| Epinephrine 1mg/mL IM | 0.18mg | 0.18mL | Normal Saline IV Bolus | 360mL | 360mL |
| Epinephrine 1mg/mL NEB | 5mg | 5mL | Ondansetron ODT* | 4mg | 1 tablet |
| Fentanyl IV/IM | 18mcg | 0.36mL | Sodium Bicarbonate | 18mEq | 18mL |

**WHITE**

*4 years or older

## 19 Kg

| Length 107 – 119.5 cm | | | 5 – 6 years | | |
|---|---|---|---|---|---|
| Normal Vital Signs: | Heart Rate: 70-120 | | Respirations: 15-30 | Systolic BP: >80 | |
| Cardioversion: | 19 joules | | 38 joules | 38 joules | |
| Defibrillation: | 38 joules | | 76 joules | 76 joules | |
| **Medication** | **Dose** | **mLs** | **Medication** | **Dose** | **mLs** |
| Adenosine | 1.9mg | 0.63mL | Fentanyl IN | 28.5mcg | 0.57mL |
| Albuterol NEB | 5mg | 6mL | Glucagon IM | 1mg | 1mL |
| Amiodarone | 95mg | 1.9mL | Glucopaste | 15gm | 1 dose |
| Atropine | 0.38mg | 3.8mL | Ketorolac slow IV/IO | 9.5mg | 0.63mL |
| Calcium Chloride | 380mg | 3.8mL | Ketorolac IM | 19mg | 1.27mL |
| Dextrose 10% slow IV | 95mL | 95mL | Lidocaine 2% IO | 9.5mg | 0.48mL |
| Diphenhydramine IV/IM | 19mg | 0.38mL | Midazolam IV/IM/IO | 1.9mg | 0.38mL |
| Duodote™ | 1 dose | NA | Midazolam IN | 3.8mg | 0.76mL |
| Epinephrine Push Dose | 10mcg | 1mL | Morphine IV/IM/IO | 1.9mg | 0.48mL |
| Epinephrine 0.1mg/mL IV | 0.19mg | 1.9mL | Naloxone IV/IM/IN | 1.9mg | 1.9mL |
| Epinephrine 1mg/mL IM | 0.19mg | 0.19mL | Normal Saline IV Bolus | 380mL | 380mL |
| Epinephrine 1mg/mL NEB | 5mg | 5mL | Ondansetron ODT | 4mg | 1 tablet |
| Fentanyl IV/IM | 19mcg | 0.38mL | Sodium Bicarbonate | 19mEq | 19mL |

## 20 Kg

| Cardioversion: | 20 joules | | 40 joules | 40 joules | |
|---|---|---|---|---|---|
| Defibrillation: | 40 joules | | 80 joules | 80 joules | |
| **Medication** | **Dose** | **mLs** | **Medication** | **Dose** | **mLs** |
| Adenosine | 2mg | 0.67L | Fentanyl IN | 30mcg | 0.6mL |
| Albuterol NEB | 5mg | 6mL | Glucagon IM | 1mg | 1mL |
| Amiodarone | 100mg | 2mL | Glucopaste | 15gm | 1 dose |
| Atropine | 0.4mg | 4mL | Ketorolac slow IV/IO | 10mg | 0.67mL |
| Calcium Chloride | 400mg | 4mL | Ketorolac IM | 20mg | 1.33mL |
| Dextrose 10% slow IV | 100mL | 100mL | Lidocaine 2% IO | 10mg | 0.5mL |
| Diphenhydramine IV/IM | 20mg | 0.4mL | Midazolam IV/IM/IO | 2mg | 0.4mL |
| Duodote™ | 1 dose | NA | Midazolam IN | 4mg | 0.8mL |
| Epinephrine Push Dose | 10mcg | 1mL | Morphine IV/IM/IO | 2mg | 0.5mL |
| Epinephrine 0.1mg/mL IV | 0.2mg | 2mL | Naloxone IV/IM/IN | 2mg | 2mL |
| Epinephrine 1mg/mL IM | 0.2mg | 0.2mL | Normal Saline IV Bolus | 400mL | 400mL |
| Epinephrine 1mg/mL NEB | 5mg | 5mL | Ondansetron ODT | 4mg | 1 tablet |
| Fentanyl IV/IM | 20mcg | 0.4mL | Sodium Bicarbonate | 20mEq | 20mL |

## 22 Kg

| Cardioversion: | 22 joules | | 44 joules | 44 joules | |
|---|---|---|---|---|---|
| Defibrillation: | 44 joules | | 88 joules | 88 joules | |
| **Medication** | **Dose** | **mLs** | **Medication** | **Dose** | **mLs** |
| Adenosine | 2.2mg | 0.73mL | Fentanyl IN | 33mcg | 0.66mL |
| Albuterol NEB | 5mg | 6mL | Glucagon IM | 1mg | 1mL |
| Amiodarone | 110mg | 2.2mL | Glucopaste | 15gm | 1 dose |
| Atropine | 0.44mg | 4.4mL | Ketorolac slow IV/IO | 11mg | 0.73mL |
| Calcium Chloride | 440mg | 4.4mL | Ketorolac IM | 22mg | 1.47mL |
| Dextrose 10% slow IV | 110mL | 110mL | Lidocaine 2% IO | 11mg | 0.55mL |
| Diphenhydramine IV/IM | 22mg | 0.44mL | Midazolam IV/IM/IO | 2.2mg | 0.44mL |
| Duodote™ | 1 dose | NA | Midazolam IN | 4.4mg | 0.88mL |
| Epinephrine Push Dose | 10mcg | 1mL | Morphine IV/IM/IO | 2.2mg | 0.55mL |
| Epinephrine 0.1mg/mL IV | 0.22mg | 2.2mL | Naloxone IV/IM/IN | 2mg | 2mL |
| Epinephrine 1mg/mL IM | 0.22mg | 0.22mL | Normal Saline IV Bolus | 440mL | 440mL |
| Epinephrine 1mg/mL NEB | 5mg | 5mL | Ondansetron ODT | 4mg | 1 tablet |
| Fentanyl IV/IM | 22mcg | 0.44mL | Sodium Bicarbonate | 22mEq | 22mL |

BLUE

## 24 Kg

| Length 119 – 129 cm | | | 7 – 9 years | | |
|---|---|---|---|---|---|
| Normal Vital Signs: | Heart Rate: 70-110 | | Respirations: 15-30 | Systolic BP: >80 | |
| Cardioversion: | 24 joules | | 48 joules | 48 joules | |
| Defibrillation: | 48 joules | | 96 joules | 96 joules | |
| **Medication** | **Dose** | **mLs** | **Medication** | **Dose** | **mLs** |
| Adenosine | 2.4mg | 0.8mL | Fentanyl IN | 36mcg | 0.72mL |
| Albuterol NEB | 5mg | 6mL | Glucagon IM | 1mg | 1mL |
| Amiodarone | 120mg | 2.4mL | Glucopaste | 15gm | 1 dose |
| Atropine | 0.48mg | 4.8mL | Ketorolac slow IV/IO | 12mg | 0.8mL |
| Calcium Chloride | 480mg | 4.8mL | Ketorolac IM | 24mg | 1.6mL |
| Dextrose 10% slow IV | 120mL | 120mL | Lidocaine 2% IO | 12mg | 0.6mL |
| Diphenhydramine IV/IM | 24mg | 0.48mL | Midazolam IV/IM/IO | 2.4mg | 0.48mL |
| Duodote™ | 2 doses | NA | Midazolam IN | 4.8mg | 0.96mL |
| Epinephrine Push Dose | 10mcg | 1mL | Morphine IV/IM/IO | 2.4mg | 0.6mL |
| Epinephrine 0.1mg/mL IV | 0.24mg | 2.4mL | Naloxone IV/IM/IN | 2mg | 2mL |
| Epinephrine 1mg/mL IM | 0.24mg | 0.24mL | Normal Saline IV Bolus | 480mL | 480mL |
| Epinephrine 1mg/mL NEB | 5mg | 5mL | Ondansetron ODT | 4mg | 1 tablet |
| Fentanyl IV/IM | 24mcg | 0.48mL | Sodium Bicarbonate | 24mEq | 24mL |

## 26 Kg

| Cardioversion: | 26 joules | | 52 joules | 52 joules | |
|---|---|---|---|---|---|
| Defibrillation: | 52 joules | | 104 joules | 104 joules | |
| **Medication** | **Dose** | **mLs** | **Medication** | **Dose** | **mLs** |
| Adenosine | 2.6mg | 0.87mL | Fentanyl IN | 36mcg | 0.78mL |
| Albuterol NEB | 5mg | 6mL | Glucagon IM | 1mg | 1mL |
| Amiodarone | 130mg | 2.6mL | Glucopaste | 15gm | 1 dose |
| Atropine | 0.5mg | 5mL | Ketorolac slow IV/IO | 13mg | 0.87mL |
| Calcium Chloride | 520mg | 5.2mL | Ketorolac IM | 26mg | 1.7mL |
| Dextrose 10% slow IV | 130mL | 130mL | Lidocaine 2% IO | 13mg | 0.65mL |
| Diphenhydramine IV/IM | 26mg | 0.52mL | Midazolam IV/IM/IO | 2.6mg | 0.52mL |
| Duodote™ | 2 doses | NA | Midazolam IN | 5mg | 1mL |
| Epinephrine Push Dose | 10mcg | 1mL | Morphine IV/IM/IO | 2.6mg | 0.65mL |
| Epinephrine 0.1mg/mL IV | 0.26mg | 2.6mL | Naloxone IV/IM/IN | 2mg | 2mL |
| Epinephrine 1mg/mL IM | 0.26mg | 0.26mL | Normal Saline IV Bolus | 520mL | 520mL |
| Epinephrine 1mg/mL NEB | 5mg | 5mL | Ondansetron ODT | 4mg | 1 tablet |
| Fentanyl IV/IM | 26mcg | 0.52mL | Sodium Bicarbonate | 26mEq | 26mL |

## 28 Kg

| Cardioversion: | 28 joules | | 56 joules | 56 joules | |
|---|---|---|---|---|---|
| Defibrillation: | 56 joules | | 112 joules | 112 joules | |
| **Medication** | **Dose** | **mLs** | **Medication** | **Dose** | **mLs** |
| Adenosine | 2.8mg | 0.93mL | Fentanyl IN | 42mcg | 0.84mL |
| Albuterol NEB | 5mg | 6mL | Glucagon IM | 1mg | 1mL |
| Amiodarone | 140mg | 2.8mL | Glucopaste | 15gm | 1 dose |
| Atropine | 0.5mg | 5mL | Ketorolac slow IV/IO | 14mg | 0.93mL |
| Calcium Chloride | 560mg | 5.6mL | Ketorolac IM | 28mg | 1.8mL |
| Dextrose 10% slow IV | 140mL | 140mL | Lidocaine 2% IO | 14mg | 0.7mL |
| Diphenhydramine IV/IM | 28mg | 0.56mL | Midazolam IV/IM/IO | 2.8mg | 0.56mL |
| Duodote™ | 2 doses | NA | Midazolam IN | 5mg | 1mL |
| Epinephrine Push Dose | 10mcg | 1mL | Morphine IV/IM/IO | 2.8mg | 0.7mL |
| Epinephrine 0.1mg/mL IV | 0.28mg | 2.8mL | Naloxone IV/IM/IN | 2mg | 2mL |
| Epinephrine 1mg/mL IM | 0.28mg | 0.28mL | Normal Saline IV Bolus | 560mL | 560mL |
| Epinephrine 1mg/mL NEB | 5mg | 5mL | Ondansetron ODT | 4mg | 1 tablet |
| Fentanyl IV/IM | 28mcg | 0.56mL | Sodium Bicarbonate | 28mEq | 28mL |

ORANGE

**30 Kg** — **GREEN**

| Length 129 – 141.5 cm | | | 10 – 12 years | | |
|---|---|---|---|---|---|
| Normal Vital Signs: | Heart Rate: 60-100 | | Respirations: 15-20 | Systolic BP: >90 | |
| Cardioversion: | 30 joules | | 60 joules | 60 joules | |
| Defibrillation: | 60 joules | | 120 joules | 120 joules | |
| **Medication** | **Dose** | **mLs** | **Medication** | **Dose** | **mLs** |
| Adenosine | 3mg | 1mL | Fentanyl IN | 45mcg | 0.9mL |
| Albuterol NEB | 5mg | 6mL | Glucagon IM | 1mg | 1mL |
| Amiodarone | 150mg | 3mL | Glucopaste | 15gm | 1 dose |
| Atropine | 0.5mg | 5mL | Ketorolac slow IV/IO | 15mg | 1mL |
| Calcium Chloride | 600mg | 6mL | Ketorolac IM | 30mg | 2mL |
| Dextrose 10% slow IV | 150mL | 150mL | Lidocaine 2% IO | 15mg | 0.75mL |
| Diphenhydramine IV/IM | 30mg | 0.6mL | Midazolam IV/IM/IO | 3mg | 0.6mL |
| Duodote™ | 2 doses | NA | Midazolam IN | 5mg | 1mL |
| Epinephrine Push Dose | 10mcg | 1mL | Morphine IV/IM/IO | 3mg | 0.75mL |
| Epinephrine 0.1mg/mL IV | 0.3mg | 3mL | Naloxone IV/IM/IN | 2mg | 2mL |
| Epinephrine 1mg/mL IM | 0.3mg | 0.3mL | Normal Saline IV Bolus | 600mL | 600mL |
| Epinephrine 1mg/mL NEB | 5mg | 5mL | Ondansetron ODT | 4mg | 1 tablet |
| Fentanyl IV/IM | 30mcg | 0.6mL | Sodium Bicarbonate | 30mEq | 30mL |

**32 Kg** — **GREEN**

| Length 129 – 141.5 cm | | | 10 – 12 years | | |
|---|---|---|---|---|---|
| Normal Vital Signs: | Heart Rate: 60-100 | | Respirations: 15-20 | Systolic BP: >90 | |
| Cardioversion: | 32 joules | | 64 joules | 64 joules | |
| Defibrillation: | 64 joules | | 128 joules | 128 joules | |
| **Medication** | **Dose** | **mLs** | **Medication** | **Dose** | **mLs** |
| Adenosine | 3.2mg | 1.07mL | Fentanyl IN | 48mcg | 0.96mL |
| Albuterol NEB | 5mg | 6mL | Glucagon IM | 1mg | 1mL |
| Amiodarone | 160mg | 3.2mL | Glucopaste | 15gm | 1 dose |
| Atropine | 0.5mg | 5mL | Ketorolac slow IV/IO | 15mg | 1mL |
| Calcium Chloride | 640mg | 6.4mL | Ketorolac IM | 30mg | 2mL |
| Dextrose 10% slow IV | 160mL | 160mL | Lidocaine 2% IO | 16mg | 0.8mL |
| Diphenhydramine IV/IM | 32mg | 0.64mL | Midazolam IV/IM/IO | 3.2mg | 0.64mL |
| Duodote™ | 2 doses | NA | Midazolam IN | 5mg | 1mL |
| Epinephrine Push Dose | 10mcg | 1mL | Morphine IV/IM/IO | 3.2mg | 0.8mL |
| Epinephrine 0.1mg/mL IV | 0.32mg | 3.2mL | Naloxone IV/IM/IN | 2mg | 2mL |
| Epinephrine 1mg/mL IM | 0.32mg | 0.32mL | Normal Saline IV Bolus | 640mL | 640mL |
| Epinephrine 1mg/mL NEB | 5mg | 5mL | Ondansetron ODT | 4mg | 1 tablet |
| Fentanyl IV/IM | 32mcg | 0.64mL | Sodium Bicarbonate | 32mEq | 32mL |

| 34 Kg | Length 129 – 141.5 cm | | | 10 – 12 years | | | GREEN |
|---|---|---|---|---|---|---|---|
| | Normal Vital Signs: | Heart Rate: 60-100 | | Respirations: 15-20 | Systolic BP: >90 | | |
| | Cardioversion: | 34 joules | | 68 joules | 68 joules | | |
| | Defibrillation: | 68 joules | | 136 joules | 136 joules | | |
| | Medication | Dose | mLs | Medication | Dose | mLs | |
| | Adenosine | 3.4mg | 1.13mL | Fentanyl IN | 50mcg | 1mL | |
| | Albuterol NEB | 5mg | 6mL | Glucagon IM | 1mg | 1mL | |
| | Amiodarone | 170mg | 3.4mL | Glucopaste | 15gm | 1 dose | |
| | Atropine | 0.5mg | 5mL | Ketorolac slow IV/IO | 15mg | 1mL | |
| | Calcium Chloride | 680mg | 6.8mL | Ketorolac IM | 30mg | 2mL | |
| | Dextrose 10% slow IV | 170mL | 170mL | Lidocaine 2% IO | 17mg | 0.85mL | |
| | Diphenhydramine IV/IM | 34mg | 0.68mL | Midazolam IV/IM/IO | 3.4mg | 0.68mL | |
| | Duodote™ | 2 doses | NA | Midazolam IN | 5mg | 1mL | |
| | Epinephrine Push Dose | 10mcg | 1mL | Morphine IV/IM/IO | 3.4mg | 0.85mL | |
| | Epinephrine 0.1mg/mL IV | 0.34mg | 3.4mL | Naloxone IV/IM/IN | 2mg | 2mL | |
| | Epinephrine 1mg/mL IM | 0.34mg | 0.34mL | Normal Saline IV Bolus | 680mL | 680mL | |
| | Epinephrine 1mg/mL NEB | 5mg | 5mL | Ondansetron ODT | 4mg | 1 tablet | |
| | Fentanyl IV/IM | 34mcg | 0.68mL | Sodium Bicarbonate | 34mEq | 34mL | |

| 36 Kg | Length 129 – 141.5 cm | | | 10 – 12 years | | | GREEN |
|---|---|---|---|---|---|---|---|
| | Normal Vital Signs: | Heart Rate: 60-100 | | Respirations: 15-20 | Systolic BP: >90 | | |
| | Cardioversion: | 36 joules | | 72 joules | 72 joules | | |
| | Defibrillation: | 72 joules | | 144 joules | 144 joules | | |
| | Medication | Dose | mLs | Medication | Dose | mLs | |
| | Adenosine | 3.6mg | 1.2mL | Fentanyl IN | 50mcg | 1mL | |
| | Albuterol NEB | 5mg | 6mL | Glucagon IM | 1mg | 1mL | |
| | Amiodarone | 180mg | 3.6mL | Glucopaste | 15gm | 1 dose | |
| | Atropine | 0.5mg | 5mL | Ketorolac slow IV/IO | 15mg | 1mL | |
| | Calcium Chloride | 720mg | 7.2mL | Ketorolac IM | 30mg | 2mL | |
| | Dextrose 10% slow IV | 180mL | 180mL | Lidocaine 2% IO | 18mg | 0.9mL | |
| | Diphenhydramine IV/IM | 36mg | 0.72mL | Midazolam IV/IM/IO | 3.6mg | 0.72mL | |
| | Duodote™ | 2 doses | NA | Midazolam IN | 5mg | 1mL | |
| | Epinephrine Push Dose | 10mcg | 1mL | Morphine IV/IM/IO | 3.6mg | 0.9mL | |
| | Epinephrine 0.1mg/mL IV | 0.36mg | 3.6mL | Naloxone IV/IM/IN | 2mg | 2mL | |
| | Epinephrine 1mg/mL IM | 0.36mg | 0.36mL | Normal Saline IV Bolus | 720mL | 720mL | |
| | Epinephrine 1mg/mL NEB | 5mg | 5mL | Ondansetron ODT | 4mg | 1 tablet | |
| | Fentanyl IV/IM | 36mcg | 0.72mL | Sodium Bicarbonate | 36mEq | 36mL | |

ADULT

## Longer than the Length-Based Resuscitation Tape

BLACK

| Normal Vital Signs: | Heart Rate: 50-99 | | Respirations: 12-20 | Systolic BP: >100 | |
|---|---|---|---|---|---|
| Cardioversion: | 120 joules | | 150 joules | 200 joules | |
| Defibrillation: | 200 joules | | 200 joules | 200 joules | |
| **Medication** | **Dose** | **mLs** | **Medication** | **Dose** | **mLs** |
| Adenosine | 6 or 12mg | 2 or 4mL | Glucagon IM | 1mg | 1mL |
| Albuterol NEB | 5mg | 6mL | Glucopaste | 15gm | 1 dose |
| Amiodarone | 300mg | 6mL | Ketorolac slow IV/IO | 15mg | 1mL |
| Aspirin | 325mg | 1 tablet | Ketorolac IM | 30mg | 2mL |
| Atropine | 0.5mg | 5mL | Lidocaine 2% IO | 40mg | 2mL |
| Calcium Chloride | 1gm | 10mL | Midazolam IV/IM/IN/IO[3] | 2-5mg | 0.4-1mL |
| Dextrose 10% slow IV[1] | 125-250mL | 125-250mL | Morphine IV/IM/IO[4] | 4mg | 1mL |
| | | | Naloxone IV | 0.8-2mg | 0.8-2mL |
| Diphenhydramine IV/IM | 50mg | 1mL | Naloxone IM | 2mg | 2mL |
| Duodote™ | 1-3 doses | NA | Naloxone IN | 2-4mg | 2-4mL |
| Epinephrine Push Dose | 10mcg | 10mL | Nitroglycerin[5] | 0.4mg | 1 dose |
| Epinephrine 0.1mg/mL IV | 1mg | 0.5mL | Normal Saline IV Bolus | 1L | 1L |
| Epinephrine 1mg/mL IM | 0.5mg | 5mL | Ondansetron ODT | 4mg | 1 tablet |
| Epinephrine 1mg/mL NEB | 5mg | 1mL | Ondansetron IV/IM[6] | 4mg | 2mL |
| Fentanyl IV/IM/IN[2] | 50mcg | 1mL | Sodium Bicarbonate | 15mEq | 15mL |

NOTES:

[1] Dextrose: **125mL IV** and reassess, if patient remains symptomatic, repeat x1 for a total of 250mL

[2] Fentanyl: **50mcg (1mL) slow IV push or IM/IN**, repeat every 5min prn, maximum total dose prior to Base Contact 150mcg

[3] Midazolam:

Agitated Delirium / Behavioral / Psychiatric Crisis

**5mg (1mL) IM/IN/IV**, repeat x1 in 5 min prn, maximum total dose prior to Base contact 10mg for Agitated Delirium (Psychiatric Crisis requires Base order for any)

Cardiac Dysrhythmia - sedation prior to synchronized cardioversion / transcutaneous pacing

**2mg (0.4mL) slow IV/IO push/IM/IN**, may repeat ever 5 min, maximum total dose prior to Base contact 6mg

Seizure - Active

**5mg (1mL) IM/IN/IV**, repeat x1 in 2 min prn, maximum total dose prior to Base contact 10mg

[4] Morphine: **4mg (1mL) slow IV/IO push or IM**, repeat every 5min prn, maximum total dose prior to Base contact 12mg

[5] Nitroglycerin

Chest Pain – Suspected Cardiac / Chest Pain – STEMI

**0.4 mg SL** prn, repeat every 5min prn x2, total 3 doses, hold if SBP < 100mmHg or patient has taken sexually enhancing medication within 48 hours

Pulmonary Edema / CHF

**0.4mg SL**, for SBP ≥ 100mmHg; **0.8mg SL**, for SBP ≥ 150mmHg; **1.2mg SL**, for SBP ≥ 200mmHg

Repeat every 3-5 min prn x2 for persistent dyspnea, assess blood pressure prior to each administration and determine subsequent dose base on SBP as listed above. Hold if SBP

[6] Ondansetron IV/IM – only for 15 years of age or older

# Medical Control Guideline: CONDUCTED ELECTRICAL WEAPON

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**PRINCIPLE:**

1. Safety is the first priority in any situation involving the use of a conducted electrical weapon (CEW), trade name Taser®. Law enforcement should secure the scene and ensure the safety of EMS personnel before the patient is assessed or treated.

2. Aggressive or violent behavior may be symptomatic of medical conditions such as head trauma, alcohol or drug related problems, metabolic disorders, stress or psychiatric problems.

3. Concurrent intoxication with cocaine, methamphetamine, phencyclidine (PCP), or other stimulants is common among those subdued by law enforcement with electrical weapons.

4. Physical assessment should include evaluation for any potential injury that may have occurred as a result of the use of a CEW.

5. Paramedics cannot medically clear CEW patients for booking by law enforcement.

**GUIDELINES:**

1. Do not remove CEW barbs, probes or darts unless they interfere with the patient's airway, for life-saving measures, or the individual cannot be safely transported with the barbs in place.

2. Complete a thorough physical assessment for all patients who have sustained the use of a CEW.

3. Maintain a high index of suspicion for traumatic injuries (i.e., sustained from fall) as a result of the deployment and discharge of the CEW.

4. Paramedics shall make Base Hospital Contact and transport in accordance with the protocol appropriate for the Provider Impression. For isolated CEW injury, the appropriate Provider Impression is Traumatic Injury.

5. Documentation on the Patient Care Report.

# Medical Control Guideline: CONTINUOUS POSITIVE AIRWAY PRESSURE

*1200 Table of Contents*

**PRINCIPLES:**

1. Continuous Positive Airway Pressure (CPAP) is a non-invasive, mechanical ventilatory support system. It is effective in treating patients with shortness of breath by decreasing work of breathing, improving pulmonary gas exchange and improving pulmonary compliance. CPAP decreases the need for endotracheal intubation, reduces intensive care unit admissions, and shortens hospital length of stay.

2. CPAP is approved for patients with moderate-to-severe respiratory distress who meet ALL of the following criteria:
   a. Greater than the length of the length-based resuscitation tape (i.e. Broselow tm)
   b. Awake
   c. Cooperative
   d. Able to follow commands

3. Contraindications to CPAP include:
   a. Respiratory or cardiac arrest
   b. Inability to protect airway
   c. Cannot follow basic commands
   d. Hypotension (systolic blood pressure < 90mmHg)
   e. Tracheostomy
   f. Vomiting
   g. Suspected pneumothorax
   h. Respiratory distress due to traumatic injury

**GUIDELINES:**

1. Explain the procedure to the patient prior to starting CPAP. Patient understanding and cooperation are critical to successful treatment.

2. Titrate CPAP pressure per manufacturer's guidelines to improvement of symptoms as tolerated by patient. Improvement is demonstrated by a decrease in respiratory distress, improvement in vital signs, and/or an increase in oxygen saturation.

3. Continuously monitor vital signs, including oxygen saturation and end-tidal carbon dioxide, to ensure adequate ventilation and hemodynamic stability. Document findings at least every five minutes throughout the treatment until the transfer of care.

4. If the patient's condition worsens or is unable to tolerate CPAP, discontinue CPAP and continue to supplement oxygen per *MCG 1302*. Be prepared to assist ventilations with a bag mask as indicated.

5. Maintain CPAP for patients who tolerate treatment until care is assumed by the receiving facility.

6. Document the patient's response to therapy, CPAP pressure (initial and at transfer of care), any adverse event while on CPAP, and rationale if CPAP is discontinued prior to the transfer of care.

# Medical Control Guideline: DRUG REFERENCE

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| DRUG | Ref. No. | Date of last Revision |
|---|---|---|
| Adenosine | 1317.1 | 07-01-18 |
| Albuterol | 1317.3 | 07-01-18 |
| Amiodarone | 1317.5 | 07-01-18 |
| Aspirin | 1317.7 | 07-01-18 |
| Atropine | 1317.9 | 04-01-19 |
| Calcium Chloride | 1317.11 | 07-01-18 |
| Dextrose | 1317.13 | 07-01-18 |
| Diphenhydramine | 1317.15 | 07-01-18 |
| Epinephrine | 1317.17 | 07-01-18 |
| Fentanyl | 1317.19 | 04-01-19 |
| Glucagon | 1317.21 | 07-01-18 |
| Ketorolac | 1317.22 | 07-01-20 |
| Lidocaine | 1317.23 | 07-01-18 |
| Midazolam | 1317.25 | 07-01-19 |
| Morphine Sulfate | 1317.27 | 04-01-19 |
| Naloxone | 1317.29 | 07-01-18 |
| Nitroglycerin | 1317.31 | 07-01-18 |
| Ondansetron | 1317.33 | 07-01-18 |
| Oxygen | 1317.35 | 07-01-18 |
| Pralidoxime Chloride (DuoDote™) | 1317.37 | 07-01-18 |
| Sodium Bicarbonate | 1317.39 | 07-01-18 |

## Medical Control Guideline: DRUG REFERENCE - ADENOSINE — Ref. No. 1317.1

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**Classification**

Antidysrthythmic

**Prehospital Indications**

Cardiac Dysrhythmia:
- SVT - Narrow Complex: HR ≥ 150 for adults; ≥180 for a child; and ≥220 for infants
  - Perfusing unresponsive to Valsalva
  - Alert patients with poor perfusion
- Regular/Monomorphic Wide Complex Tachycardia
  - Adequate perfusion
  - Alert patients with poor perfusion

**Other Common Indications**

Used in hospital setting as part of drug combination for cardiac "stress testing" and diagnosis of pulmonary hypertension

**Adult Dose**

**6 or 12mg rapid IVP** (per protocol), within 1-3 seconds, followed by a rapid flush of 10mL of NS
**If no conversion after 1**-2 minutes, may repeat 12mg rapid IVP followed by rapid flush of 10mL of NS.

**Pediatric Dose**

**0.1mg/kg (3mg/mL) rapid IVP**, dose per *MCG 1309*, maximum 6mg, followed by a rapid flush of 10mL NS
**If no conversion after 1**-2 minutes, may repeat one time 0.2mg/kg (3mg/mL) followed by a rapid flush of 10mL NS, dose per *MCG 1309*, maximum 12mg

**Mechanism of Action**

Slows conduction through the AV node and interrupts AV reentry pathways as well as conduction through the sinoatrial (SA) nodes

**Pharmacokinetics**

Onset immediate, Duration < 10 secs

**Contraindications**

Should not be used for sinus tachycardia, despite rate >150
2nd and 3rd degree heart block without pacemaker
Sinus Node Disease (Sick Sinus Syndrome)
Wolff-Parkinson-White (WPW) Syndrome or ECG consistent with WPW
Atrial flutter or fibrillation
Heart transplant – Base contact required, as noted "super-sensitivity" of transplanted heart to adenosine

**Interactions**

Potentiated by blocker of nucleoside transport [e.g., carbamazepine (Tegretol)]
Antagonized by methylxanthines such as caffeine and theophylline

**Adverse Effects**

Blurred vision
Bradycardia / Asystole
Chest pain / Chest pressure
Dyspnea
Head pressure
Hypotension
Lightheadedness / Dizziness
Metallic taste / Throat tightness
Numbness / Tingling
Palpitations

## Medical Control Guideline: DRUG REFERENCE - ADENOSINE Ref. No. 1317.1

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**Prehospital Considerations**

- Cannulate a large proximal vein with an 18-20g catheter. Use IV port closest to patient and immediately flush with 10mL Normal Saline to ensure rapid administration of drug.
- Run a 6 second ECG strip before, during and after drug administration.
- Patients usually have a 10 second period of escape beats or asystole before the sinus node starts up again. This is perceived as a feeling of impending death and can be extremely frightening for patients.
- If the wide-complex tachycardia is ventricular in origin, Adenosine is highly unlikely to cause successful cardioversion.

## Medical Control Guideline: DRUG REFERENCE - ALBUTEROL Ref. No. 1317.3

*1200 Table of Contents*

**Classification**

Sympathomimetic, $B_2$ Receptor Agonist, Bronchodilator

**Prehospital Indications**

Cardiac Dysrhythmia: suspected hyperkalemia causing bradycardia
Respiratory Distress: bronchospasm caused by acute asthma, bronchitis, bronchiolitis, COPD, drug overdose, near drowning, pulmonary edema, and/or toxic gas inhalation
Pulmonary Edema/CHF: persistent wheezing despite CPAP
Traumatic Injury: suspected hyperkalemia in the setting of crush injury or potential for development of crush syndrome (administer prior to release of crushed tissue)

**Other Common Indications**

None

**Adult Dose**

Cardiac Dysrhythmia/Crush – Evidence of or suspected hyperkalemia
**5mg (6mL) via neb**, repeat continuously until hospital arrival
Crush – at risk for Crush Syndrome
5 minutes prior to extrication: **5mg (6mL) via mask nebulization** x2 for a total dose of 10mg
Respiratory Distress, Pulmonary Edema/CHF with wheezing, Allergic Reaction with wheezing, Inhalation Injury with wheezing
**5mg (6mL) via neb**
May repeat x2 prn for wheezing

**Pediatric Dose**

Crush – Evidence of or suspected hyperkalemia
**5mg (6mL) via neb**, repeat continuously until hospital arrival
Crush – at risk for Crush Syndrome
5 minutes prior to extrication: **5mg (6mL) via neb**, repeat immediately x1
Respiratory Distress, Allergic Reaction with wheezing, Inhalation Injury with wheezing
< 1 year of age **2.5mg (3mL) via neb**
≥ 1 year of age **5mg (6mL) via neb**
Repeat x2 prn, maximum 3 total doses prior to Base contact

**Mechanism of Action**

Selective beta-2 adrenergic agonist that causes relaxation of smooth muscles in the bronchial tree, decreasing airway resistance, facilitating mucous drainage and increasing vital capacity
Shifts potassium intracellular. Has mild beta-1 activity with mild effect on heart rate.

**Pharmacokinetics**

Onset 5-15 min inhaled, Duration 3-6 hours for bronchial smooth muscle relaxation, Duration 3-4 hours for hyperkalemia shifting potassium intracellular

**Contraindications**

Do not use for patients with a known hypersensitivity/allergy to the drug

**Interactions**

Administer with extreme caution to patients being treated with MAO inhibitors or tricyclic antidepressants
Beta blocking agents and Albuterol may each inhibit the effects of the other, monitor closely

**Adverse Effects**

Anxiety/Tremors
Hypertension
Hypokalemia
Palpitations/Tachycardia

## Medical Control Guideline: DRUG REFERENCE - ALBUTEROL Ref. No. 1317.3

**Prehospital Considerations**

- Young children 2-6 years old may be more prone to adverse effects
- Don’t assume patients have administered their own drug properly. Do not include home doses of albuterol in your total drug administration consideration.

## Medical Control Guideline: DRUG REFERENCE - AMIODARONE Ref. No. 1317.5

*1200 Table of Contents*

**Classification**
Antidysrhythmic

**Prehospital Indications**
Cardiac Arrest – Non-Traumatic (adult and pediatric): pulseless ventricular tachycardia or persistent/recurrent ventricular fibrillation (i.e., continued VT/VF after 3 defibrillations)

**Other Common Indications**
Ventricular tachycardia with pulses and adequate perfusion,
Atrial fibrillation or atrial flutter with rapid ventricular rate unresponsive to other treatments

**Adult Dose**
**300mg (6mL) IV/IO**
May repeat 150mg (3mL) IV/IO x1 prn after additional defibrillation x2, max total dose 450mg

**Pediatric Dose**
**5mg/kg (50mg/mL) IV/IO** dose per *MCG 1309*, max total dose 300mg

**Mechanism of Action**
Class III antiarrhythmic agent, which inhibits adrenergic stimulation; affects sodium, potassium, and calcium channels; markedly prolongs action potential and delays repolarization; decreases AV conduction and sinus node function

**Pharmacokinetics**
Onset minutes after IV bolus administration

**Contraindications**
None in cardiac arrest

**Interactions**
**None in cardiac arrest**

**Adverse Effects**
Bradysrhythmias
Congestive heart failure
Hypotension

**Prehospital Considerations**
- Monitor heart rate, blood pressure, and cardiac rhythm closely post resuscitation
- Should not be used routinely in cardiac arrest. For use only in ventricular fibrillation or ventricular tachycardia without pulses unresponsive to attempted defibrillation x2

## Medical Control Guideline: DRUG REFERENCE - ASPIRIN — Ref. No. 1317.7

*1200 Table of Contents*

**Classification**

Non- steroidal anti-inflammatory drug (NSAID)
Platelet Inhibitor

**Prehospital Indications**

Chest Pain – Suspected Cardiac
Chest Pain – STEMI

**Other Common Indications**

Mild to moderate pain
Prophylactic use in the primary prevention of cardiovascular disease

**Adult Dose**

**325mg nonenteric/chewable tablets PO**

**Pediatric Dose**

Not recommended for pediatric administration in the out-of-hospital setting

**Mechanism of Action**

Inhibits platelet aggregation, inhibits synthesis of prostaglandin by cyclooxygenase, has antipyretic and analgesic activity

**Pharmacokinetics**

Onset is 5-30 min,

**Contraindications**

Known aspirin allergy, bleeding GI ulcers

Should not be administered to pediatric patients

**Interactions**

Anticoagulants and alcohol abuse potentiates risk of bleeding

**Adverse Effects**

GI bleeding
Prolonged bleeding time

**Prehospital Considerations**

- Chewing allows for rapid absorption. Chewable preparations are preferred, because it is less likely to provoke nausea but the pill can also be swallowed if chewable not available.
- A significant portion (7%) of patients with asthma may have aspirin sensitivity. Careful respiratory monitoring should be performed on all patients with history of asthma who receive aspirin in the prehospital setting.
- Tinnitus can be a clinical symptom of aspirin overdose

## Medical Control Guideline: DRUG REFERENCE - ATROPINE Ref. No. 1317.9

*1200 Table of Contents*

**Classification**
Anticholinergic

**Prehospital Indications**
Cardiac Dysrhythmia: symptomatic bradycardia in adults; suspected AV Block or increased vagal tone in pediatrics
Hazmat exposure: organophosphate/pesticide/nerve agent poisoning with heart rate < 60 bpm, respiratory depression and/or extreme salivation

**Other Common Indications**
End-of-life care, to dry secretions for patient comfort
Eye disorders requiring mydriasis (pupillary dilation) for treatment/testing, administered as eye drop
GI disorders caused by hypermobility (chronic diarrhea, irritable bowel syndrome)

**Adult Dose**
Cardiac Dysrhythmia
**0.5mg (5mL) IV/IO push** repeat every 3-5 min prn, maximum total dose 3mg
Organophosphate poisoning
**2mg (20mL) IV/IM/IO**, may repeat every 5 min until patient is asymptomatic

**Pediatric Dose**
Cardiac Dysrhythmia
**0.02mg/kg (0.1mg/mL) IV/IO**, dose per *MCG 1309*, may repeat x1 in 5 min
Organophosphate poisoning
**0.05mg/kg (0.1mg/mL) IV/IM**, may be repeated every 5 min, maximum total dose 5mg

**Mechanism of Action**
Competitively inhibits action of acetylcholine on autonomic effectors innervated by postganglionic nerves

**Pharmacokinetics**
Peak effect in 20-30 min IM, 2-4 min IV/IO, duration 4 hr,

**Contraindications**
Glaucoma
Tachycardia
Thyrotoxicosis

**Interactions**
None for IV/IM/IO administration

**Adverse Effects**
Dry mouth / Thirst
Dysrhythmias
Flushed dry skin
Hypertension / Hypotension
Hyperthermia
Increased intraocular pressure
Mydriasis (pupil dilation)

**Prehospital Considerations**
- Use cautiously if myocardial infarction and/or ischemia is suspected, as atropine will increase myocardial $O_2$ demand, which may worsen the infarct.
- Bradycardia due to 2nd degree type II and 3rd degree heart blocks will not improve with atropine; if treatment indicated, transcutaneous pacing (TCP) should be performed.

## Medical Control Guideline: DRUG REFERENCE – CALCIUM CHLORIDE Ref. No. 1317.11

*1200 Table of Contents*

**Classification**

Electrolyte

**Prehospital Indications**

Cardiac Arrest – Non-Traumatic: suspected hyperkalemia, patients with renal failure
Cardiac Dysrhythmia: suspected hyperkalemia causing bradycardia
Overdose / Poisoning / Ingestion: calcium channel blocker toxicity
Traumatic Injury: suspected hyperkalemia in the setting of crush injury or potential for development of crush syndrome (administer prior to release of crushed tissue)

**Other Common Indications**

Acute hypocalcemia with or without tetany
Topically for hydrofluoric acid burns
Calcium channel blocker overdose

**Adult Dose**

Cardiac Arrest
**1gm (10mL) IVP/IO**
Cardiac Dysrhythmia/Crush - Suspected hyperkalemia
**1gm (10mL) slow IV/IO push**, may repeat x1 for persistent symptoms / ECG abnormalities
Overdose / Poisoning / Ingestion - Suspected Calcium Channel Blocker Overdose
**1g (10mL) IV slow push** over 60 seconds

**Pediatric Dose**

Crush - Suspected hyperkalemia
**20mg/kg (100mg/mL) slow IV/IO push**, dose per *MCG 1309*, repeat x1 for persistent ECG abnormalities
Overdose / Poisoning / Ingestion - Suspected Calcium Channel Blocker Overdose
**20mg/kg (100mg/mL) IV slow push**, dose per *MCG 1309*

**Mechanism of Action**

Essential regulator for the excitation threshold of nerves and muscles; causes significant increase in myocardial contractility and ventricular automaticity. Antidote for some electrolyte imbalances and calcium channel blocker toxicity.

**Pharmacokinetics**

Onset and peaks immediately, duration varies

**Contraindications**

Hypercalcemia
Ventricular fibrillation

**Interactions**

Inactivates or minimizes the effects of catecholamines if not flushed properly
Can cause cardiac standstill in patients taking Digoxin

**Adverse Effects**

Cardiac arrest
Hypotension or hypertension
Pain and burning at injection site
Tingling sensations

**Prehospital Considerations**

- Precipitates to form calcium carbonate (chalk) when used with sodium bicarbonate. Administer calcium chloride and sodium bicarbonate in separate IV/ IO or thoroughly flush in between administrations using at least 10mL of normal saline
- Confirm IV is patent prior to administration as extravasation causes severe tissue necrosis

## Medical Control Guideline: DRUG REFERENCE – DEXTROSE Ref. No. 1317.13

*1200 Table of Contents*

**Classification**
Carbohydrate

**Prehospital Indication**
Hypoglycemia: blood glucose < 60mg/dL

**Other Common Indications**
None

**Adult Dose**
**Dextrose10% in water, 125 mL IV** and reassess, if patient remains symptomatic, repeat x1 for a total of 250 mL

**Pediatric Dose**
= or <24 kg: **Dextrose 10% in water, 5mL/kg IV in 1mL/kg** increments dose per *MCG 1309*, reassess for clinical improvement after every 1mL/kg. Administer slow IVP. May repeat as needed, maximum total dose 5mL/kg. Recheck glucose prn after 3mL/kg infused.
>24 kg: **Dextrose 10% in water, administer 120mL IVPB** and reassess, continue infusion as needed with maximum dose of 5mL/ kg

**Mechanism of Action**
Principal form of glucose (sugar) used by the body to create energy

**Pharmacokinetics**
Onset < 1min, peak effect dependent upon degree and cause of hypoglycemia

**Contraindications**
None

**Interactions**
None

**Adverse Effects**
Pain or burning at injection site
Phlebitis or thrombosis in vein of administration

**Prehospital Considerations**
- Confirm the IV line is patent prior to administration as severe tissue necrosis may occur with extravasation.
- Report and record blood glucose levels before and after administering this solution.

## Medical Control Guideline: DRUG REFERENCE – DIPHENHYDRAMINE Ref. No. 1317.15

*1200 Table of Contents*

**Classification**

Antihistamine

**Prehospital Indications**

Allergic Reaction: itching and/or hives
Dystonic Reaction

**Other Common Indications**

Over-the-counter sleep aid, prevention or treatment of motion sickness, nausea and vomiting
Mild Parkinson's disease
Prevention of extrapyramidal symptoms in patients on antipsychotic medications

**Adult Dose**

**50mg slow IV push** or **50mg IM**, may repeat in 15 min x1, total maximum dose 100mg

**Pediatric Dose**

**1mg/kg slow IV push** one time, dose per *MCG 1309*, if unable to obtain venous access **1mg/kg deep IM**, dose per *MCG 1309*

**Mechanism of Action**

Histamine H1- receptor antagonist of effector cells in respiratory tract, blood vessels, and GI smooth muscle. Possesses anticholinergic properties, resulting in antidyskinetic properties.

**Pharmacokinetics**

Onset is 15-30 min, duration is < 10 min

**Contraindications**

Acute asthma attack

**Interactions**

Increase central nervous system depression when used with alcohol and other central nervous system depressants, or MAO inhibitors

**Adverse Effects**

Confusion
Drowsiness
Mild hypotension
Palpitation
Parodoxical excitement in children
Tachycardia
Wheezing

**Prehospital Considerations**

- Administer injection deep IM into a large muscle group (lateral thigh, gluteus).
- Diphenhydramine (Benadryl) does not treat anaphylaxis/airway edema; if signs of anaphylaxis present, administer epinephrine IM
- Use with caution in elderly as they have increased adverse effects such as confusion, drowsiness
- Use with caution on all patients with a history of asthma.
- May cause paradoxical agitation in pediatric patients.

## Medical Control Guideline: DRUG REFERENCE – EPINEPHRINE Ref. No. 1317.17

*1200 Table of Contents*

**Classification**

Sympathomimetic

**Prehospital Indications**

Anaphylaxis
Cardiac Arrest – Non-Traumatic: cardiac arrest resuscitation, hypotension after return of spontaneous circulation (ROSC) not responsive to IV fluid resuscitation
Cardiac Dysrhythmia: symptomatic bradycardia not responsive to atropine and transcutaneous pacing for adults: and for symptomatic bradycardia unresponsive to oxygenation and ventilation for pediatric patients
Respiratory Distress / Bronchospasm: asthma, reactive bronchospasm (unlikely to benefit in COPD)
Airway Obstruction: stridor or visible airway swelling, croup/tracheitis in pediatrics
Shock / Hypotension: non-traumatic hypotension not responsive to IV fluid resuscitation

**Adult Dose**

Anaphylaxis
**0.5mg (1mg/mL) IM** in the lateral thigh, may repeat every 10 min x2 prn, maximum total 3 doses
Cardiac Arrest
**1mg (0.1mg/mL) 10mL IV/IO** may repeat every 5 min x2, maximum total dose 3mg
Non-traumatic shock (including from symptomatic bradycardia or after ROSC)
**Push-dose epinephrine –** mix 9mL normal saline with 1mL epinephrine 0.1mg/mL (IV formulation) in a 10mL syringe. Administer push-dose epinephrine 1mL IV/IO every 1-5 min as needed to maintain SBP >90mmHg
Respiratory Distress/Bronchospasm
**0.5mg (1mg/mL) IM** in the lateral thigh
Airway Obstruction - Stridor
**Epinephrine (1mg/mL solution) administer 5mg (5mL) via neb**, repeat x1 in 10 min prn
Airway Obstruction – Airway swelling
**Epinephrine (1mg/mL) administer 0.5mg (0.5mL) IM,** repeat every 10 min prn x2, maximum total 3 doses

**Pediatric Dose**

Anaphylaxis
**0.01mg/kg (1mg/mL) IM**, dose per *MCG 1309*, in the lateral thigh, may repeat every 10 min x2 prn for persistent symptoms, maximum total 3 doses
Cardiac Arrest
**0.01mg/kg (0.1mg/mL) IV/IO**, dose per *MCG 1309*, may repeat every 5 min, maximum single dose 1mg, and maximum total dose emg
Cardiac Dysrhythmia - Symptomatic bradycardia
**0.01mg/kg (0.1mg/mL) slow IV/IO push**, dose per *MCG 1309*
Shock / Hypotension (including hypotension after ROSC)
**Push-dose epinephrine –** mix 9mL normal saline with 1mL epinephrine (0.1mg/mL) IV formulation in a 10mL syringe. Administer push-dose epinephrine (0.01mg/mL), dose per *MCG 1309* every 1-5 min as needed to maintain SBP >70mmHg
Respiratory Distress/Bronchospasm
**Epinephrine (1mg/mL) 0.01mg/kg IM** in the lateral thigh, dose per *MCG 1309*
Airway obstruction – Stridor from croup/tracheitis
<1 year old: **Epinephrine (1mg/mL) 2.5mL via neb**, dose per *MCG 1309*
≥ 1 year of age: **Epinephrine (1mg/mL) 5mL via neb,** dose per *MCG 1309*
Repeat x1 in 10 min prn, maximum 2 total doses prior to Base contact
Airway obstruction - Airway swelling
**Epinephrine (1mg/mL) 0.01mg/kg IM** dose per *MCG 1309,* repeat every 10 min prn x2, maximum 3 total doses prior to Base contact

## Medical Control Guideline: DRUG REFERENCE – EPINEPHRINE Ref. No. 1317.17

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**Mechanism of Action**

A naturally occurring catecholamine. Acts directly on alpha and beta adrenergic receptors. It is the most potent activator of alpha receptors vasoconstricting the aorta and peripheral vasculature. Beta 1 stimulation increases inotropy, chronotropy, and AV conduction. Beta 2 stimulation causes bronchial smooth muscle relaxation and vasodilation to internal organs and skeletal muscles.

**Pharmacokinetics**

Onset is < 2 min IV, 1-3 min IM; duration is 5-10 min IV, 20-30 min IM

**Contraindications**

None

**Interactions**

Can be partially deactivated by highly alkaline solutions, such as sodium bicarbonate.

**Adverse Effects**

Anxiety
CVA or MI (rare, IV only)
Hypertension
Palpitations
Tachydysrhythmias
Tremors

**Prehospital Considerations**

- Inadvertent IV injection of usual IM formulation and dose constitutes a 10-fold overdose that can result in sudden severe hypertension and possible cerebral hemorrhage.

## Medical Control Guideline: DRUG REFERENCE – FENTANYL Ref. No. 1317.19

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**Classification**
Synthetic opioid

**Prehospital Indications**
Multiple provider impressions: pain management

**Other Common Indications**
None

**Adult Dose**
**50mcg (1mL) slow IV push or IM/IN**, repeat every 5 min prn, maximum total dose prior to Base contact 150mcg
Contact Base for additional pain management after maximum dose administered: may repeat dose for a maximum total dose of 250mcg

**Pediatric Dose**
**1mcg/kg (50mcg/mL) slow IV push or IM**, dose per *MCG 1309*, or
**1.5mcg/kg (50mcg/mL) IN**, dose per *MCG 1309*
Repeat in 5 min prn x1, maximum 2 total doses prior to Base contact
Contact Base for additional pain management after maximum dose administered: may repeat dose for a maximum 4 total doses

**Mechanism of Action**
Narcotic agonist-analgesic of opiate receptors; inhibits ascending pain pathways thus altering response to pain, increases pain threshold, produces analgesis, respiratory depression and sedation

**Pharmacokinetics**
Onset is immediate; peak in 3-5 min; duration is 30-60 min

**Contraindications**
Hypersensitivity

**Interactions**
Alcohol and other central nervous system depressants potentiate its effect

**Adverse Effects**
Chest wall stiffness / Chest wall pain
Delirium / Convulsions (uncommon)
Muscle stiffness
Nausea and vomiting (most common)
Respiratory depression

**Prehospital Considerations**
- Monitor respiratory status. Respiratory depression, when it occurs, may last longer than the analgesic effect.
- Administer slowly to decrease likelihood of chest stiffness, which can be life threatening.
- Onset of fentanyl is quicker and duration of action is shorter as compared to morphine. Unlike morphine, does not cause histamine release. Therefore, it is unlikely to cause hypotension in therapeutic dosages.
- Naloxone can be used for reversal if needed.

## Medical Control Guideline: DRUG REFERENCE – GLUCAGON Ref. No. 1317.21

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**Classification**
Hormone (pancreatic)

**Prehospital Indications**
Hypoglycemia: glucose <60mg/dL and venous access cannot be established

**Other Common Indications**
Clearance of impacted esophageal foreign body (via smooth muscle relaxation)
Treatment of beta-blocker overdose and/or adjunctive treatment of calcium channel blocker overdose

**Adult Dose**
**1mg (1mL) IM**, may repeat in x1 in 20 min prn

**Pediatric Dose**
< 1 year of age **0.5mL (1mg/mL) IM**, may repeat in x1 in 20 min prn
≥ 1 year of age **1.0mL (1mg/mL) IM**, may repeat in x1 in 20 min prn

**Mechanism of Action**
A hormone naturally produced by pancreatic alpha cells of the islets of Langerhans. Causes breakdown of glycogen (stored in the liver) to glucose and inhibits the synthesis of glycogen from glucose. The combined actions increase the blood levels of glucose.

**Pharmacokinetics**
Onset is 5-20 min; duration is 1-1.5 hr

**Contraindications**
In patients with known insulinoma (insulin-secreting tumor), glucagon will produce worsening hypoglycemia

**Interactions**
None

**Adverse Effects**
Hypotension
Nausea and vomiting

**Prehospital Considerations**
- Use mixture immediately after reconstitution of dry powder and provided solution.
- Patient usually awakens from hypoglycemic coma 5-20 min after glucagon injection. PO carbohydrates should be given as soon as possible after patient regains consciousness.
- Symptoms such as headache, nausea and weakness may persist after recovery from hypoglycemic reaction.
- Glucagon is effective only if there are glycogen stores in the liver. Therefore, it is unlike to be effective in patients with severe malnutrition, adrenal insufficiency or chronic hypoglycemia.

## Medical Control Guideline: DRUG REFERENCE – KETOROLAC Ref. No. 1317.22

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**Classification**
Nonsteroidal Anti-inflammatory Drug (NSAID)

**Prehospital Indications**
Multiple provider impressions: pain management

**Other Common Indications**
None

**Adult Dose**
**15mg (1mL) slow IV/IO push**, or
**30mg (2mL) IM**

**Pediatric Dose**
**0.5mg/kg (15mg/mL) slow IV/IO push**, dose per *MCG 1309*, or
**1mg/kg (15mg/mL) IM**, dose per *MCG 1309*,

**Mechanism of Action**
Reversibly inhibits cyclooxygenase-1 and 2 enzymes, which decreases formation of prostaglandin precursors. Inhibits platelet function. Ketorolac has analgesic and anti-inflammatory properties.

**Pharmacokinetics**
Onset minutes after IM/IV/IO administration

**Contraindications**
Active bleeding
Active wheezing
Age < 4 years old or > 65 years old
Allergy to NSAIDs
Current anticoagulation therapy
Current steroid use
Head injury
History of upper GI bleeding or peptic ulcer disease
History of renal disease or kidney transplant
Known or suspected pregnancy
Suspected sepsis or septic shock

**Interactions**
May enhance the adverse/toxic effect of other NSAIDs and enhance the antiplatelet effect of other agents with antiplatelet properties.

**Adverse Effects**
Abdominal Pain
Headache
Nausea

**Prehospital Considerations**
- Review contraindications prior to administration
- One time does in the prehospital setting
- Avoid in cardiac chest pain

## Medical Control Guideline: DRUG REFERENCE – LIDOCAINE Ref. No. 1317.23

*1200 Table of Contents*

**Classification**
Local Anesthetic

**Prehospital Indications**
Multiple provider impressions: patients responsive to pain that have intraosseous (IO) access

**Other Common Indications**
Topical, transmucosal or intradermal anesthesia
Ventricular arrhythmias refractory to other treatments

**Adult Dose**
**2% 40mg slow IO push over 2 minutes;** may give second dose of 20 mg x1 prn

**Pediatric Dose**
**2% 0.5mg/kg (20mg/mL) slow IO push over 2 minutes**, dose per *MCG 1309*, not to exceed adult dose; may repeat second dose at half the initial dose x1 prn

**Mechanism of Action**
Inhibits sodium ion channels, stabilizing neuronal cell membranes causing a nerve conduction blockage

**Pharmacokinetics**
Onset is 2 min; peak in 3-5 min; duration is 10-20 min

**Contraindications**
None, when used for anesthesia in IO placement

**Interactions**
No significant interaction at therapeutic doses for IO placement. In larger doses, multiple interactions possible including potentiation of fentanyl and amiodarone.

**Adverse Effects**
None for IO use, high doses have been associated with increased risk of seizure

**Prehospital Considerations**
- This should be given pre-infusion if IV fluids or infusion of other medications through the IO on patients that are responsive to pain.
- Lidocaine 2% (preservative and epinephrine free) should be used.
- Slow infusion is necessary to ensure the lidocaine remains in the medullary space.
- A base order is not needed to administer lidocaine as part of the IO procedure

## Medical Control Guideline: DRUG REFERENCE – MIDAZOLAM Ref. No. 1317.25

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**Classification**

Sedative, benzodiazepine

**Prehospital Indications**

Agitated Delirium: patients requiring restraints for patient and provider safety
Behavioral / Psychiatric Crisis: patients requiring restraints for patient and provider safety
Cardiac Dysrhythmia: sedation prior to and/or during synchronized cardioversion or transcutaneous pacing
Seizure - Active

**Other Common Indications**

Sedation and amnestic agent in patients undergoing mechanical ventilation or painful procedures

**Adult Dose**

Agitated Delirium / Behavioral / Psychiatric Crisis
**5mg (1mL) IM/IN/IV**, repeat x1 in 5 min prn, maximum total dose prior to Base contact 10mg for Agitated Delirium (Psychiatric Crisis requires Base order for any)
Cardiac Dysrhythmia - sedation prior to synchronized cardioversion / transcutaneous pacing
**2mg (0.4mL) slow IV/IO push/IM/IN**, may repeat every 5 min, maximum total dose prior to Base contact 6mg
Seizure - Active
**5mg (1mL) IM/IN/IV**, repeat x1 in 2 min prn, maximum total dose prior to Base contact 10mg

**Pediatric Dose**

Agitated Delirium / Behavioral / Psychiatric Crisis
**0.1mg/kg (5mg/mL) IM/IN/IV**, dose per *MCG 1309*, repeat dosing every 5 min prn per Base order
Cardiac Dysrhythmia - sedation prior to synchronized cardioversion / transcutaneous pacing
**0.1mg/kg (5mg/mL) IM/IN/IV/IO**, dose per *MCG 1309*, repeat x1 in 2 min prn, maximum 2 doses prior to Base contact, maximum single dose 5mg
Seizure - Active
**0.1mg/kg (5mg/mL) IM/IV/IO**, dose per *MCG 1309*, repeat x1 in 2 min prn, maximum 2 doses, maximum single dose 5mg OR
**0.2mg/kg (5mg/mL) IN**, dose per *MCG 1309*, repeat x1 in 2 min prn, maximum 2 doses prior to Base contact, maximum single dose 5mg

**Mechanism of Action**

Binds to receptors at several sites within the CNS, potentiates GABA receptor system which produces anxiolytic, anticonvulsant, muscle relaxant, and amnesic effects.

**Pharmacokinetics**

Onset 3-5 min IV, 15-20 min IM, 6-14 min IN
Duration 1-6 hours IV/IM

**Contraindications**

Acute alcohol intoxication with altered mental status
Respiratory depression
Shock / Poor perfusion

**Interactions**

Risk of respiratory or central nervous system depression, increases when used with diphenhydramine, fentanyl, morphine, or other opiate or sedative medications

**Adverse Effects**

Hypotension
Respiratory depression / arrest

**Medical Control Guideline: DRUG REFERENCE – MIDAZOLAM** **Ref. No. 1317.25**

**Prehospital Considerations**

- Closely monitor respiratory and cardiac function after administration
- For patients with agitated delirium and violent behavior, IM/IN administration is recommended over IV for the initial dose for the safety of EMS personnel.
- If available, waveform $EtCO_2$ monitoring should be instituted after administration.

## Medical Control Guideline: DRUG REFERENCE – MORPHINE Ref. No. 1317.27

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**Classification**

Opiate Analgesic

**Prehospital Indications**

Multiple provider impressions: pain management

**Other Common Indications**

None

**Adult Dose**

**4mg (1mL) slow IV/IO push or IM**, repeat every 5 min prn, maximum total dose prior to Base contact 12mg

Contact Base for additional pain management after maximum dose administered: may repeat dose for a maximum total dose of 20mg

**Pediatric Dose**

**0.1mg/kg (4mg/mL) slow IV/IO push or IM**, dose per *MCG 1309*, repeat in 5 min x1, maximum 2 total doses prior to Base contact

Contact Base for additional pain management after maximum dose administered: may repeat dose for a maximum 4 total doses

**Mechanism of Action**

Narcotic agonist- analgesic of opiate receptors; inhibits ascending pain pathways, thus altering response to pain.

**Pharmacokinetics**

Onset is immediate IV, 15-30 min IM; duration is 2-7 hr

**Contraindications**

Hypotension or evidence or poor perfusion

History of allergy to morphine or other narcotic medications

**Interactions**

Central nervous system depressants, sedatives, barbiturates, alcohol, benzodiazepines and tricyclic depressants may potentiate the central nervous system and respiratory depressant effects.

**Adverse Effects**

Decrease cough reflex
Disorientation
Hypotension
Nausea and vomiting
Respiratory depression

**Prehospital Considerations**

- Monitor vital signs at regular intervals
- Consider monitoring with $EtCO_2$ if available
- Use extreme caution in patient at risk for respiratory depression or ALOC
- Naloxone may be used for reversal of respiratory depression if needed

## Medical Control Guideline: DRUG REFERENCE – NALOXONE Ref. No. 1317.29

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**Classification**
Opiate Antagonist

**Prehospital Indications**
Overdose / Poisoning/ Ingestion: suspected opiate overdose with altered mental status and hypoventilation/apnea

**Other Common Indications**
None

**Adult Dose**
**2-4 mg IN** (1mg per nostril or 4mg/0.1mL IN if formulation available) or **2mg IM** or **0.8-2mg IV push**
Maximum dose all routes 8mg, titrate to adequate respiratory rate and tidal volume

**Pediatric Dose**
**0.1mg/kg (1mg/mL) IM/IN/IV**, dose per *MCG 1309*, maximum dose all routes 8mg, titrate to adequate respiratory rate and tidal volume

**Mechanism of Action**
Competes for and displaces narcotic molecules from opiate receptors in the brain. Reverses the respiratory depression associated with overdose of narcotic agents.

**Pharmacokinetics**
Onset is < 2 min IV, 2-10min IM; duration is 20-120 min

**Contraindications**
Hypersensitivity

**Interactions**
None

**Adverse Effects**
Nausea and vomiting
Sweating
Tachycardia
Agitation
Hypertension
Abdominal pain
Acute pulmonary edema

**Prehospital Considerations**
- Give in small increments until the desired narcotic reversal is achieved (respiratory rate 12 and adequate tidal volume).
- Duration of action of some narcotics may exceed that of naloxone; therefore, patient must be closely observed for need for repeat doses.
- Naloxone causes acute withdrawal symptoms and can precipitate acute pulmonary edema when given in large boluses to narcotic addicts. Use only enough to reverse respiratory depression.
- Naloxone is not indicated in cardiac arrest though can be given after ROSC if narcotic overdose suspected.

## Medical Control Guideline: DRUG REFERENCE – NITROGLYCERIN Ref. No. 1317.31

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**Classification**

Nitrate Vasodilator

**Prehospital Indications**

Chest Pain – Suspected Cardiac
Chest Pain – STEMI
Pulmonary Edema / CHF

**Other Common Indications**

Rapid blood pressure lowering in hypertensive emergency

**Adult Dose**

Chest Pain – Suspected Cardiac / Chest Pain – STEMI

**0.4 mg SL** prn, repeat every 5 min prn x2, total 3 doses, hold if SBP < 100mmHg or patient has taken sexually enhancing medication within 48 hours

Pulmonary Edema / CHF

**0.4mg SL**, for SBP ≥ 100mmHg
**0.8mg SL**, for SBP ≥ 150mmHg
**1.2mg SL**, for SBP ≥ 200mmHg
Repeat every 3-5 min prn x2 for persistent dyspnea, assess blood pressure prior to each administration and determine subsequent dose base on SBP as listed above. Hold if SBP < 100mmHg

**Pediatric Dose**

Not recommended for pediatric administration

**Mechanism of Action**

Organic nitrate which causes systemic venous dilatation, decreasing preload. Cellular mechanism: nitrate enters vascular smooth muscle and is converted to nitric oxide leading to vasodilation. Relaxes smooth muscle via dose-dependent dilation of arterial and venous beds to reduce both preload and afterload, and myocardial oxygen demand. Also improves coronary collateral circulation. Lowers BP, increases heart rate and occasional paradoxical bradycardia.

**Pharmacokinetics**

Onset is 1-3 min SL or TM; duration is 20-30 min

**Contraindications**

Use of sexually enhancing/erectile dysfunction medications such as sildenafil, tadalafil or vardenafil within the past 48 hours
Hypotension with SBP < 100mmHg
Suspected cardiac tamponade

**Interactions**

Alcohol, opiates and antihypertensive agents may compound hypotensive effects. Patients taking sexually enhancing/erectile dysfunction medications are at risk for severe, prolonged hypotension leading to death.

**Adverse Effects**

Circulatory Collapse
Dizziness
Headache
Hypotension / Postural Hypotension
Syncope
Weakness

**Prehospital Considerations**

- Caution advised in suspected intracranial hemorrhage or stroke patients

## Medical Control Guideline: DRUG REFERENCE – ONDANSETRON Ref. No. 1317.33

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**Classification**
Antiemetic

**Prehospital Indications**
Multiple provider impressions: Nausea and/or vomiting, or prior to fentanyl or morphine administration to reduce potential for nausea/ vomiting

**Other Common Indications**
None

**Adult Dose**
**4 mg ODT/IV/IM**, may repeat x1 in 15 min prn

**Pediatric Dose**
**4 mg ODT**, only for 4 years of age or older

**Mechanism of Action**
Mechanism of action has not been fully characterized but believed to function via serotonin antagonism at central and/or peripheral receptors. Serotonin receptors of the 5-HT3 type are present both peripherally on vagal nerve terminals and centrally in the chemoreceptor trigger zone of the area of the medullary structure that controls vomiting.

**Pharmacokinetics**
Onset is 1-5 min; duration is 4-6 hr

**Contraindications**
Known allergy to Ondansetron
Pregnancy, regardless of gestational age

**Interactions**
Amiodarone and other QT prolonging drugs (additive prolongation of QT may produce torsade de pointes/polymorphic ventricular tachycardia)

**Adverse Effects**
Constipation
Headache
QT prolongation
Sedation

**Prehospital Considerations**
- May cause prolonged QT interval. Caution in patients with known prolonged QT syndrome or recent/simultaneous use of other QT-prolonging drugs.
- Should not be administered in patients known to be pregnant, regardless of gestational age.
- Peak activity is decreased by approximately 40% in oral administration, compared to IV, due to first pass metabolism in the liver.

## Medical Control Guideline: DRUG REFERENCE – OXYGEN Ref. No. 1317.35

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**Classification**

Gas

**Prehospital Indications**

Multiple provider impressions: hypoxia $SPO_2$ <94% on room air, respiratory or cardiac arrest, shock, anaphylaxis, traumatic brain injury, carbon Monoxide exposure/poisoning/toxicity, suspected pneumothorax

**Other Common Indications**

Chronic hypoxia in patients with restrictive lung disease

**Adult and Pediatric Dose**

| Delivery Device | Flow Rate | % Delivered |
|---|---|---|
| Nasal Cannula | 1-6 L/min | 22-44% |
| Simple Face Mask | 8-10 L/min | 40-60% |
| Face Mask with $O_2$ Reservoir | 15 L/min | 90% |
| Bag-Mask with $O_2$ Reservoir | 15 L/min | 90% |
| ET with Bag with $O_2$ Reservoir | 15 L/min | 100% |
| ET with T-Tube | 15 L/min | 70% |
| Supraglottic Airway (King LT) | 15 L/min | 90% |

**Mechanism of Action**

Oxygen is a tasteless, odorless gas transported by hemoglobin in the blood to organ tissues. It is required for the breakdown of glucose into a useable energy form (aerobic metabolism). Therapeutic oxygen administration increases the oxygen concentration in the alveoli, which in turn increases the oxygen saturation of available hemoglobin.

**Pharmacokinetics**

Onset is immediate; duration is < 2 min

**Contraindications**

None

**Adverse Effects**

High flow $O_2$ (100%) by mask may produce a 30% decrease in coronary blood flow in as little as 5 min, and may decrease the efficiency of nitroglycerin.
In patients with COPD or other chronic lung disease, high inspired $O_2$ concentration may decrease respiratory drive and cause $CO_2$ retention.
$O_2$ will dry mucus membranes.

## Medical Control Guideline: DRUG REFERENCE – PRALIDOXIME CHLORIDE (DuoDote™) Ref. No. 1317.37

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**Classification**
Cholinesterase Reactivator

**Prehospital Indications**
HAZMAT Exposure: nerve agent or organophosphate poisoning

**Other Common Indications**
Antidote to toxicity from agents (neostigmine, pyridostigmine) used in treatment of myasthenia gravis

**Adult Dose**
Given in conjunction with atropine as a DuoDote injection – Atropine 2.1mg and Pralidoxime Chloride 600mg (2PAMCl). Medications delivered sequentially by one syringe into 2 different areas of the muscle.
Mild Exposure **DuoDote™ IM x1**
Moderate Exposure **DuoDote™ IM x2**, one after another
Severe Exposure **DuoDote™ IM x3**, one after another

**Pediatric Dose**
Pediatric patients **longer** than the length-based resuscitation tape (Broselow™) should receive adult dose
Pediatric patients between **3-36kg** body weight, based on measurement using the length-based resuscitation tape (Broselow™), should be treated as follows:
Mild Exposure **Atropine (0.1mg/mL) 0.02mg/kg IV/IM**, dose as per *MCG 1309*
Moderate Exposure **1 DuoDote™ IM**
Severe Exposure **1 or 2 DuoDote(s)™ IM**, one after the other when applicable, based on the table below:

| Avg. Wt. (kg) | Color | Initial Emergency Dose |
|---|---|---|
| 4 | Grey | 1 DuoDote™ |
| 6.5 | Pink | |
| 8.5 | Red | |
| 10.5 | Purple | |
| 13 | Yellow | |
| 16.5 | White | |
| 20.5 | Blue | |
| 26 | Orange | 2 DuoDotes™ |
| 33 | Green | |

**Mechanism of Action**
Reactivates cholinesterase by displacing the enzyme from its receptor sites. The free enzyme then can resume its function of degrading accumulated acetylcholine, thereby restoring normal neuromuscular transmission. Pralidoxime also detoxifies some organophosphates by direct chemical reaction.

**Pharmacokinetics**
Onset is 2-3 min; peak effect in 5-15 min; duration is 2-3 hr

**Contraindications**
Poisonings with carbamate insecticide Sevin, inorganic phosphates, organophosphates with no anticholinesterase

**Interactions**
None

**Adverse Effects**
Dizziness
Blurred vision
Hypertension
Laryngospasm
Tachycardia

## Medical Control Guideline: DRUG REFERENCE – SODIUM BICARBONATE Ref. No. 1317.39

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**Classification**

Electrolyte / Alkalinizing Agent

**Prehospital Indications**

Cardiac Arrest – Non-Traumatic: suspected hyperkalemia, patients with renal failure
Cardiac Dysrhythmia: suspected hyperkalemia causing bradycardia
Overdose / Poisoning / Ingestion: suspected tricyclic overdose with ECG changes
Traumatic Injury: suspected hyperkalemia in the setting of crush injury or potential for development of crush syndrome (administer prior to release of crushed tissue)

**Other Common Indications**

None

**Adult Dose**

**50mEq (50mL) slow IV/IO push**
For crush injury repeat x1 for persistent ECG abnormalities

**Pediatric Dose**

**1mEq/kg (1mEq/mL) slow IV push**, dose per *MCG 1309*
For crush injury, repeat x1 for persistent ECG abnormalities

**Mechanism of Action**

Increases blood and urinary pH by releasing a bicarbonate ion, which in turn neutralizes hydrogen ion concentration.

**Pharmacokinetics**

Onset is < 15 min (observed < 5 for tricyclic overdose); clinical effect in < 15 min; duration is 1-2 hr

**Contraindications**

Evidence of pulmonary edema
Hypernatremia or hypocalcemia

**Interactions**

Precipitates to form calcium carbonate (chalk) when used with calcium chloride or calcium gluconate. Administer calcium chloride and sodium bicarbonate separately.
Can reduce potency of epinephrine, flush line after administration.

**Adverse Effects**

Extracellular alkalosis
Tissue damage if IV infiltrates
Pulmonary edema

**Prehospital Considerations**

- Multiple doses may be needed in TCA overdose when indicated

# Medical Control Guideline: LEVEL OF CONSCIOUSNESS

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**PRINCIPLE:**

1. Evaluation and documentation of the patient's level of consciousness are key components of a thorough patient assessment.

2. The patient's baseline level of consciousness should be taken into consideration when evaluating whether the altered level of consciousness (ALOC) finding represents an acute change or is normal for the patient.

3. Signs and symptoms of ALOC may present as disorientation to person, place or time; confusion; lethargy; impaired cognition; coma; inappropriate aggressiveness; or hostility. These findings should alert EMS personnel to the possibility that the patient may have a serious underlying medical condition.

4. If the patient has ALOC, evaluation of past medical history, including history of ALOC reported by patient or family members, may provide clues to the cause of the patient's ALOC.

**GUIDELINES:**

1. Assess orientation by asking the patient the following:
   a. Name
   b. Where they live/where they are
   c. Day of week/year/time of day

   Patients unable to reasonably answer one or more of the above shall be considered to have ALOC.

2. Utilize the appropriate Glasgow Coma Scale (GCS) to assess the neurological status of all patients. Report and document the GCS in the following order: eye opening, verbal response, and motor response.

| | Adult | Child (1-4 yrs.) | Infant |
|---|---|---|---|
| **EYE OPENING** | | | |
| **4** | Spontaneous | Spontaneous | Spontaneous |
| **3** | To voice | To voice | To shout |
| **2** | To pain | To pain | To pain |
| **1** | None | None | None |
| **VERBAL RESPONSE** | | | |
| **5** | Oriented | Oriented | Smiles and coos appropriately |
| **4** | Confused | Confused | Cries and consolable |
| **3** | Inappropriate | Inappropriate | Persistent inappropriate crying and/or screaming |
| **2** | Incomprehensible | Incomprehensible | Grunts or is agitated or is restless |
| **1** | None | None | None |
| **MOTOR RESPONSE** | | | |
| **6** | Obedient | Obeys command | Spontaneous |
| **5** | Purposeful | Localizes to pain | Localizes to pain |
| **4** | Withdraws to pain | Withdraws to pain | Withdraws to pain |
| **3** | Flexion (decorticate) | Flexion (decorticate) | Flexion (decorticate) |
| **2** | Extension (decerebrate) | Extension (decerebrate) | Extension (decerebrate) |
| **1** | None | None | None |

**NOTE: For patients unable to communicate or patients with a language barrier, estimate appropriateness of motor response, obedience, and verbal response by consulting with the family and/or primary caregiver(s), if applicable.**

3. If the patient has ALOC consider possible causes using AEIOU-TIPS:
   - **A** – Alcohol, abuse of substances
   - **E** – Electrolytes
   - **I** – Infection
   - **O** – Oxygen (hypoxia), overdose
   - **U** – Uremia
   - **T** – Trauma, tumor, child maltreatment, toxic substance (or adverse reactions to medications
   - **I** – Insulin (hypoglycemia)
   - **P** – Poisoning, Psych
   - **S** – Seizures, Sepsis, Stroke, Subarachnoid Hemorrhage

4. Perform an on scene assessment, obtain history from caregivers including baseline functional status, and complete physical assessment including neurological exam to evaluate patient for signs of stroke.

5. Point of care testing should include pulse oximetry, glucose testing, and cardiac monitoring to include 12-lead ECG in patients with suspected cardiac ischemia or dysrhythmia.

# Medical Control Guideline: MECHANICAL CIRCULATORY SUPPORT DEVICES

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**PRINCIPLES:**

1. A Mechanical Circulatory Support (MCS) device is an implanted device that is used to partially or completely replace the function of a failing heart in adults and children. MCS devices may be used as a bridge to transplant or as destination therapy for those who are not transplant candidates.

2. There are several types of MCS devices. A ventricular assist device (VAD) can support the function of the left ventricle with a left ventricular assist device (LVAD), the right ventricle (RVAD), or both ventricles (biventricular device). A total artificial heart (TAH) replaces the heart itself. The most common device is currently a LVAD.

3. MCS patients have a coordinator available 24 hours a day who will provide direction on managing the device. Contact information for the device coordinator may be located on the device, refrigerator, medical-alert bracelet or on a card in the patient's wallet.

4. The patient and family members receive extensive training on their specific MCS device and should be utilized in the care of the patient.

5. Many MCS device patients are on anticoagulants and prone to bleeding.

6. MCS device patients are preload dependent and may be harmed by vasodilators (e.g., nitrates).

7. Most MCS device patient emergencies will NOT be related to malfunction of the device.

**Ventricular Assist Devices (VAD)**

8. Due to the continuous (non-pulsatile) flow of VAD devices, vital signs such as blood pressure, heart rate, and pulse oximetry are unobtainable or unreliable and perfusion status should be based on the clinical exam. Capnography will read accurately and can provide valuable information on the patient's perfusion status.

9. All VAD patients can be defibrillated and cardioverted, if indicated.

10. Chest compressions may dislodge the internal VAD tubes from the heart, causing the patient to bleed into the thoracic and/or abdominal cavities; however, chest compression can be performed if needed on VAD patients.

**Total Artificial Heart (TAH)**

11. The TAH produces pulsatile flow with a palpable pulse and measurable blood pressure.

12. TAH patients cannot be defibrillated or cardioverted and do not produce an ECG tracing.

13. Systolic hypertension increases afterload and may lead to pulmonary edema. In this situation, careful administration of vasodilators may be considered.

14. Chest compressions should not be performed on TAH patients because non-compressible mechanical chambers have replaced the ventricles.

**GUIDELINES:**

1. If there is concern for device malfunction, call the MCS device coordinator directly to assist with troubleshooting.

2. If the MCS coordinator is not reachable and/or additional orders are required, contact the Base hospital.

3. Treat MCS patients by the appropriate treatment protocol, based on your provider impression.

4. Attempt to locate an Advanced Healthcare Directive and/or a Physician Orders for Life-sustaining Therapy (POLST). Most MCS device patients have made end-of-life care decisions.

5. Given that MCS devices are preload dependent, administer fluids early when directed by the Treatment Protocol.

6. All of the patient's MCS device equipment must accompany them to the hospital. Make sure all equipment is safely secured prior to transport to ensure that the driveline is not pulled or cut during transport. Spinal motion restriction and/or splinting may be modified to protect the integrity of the MCS device equipment.

7. When a MCS patient is experiencing signs and symptoms related to the device, every effort should be made to transport the patient to their MCS hospital. Allow the family member or caregiver to ride with the patient if treatment and space permit.

**Ventricular Assist Devices (VAD)**

8. Do not administer nitroglycerin; give only aspirin and morphine or fentanyl when treating chest pain suspected cardiac or STEMI.

9. Utilize clinical parameters for patient assessment (e.g., skin color, capillary refill, level of consciousness and general appearance), because these patients will not have a blood pressure and/or palpable pulse.

10. The patient's underlying rhythm only requires treatment if the patient has signs of poor perfusion. If external defibrillation or cardioversion is necessary, apply the pads as to avoid an internal Pacemaker/Implanted Cardioverter Defibrillator (ICD) and use the standard amount of energy. DO NOT disconnect the system controller from the percutaneous lead (driveline) or stop the pump prior to delivering the shock.

11. For patients in cardiac arrest, assess for VAD malfunction in consultation with the device coordinator. Chest compressions should only be initiated if the VAD is functioning and the patient remains in cardiac arrest or if the VAD cannot be fixed and resuscitation is in agreement with the patient's Advanced Health Care Directive or Standardized Patient-Designated Directives (e.g., POLST, State DNR Form).

12. In an unconscious, pulseless patient with a VAD, a capnography reading of < 20 is an indicator of poor systemic perfusion and should prompt initiation of chest compressions.

**Total Artificial Heart (TAH)**

13. Do not administer epinephrine. The resulting increase in afterload may cause pulmonary edema and circulatory collapse.

14. For patients in respiratory distress with a systolic blood pressure >150mmHg, administration of nitroglycerin should be considered. Alternatively, the patient may be assisted in self-administration of their home dose of oral hydralazine.

15. For patients in cardiac arrest, assess for TAH malfunction in consultation with the device coordinator. Do not perform chest compressions or attempt defibrillation. The only therapeutic option is to restore the function of the device.

# Medical Control Guideline: MEDICATION ORDERS / ADMINISTRATION

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**PRINCIPLES:**

1. A complete and accurate medication order is essential for patient care.
2. Confirmation of correct medication by two EMS providers (EMT/paramedic or paramedic/paramedic) should be performed prior to medication administration.
3. If Base Contact is made, closed-loop communication (repeating orders back to the base hospital and to paramedic partner) reduces medication errors.

**GUIDELINES:**

1. Base hospitals must provide complete medication and fluid orders to include:
    a. Name of medication
    b. Color code of the patient, if applicable
    c. Dose (mg and mL to be delivered)
    d. Route of administration per L.A. County protocols
        i. Intravenous (IV)
        ii. Intramuscular (IM)
        iii. Intranasal (IN)
        iv. Intraosseous (IO)
        v. Nebulized (via neb)
        vi. Orally Disintegrating Tablet (ODT)
        vii. Per Os/Oral (PO)
        viii. Rapid infusion (IV/IO) – fluid administration as quickly as possible
        ix. Slow IV/IO push – dose administered over 60 seconds
        x. Sublingual (SL)
    e. Frequency of administration, if applicable
2. A minimum of two EMS providers (EMT/paramedic or paramedic/paramedic) should confirm correct medication prior to medication administration.
    a. The EMT and paramedic will work together to identify the correct medication and the paramedic will confirm drug dosing and route.

i. The EMT will visually show the drug to the paramedic who will then confirm the name of the medication and the formulation verbally.

ii. The paramedic will then use *MCG 1309* to determine the route and dose based on color code which will be delivered in mLs to the patient.

b. The paramedic not administering the medication will work together with the paramedic administering the medication ("patient man") to identify the correct medication, route, and dose.

i. The paramedic not administering the medication will visually show the medication to the patient man. The patient man will confirm the name of the medication and the formulation verbally.

ii. The patient man will then use *MCG 1309* to determine the route and dose based on the color code which will be verbally communicated back to the second paramedic prior to the delivery of the medication in mLs to the patient.

3. If Base contact is made prior to administration, the paramedic will repeat the medication order including name of medication, number of mg or mcg, followed by mLs and color code, as applicable, to the base hospital.

4. Base personnel who provide pro re nata (PRN) orders should have indications for administration as well as complete a full order including name of medication to be administered, mg or mcg, mLs, route, and color code as applicable.

a. The paramedic administering the drug will repeat these back to the Base personnel as a secondary check and document the order.

5. Base personnel, as applicable, and the paramedic should document all medications administered on the Base Hospital Form and EMS patient care record.

6. All adverse events should be reported in the patient care record including interventions taken to treat the event (e.g., oxygen, suction, fluids). Any adverse events should be communicated to the receiving emergency department staff on transfer of care.

# Medical Control Guideline: NEEDLE THORACOSTOMY

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**PRINCIPLES:**

1. Needle thoracostomy is an uncommon procedure that may provide life-saving treatment of a tension pneumothorax during prehospital care and transport.

2. Risk of tension pneumothorax increases significantly after initiation of positive pressure ventilation (e.g., bag-mask ventilation, placement of advanced airway), which can convert a simple pneumothorax into a tension pneumothorax.

3. Needle thoracostomy should be performed, if indicated as outlined in Guidelines 2.1 below, prior to Base contact on any of the following patients:

    - PEA cardiac arrest with multisystem blunt trauma

    - Penetrating trauma which includes the thorax and abdomen or who have evidence of chest trauma with profound shock and signs of tension pneumothorax.

4. PEA cardiac arrest maybe due to tension pneumothorax after positive pressure ventilation.

5. ALS and Paramedic Assessment Units should carry an 8cm (3.0 – 3.5 inches) 14G commercial needle decompression device for the performance of emergency needle thoracostomy.

6. The procedure for needle thoracostomy in pediatric patient is unchanged from that of adults. It is expected that a shorter distance will need to be traversed to enter the pleural space in children due to the thinner chest wall.

7. Maintenance of skills requires regular in-service training on recognition and treatment of tension pneumothorax. It is strongly recommended that this training be completed in a simulation environment, rather than through slide-based or didactic learning.

**GUIDELINES:**

1. Manage patient with traumatic injuries as per *TP 1243/1243-P, Traumatic Arrest* and/or *TP 1244/1244-P, Traumatic Injury*.

2. Consider tension pneumothorax in the following patients.

    2.1. Trauma patients with obvious chest trauma (e.g., open chest wounds, evidence of crush or flail segment) or with mechanism consistent with chest trauma who demonstrate:

        a. Decreased or absent breath sounds on affected side, **and**
        b. SBP < 90mmHg (adult), < 70mmHg (child and infant), **and**
        c. One or more of the following:

i. Altered mental status
ii. Severe respiratory distress, with RR > 30 breaths per minute or < 10 breaths per minute
iii. Severe hypoxia, with < 90% oxygen saturation
iv. Cool, pale, moist skin

3.2. Traumatic full arrest with PEA rhythm (bilateral needle thoracostomy should be performed if evidence of chest wall trauma)

3.3. Trauma patients requiring positive-pressure ventilation who develop hypoxia or severe hypotension (SBP < 90mmHg), without alternate cause, after initiation of positive pressure ventilation

3.4. PEA cardiac arrest that develops after initiating positive pressure ventilation

3. Immediately place all patients with suspected pneumothorax on high flow oxygen by non- rebreather mask.

4. If the patient is awake and alert, explain medical condition and rationale for the procedure to the patient.

5. Prepare skin of chest with alcohol or chlorhexidine prior to skin puncture.

6. Insert the needle-catheter perpendicular to chest just above the 3$^{rd}$ rib at the mid-clavicular line (second intercostal space) or just above the 5$^{th}$ rib (fourth intercostal space) anterior axillary line per training. Only place in sites for which paramedic has undergone specific training.

7. Attach a syringe to the thoracostomy needle during procedure, if possible. Advance needle perpendicular to the chest wall while withdrawing on syringe until air is easily aspirated into the syringe (confirming penetration of lung pleura). Advance needle an additional 1cm, then over the needle advance catheter further before withdrawing needle and disconnecting the syringe.

8. Secure catheter to skin with tape or commercial device, if available. Do not place a one-way valve on the catheter hub.

9. If the patient has an open or sucking chest wound, cover the wound with a commercially available vented chest seal or vented (3-sided) occlusive dressing. Placement of a vented dressing can prevent conversion of an open pneumothorax to a tension pneumothorax. However, tension pneumothorax may still develop in the presence of a vented dressing and should be treated with needle thoracostomy. Furthermore, needle thoracostomy in a patient with evidence of tension pneumothorax should not be delayed for placement of dressing.

10. If a patient does not improve after needle thoracostomy, or improves but later decompensates, and there is concern for catheter dislodgement or obstruction, needle thoracostomy may be repeated on the same side or at an alternate location.

# Medical Control Guideline: ONLINE MEDICAL DIRECTIOM AND RECEIVING HOSPITAL NOTIFICATION

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**DEFINITIONS:**

1. On-line Medical Direction is provided to prehospital provider(s) via voice communication from qualified Base hospital personnel (MICN or Base Physician) for the purposes of real-time patient care.

2. Receiving hospital notification is communication of patient information by prehospital provider(s) or Base hospital personnel for the purpose of preparing the receiving hospital staff for patient arrival.

**PRINCIPLES:**

1. Online medical direction occurs when Base hospital contact is established by paramedics in order to obtain guidance on patient care from a designated paramedic Base hospital.

2. In general, for situations requiring base hospital contact, the time when Base hospital contact is established will be based on paramedic judgement unless otherwise specified.

3. The paramedic who provides direct patient care during transport shall have a means to establish communication with the Base hospital at all times.

4. Once Base hospital contact is made for medical direction, the overall authority for patient's medical care lies with the Base. The treatment plan based on Provider Impression should be developed collaboratively by prehospital providers and Base personnel.

5. Treatments outlined in the applicable protocol may be administered by prehospital providers and communicated to the Base.

6. Communication shall be maintained until the Base hospital ends the call.

7. If Base hospital contact is made, the Base hospital is responsible for receiving hospital notification.

**GUIDELINES:**

1. Paramedics shall establish Base hospital contact for online medical direction on all patients who meet Base hospital contact criteria as specified in *Ref. 1200.1, Treatment Protocol General Instructions* and when directed by the Treatment Protocols.

2. Utilize radios, the VMED28 radio frequency, or telephone to establish Base hospital contact.

3. Paramedics shall clearly indicate the reason for the contact:

    a. "Base Contact for online medical direction."
    b. "Providing notification of patient transport to your facility" or may simply state "Notification"

4. When requesting online medical direction, paramedics shall report their field assessment to Base hospital personnel. Their report should include the following information:

    a. Sequence Number
    b. Provider Code/Unit number
    c. Provider Impression
    d. Patient age and gender
    e. For pediatric patients: Weight (kg) and Color Code from length-based resuscitation tape
    f. Pertinent patient assessment findings based on primary and secondary assessments
    g. Past medical history, medications and allergies
    h. Treatment provided prior to Base hospital contact
    i. Response to treatment or patient re-assessment
    j. Proposed hospital destination and estimated time of arrival
    k. Any further information pertinent to the field care of the patient

5. Repeat all Base hospital orders, especially complete medication orders (name of drug, dose and route) to confirm reception and decrease errors.

6. Maintain or re-establish online communications as directed by the Base hospital for critical or hemodynamically unstable patients.

7. If a patient refuses treatment and/or transport and meets Base hospital contact criteria, paramedics should establish Base hospital contact prior to having the patient sign out against medical advice.

8. Receiving hospital notification shall include but is not limited to the following:

    a. Sequence Number
    b. Provider Code/Unit number
    c. Provider Impression
    d. Patient age and gender
    e. For pediatric patients: Weight (kg) and Color Code from length-based resuscitation tape
    f. Critical information that is needed for the receiving hospital to prepare for the patient
    g. Estimated time of arrival

# Medical Control Guideline: PAIN MANAGEMENT

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**PRINCIPLES:**

1. All patients should undergo pain assessment and management, regardless of age or ability to communicate in English.

2. Uncontrolled pain has been associated with both short-term and long-term adverse outcomes.

3. Measurement of a patient's pain is subjective; therefore, the patient who is able to communicate best determines the presence and severity of their pain.

4. Recording a pain level using a validated pain scale provides health care providers with a baseline against which to compare subsequent evaluations of the patient's pain.

5. Los Angeles County utilizes the "Numeric Pain Intensity", "Facial Expression", and FLACC (Face, Legs, Activity, Cry and Consolability) pain scales.

6. Pain management includes both pharmacologic and non-pharmacologic interventions, such as distraction, positioning, and medication administration which may be provided concurrently or in an escalating fashion.

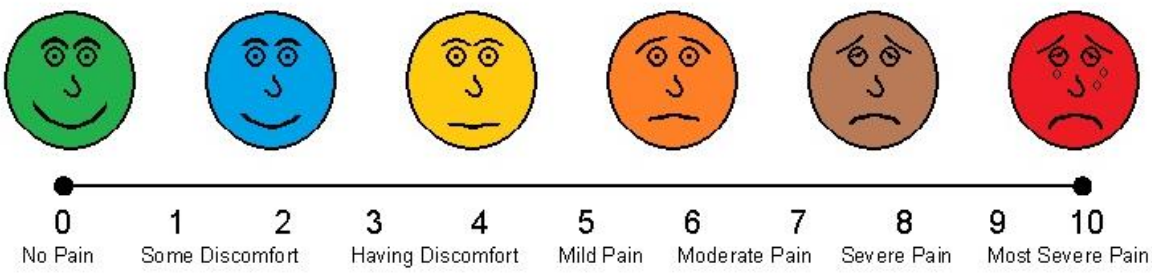
7. When choosing a pain management strategy, providers should utilize their clinical judgement to select the most appropriate initial therapy. Treatment may be escalated as needed to achieve pain control.

**GUIDELINES:**

1. Pain assessment should be performed on patients of all ages as part of the initial patient assessment, and should include severity as measured on one of the 3 formal pain scales used in Los Angeles County.

2. For verbal patients 8 years of age or older, use the Numeric Pain Intensity scale by asking the patient to rate their pain on a 0-10 scale; zero (0) equals no pain and ten (10) equals the most severe pain. Document the number selected on the EMS Report Form.

3. For patients 4-7 years old, or for patients with limited English proficiency, use the Facial Expression pain scale.



4. For children <4 years of age or for patients who are non-verbal due to baseline medical conditions such as cognitive impairment or severe dementia, utilize the FLACC Behavioral Tool. The patient should be assessed in each of the 5 categories shown in the table below, with the pain severity determined based on the total score on a scale of 0-10.

| Behavior | 0 | 1 | 2 |
|---|---|---|---|
| Face | No particular expression or smile | Occasional grimace or frown, withdrawn, disinterested | Frequent to constant frown, clenched jaw, quivering chin |
| Legs | Normal position or relaxed | Uneasy, restless, tense | Kicking or legs drawn up |
| Activity | Lying quietly, normal position, moves easily | Squirming, tense, shifting back and forth, hesitant to move, guarding | Arched, rigid or jerking, fixed position, rubbing of body part |
| Cry | No cry/moan (awake or asleep) | Moans or whispers, occasional cries, sighs or complaint | Cries steadily, screams, sobs, moans, groans, frequent complaints |
| Consolability | Calm, content, relaxed, needs no consoling | Reassured by hugging, talking to, distractible | Difficult to console or comfort |

5. Reassess the patient's pain with each assessment of vital signs and after any intervention, including patient movement into the ambulance. Document pain reassessment on the Patient Care Record.

6. Provide indicated treatment to patients with mild to severe pain as measured on any 0-10 scale per the table below. Nonpharmacologic methods should be used for all patients regardless of pain scale.

| Pain Score | Indicated Treatment(s) | Considerations |
|---|---|---|
| ≥1 | Ice packs<br>Distraction<br>Positioning for comfort<br>Splinting | For pain scores ≥4, use in conjunction with most appropriate analgesic(s). |
| ≥4 | Ketorolac | For pain score ≥7, may use in conjunction with opioid or alone if other analgesics are contraindicated. Avoid in cardiac chest pain. |
| ≥7 | Fentanyl<br>Morphine | May only administer ONE of these medications.<br>May administer in conjunction with ketorolac. Opioids should be administered alone for cardiac chest pain. |

7. Consider ketorolac in patients with mild to moderate pain (pain score ≥ 4). Ketorolac may also be given in patients with moderate to severe pain (pain score ≥ 7) in conjunction with opioids, or when contraindications to other analgesics exist (e.g., hypotension, respiratory failure, opioid allergy).

**Ketorolac Dosing**

**Adult Dose**

**15mg (1mL) slow IV/IO push,** or
**30mg (2mL) IM**

**Pediatric Dose,** only for 4 years of age or older

**0.5mg/kg (15mg/mL) slow IV/IO push,** dose per *MCG 1309*, or
**1mg/kg (15mg/mL) IM,** dose per *MCG 1309*

**Contraindications**

Active bleeding
Active wheezing
Age <4 years old or >65 years old
Allergy to NSAIDs
Current anticoagulation therapy
Head injury
History of upper GI bleeding or peptic ulcer disease
History of renal disease or kidney transplant
Known or suspected pregnancy
Suspected sepsis or septic shock

8. Consider opioid analgesia (Fentanyl or Morphine) for patients with moderate to severe pain (pain score ≥7). These analgesics should be considered equivalent options, however there are scenarios where one agent is preferred:

Opioids preferred: cardiac chest pain, children under 4 years of age

**Fentanyl Dosing**

**Adult Dose**

**50mcg (1mL) slow IV push or IM/IN**, repeat every 5 min prn, maximum total dose prior to Base contact 150mcg

**Pediatric Dose**

**1mcg/kg (50mcg/mL) slow IV push or IM**, dose per *MCG 1309*, or
**1.5mcg/kg (50mg/mL) IN**, dose per *MCG 1309*
Repeat in 5 min prn x1, maximum 2 total doses prior to Base contact

**Contraindications**

History of allergy to fentanyl

**Contact Base** for additional pain management after maximum dose administered: may repeat as above up to maximum total dose of Fentanyl 250mcg

**Morphine Dosing**

**Adult Dose**

**4mg (1mL) slow IV/IO push**, repeat every 5 min prn, maximum total dose prior to Base contact 12mg

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**Pediatric Dose**

**0.1mg/kg (4mg/mL) slow IV/IO push**, dose per *MCG 1309*, repeat in 5 min x1, maximum 2 total doses prior to Base contact

**Contraindications**

Hypotension or evidence or poor perfusion
History of allergy to morphine

**Contact Base** for additional pain management after maximum dose

administered: may repeat as above up to maximum total dose of Morphine 20mg

9. Use caution when administering paint medication in the following situations:

    a. Elderly patients
    b. Adults with SBB <90mmHg; Pediatrics SBP <70mmHg (ketorolac preferred – this agent is less likely to worsen hypotension

    c. Potential for respiratory failure (ketorolac preferred – this is less likely to worsen respiratory depression)
    d. Suspected drug/alcohol intoxication

10. When giving opioids, consider administering ondansetron 4mg ODT or IV prior to or concurrent with administration of the first dose in patients 4 years of age or older. These medications may cause nausea and vomiting.

11. Document and report all interventions performed for pain management, whether pharmacologic or nonpharmacologic. These may include, but are not limited to:

    a. Nonpharmacologic:
        i. Splinting
        ii. Distraction with devices (e.g. video viewing)
        iii. Ice pack application
        iv. Positioning for comfort
    b. Pharmacologic: Medication administration

12. Contact Base for orders if patient's condition requires additional dosing of medications beyond that permitted by Treatment Protocol.

# Medical Control Guideline: PEDIATRIC PATIENTS

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**DEFINITION:**

Pediatric patients in the prehospital setting are defined as children 14 years of age and younger or, in the case that the is age unknown, the patient can be measured on the length-based resuscitation tape (e.g., Broselow™).

**PRINCIPLES:**

1. Pediatric patients require special consideration in assessment, treatment and medication administration.

2. Pediatric assessment includes: pre-arrival preparation, scene size-up for hazards to patient or providers, assessment of scene for signs of child maltreatment, the Pediatric Assessment Triangle (PAT), vital signs, focused history using SAMPLE (signs and Symptoms, Allergies, Medications, Past Medical History, Last food or liquid intake, and Events leading to illness or injury), and a detailed physical exam as dictated by the patient's presenting signs and symptoms and condition.

3. PAT is composed of three components Appearance, Work of Breathing and Circulation to the Skin (Figure 1).

    a. The PAT is a "rapid Assessment Tool" that uses only visual and auditory clues and requires no equipment.

    b. The PAT is intended to allow the EMS provider to:
        i. Establish the child's severity of illness
        ii. Determine sick or not sick
        iii. Recognize the general category of pathophysiology called the "general impression"
        iv. Determine the urgency of interventions

    c. Appearance: Recalled by the mnemonic TICLS, an abnormality in any component is abnormal.
        i. **T**one
        ii. **I**nteractiveness
        iii. **C**onsolability
        iv. **L**ook/Gaze
        v. **S**peech/Cry

    d. Work of Breathing: Presence of any of the following implies abnormal work of breathing.
        i. Stridor
        ii. Wheezing
        iii. Grunting
        iv. Tripod positioning
        v. Retractions
        vi. Flaring
        vii. Apnea/Gasping

e. Circulation to the Skin: Presence of any of the following indicates abnormal circulation to the skin or signs of poor perfusion.
   i. Pale
   ii. Mottled
   iii. Cyanotic

f. Combining the PAT assessment based on these components can be used to determine the general impression (i.e., what, if anything, is critically wrong with the patient in terms of pathophysiology) which will dictate immediate management priorities (Figure 2):
   i. Stable
   ii. Respiratory distress
   iii. Respiratory failure
   iv. Shock
   v. CNS/Metabolic disorder
   vi. Cardiopulmonary failure/Cardiopulmonary Arrest

4. Treatments, medication concentrations and drug dosages are age- or weight-specific for the pediatric patient.

5. Accurate pediatric drug doses are obtained by:
   a. Measuring the patient against a pediatric length-based resuscitation tape (e.g., Broselow Tape) to obtain the weight/color zone, and then
   b. Referring to the *MCG 1309* EMS Agency Color Code Drug Doses L.A. County Kids for the medication doses appropriate to that weight/color zone.

6. Brief Resolved Unexplained Events (BRUE) is defined as a brief episode characterized by any of the following (for children 12 months of age or younger):
   a. Absent, decreased or irregular breathing
   b. Color change (usually cyanosis or pallor)
   c. Marked change in muscle tone (usually limpness or hypotonia, may also include hypertonia)
   d. Altered level of consciousness

**GUIDELINES:**

1. Assess using the PAT and initiate immediate treatment based on your general impression (Stable, Respiratory Distress, Respiratory Failure/Arrest, Shock, Center Nervous System Disorder/Metabolic Disorder, or Cardiopulmonary Failure/Arrest).

2. Determine your Provider Impression and continue treatment per the corresponding Treatment Protocol.

3. Document findings of the PAT, your assessment, and your Provider Impression.

4. Obtain the patient's estimated weight utilizing a pediatric length-based resuscitation tape and document the corresponding weight and color zone on the EMS Report Form.

5. Pediatric Airway Management:
   a. Bag Mask Ventilation (BMV), nasopharyngeal (NP) airway, or oropharyngeal (OP) airway are approved airway adjuncts for pediatric patients.
   b. King airway is approved as a rescue airway for patients who are longer than the length-based resuscitation tape (e.g., Broselow Tape™).
   c. Endotracheal Intubation (ETI) is approved for patients 12 years of age or greater or longer than the length-based resuscitation tape.

6. Pediatric Cardiopulmonary Resuscitation (CPR):
   a. Use Neonatal CPR for newborns up to 1 month of age
   b. Use Infant CPR for patients greater than one month of age to less than 13 months of age
   c. Use Child CPR for patients greater than or equal to 13 months of age to the onset of puberty

7. Automatic External Defibrillators (AED):
   Pediatric self-adhering pads or a pediatric attenuator system are recommended for infants and children younger than 8 years of age. When pediatric pads and/or a pediatric attenuator is not available, use adult AED and place front to back for infants and children

**Figure 1:** Pediatric Assessment Triangle

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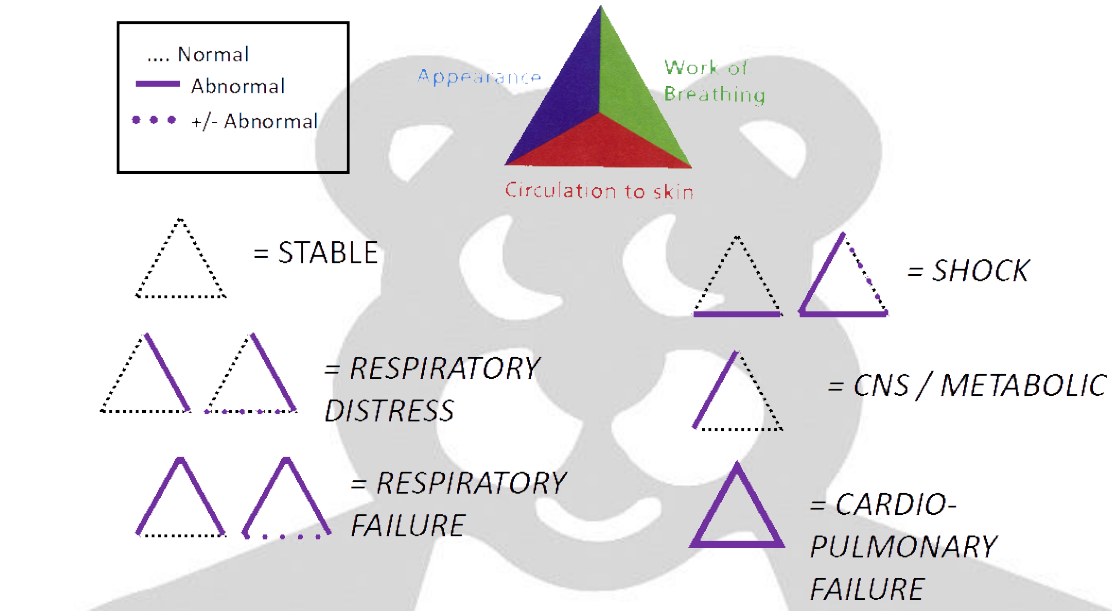
**Figure 2:** Using the components of the PAT to for a General Impression



# Medical Control Guideline: PERFUSION STATUS

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**PRINCIPLES:**

1. Perfusion status is determined by a combination of parameters that includes heart rate, blood pressure, tissue color and mentation. No one parameter alone can be used to determine perfusion status.

2. Adequate perfusion is defined as adequate circulation of blood through organs and tissues, manifested by normal pulse, tissue color, level of consciousness and blood pressure.

3. Poor perfusion is defined as inadequate circulation of blood through organs and tissues manifested by vital sign abnormalities and/or signs and symptoms of organ dysfunction.

4. Patients with poor perfusion that are unresponsive to initial fluid resuscitation are in shock.

**GUIDELINES:**

1. EMS providers should evaluate for the following signs and use clinical judgement to determine poor perfusion status, which may include but not limited to:

   a. Bradycardia, tachycardia and/or poor pulse quality (weak/thready)

   b. Altered mental status (including anxiety, restlessness, lethargy, combative behavior)

   c. Adult systolic blood pressure (SBP) < 90mmHg, pediatric SBP < 70mmHg

   d. Delayed capillary refill time (>2 seconds) and/or changes in tissue color including pallor, cyanosis or mottling

## Medical Control Guideline: PROTECTION AGAINST POTENTIAL COMMUNICABLE DISEASES

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**PURPOSE:** To describe processes for protection against communicable diseases including, personal protective equipment (PPE), isolation of the ambulance patient compartment, and decontamination of the ambulance post call.

**DEFINITIONS:**

**Airborne Transmission:** Transmission of a communicable disease via residue from evaporated droplets or dust particles containing microorganisms which remain suspended in the air.

**Communicable Disease:** A disease that is transmitted from human to human.

**Contact Transmission:** Transmission of a communicable disease via direct contact of the infected person or via an object or material that can carry infectious particles.

**Donning:** The process of applying PPE to oneself.

**Doffing:** The process of removing PPE from oneself.

**Droplet Transmission:** Transmission of a communicable disease via respiratory droplets that are too large to be airborne for long periods of time, and quickly settle out of air.

**Personal Protective Equipment (PPE):** Specialized equipment worn to protect oneself from communicable diseases.

**PRINCIPLES:**

1. Exposure to communicable diseases in emergency medical response is a hazard that can be mitigated by proper use of PPE, implementation of strategies to isolate or increase airflow in the compartment, and decontamination of equipment after each patient encounter.

2. Modes of transmission vary by microorganism. Transmission may occur via contact, respiratory droplets, and/or airborne particles.

    a. Standard (i.e., unknown transmission or no known communicable disease)
    b. Contact (i.e., infected areas of the person's body such as skin infections, diarrhea)
    c. Droplet (i.e., COVID-19, influenza, meningitis, bronchiolitis, other respiratory viruses)
    d. Airborne (i.e., measles, varicella (chicken pox), disseminated herpes zoster, or tuberculosis)

3. Standard precautions, formerly known as universal precautions, are the minimum PPE worn for every patient encounter.

4. The appropriate strategies, including the use of PPE beyond standard precautions, are selected by anticipating which communicable disease may be present on scene and the route by which that communicable disease is transmitted.

5. Donning appropriate PPE is an essential part of provider safety and takes precedence over expediting patient care.

6. Donning and doffing should be performed in the presence of a partner to ensure proper technique.

**GUIDELINES:**

1. Perform hand hygiene prior to donning PPE.

2. Don PPE in the following sequence from first on to last on: gown, mask or respirator, eye protection, gloves. If two-glove technique used don first pair of gloves first and second pair of gloves last.

3. Don the appropriate PPE and take the following precautions during care of a patient with a confirmed or suspected communicable disease, see Table 1.

4. For all precautions, limit the number of providers in the patient compartment to only essential personnel to minimize exposures.

5. Maintain PPE throughout the patient encounter. Doff PPE once the patient encounter is complete.

6. Doff PPE in the following sequence from first off to last off: gown, gloves, goggles or face shield, mask or respirator. If two-glove technique used doff first pair of gloves first and second pair of gloves last.

    a. Contaminated surfaces of the PPE are the outer glove surface, front portion of the gown/raincoat, front portion of the eye protection, and front portion of the mask and any other surfaces that knowingly came into contact with the patient or were otherwise contaminated. Clean surfaces of the PPE include the rear portion of the gown/raincoat, eye protection straps, and mask straps.

    b. PPE should be doffed by clean hands coming into contact with clean portions of the PPE only.

7. Dispose of doffed PPE in a biohazard container.

8. Perform proper hand hygiene.

9. Refer to the CDC for on additional guidance on donning and doffing PPE: https://www.cdc.gov/coronavirus/2019-ncov/hcp/using-ppe.html

10. After each patient encounter decontaminate all surfaces of durable medical equipment using Environmental Protection Agency (EPA) approved disinfectant and dispose of all disposable medical equipment that came in contact with the patient or the scene per provider agencies protocols. If a raincoat is used as a gown, wipe down with EPA approved disinfectant and hang up to air dry.

Table 1. PPE and Mitigation Strategies for Communicable Disease Precautions

| Type of Transmission | Minimum PPE Required | Mitigation Strategies |
|---|---|---|
| Standard | Gloves | • Perform hand hygiene<br>• Clean and disinfect surfaces |
| Contact | Gloves, gowns (as available) | |
| Droplet | Gloves, surgical mask, eye protection, gowns (as available) | • Perform hand hygiene<br>• Clean and disinfect surfaces<br>• Place surgical mask on patient (and caregiver)<br>• Use viral filters during positive pressure ventilation<br>• Ask ambulatory patients to move outside of residence<br>• Open windows of transport vehicle, weather permitting<br>• Adjust the transport vehicle's ventilation system to the highest air changes per hour |
| Airborne | Gloves, respirator (N95, P100, or PAPR), eye protection, gowns | |

# Medical Control Guideline: SPINAL MOTION RESTRICTION (SMR)

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**DEFINITION:**

Spinal Motion Restriction (SMR) describes the procedure used to care for patients with possible unstable spinal injuries. SMR includes: Reduction of gross movement by the patient; prevention of additional damage to the spine; and regular reassessment of motor/sensory function.

**PRINCIPLES:**

1. SMR involves maintaining a neutral in-line position of the spine at all times during patient treatment and transport. SMR requires the patient's head, neck and torso to be appropriately stabilized. This can be achieved manually or with the use of commercially available equipment.

2. There are multiple commercial devices that may be used to assist with SMR during patient movement. In addition, there are harmful side effects of these devices that must be considered.

3. Prehospital provider assessment will determine if SMR is required.

4. Prehospital providers should use judgment and consider SMR for patients without neurologic findings, but in whom one is still concerned for unstable spinal injury.

5. A cervical collar alone does not provide adequate SMR. To provide appropriate SMR, the patient must be maintained in a neutral in-line position during movement and while on the gurney. Patients with potential thoracolumbar injury should be supine or reverse Trendelenburg.

6. The backboard is an extrication device. It may also be used to provide splinting during movement of patients with multiple traumatic injuries. While a backboard may be used to assist with SMR during the extrication phase, it is not required for SMR.

7. Once the patient is on the ambulance gurney, the backboard does not provide any advantage and may cause harm related to increased pain, increased lateral movement, and increased imaging at the hospital.

8. The backboard should not be maintained during transport for the purposes of SMR. Whenever possible, patients should be rolled off the backboard prior to transport. Exceptions are patients who are hemodynamically unstable or when there are scene safety concerns.

9. A backboard should not be used in the ambulatory patient (i.e. a patient who is standing and/or walking at the time of EMS arrival).

10. SMR is generally not indicated for penetrating injuries and transport must not be delayed to maintain SMR. Treatment of patients with penetrating trauma should not involve a backboard unless it is required as an extrication device.

11. Safe and proper removal of the helmet should be done by two people following steps outlined in an approved trauma curriculum.

12. Paramedic assessment, in accordance with guidelines below, will determine whether SMR is required. Whenever BLS has initiated SMR, paramedics should strongly consider maintaining c-collar and spinal precautions until hospital evaluation. Once SMR has been determined necessary based upon paramedic assessment, it should be maintained throughout the prehospital phase of care by whatever methods the provider deems appropriate. This does not include continuation of the backboard, which, if used to assist during extrication, should be removed once patient is on gurney.

13. The method by which SMR is maintained and devices used may be adjusted to meet the needs of the patient. In particular, management of the patient's airway may necessitate alternate SMR methods and should take precedence.

14. For purposes of the assessment, an unreliable patient is anyone who is altered, intoxicated or nonverbal. Limited evaluation may be due to communication barrier, uncooperative patient or patient too distracted by other injuries and circumstances. An abnormal spine exam is any deformity or tenderness along the spine.

15. For the purposes of the pediatric assessment, an abnormal torso exam refers to evidence of substantial torso injury, defined as injuries thought to be potentially life threatening to the thorax including the chest wall, abdomen, flanks, back and pelvis with an unstable chest wall, abdominal distension or significant chest or abdominal tenderness.

**GUIDELINES:**

1. Every patient with trauma, including ambulatory patients, must receive an assessment. If any assessment component is positive, the patient requires SMR.
(See age-appropriate SMR algorithm.)

2. Patients initially placed in SMR by BLS providers whose care is transferred to ALS providers, shall receive a paramedic assessment to determine if continuation of SMR is indicated.

3. Neurological examination includes:
   a. Test of sensation and abnormal sensation (parasthesias) in all 4 extremities
   b. Test of motor skills in all 4 extremities with active movements by the patient (avoid just reflexive movements like hand grasp) to include: wrist/finger extension and flexion, foot plantar and dorsiflexion
   c. Frequent reassessment.

4. All history and examinations pertinent to the decision for spinal motion restriction, as outlined in the adult and pediatric algorithms, must be assessed and documented on the ePCR.

5. Padding may be necessary to maintain neutral alignment particularly in children <3 years old who have a large occiput forcing the head forward when supine.

6. Infants in rear facing car seats may be immobilized and extricated in the car seat as long as the patient is stable and does not exhibit signs of respiratory distress or shock.

7. Children restrained in a car seat with a high back should be extricated in the car seat and then be placed in SMR as appropriate. Children in booster seats (without a back) should be placed in SMR as appropriate.

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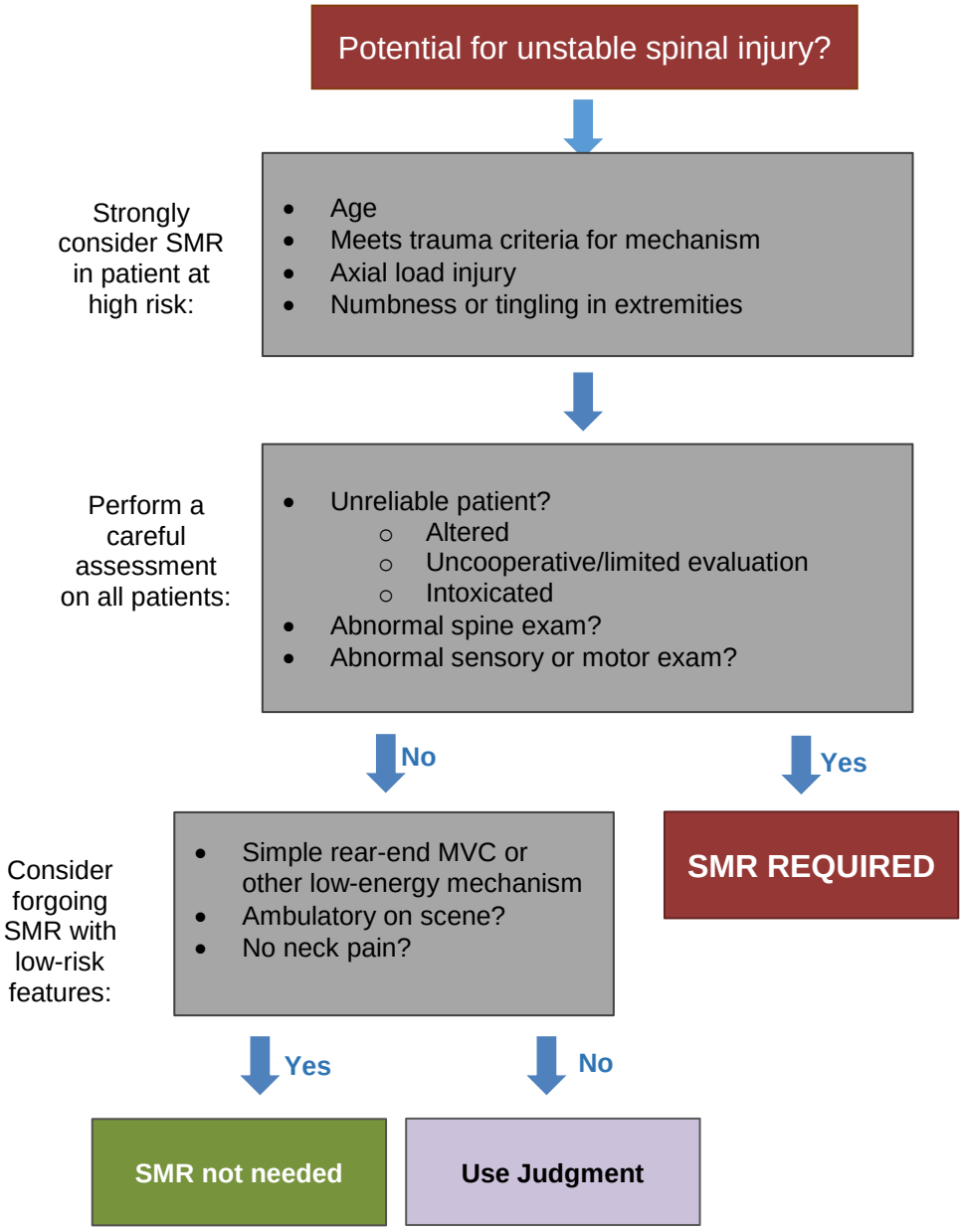
**ADULT ALGORITHM:**



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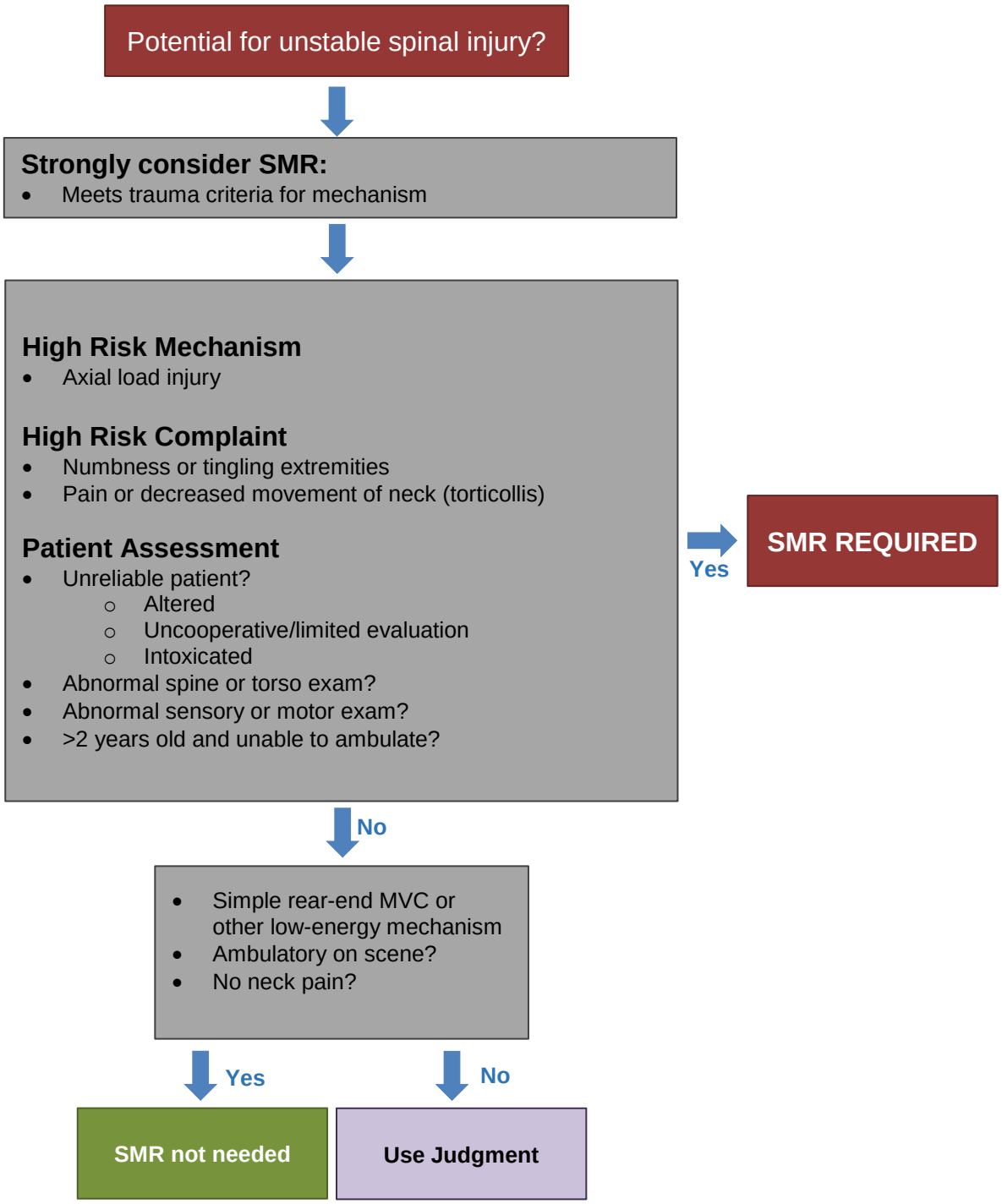
**PEDIATRIC ALGORITHM:**




Predisposing conditions are any of the following: Family members who fracture bones easily, child with spinal deformity, dysmorphic features, or childhood rheumatoid arthritis.

Specific conditions include: Down syndrome, hydrocephalus, dwarfism (achondrodysplasia), Klippel-Feil syndrome, mucopolysaccharidosis, Ehlers-Danlos syndrome, Marfan syndrome, osteogenesis imperfecta, Larsen syndrome, juvenile rheumatoid arthritis, juvenile ankylosing spondylitis, renal osteodystrophy, rickets, scoliosis, history of cervical spine injury /surgery.

# Medical Control Guideline: TRANSCUTANEOUS PACING

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**PRINCIPLES:**

1. Transcutaneous Pacing (TCP) provides temporary external cardiac pacing for the treatment of symptomatic bradycardia.

2. TCP should not be initiated on patients in asystole.

3. Do not delay TCP for IV access if the patient has poor perfusion.

4. Strongly consider sedation for pacing discomfort. Refer to *TP 1212 or 1212-P, Cardiac Dysrhythmia - Bradycardia* for drugs and dosages.

5. All TCP equipment must be used and maintained in accordance with the manufacturer's guidelines.

**GUIDELINES:**

1. Explain the procedure to the patient, family member, and/or caregiver.

2. Place pacing electrodes/pads and attach the pacing cable according to the manufacturer's guidelines.

3. For awake patients, provide sedation and analgesia unless contraindicated. Contraindications include RR < 10 for adults (< lower limit for color code on *MCG 1309* for pediatrics) or unresponsiveness.

4. Activate the pacing device, set the initial pacing rate at 70 beats per minute (bpm) and the current at zero milliampere (mA). Slowly increase the mA until electrical and mechanical capture is achieved as evidenced by **a palpable pulse** that correlates with the paced heart rate on the monitor.

5. If the patient continues to exhibit signs and symptoms of poor perfusion, increase the rate by 10 bpm until adequate perfusion is achieved. Maximum rate is 100 bpm.

## Medical Control Guideline: TRAUMATIC HEMORRHAGE CONTROL

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**PRINCIPLES:**

1. Applying direct continuous pressure to the area of bleeding should be the first management technique to control external bleeding.

2. Tourniquets have been demonstrated to be safe and effective when used appropriately and can be lifesaving.

3. A hemorrhage control tourniquet should be used if external bleeding from an extremity cannot be controlled by direct pressure to an exposed wound.

4. Poorly perfusing patients with an isolated penetrating extremity injury and those with amputations or mangled extremities should have a tourniquet applied even if minimal to no visible bleeding.

5. Tourniquet application may be the initial method to control extremity bleeding when scene safety concerns, resource limitations, or patient position/entrapment preclude direct pressure application.

6. Tourniquet application frequently results in severe pain. Pain management should be provided as necessary.

7. Hemostatic Agents are only to be utilized by approved providers.

**GUIDELINES:**

1. First, remove any bandages applied by patient or bystanders, identify the area of bleeding, and apply continuous, firm, focused pressure directly to source of bleeding using gauze or hemostatic agents as appropriate.

2. If unable to control hemorrhage with direct pressure, or if scene or patient safety precludes application of direct pressure, prepare for tourniquet application.

3. Explain usage of tourniquet to the patient if patient's condition allows.

4. Follow manufacturer's instructions for application of the tourniquet.

5. Apply tourniquet 2-3 inches proximal to the bleeding site but not over a joint or the hemorrhaging injury.

6. Ensure that bleeding is stopped and distal pulses are absent after the application of the tourniquet.

7. Once a tourniquet is applied, the patient should be reassessed at least every 5 minutes for continued absence of distal pulse and/or bleeding.

8. If bleeding is not controlled with one tourniquet, a second tourniquet may be applied proximal to the first tourniquet. Do not remove the first tourniquet after applying the second tourniquet.

9. Once a tourniquet is applied it should not be loosened or removed without physician approval.

10. Provide analgesia per *MCG 1345* and refer to *TP 1244 or 1244-P, Traumatic Injury* and *TP 1242 or 1242-P, Crush Injury/Syndrome* as appropriate for dosing.

11. Paramedics shall make Base hospital contact and transport in accordance with *Ref. 1200.1* and *Ref. 502, Patient Destination*. In general, patients requiring tourniquets should be transported to a Trauma Center.

12. Paramedic shall document the time tourniquet applied on the tourniquet and on the EMS Report Form. Remaining patient documentation will be in accordance with *Ref. 606, Documentation of Prehospital Care*.

# Medical Control Guideline: TREATMENT PROTOCOL QUALITY IMPROVEMENT FALLOUT DATA DICTIONARY

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**DEFINITION:**

**Fallout:** a deviation from an established standard.

**PRINCIPLES:**

1. An EMS QI program incorporating the Treatment Protocols is essential to effectively evaluate the quality of prehospital care as well as the efficiency in providing emergency medical services.

2. A collaborative relationship between Base Hospitals and EMS Provider Agencies is necessary for a comprehensive and effective quality improvement (QI) program.

3. Base Hospitals and EMS Provider Agencies shall evaluate the appropriate utilization of the Treatment Protocols based on the fallouts outlined below.

**GUIDELINES:**

EMS PROVIDER AGENCY

1. ALL TREATMENT PROTOCOLS

   a. Provider Impression (PI)
      - Primary PI not documented
      - Primary PI clinically incorrect
      - Secondary PI not documented when appropriate

   b. Treatment Protocol (TP)
      - Designated TP for PI not used
      - Secondary TP for secondary PI not used when appropriate

   c. Airway (AW)
      - Adult - Unresponsive requiring Bag-Mask-Ventilation (BMV) and oropharyngeal airway not used
      - Advanced airway (ET tube, King LTS-D) not used for ineffective BMV (age >12 years)
      - Capnography not used for any positive pressure ventilation
      - Positive pressure ventilation required and not performed

   d. Oxygen (O2)
      - Does not receive $O_2$ and $O_2$ sat <94% (<88% COPD), unless newborn or pediatric congenital heart disease
      - Meets criteria for high flow $O_2$ and patient does not receive
      - Receives $O_2$ and $O_2$ sat >94% and patient does not meet criteria for high flow $O_2$
      - Pediatric – Newborn or pediatric congenital heart disease receive inappropriate $O_2$ as per MCG 1302

e. Pain (PN)
- Pain level not recorded
- Pain score ≥ 7 and pain not addressed
- Pain treated and not reassessed
- Incorrect dose of pain medication administered

f. Base Contact (BA)
- Base contact not made when specified by Ref. No. 1200.1 or by specific protocol used

g. Receiving Hospital Notification (NT)
- No notification to receiving hospital as per Ref. No. 1200.1

h. Transport (TS)
- Advanced Life Support (ALS) transport not made when indicated by Ref. No. 1200.1

i. Destination (DS)
- Failure to transport to a specialty center when indicated
- Transport to the wrong specialty center; includes Trauma Center, STEMI Receiving Center, Perinatal Center, Emergency Department Approved for Pediatrics, Pediatric Medical Center, Primary Stroke Center and Comprehensive Stroke Center.
- Transport to the incorrect stroke center level based on mLAPSS, LAMS and Last Known Well Time

j. Documentation (DO)
- Erroneous Provider Impression or Treatment Protocol documentation due to data entry error alone

k. Color Code Drug Doses (DD)
- Pediatric – for children ≤ 14 years weight (kg) and Color Code not documented
- Pediatric – for children ≤ 14 years weight (kg) or Color Code incorrect

l. Fluid Administration (FL)
- Adult – Normal Saline 1L not administered for poor perfusion or other protocol-specific indication (unless contraindicated because of pulmonary edema or multi-system trauma patient)
- Pediatric – Normal Saline 20mL/kg not administered for poor perfusion or other protocol-specific indication
- Patient not reassessed after each Normal Saline 250mL and fluids continued

m. Ondansetron (ON)
- Pediatric – Ondansetron 4mg ODT given to patient < 4 years old
- Not administered when indicated

2. TP 1202 / 1202-P – GENERAL MEDICAL
As per “All Treatment Protocols”

3. TP 1203 / 1203-P – DIABETIC EMERGENCIES

a. Glucose (GL)

- Blood glucose not checked

b. Low Blood Glucose (LG)
- Blood glucose < 60 and not treated

4. TP 1204 / 1204-P – FEVER / SEPSIS
As per “All Treatment Protocols”

5. TP 1205 / 1205-P – GI/GU EMERGENCIES
As per “All Treatment Protocols”

6. TP 1206 / 1206-P – MEDICAL DEVICE MALFUNCTION
As per “All Treatment Protocols”

7. TP 1207 / 1207-P – SHOCK / HYPOTENSION

a. Vascular Access (VA)
- Vascular access not attempted for patient
- Intraosseous line not attempted when Intravenous Line cannot be established and Intraosseous Line indicated per MCG 1375
- Intraosseous Line placed without indication as per MCG 1375

b. Cardiac Monitoring (CM)
- Cardiac monitoring not initiated

c. Fluid Administration (FL)
- Any universal fallout as specified above
- Additional Normal Saline 1L for adults or 20mL/kg for pediatrics not administered for persistent poor perfusion after initial NS infusion (unless contraindicated or withheld by Base order)

d. **Push-dose Epinephrine** (PD)
- Base contact not made to discuss or Push-Dose Epinephrine not initiated for persistent poor perfusion or poor perfusion with pulmonary edema

8. TP 1208 / 1208-P – AGITATED DELIRIUM

a. Sedation (SE)
- Adult – Midazolam not administered in patient requiring restraints or for provider safety
- Pediatric – Base contact not made to discuss Midazolam administration in patients requiring restraints or for provider safety
- Pediatric – Midazolam administered without Base order
- Midazolam administered in patient not meeting criteria (not requiring restraints or not agitated with 2 or more of confusion, diaphoresis, tactile fever, tachycardia)

9. TP 1209 / 1209-P – BEHAVIORAL / PSYCHIATRIC CRISIS

a. Sedation (SE)
- Midazolam not administered in patient requiring restraints or for provider safety
- Midazolam administered in patient not meeting criteria (not requiring restraints for patient or provider safety

- Midazolam administered without Base order

10. TP 1210 / 1210-P – CARDIAC ARREST

    a. Scene (SD)
    - Patient transported prior to at least 20 minutes of on-scene resuscitation

    b. Vascular Access (VA)
    - Vascular Access not attempted for patient
    - Intraosseous Line not attempted when intravenous line cannot be established and Intraosseous Line indicated per MCG 1375

    c. Capnography (WC)
    - Waveform capnography is not used throughout resuscitation

    d. Defibrillation (DF)
    - Adult – Defibrillation biphasic at 200J not performed immediately for shockable rhythm
    - Pediatric – Defibrillation at 2J/kg not performed immediately for shockable rhythm
    - Pediatric – Repeat defibrillation at 4J/kg not performed when indicated
    - Defibrillation performed for non-shockable rhythm

    e. Epinephrine (EP)
    - Epinephrine administered prior to defibrillation x 2 for shockable rhythm
    - Epinephrine not administered after defibrillation x 2 for shockable rhythm
    - Epinephrine not administered for PEA/Asystole

    f. Amiodarone (AM)
    - Amiodarone not administered for persistent or recurrent V-Fib/V-Tach without pulses
    - Amiodarone administered for rhythm besides persistent V-Fib/V-Tach without pulses

    g. 12-Lead ECG (EC)
    - 12-Lead ECG not performed after Return of Spontaneous Circulation (ROSC) per MCG 1308
    - 12-Lead ECG paramedic interpretation not documented
    - 12-Lead ECG software interpretation not documented

    h. Fluid Administration (FL)
    - Normal Saline not administered for PEA/Asystole
    - Normal Saline not administered for SBP <90 after ROSC

    i. **Push-dose Epinephrine** (PD)
    - Adult – Push-dose epinephrine not administered for SBP <90mmHg after 250mL Normal Saline for ROSC
    - Pediatric – Push-dose epinephrine not administered for SBP <70mmHg after Normal Saline 20mL/kg for ROSC

11. TP 1211 – CARDIAC CHEST PAIN

    a. Cardiac Monitoring (CM)

- Cardiac Monitoring not initiated

b. 12-Lead ECG (EC)
- 12-Lead ECG not performed as per MCG 1308
- 12-Lead ECG paramedic interpretation not documented
- 12-Lead ECG software interpretation not documented

c. Aspirin (AS)
- Aspirin not administered for alert patient (unless documented that patient is allergic to Aspirin/has contraindication to receiving Aspirin)
- Aspirin administered to a pediatric patient

d. Nitroglycerin (NG)
- Nitroglycerin given for SBP <100mmHg
- Nitroglycerin given when patient has taken sexually enhancing drugs within 48 hours
- Nitroglycerin given without assessing for sexually enhancing drugs
- Nitroglycerin not given despite chest pain and no documentation as to why withheld
- Nitroglycerin given to a pediatric patient

12. TP 1212 / 1212P – CARDIAC DYSRHYTHMIA – BRADYCARDIA

a. Cardiac Monitoring (CM)
- Cardiac Monitoring not initiated

b. 12-Lead ECG (EC)
- 12-Lead ECG not performed as per MCG 1308
- 12-Lead ECG paramedic interpretation not documented
- 12-Lead ECG software interpretation not documented

c. Chest Compressions (CC)
- Pediatric - Chest compressions not performed for pulse <60bpm with persistent poor perfusion after $O_2$ and BMV
- Pediatric - Chest compressions continued after pulse >60bpm

d. Epinephrine (EP)
- Pediatric – Epinephrine administered without $O_2$ and BMV/airway management for poor perfusion
- Pediatric – Epinephrine not administered for persistent poor perfusion after $O_2$ and BMV
- Pediatric – Epinephrine not administered at correct dose

e. Atropine (AT)
- Adult – Atropine not administered for poor perfusion (unless immediate Transcutaneous Pacing (TCP) is indicated and initiated)
- Pediatric – Atropine not administered for suspected AV Block or increased vagal tone (unless immediate TCP indicated and initiated)

f. Transcutaneous Pacing (TCP) (TC)
- TCP not initiated for HR ≤ 40 with continued poor perfusion as per MCG 1365

13. TP 1213 / 1213-P – CARDIAC DYSRHYTHMIA – TACHYCARDIA

    a. Cardiac Monitoring (CM)
       - Cardiac Monitoring not initiated

    b. 12-Lead ECG (EC)
       - 12-Lead ECG not performed as per MCG 1308
       - 12-Lead ECG paramedic interpretation not documented
       - 12-Lead ECG software interpretation not documented

    c. Valsalva (VL)
       - Valsalva not attempted for supraventricular tachycardia (SVT)/narrow complex with adequate perfusion

    d. Adenosine (AD)
       - Adenosine not administered for SVT/narrow complex with adequate perfusion when Valsalva fails
       - Adenosine not administered for SVT/narrow complex in alert patient with poor perfusion
       - Adenosine not administered for Wide-Complex Regular Monomorphic Tachycardia with adequate perfusion
       - Adenosine dosing incorrect for poor perfusion
       - Adenosine given for Wide-Complex Irregular tachycardia

    e. Synchronized Cardioversion (SC)
       - Synchronized Cardioversion not performed for SVT/narrow complex with persistent poor perfusion
       - Synchronized Cardioversion not performed for SVT/narrow complex with ALOC
       - Synchronized Cardioversion not performed for Wide-Complex Regular Monomorphic Tachycardia with poor perfusion if adenosine fails and IV not immediately available
       - Synchronized Cardioversion not performed for Wide-Complex Irregular Tachycardia with poor perfusion

14. TP 1214 – PULMONARY EDEMA / CHF

    a. Continuous Positive Airway Pressure (CPAP) (CP)
       - CPAP not administered for moderate to severe respiratory distress (SBP ≥ 90mmHg and no contraindications)
       - CPAP administered to patient with contraindications

    b. Cardiac Monitoring (CM)
       - Cardiac monitoring not initiated

    c. Vascular Access (VA)
       - Vascular Access not attempted for patient
       - Intraosseous Line not attempted when intravenous line cannot be established and Intraosseous Line indicated per MCG 1375
       - Intraosseous Line placed without indication as per MCG 1375

    d. Nitroglycerin (NG)
       - Nitroglycerin not administered

- Nitroglycerin given for SBP <100mmHG
- Nitroglycerin given when patient has taken sexually enhancing drugs within 48 hours
- Nitroglycerin given without assessing for sexually enhancing drugs
- Nitroglycerin dose incorrect for SBP

e. Albuterol (AL)
- Albuterol not given for patient with wheezing despite CPAP

15. TP 1215 / 1215-P – CHILDBIRTH MOTHER

a. Vascular Access (VA)
- Vascular Access attempt delays transport

b. Amniotic Sac (AN)
- Amniotic sac showing with presenting crown and sac rupture not performed and/or documented

c. Fundal Massage (FM)
- Fundal massage not performed after placenta delivery

d. Destination (DS)
- Incorrect transport destination based on gestational age

16. TP 1216-P – NEWBORN / NEONATAL RESUSCITATION

a. Amniotic Sac (AN)
- Amniotic sac showing with presenting crown and sac rupture not performed and/or documented

b. Vascular Access (VA)
- Vascular Access not attempted for a child who does not respond to initial resuscitation and BMV
- Vascular Access attempt delays transport

c. Chest Compressions (CC)
- Chest compressions not performed for pulse <60bpm after BMV for 30 seconds
- Chest compressions continued after pulse >60bpm

d. Epinephrine (EP)
- Epinephrine not administered for <60bpm once chest compressions begun
- Epinephrine not administered at correct dose

17. TP 1217 / 1217-P – PREGNANCY COMPLICATION

a. Vascular Access (VA)
- Vascular Access not attempted
- Vascular Access attempt delays transport

b. Amniotic Sac (AN)
- Amniotic sac showing with presenting crown and sac rupture not performed and/or documented

c. Abnormal Delivery (AB)
   - Abnormal delivery not managed per protocol

18. TP 1218 / 1218-P – PREGNANCY LABOR
    As per “All Protocols”

19. TP 1219 / 1219-P – ALLERGY

    a. Epinephrine (EP)
       - Epinephrine not administered for anaphylaxis
       - Epinephrine not administered at correct dose
       - Epinephrine not administered every 10min x 2 for persistent symptoms
       - Epinephrine administered by incorrect route
       - More than 3 doses of epinephrine administered

    b. Vascular Access (VA)
       - Vascular Access not attempted for patient with anaphylaxis
       - Intraosseous Line not attempted when Intravenous Line cannot be established in patients in anaphylactic shock
       - Intraosseous Line placed without indication as per MCG 1375

    c. Albuterol (AL)
       - Albuterol not given for patient with wheezing

20. TP 1220 / 1220-P – BURNS

    a. Clothing (CL)
       - Clothing (jewelry) not removed from affected area

    b. Burn Management (BM)
       - Burn type not identified
       - Burn not managed by protocol for type

    c. Warming Measures (WM)
       - Measures not taken to keep patient warm

21. TP 1221 / 1221-P – ELECTROCUTION

    a. Cardiac Monitoring (CM)
       - Cardiac Monitoring not initiated

    b. Clothing (CL)
       - Clothing (jewelry) not removed from affected area

22. TP 1222 / 1222-P – HYPERTHERMIA (ENVIRONMENTAL)

    a. Cardiac Monitoring (CM)
       - Cardiac Monitoring not initiated

    b. Cooling Measures (CO)
       - Cooling measures not initiated

23. TP 1223 / 1223-P – HYPOTHERMIA / COLD INJURY

    a. Cardiac Monitoring (CM)
       - Cardiac Monitoring not initiated

    b. Warming Measures (WM)
       - Warming measure not initiated

24. TP 1224 / 1224-P – STINGS / VENOMOUS BITES

    a. Venomous Bite (VB)
       - Bite not managed by protocol for type

25. TP 1225 / 1225-P – SUBMERSION

    a. Cardiac Monitoring (CM)
       - Cardiac Monitoring not initiated

    b. Warming Measures (WM)
       - Warming measures not initiated

26. TP 1226 / 1226-P – ENT / DENTAL EMERGENCIES

    a. Control Bleeding (CB)
       - Bleeding control with direct pressure not attempted when indicated

    b. Tooth Avulsion (TA)
       - Avulsed tooth not placed in Normal Saline

27. TP 1227 – Omitted

28. TP 1228 / 1228-P – EYE PROBLEM

    a. Shield Eye (SH)
       - Globe rupture suspected and eye not shielded

    b. Burn Management (BM)
       - Burn type not identified
       - Chemical burn not irrigated with Normal Saline 1L
       - Thermal burn not covered with dry dressing

    c. Ondansetron (ON)
       - Ondansetron not administered to nauseated patient with suspected globe rupture

29. TP 1229 / 1229-P – ALOC

    a. Cardiac Monitoring (CM)
       - Cardiac monitoring not initiated

    b. Vascular Access (VA)

- Vascular Access not attempted for patient
- Intraosseous Line not attempted when Intravenous Line cannot be established and Intraosseous Line indicated as per MCG 1375
- Intraosseous Line placed without indication as per MCG 1375

c. Glucose (GL)
- Blood Glucose not checked

d. Modified Los Angeles Prehospital Stroke Screen (mLAPSS) (ML)
- Adult – mLAPSS not performed when GCS is adequate for patient cooperation
- Pediatric – Neurological exam not performed/documented

30. TP 1230 / 1230-P – DIZZINESS / VERTIGO

a. Glucose (GL)
- Blood Glucose not checked

b. Modified Los Angeles Prehospital Stroke Screen (mLAPSS) (ML)
- Adult – mLAPSS not performed for vertigo
- Pediatric – Neurological exam not performed/documented

31. TP 1231 / 1231-P – SEIZURE

a. Midazolam (MD)
- Midazolam not administered for active seizure
- Midazolam dose incorrect
- Midazolam frequency incorrect

b. Glucose (GL)
- Blood Glucose not checked for persistent ALOC

32. TP 1232 / 1232-P – STROKE / CVA / TIA

a. Cardiac Monitoring (CM)
- Cardiac Monitoring not initiated

b. Vascular Access (VA)
- Vascular Access not attempted for patients with Los Angeles Motor Score (LAMS) 4 or 5

c. Glucose (GL)
- Blood Glucose not checked

d. Modified Los Angeles Prehospital Stroke Screen (mLAPSS) (ML)
- mLAPSS not performed
- mLAPSS not documented

e. Los Angeles Motor Score (LAMS) (LA)
- LAMS not performed for positive mLAPSS
- LAMS not documented for positive mLAPSS

f. Last Known Well Time (LK)

- Last Known Well Time not documented

33. TP 1233 / 1233-P – SYNCOPE / NEAR SYNCOPE

    a. Cardiac Monitoring (CM)
    - Cardiac monitoring not initiated

    b. 12-Lead ECG (EC)
    - 12-Lead ECG not performed as per MCG 1308
    - 12-Lead ECG paramedic interpretation not documented
    - 12-Lead ECG software interpretation not documented

34. TP 1234 / 1234-P – AIRWAY OBSTRUCTION

    a. Obstructed Airway (OA)
    - > 1 year old - abdominal thrusts not performed in conscious patient who is unable to speak
    - < 1 year old – back blows/chest thrusts not performed in conscious patient
    - Chest compressions not initiated on patient that loses consciousness
    - Laryngoscopy not performed to visualize potential obstruction if chest compressions fail to dislodge foreign body
    - Visible foreign body removal not attempted with McGill forceps if laryngoscopy performed

    b. Unmanageable Airway (UA)
    - Immediate MAR transport not initiated

    c. Cardiac Monitoring (CM)
    - Cardiac Monitoring not initiated

    d. Epinephrine (EP)
    - Epinephrine neb not administered for stridor with respiratory distress
    - Epinephrine IM not administered for visible airway/tongue swelling
    - Epinephrine not administered at correct dose
    - Epinephrine not administered by correct route for indication
    - Epinephrine not administered at correct frequency
    - Epinephrine neb administered more than 2 times

    e. Tracheostomy Management (TM)
    - Suctioning not attempted
    - Inner cannula not removed and cleaned if present
    - Tracheostomy not removed and replaced when indicated

35. TP 1235-P – BRUE

    Cardiac Monitoring (CM)
    - Cardiac monitoring not initiated

36. TP 1236 / 1236-P – INHALATION INJURY

    a. Remove from Environment (RE)
    - Patient not removed from environment for ongoing exposure

b. Epinephrine (EP)
- Epinephrine neb not administered for stridor with respiratory distress
- Epinephrine not administered at correct dose
- Epinephrine not administered at correct frequency
- Epinephrine neb administered more than 2 times

c. Albuterol (AL)
- Albuterol not given for patient with wheezing/bronchospasm

d. Continuous Positive Airway Pressure (CPAP) (CP)
- CPAP not administered for moderate to severe respiratory distress (SBP ≥ 90mmHg, no contraindications, and patient size > length-based resuscitation tape)
- CPAP administered to patient with contraindications

37. TP 1237 / 1237-P – RESPIRATORY DISTRESS

a. Continuous Positive Airway Pressure (CPAP) (CP)
- CPAP not administered for moderate to severe respiratory distress (SBP ≥ 90mmHg, no contraindications, and patient size > length-based resuscitation tape)
- CPAP administered to patient with contraindications

b. Albuterol (AL)
- Albuterol not given for patient with wheezing

c. Epinephrine (EP)
- Epinephrine IM not administered for deteriorating respiratory status despite albuterol
- Epinephrine not administered at correct dose

d. Needle Thoracostomy (NE)
- Needle Thoracostomy not performed when indicated as per MCG 1335
- Needle Thoracostomy performed when not indicated as per MCG 1335

38. TP 1238 / 1238-P – CARBON MONOXIDE EXPOSURE

a. Remove from Environment (RE)
- Patient not removed from environment for ongoing exposure

39. TP 1239 / 1239-P – DYSTONIC REACTION

a. Diphenhydramine (DP)
- Dystonic reaction not recognized
- Diphenhydramine not administered

40. TP 1240 / 1240-P – HAZMAT

a. Clothing (CL)
- Clothing not removed

b. Decontaminate (DC)
   - Decontamination not performed as indicated

c. Irrigation (IR)
   - Eyes not flushed when indicated
   - Eye not irrigated with at least 1L Normal Saline

d. Cardiac Monitoring (CM)
   - Cardiac Monitoring not initiated

e. Nerve Agent Exposure (NA)
   - DuoDote not administered per protocol

f. Organophosphate Exposure (OG)
   - Atropine not administered as indicated per protocol

g. Radiologic Exposure (RA)
   - Detection device not utilized for suspected contamination
   - Cause of contamination not determined (if contamination confirmed)
   - Treatment not initiated for life threatening conditions in conjunction with decontamination (treatment delayed for decontamination)

41. TP 1241 / 1241-P – OVERDOSE / POISONING / INGESTION

a. Naloxone (NL)
   - Naloxone not administered for hypoventilation/apnea in suspected opiate overdose
   - Incorrect dose used for administration route

b. Glucose (GL)
   - Blood Glucose not checked

c. Antidote (AE)
   - Correct antidote not administered when available for suspected exposure

42. TP 1242 / 1242-P – CRUSH INJURY / SYNDROME

a. Hospital Emergency Response Team (HERT) (HT)
   - HERT not activated for anticipated prolonged entrapment (>30 minutes) or when otherwise indicated

b. Vascular Access (VA)
   - Vascular Access not attempted
   - No discussion with base for Intraosseous Line if unable to establish Intravenous Line
   - Intraosseous Line placed without indication as per MCG 1375

c. Fluid Administration (FL)
   - Adult – Normal Saline not administered as soon as possible prior to release
   - Adult – Less than 2L Normal Saline administered (unless contraindicated or hospital arrival prior to completion)

- Pediatric – Normal Saline 20mL/kg not administered as soon as possible and prior to release
- Pediatric – greater than 40mL/kg Normal Saline administered without base order
- Patient not assessed after each Normal Saline 250mL and fluids continued unless contraindicated

d. Cardiac Monitoring (CM)
- Cardiac monitoring not initiated

e. Warming Measures (WM)
- Measures not taken to keep patient warm

f. Hyperkalemia (HK)
- Calcium Chloride not administered when evidence of hyperkalemia
- Sodium Bicarbonate not administered when evidence of hyperkalemia
- Albuterol not administered when evidence of hyperkalemia
- Medications administered at wrong dose and/or route

g. Crush Syndrome (CS)
- Potential for Crush Syndrome not identified
- Calcium Chloride not administered when risk for crush syndrome
- Sodium Bicarbonate not administered when risk for crush syndrome
- Albuterol not administered when risk for crush syndrome
- Medications administered at wrong dose and/or route
- Medications administered at wrong time (not administered just prior to release of entrapment)

43. TP 1243 / 1243-P – TRAUMATIC ARREST

a. Scene (SD)
- Patient transport delay

b. Control Bleeding (CB)
- Bleeding control not attempted when indicated
- Tourniquet not applied when indicated as per MCG 1370

c. Needle Thoracostomy (NE)
- Needle Thoracostomy not performed when indicated as per MCG 1335
- Needle Thoracostomy performed when not indicated as per MCG 1335

d. Defibrillation (DF)
- Adult - Defibrillation biphasic at 200J not performed immediately for shockable rhythm
- Pediatric – Defibrillation not performed immediately for shockable rhythm as per MCG 1309
- Defibrillation performed for non-shockable rhythm

e. Spinal Motion Restriction (SMR) (SR)
- Backboard used solely for purpose of SMR
- Transport delayed for SMR

f. Vascular Access (VA)

- Vascular Access not attempted
- Intraosseous Line not attempted when Intravenous Line cannot be established as per MCG 1375
- Transport delayed for vascular access

g. Fluid Administration (FL)
- Normal Saline not administered by rapid infusion
- Less than 2L Normal Saline initiated

44. TP 1244 / 1244-P – TRAUMATIC INJURY

a. Scene (SD)
- Patient transport delayed

b. Control Bleeding (CB)
- Bleeding control not attempted when indicated
- Tourniquet not applied when indicated as per MCG 1370

c. Needle Thoracostomy (NE)
- Needle Thoracostomy not performed when indicated as per MCG 1335
- Needle Thoracostomy performed when not indicated as per MCG 1335

d. Spinal Motion Restriction (SMR) (SR)
- Backboard used solely for the purpose of SMR
- Transport delayed for SMR
- SMR not performed when indicated as per MCG 1360
- SMR performed when not indicated and potentially harmful as per MCG 1360
- Alert patient not rolled off backboard for transport (unless safety concern)

e. Ondansetron (ON)
- Ondansetron not administered to nauseated patient with suspected traumatic brain injury

f. Fluid Administration (FL)
- Inappropriate fluid administration for patient condition
- Fluids not ordered when indicated or inadequate volume of fluids ordered

## II. BASE HOSPITAL

1. ALL BASE CONTACTS

a. Provider Impression (PI)
- Primary PI in discussion with paramedics is clinically incorrect and/or not supported with documented data
- Primary PI not documented
- Secondary PI not documented when appropriate

b. Treatment Protocol (TP)
- Designated TP for PI not used
- Secondary TP for secondary PI not used when appropriate
- Base hospital orders deviate from treatment protocol standards without documented clinical rationale

c. Critical Interventions

i. Synchronized Cardioversion (SC)
- Inappropriate cardioversion (indication, energy, timing)
- Cardioversion not ordered when indicated

ii. Push-dose Epinephrine (PD)
- Inappropriate administration of push-dose epinephrine (indication, dose, timing)
- Push-dose epinephrine not ordered when indicated

iii. Transcutaneous Pacing (TCP) (TC)
- Inappropriate administration of TCP (indication, settings, timing)
- TCP not ordered when indicated

iv. Fluid Administration (FL)
- Inappropriate fluid administration for patient condition
- Fluids not ordered when indicated or inadequate volume of fluids ordered

v. Pain (PN)
- Inappropriate pain management treatment (indication, dose, frequency)
- Pain management not ordered when indicated

d. Transport (TS)
- Advanced Life Support (ALS) transport not made when indicated by Ref. No. 1200.1 (i.e. inappropriate BLS downgrade)

e. Destination (DS)
- Not directing transport to a specialty center when indicated
- Directing transport to the wrong specialty center; includes Trauma Center, Perinatal Center, STEMI Receiving Center, Primary and Comprehensive Stroke Centers, Emergency Department Approved for Pediatrics and Pediatric Medical Center.
- Directing transport to the incorrect stroke center level based on mLAPSS, LAMS and Last Known Well Time

f. Termination of Resuscitation (TR)
- Cardiac Resuscitation terminated without meeting Ref. 814 criteria
- Cardiac arrest transported when meets Ref. 814 criteria and judgement for transport not described

# Medical Control Guideline: VASCULAR ACCESS

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**PRINCIPLES:**

1. Vascular access is a catheter inserted intravenously (IV) or a needle inserted intraosseously (IO), through which medications and/or fluids can be administered.

2. Not all patients will require vascular access.

3. Peripheral IV, placed by EMS, is the preferred vascular access method for patients requiring parenteral therapy.

4. Intraosseous (IO) placement or use of a pre-existing vascular access device (PVAD) may be necessary for patients requiring emergent prehospital vascular access in whom an IV cannot be readily placed.

**GUIDELINES:**

**Intravenous Lines**

1. Paramedics should first attempt placement of an IV saline lock for patients requiring parenteral access for medications or fluid volume.

2. In patients whose clinical condition allows, a minimum of two attempts at IV insertion should be made prior to consideration of IO placement.

**Intraosseous Lines**

3. IO access is indicated for adult and pediatric patients in cardiopulmonary arrest, shock/poor perfusion, severe burns and extremis when intravenous (IV) access is not possible or cannot be achieved quickly.

    a. IO contraindications:
        - Deformity, suspected fracture, or infection at the placement site
        - Inability to identify landmarks

    b. The most common complication of IO placement is local infiltration of fluid resulting in tissue damage or compartment syndrome. Other, rare complications include growth plate injury in pediatric patients, skin or bone infection, and fat embolism into the patient's circulation.

    c. If the patient requires vascular access for medication/fluid administration, but does not meet the indications above, **CONTACT BASE** to discuss IO placement.

    d. If an IO is in place, IV medications may be given by IO route even if not specifically stated in the Treatment Protocol.

4. IO Placement is approved for all Provider Agencies for placement at the flat surface of the proximal medial tibia, utilizing the tibial tuberosity (pediatric and adult patients) as the landmark for proper placement. It may also be placed in the greater tuberosity of the

humeral head (adults only - with prior Provider Agency approval by the EMS Agency). The preferred IO site should be free from signs of infection or trauma.

a. Explain the plan to use the IO as a vascular access site to the patient, family or caregiver if present during the resuscitation.

b. lO placement may be attempted once on each tibia and/or each proximal humerus. Note that the proximal humerus site may be more effective for delivering resuscitation medications. However, humeral IO placement should not be attempted unless the paramedic has been trained in use of this location.

c. Prior to using the IO line slowly flush with 10mL normal saline. The IO site can be used if it flushes easily without signs of swelling in the soft tissues around or behind the bone.

d. Document all sites where IO access is attempted and/or achieved.

e. If swelling occurs or infiltration is suspected, stop infusion, remove IO needle, and apply pressure bandage to the IO site.

5. Pain management: If utilizing IO for conditions other than cardiopulmonary arrest, lidocaine should be instilled to decrease pain associated with medication/fluid administration, prior to administration of any other medications/fluids. Infuse lidocaine 2% at the dosage listed below. Slow infusion is necessary to ensure the lidocaine remains in the medullary space of the bone. Allow lidocaine to dwell in space for 60 seconds prior to flushing with normal saline. If patient experiences pain on medication or NS flush after initial dose of lidocaine, repeat with half of the initial dose.

    - Adults: ***Lidocaine 2% 40mg*** slow IO push
    - Pediatric: ***Lidocaine 2% (20 mg/ml) 0.5mg/kg*** slow IO push, dose per *MCG 1309*. Not to exceed the adult dose.

**Pre-existing Vascular Access Devices (PVAD)**

6. Pre-existing vascular access devices (PVAD) (e.g. PICC lines, ports) provide access to the central circulation through a long catheter inserted beneath the skin, allowing rapid, pain-free administration of medications and intravenous fluid.

    - Patients and caregivers can often provide valuable information regarding PVAD.

7. EMS personnel should consider other routes of medication administration such as intramuscular (IM) or intranasal (IN) before using pre-existing vascular access devices in patients without cardiopulmonary arrest.

8. EMS personnel may utilize the following PVADs with externally visible access ports without base order for patients in cardiopulmonary arrest or shock requiring immediate treatment, if unable to place IV or IO successfully at other sites.

    a. *Peripherally Inserted Central Catheters (PICC lines*) – Figure 1
        - Swab ports with alcohol swabs twice, utilizing two separate alcohol swabs
        - Withdraw 5-10 mL of blood into a syringe to clear any small clots that may have formed before infusing medications/fluids

b. *Tunneling catheters such as Broviac, Hickman, and Groshong* – Figure 2

c. *Non-tunneled, dual lumen catheters used for temporary dialysis access, i.e., Quinton catheters*

9. Base hospital order is required to use any PVADs for patients not in cardiopulmonary arrest or shock.

10. **Devices that require puncture of the skin (those without visible external access ports) may be accessed ONLY IN CARDIAC ARREST AND WITH BASE ORDER.**

    a. Arteriovenous shunts (synthetic bridges between the arterial and venous circulation used for dialysis; located under the skin of the forearm) – Figures 3 and 4

    b. Subcutaneous internal access devices that require access through the skin (often found in the upper chest or forearm) for example, Port-a-Cath – Figure 5

11. Observe adherence to sterile technique when handling PVADs. Contamination of these devices may cause severe infection or dysfunction requiring surgical removal.

12. Do not introduce air or allow IV fluids to run dry; these are direct lines into the central circulation.

13. Use padded hemostats to clamp the catheter if catheter gets damaged during access.

# Images: ACCESSIBLE DEVICES – devices with externally visible access ports

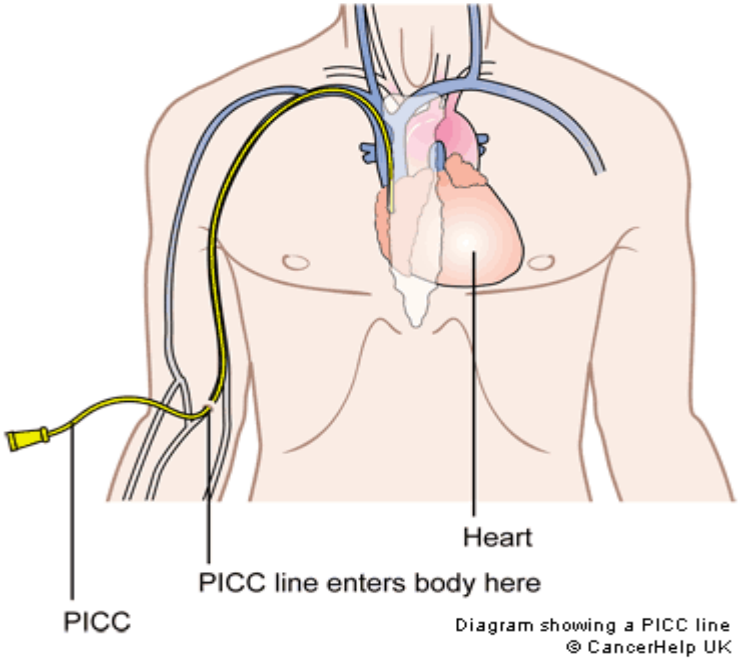



**Figure 1: Peripherally Inserted Central Catheter Line (PICC)**

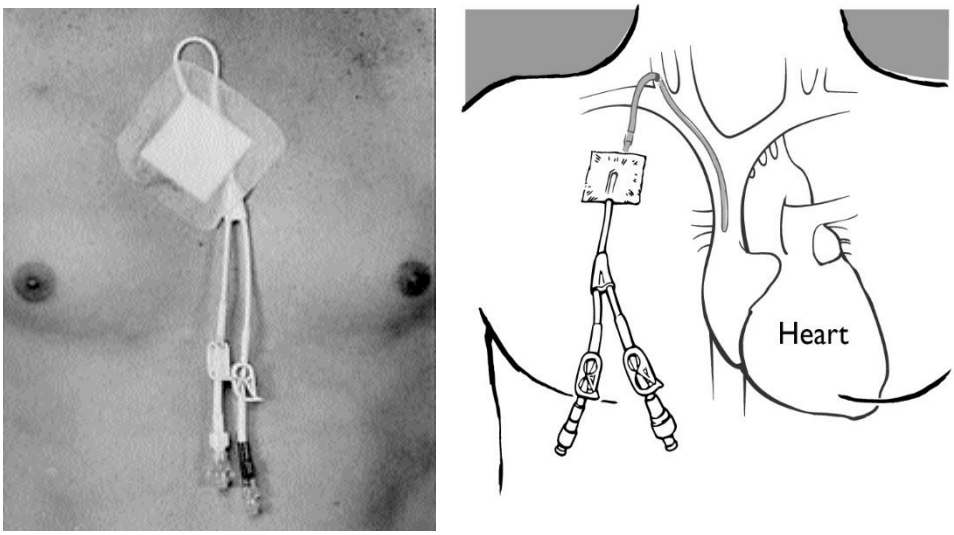
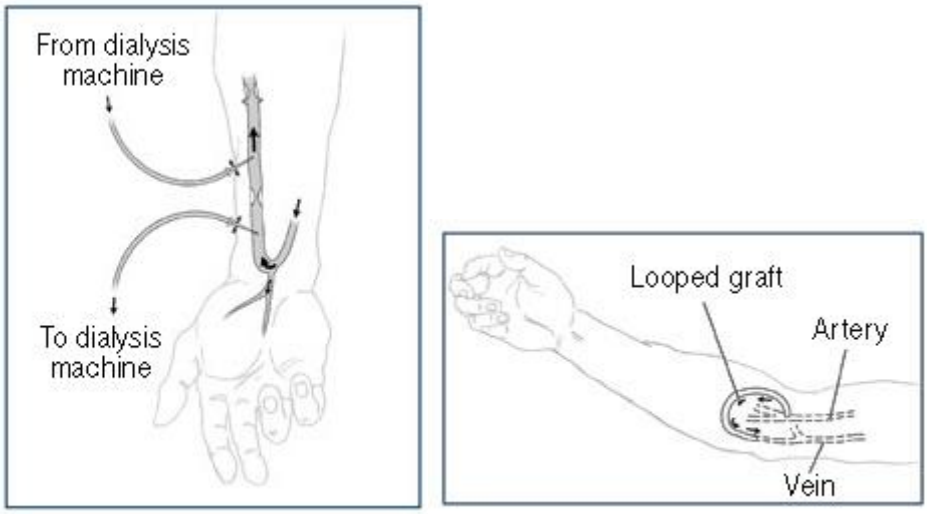



**Figure 2: External and internal views: Tunneling Catheter, e.g., Groshong, Hickman, and Broviac.**

## Images: DEVICES ACCESSIBLE ONLY IN CARDIAC ARREST AND WITH BASE ORDER –no visible external access ports; require skin puncture for subcutaneous internal access.




**Figures 3 and 4: Arteriovenous fistula and arteriovenous graft used for dialysis**

**Figure 5: Port-a-Cath**

# Medical Control Guideline: VITAL SIGNS

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**PRINCIPLE:**

1. Vital signs are a key component of the patient assessment utilized in determining the patient's physiological status, and the treatment options that best meet their needs.

**GUIDELINES:**

1. Normal Vital Signs
    a. Adult
        i. SBP 90-139 mmHg
        ii. DBP <90 mmHg
        iii. HR 60-100 bpm
        iv. RR 12-20 bpm
        v. $O_2$ sat ≥ 94% (if patient on home $O_2$, measured on $O_2$ at usual flow rate)
    b. Pediatric as per *MCG 1309*
    c. Circumstances should also be considered when assessing for and determining cause for concern regarding abnormal vital signs

2. Obtain and document the following vital signs on all patients:
    a. Blood pressure (for patients < 3 years, document capillary refill instead)
    b. Pulse
    c. Respiratory rate and tidal volume
        - Adults – count respirations over 15 seconds and multiply by 4
        - Pediatrics – count respirations over 30 seconds and multiply by 2
    d. Oxygen saturation
    e. Level of consciousness
    f. Pain level using appropriate pain scale
    g. End-tidal $CO_2$ level for any patient receiving positive pressure ventilation
    h. Skin signs

3. Document additional vital signs if measured:
    a. Temperature
    b. Carbon monoxide level

4. Repeat and document vital signs:
    a. On any patient whose initial vital signs were not within normal limits
    b. When patient's clinical condition changes
    c. After any treatment
    d. After administration of medications
    e. Upon transfer of care

5. The paramedic should report the initial vital signs, the most recent vital signs if different, and any intervening treatments to the Base Hospital and/or Receiving Hospital personnel.

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PURPOSE: To ensure that 9-1-1 patients are transported to the most appropriate facility that is staffed, equipped, and prepared to administer emergency and/or definitive care appropriate to the needs of the patient.

AUTHORITY: Health and Safety Code, Division 2.5, Section 1797.220
California Administrative Code, Title 13, Section 1105 (c)

PRINCIPLES:

1. In the absence of decisive factors to the contrary, 9-1-1 patients shall be transported to the most accessible 9-1-1 receiving facility equipped, staffed, and prepared to receive emergency cases and administer emergency care appropriate to the needs of the patient.

2. The most accessible receiving (MAR) facility may or may not be the closest facility geographically. Transport personnel shall take into consideration traffic, weather conditions, or other factors that may influence transport time in identifying the most accessible facility.

3. The most appropriate receiving facility for a patient may be the health facility which is affiliated with their health plan. Depending upon the patient's chief complaint and medical history, it may be in the patient's best interest to be transported to their 'medical home,' as defined by their health plan, personal physician, and/or medical records.

4. Patients shall not be transported to a medical facility that is on diversion due to internal disaster.

5. Notwithstanding any other provision of this reference, and in accordance with Reference No. 503, Guidelines for Hospitals Requesting Diversion of ALS Patients, final authority for patient destination rests with the base hospital handling the call. Base hospitals shall honor diversion requests based on patient condition and available system resources. 9-1-1 patients shall ordinarily be transported to general acute care hospitals with a basic emergency department permit. Transport to other medical facilities (hospitals with a stand-by permit, clinics and other medical facilities approved by the EMS Agency) shall be performed only in accordance with this policy.

POLICY:

I. Transport of Patients by EMT Personnel

   A. EMT personnel shall transport 9-1-1 patients deemed stable and requiring only basic life support (BLS) to the MAR regardless of its diversion status (exception: internal disaster).



APPROVED: _____ _____
Director, EMS Agency Medical Director, EMS Agency

B. EMT personnel may honor patient requests to be transported to other than the MAR provided that the patient is deemed stable, requires basic life support measures only, and the ambulance is not unreasonably removed from its primary area of response. In order to facilitate this, EMT personnel may transfer care of a patient to another EMT team if necessary.

C. In life-threatening situations (e.g., unmanageable airway or uncontrollable hemorrhage) in which the estimated time of arrival (ETA) of the paramedics exceeds the ETA to the MAR, EMTs should exercise their clinical judgment as to whether it is in the patient's best interest to be transported prior to the arrival of paramedics.

D. EMT personnel may immediately transport hypotensive trauma patients with life-threatening, penetrating injuries to the torso to the closest trauma center, not the MAR, when the transport time is less than the estimated time of paramedic arrival. The transporting unit should make every effort to contact the receiving trauma center while in route.

II. Transport of Patients by Paramedic Personnel

A. Patients should be transported to the MAR unless:

1. The base hospital determines that another facility is more appropriate to meet the needs of the patient; or

2. The patient meets criteria or guidelines for transport to a specialty care center (i.e., Trauma Center, Pediatric Trauma Center, ST-Elevation Myocardial Infarction Receiving Center, Emergency Department Approved for Pediatrics, Pediatric Medical Center, Perinatal Center, Sexual Assault Response Team Center, or Designated Stroke Center)

3. The patient requests a specific hospital; and

   a. The patient's condition is considered sufficiently stable to tolerate additional transport time; and

   b. The requested hospital does not have a defined service area (see Section V of this policy); and

   c. The requested hospital can provide services appropriate to the patient's chief complaint; and

   d. The EMS provider has determined that such a transport would not unreasonably remove the unit from its primary area of response. If the provider is unable to honor the request, and the patient therefore refuses to be transported, the provider should attempt to arrange for alternate transportation (i.e., private ambulance), in order to assist patient with receiving necessary treatment.

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4. The MAR has requested diversion of 9-1-1 patients requiring advanced life support (ALS) as specified in Ref. No. 503. ALS patients may be directed to an alternate open facility provided:

   a. The patient does not exhibit an unmanageable airway or uncontrolled hemorrhage.

   b. The involved ALS unit estimates that it can reach an alternate facility within fifteen (15) minutes, Code 3, from the incident location. If there are no open facilities within this time frame, ALS patients shall be directed to the MAR, regardless of its diversion status (exception: Internal Disaster).

B. Paramedic personnel may transfer care of a patient to another paramedic team if necessary. If base hospital contact has been made, the initial paramedic team shall advise the base hospital that another paramedic team has assumed responsibility for the patient.

lll. Destination of Restrained Patients

A. Restrained patients shall be transported to the MAR within the guidelines of this policy. Allowable exceptions:

1. Patients without a medical complaint, with a 5150 order written by a designated Department of Mental Health Team, when transport to a psychiatric facility has been arranged.

2. A law enforcement request for transport to medical facilities other than the closest may be honored with base hospital concurrence.

IV. Transport to Hospitals that are Non 9-1-1 Receiving Facilities

A. Patient requests for transport to hospitals that are not 9-1-1 Receiving Facilities may be honored by EMT or paramedic personnel provided:

1. The patient, family, or private physician is made aware that the requested hospital is not a 9-1-1 receiving facility;

2. The Base hospital or EMS provider contacts the requested facility and ensures that the hospital has agreed to accept the patient;

3. If transport requires additional transport time, the patient’s condition is considered sufficiently stable to tolerate and the EMS provider has determined that such a transport would not unreasonable remove the unit from its primary area of response

B. Other medical facilities approved on an individual basis by the EMS Agency: 9-1-1 patients may be transported to medical facilities other than hospitals (i.e., clinics, etc.) only when approved in advance by the EMS Agency.

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V. Transport to Designated Service Area Facilities

A. Patients shall be transported by EMT or paramedic personnel to hospitals with a designated service area whenever the incident location is within the hospital's defined service area (exception: diversion for Internal Disaster). In most instances, the service area hospital is also the MAR.

B. If a patient within the defined service area meets criteria or guidelines for a specialty care center, for care not provided by the service area hospital, this patient shall be transported to the appropriate specialty care center.

C. Patient requests for transport to a service area hospital when the incident location is outside the hospital's defined service area or inside the service area of another hospital, may be honored by:

1. EMT personnel if it is a BLS patient, the receiving hospital is contacted and agrees to accept the patient, and the transporting unit is not unreasonably removed from its primary response area.

2. Paramedic personnel if the base hospital is contacted and concurs that the patient's condition is sufficiently stable to permit the estimated transport time, the requested hospital agrees to accept the patient, and the transporting unit is not unreasonably removed from its primary response area. The receiving hospital may be contacted directly if the ALS unit is transporting a BLS patient.

CROSS REFERENCE:

Prehospital Care Manual:
Ref. No. 503, **Guidelines for Hospitals Requesting Diversion of ALS Patients**
Ref. No. 504, **Trauma Patient Destination**
Ref. No. 506, **Trauma Triage**
Ref. No. 508, **Sexual Assault Patient Destination**
Ref. No. 508.1 **SART Center Roster**
Ref. No. 509, **Service Area Hospital**
Ref. No. 510, **Pediatric Patient Destination**
Ref. No. 511, **Perinatal Patient Destination**
Ref. No. 512, **Burn Patient Destination**
Ref. No. 513 **ST-Elevation Myocardial Infarction Patient Destination**
Ref. No. 516, **Cardiac Arrest (Non-Traumatic) Patient Destination**
Ref. No. 519, **Management of Multiple Casualty Incidents**
Ref. No. 521, **Stroke Patient Destination**
Ref. No. 838**,** **Application of Patient Restraints**

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PURPOSE: To establish criteria and standards which ensure that patients requiring the care of a trauma center are appropriately triaged and transported.

AUTHORITY: California Code of Regulations, Title 13, Section 1105(c) California Code of Regulations, Title 22, Section 100236 et seq. Health and Safety Code, Div. 2.5, Section 1797 et seq., and 1317.

PRINCIPLES:

1. Trauma patients should be secured and transported from the scene as quickly as possible, consistent with optimal trauma care.

2. Paramedics shall make base hospital contact and/or notification to the receiving trauma center on all injured patients who meet trauma triage criteria and/or guidelines, or if in the paramedic's judgment it is in the patient's best interest to be transported to a trauma center. Contact shall be accomplished in such a way as not to delay transport.

3. Do not delay transport of hypotensive patients with penetrating torso trauma in order to apply spinal motion restriction.

4. EMT personnel may immediately transport hypotensive patients with life-threatening, penetrating injuries to the torso to the closest trauma center, not the Most Accessible Receiving (MAR), when the transport time is less than the estimated time of paramedic arrival. The transporting unit should make every effort to contact the receiving trauma center.

5. When pediatric and adult trauma patients are transported together in one aircraft, the receiving trauma center shall be both a trauma center and a pediatric trauma center.

POLICY:

I. Trauma Criteria – Requires immediate transportation to a designated trauma center

Patients who fall into one or more of the following categories are to be transported directly to the designated trauma center, if transport time does not exceed 30 minutes.

A. Systolic blood pressure less than 90 mmHg, or less than 70 mmHg in infants age less than one year

B. Respiratory rate greater than 29 breaths/minute (sustained), less than 10 breaths/minute, less than 20 breaths/minute in infants age less than one year, or requiring ventilatory support



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C. Cardiopulmonary arrest with penetrating torso trauma unless based upon the paramedic's thorough assessment is found apneic, pulseless, asystolic, and without pupillary reflexes upon arrival of EMS personnel at the scene

D. All penetrating injuries to head, neck, torso, and extremities proximal to the elbow or knee

E. Blunt head injury associated with a suspected skull fracture, altered level of consciousness (Glasgow Coma Score less than or equal to 14), seizures, unequal pupils, or focal neurological deficit

F. Injury to the spinal column associated with acute sensory or motor deficit

G. Blunt injury to chest with unstable chest wall (flail chest)

H. Diffuse abdominal tenderness

I. Suspected pelvic fracture (excluding isolated hip fracture from a ground level fall)

J. Extremity with:

1. Neurological/vascular compromise and/or crushed, degloved, or mangled extremity

2. Amputation proximal to the wrist or ankle

3. Fractures of two or more proximal (humerus/femur) long-bones

4. Bleeding not controlled by direct pressure requiring the usage of a hemorrhage control tourniquet or hemostatic agent (approved provider agencies only)

K. Falls:

1. Adult patients from heights greater than 15 feet

2. Pediatric patients from heights greater than 10 feet, or greater than 3 times the height of the child

L. Passenger space intrusion of greater than 12 inches into an occupied passenger space

M. Ejected from vehicles (partial or complete)

N. Auto versus pedestrian/bicyclist/motorcyclist thrown, run over, or with significant (greater than 20 mph) impact

O. Unenclosed transport crash with significant (greater than 20 mph) impact

P. Major / Critical Burn (excluding those in which the MAR is a recognized Burn Center, e.g., LAC+USC Medical Center, Torrance Memorial Medical Center, West Hills Hospital):

1. Patients 15 years of age or older with 2nd (partial thickness) and 3rd (full thickness) degree burns involving equal to or greater than 20% Total Body Surface Area (TBSA)

2. Patients ≤ 14 years of age with 2nd (partial thickness) and 3rd (full thickness) degree burns involving equal to or greater than 10% TBSA

II. Trauma Guidelines – Mechanism of injury and patient history are the most effective methods of selecting critically injured patients before unstable vital signs develop. Paramedics and base hospital personnel should consider mechanism of injury and patient history when determining patient destination. At the discretion of the base hospital or approved SFTP provider agency, transportation to a trauma center is advisable for:

A. Passenger space intrusion of greater than 18 inches into any unoccupied passenger space

B. Automobile versus pedestrian/bicyclist/motorcyclist (impact equal to or less than 20 mph)

C. Injured victims of vehicular crashes in which a fatality occurred in the same vehicle

D. Patients requiring extrication

E. Vehicle telemetry data consistent with high risk of injury

F. Injured patients (excluding isolated minor extremity injuries):

1. on anticoagulation therapy, other than aspirin-only

2. with bleeding disorders

III. Special Considerations – Consider transporting injured patients with the following to a trauma center:

A. Patients in blunt traumatic full arrest who, based on a paramedic's thorough patient assessment, was not found apneic, pulseless, and without organized ECG activity (narrow complex supraventricular rhythm) upon the arrival of EMS personnel at the scene

B. Adults age greater than 55 years

C. Systolic blood pressure less than 110 mmHg may represent shock after age 65 years

D. Pregnancy greater than 20 weeks gestation

E. Prehospital judgment

IV. Extremis Patients - Requires immediate transportation to the MAR:

A. Patients with an obstructed airway or those with concern for imminent airway obstruction due to inhalation injury

B. Patients, as determined by the base hospital personnel, whose lives would be jeopardized by transportation to any destination but the MAR

V. When, for whatever reason, base hospital contact cannot be made, the destination decision for injured patients will be made by paramedics using the principles set forth above.

VI. 9-1-1 Trauma Re-Triage – This section applies to injured patients in emergency departments of non-trauma centers whose injuries were initially estimated by EMS to be less serious (under triaged) or patients who self-transported (walk-in) to a non-trauma center, and subsequently assessed by the non-trauma center physician to require immediate trauma center care. The referring facility shall utilize the procedure outlined below to expedite transfer arrangements and rapid transport to the trauma center. This process should be reserved for patients with life-threatening traumatic injuries requiring emergent surgical intervention.

A. Determine if the injured patient meets any of the following 9-1-1 Trauma Re-Triage criteria:

1. Persistent signs of poor perfusion

2. Need for immediate blood replacement therapy

3. Intubation required

4. Glasgow Coma Score less than 9

5. Glasgow Coma Score deteriorating by 2 or more points during observation

6. Penetrating injuries to head, neck and torso

7. Extremity injury with neurovascular compromise or loss of pulses

8. Patients, who in the judgement of the evaluating emergency physician, have high likelihood of requiring emergent life- or limb-saving intervention within two (2) hours.

B. Contact the designated receiving trauma center or pediatric trauma center if the patient is less than or equal to 14 years of age and transport does not exceed 30

min. Do not delay transfer by initiating any diagnostic procedures that do not have direct impact on immediate resuscitative measures.

C. Contact 9-1-1 for transportation. The paramedic scope of practice (Ref. No. 803) does not include paralyzing agents and blood products.

D. Prepare patient and available medical records for immediate transport. Do not delay transport for medical records which could be sent at a later time.

CROSS REFERENCE:

Prehospital Care Manual:
Ref. No. 501, **Hospital Directory**
Ref. No. 502, **Patient Destination**
Ref. No. 503, **Guidelines for Hospitals Requesting Diversion of ALS Units**
Ref. No. 504, **Trauma Patient Destination**
Ref. No. 510, **Pediatric Patient Destination**
Ref. No. 803, **Paramedic Scope of Practice**
Ref. No. 814, **Determination/Pronouncement of Death in the Field**

(EMT-I/PARAMEDIC/MICN)

SUBJECT: **PEDIATRIC PATIENT DESTINATION** REFERENCE NO. 510

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PURPOSE: To ensure that 9-1-1 pediatric patients are transported to the most appropriate facility that is staffed, equipped and prepared to administer emergency and/or definitive care appropriate to the needs of the pediatric patient.

AUTHORITY: Health and Safety Code, Division 2.5, Section 1797.220
California Code of Regulations, Title 13, Section 1105 C

DEFINITIONS:

**Pediatric Patient:** Children 14 years of age or younger.

**Emergency Department Approved for Pediatrics (EDAP):** A licensed basic or comprehensive emergency department that is designated by the Emergency Medical Services (EMS) Agency to receive 9-1-1 pediatric patients via the 9-1-1 system.

**Pediatric Medical Center (PMC):** A licensed acute care hospital that is designated by the EMS Agency to receive critically **ill** pediatric patients via the 9-1-1 system based on guidelines outlined in this policy. These centers also provide referral services for critically ill pediatric patients.

**Pediatric Trauma Center (PTC):** A licensed acute care hospital that is designated by the EMS Agency to receive critically **injured** pediatric patients via the 9-1-1 system based on guidelines outlined in this policy. These centers provide tertiary-level pediatric care and serve as referral centers for critically injured pediatric patients.

**Brief Resolved Unexplained Event (BRUE):** A brief episode characterized by any one of the following (for children 12 months of age or younger): absent, decreased, or irregular breathing; color change (usually cyanosis or pallor); marked change in muscle tone (usually limpness or hypotonia, may also include hypertonia), and/or altered level of responsiveness.

PRINCIPLE: In all cases, the health and well-being of the patient is the overriding consideration in determining patient destination. Factors to be considered include severity and stability of the patient's illness or injury; current status of the pediatric receiving facility; anticipated transport time; request by the patient, family, guardian or physician; and EMS personnel and base hospital judgment.

POLICY:

I. Guidelines for transporting pediatric patients to a specialty care center (i.e., EDAP, PMC, PTC, Perinatal, Sexual Assault Response Team Center, or Trauma Center):

A. Patients who require transport, and do not meet guidelines for transport to a PMC or PTC shall be transported to the most accessible EDAP.



APPROVED:

Director, EMS Agency

Medical Director, EMS Agency

B. BLS units shall call for an ALS unit on pediatric patients who meet criteria for Base Hospital Contact and ALS Transport as listed in Ref. No. 1200.1, Treatment Protocols General Instructions.

C. BLS units shall transport pediatric patients not requiring ALS unit response to the most accessible EDAP unless criteria are met for Treat and Refer as outlined in *Ref. No. 834*, Patient Refusal of Treatment/Transportation and Treat and Release at Scene.

D. Patients meeting medical guidelines for transport to a PMC:

1. Shall be transported to the most accessible PMC if ground transport is ≤30 minutes.

2. If ground transport time to a PMC is >30 minutes, the patient may be transported to the most accessible EDAP.

E. Patients meeting trauma criteria/guidelines for transport to a PTC:

4. Shall be transported to the most accessible PTC if the transport time is ≤30 minutes.

5. If a PTC cannot be accessed but a trauma center can be accessed under the parameter in (E.1), the patient may be transported to the trauma center.

6. If a PTC or trauma center cannot be accessed as specified above, the patient may be transported to the most accessible PMC, or if >30 minutes to the closest EDAP.

F. Pediatric patients who have an uncontrollable, life-threatening situation (e.g., unmanageable airway or uncontrollable hemorrhage) shall be transported to the most accessible EDAP.

G. Pediatric patients may be transported to a non-EDAP provided all of the following are met:

1. The patient, family, or private physician requests transport to a non-EDAP facility.

2. The patient, family, or private physician is made aware that the receiving facility is not an EDAP and may not meet current EDAP standards.

3. The base hospital concurs and contacts the requested facility and ensures that the facility has agreed to accept the patient.

4. All of the above shall be documented on the Patient Care Record.

II. Guidelines for identifying critically **ill** pediatric patients who require transport to a PMC:

A. Cardiac dysrhythmia

B. Severe respiratory distress

C. Cyanosis

D. Persistent altered mental status

E. Status epilepticus

F. Brief Resolved Unexplained Event (BRUE) (and the previously called Apparent Life Threatening Event (ALTE)) ≤ 12 months of age

G. Focal neurologic signs not associated with trauma (e.g.; pediatric stroke, atypical migraine, petit mal seizures)

H. Post cardiopulmonary arrest in whom return of spontaneous circulation (ROSC) is achieved

III. Guidelines for identifying critically **injured** pediatric patients who require transport to a PTC:

Trauma triage criteria and/or guidelines identified in Ref. No. 506, Trauma Triage

CROSS REFERENCE:

Prehospital Care Manual:
Ref. No. 316, **EDAP Standards**
Ref. No. 318, **Pediatric Medical Center (PMC) Standards**
Ref. No. 324, **Sexual Assault Response Team (SART) Standards**
Ref. No. 502, **Patient Destination**
Ref. No. 504, **Trauma Patient Destination**
Ref. No. 506, **Trauma Triage**
Ref. No. 508, **Sexual Assault Patient Destination**
Ref. No. 508.1, **SART Center Roster**
Ref. No. 511, **Perinatal Patient Destination**
Ref. No. 512, **Burn Patient Destination**
Ref. No. 519, **Management of Multiple Casualty Incidents**
Ref. No. 816, **Physician at Scene**
Ref. No. 832, **Treatment/Transport of Minors**
Ref. No. 834, **Patient Refusal of Treatment or Transport**
Ref. No. 1200.1, **Treatment Protocols General Instructions**

California Emergency Medical Services Authority (EMSA) # 182: Administration, Personnel and Policy for the Care of Pediatric Patients in the Emergency Department

SUBJECT: **DECOMPRESSION EMERGENCIES/ PATIENT DESTINATION** (EMT, PARAMEDIC, MICN) REFERENCE NO. 518

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PURPOSE: To provide a procedure for transporting patients with potential decompression emergencies to the most appropriate and accessible medical facility.

POLICY:

I. Responsibilities of the Provider Agency:

A. Contact assigned base hospital for any patient suspected of having a decompression emergency.

B. Obtain dive incident history of the patient and dive partner, if possible.

This includes:

1. Maximum dive depth
2. Time spent at depth
3. Rate of ascent
4. Number of dives
5. Surface interval
6. Gas(ses) used

C. Coordinate patient transportation to the appropriate receiving facility.

Transportation of patients with potential decompression emergencies may involve the United States Coast Guard (USCG) helicopter which does not include paramedic level staffing. In some circumstances, the USCG helicopter may be able to accommodate a Los Angeles County paramedic to accompany the patient to the receiving facility. If this is not possible and rapid transport is in the best interest of the patient, care may be transferred from the paramedics handling the call to the USCG medical personnel.

D. Retrieve patient's dive equipment (e.g., dive computer, regulator, tank, buoyancy compensator, gauges and weight belt) and transport with patient. If the transporting unit cannot accommodate the equipment, the provider agency shall take custody of it and notify the receiving facility of the dive equipment location.

As a general rule, the integrity of the dive equipment should be maintained and not tampered with except by investigating authorities.



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II. Responsibilities of the Base Hospital Physician or Mobile Intensive Care Nurse (MICN):

A. Contact the Medical Alert Center (MAC) by dialing the general number (866) 940-4401; select Option 1 for emergency or consultation. The MAC will arrange a call between the hyperbaric chamber physician on call and the base hospital. If the hyperbaric physician has not responded within 10 minutes, the base hospital should re-contact the Medical Alert Center.

B. Provide medical orders for patient care.

C. In consultation with the hyperbaric chamber physician on call (arranged through the MAC), determine if the patient should be transported directly from the incident location to a hyperbaric chamber or to the most accessible receiving facility (MAR). The following guidelines should be considered for any patient with a history of recent underwater compressed gas use:

1. Transport to a MAC-listed hyperbaric chamber (Immediate)

    a. Unconscious, or
    b. Apneic, or
    c. Pulseless
    d. Premature ascent with reported failure to complete any required underwater decompression stop(s) (omitted decompression) with or without symptoms

2. Transport to a MAC-listed hyperbaric chamber and/or the MAR after consultation with the hyperbaric chamber physician (Emergent)

    a. Any neurological symptoms, or
    b. Severe dyspnea, or
    c. Chest discomfort

3. Transport to the MAR with potential secondary transfer to a hyperbaric chamber after consultation with the hyperbaric chamber physician (Non-Emergent)

    a. Delayed symptoms after flying, or
    b. Delayed minor symptoms after 24 hours

4. Patient destination for patients with decompression emergencies shall be determined by the hyperbaric chamber physician on call.

III. Responsibilities of the Medical Alert Center

A. Contact the hyperbaric chamber physician on call at LAC+USC Medical Center and arrange communication between the physician and the base hospital directing the call. If there has been no response from the LAC+USC hyperbaric physician within 10 minutes, the MAC will call the next hyperbaric physician on the list.

B. Following consultation with the hyperbaric physician on call, determine which hyperbaric chamber is most appropriate to the needs of the patient. Factors to be considered include distance; altitude; weather; ETA of available transportation; the limitations of various aircraft and the condition of the patient.

E. Inform the appropriate receiving facility of the patient's condition and ETA.

D. Coordinate the hyperbaric chamber personnel's transportation to the chamber.

E. Coordinate secondary transfers from the receiving facility as needed.

CROSS REFERENCES:

Prehospital Care Manual:
Ref. No. 502, **Patient Destination**
Ref. No. 506, **Trauma Triage**
Ref. No. 516, **Return of Spontaneous Circulation (ROSC) Patient Destination**
Ref. No. 814, **Determination/Pronouncement of Death in the Field**

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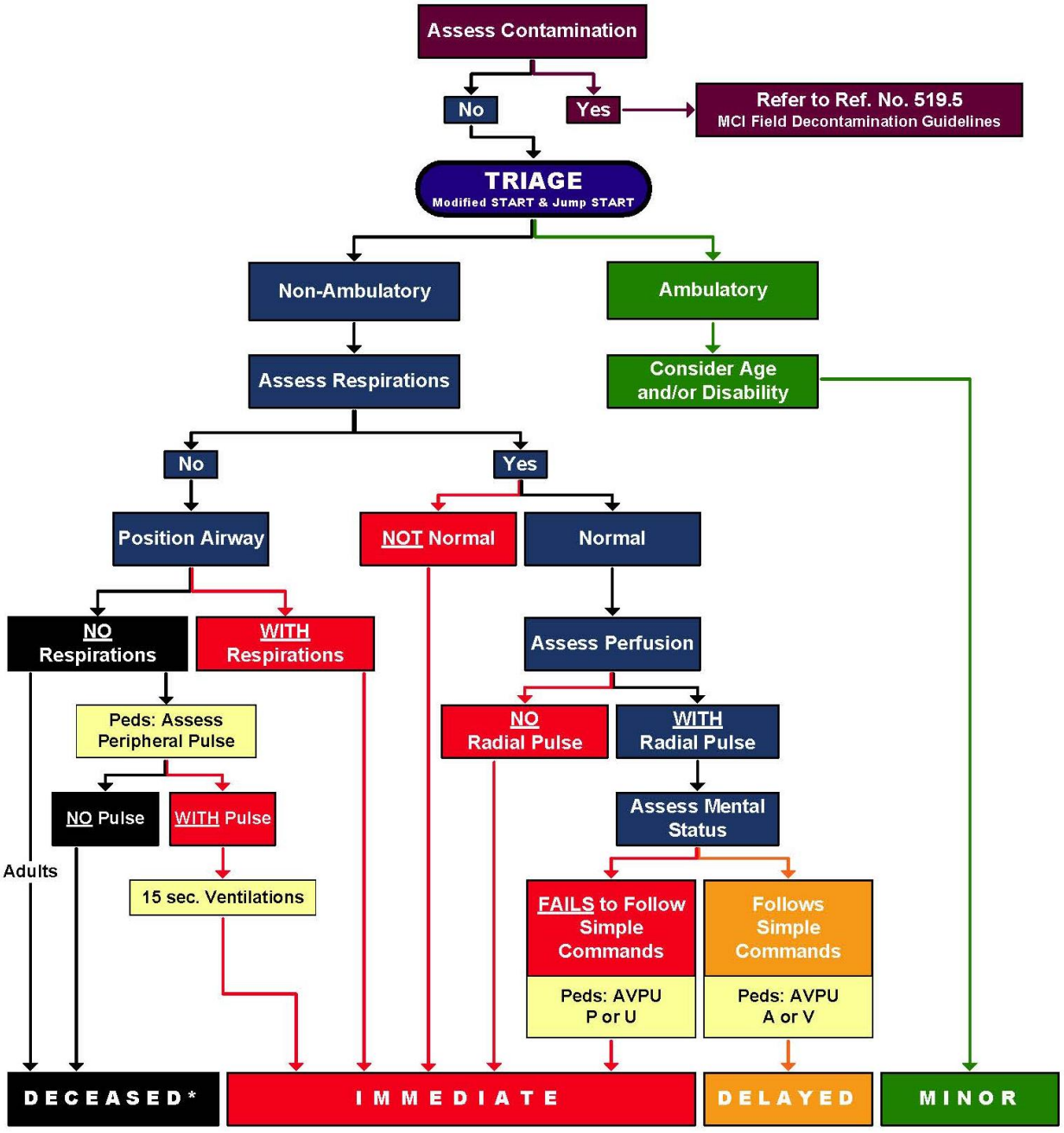


* Coordinate with Law Enforcement / Coroner

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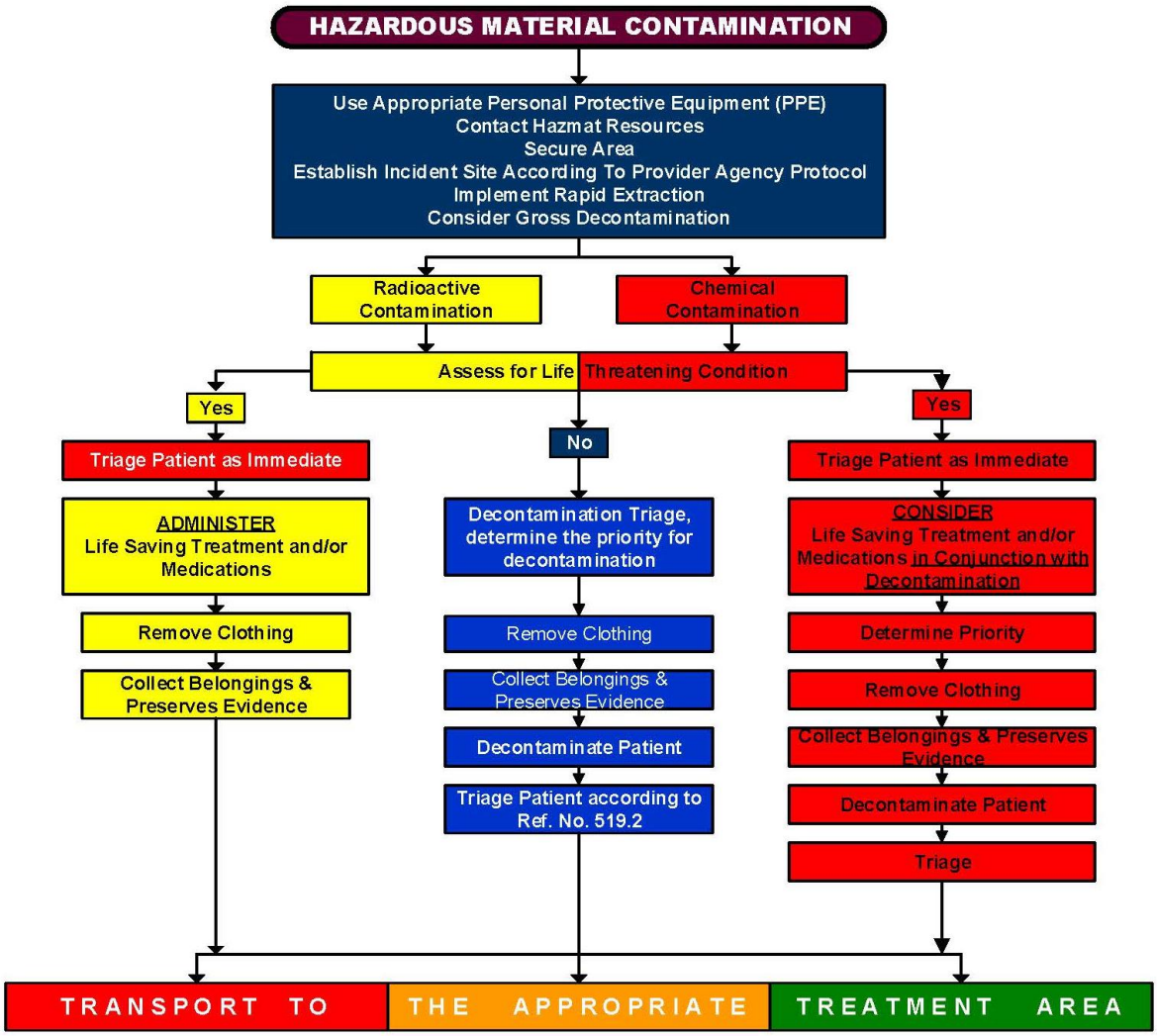
PRINCIPLES:

7. The need for decontamination should not delay the provision of time critical medication and treatment (i.e., Mark 1 antidote)

8. Patients shall not be transported to the receiving facility if hazardous chemical contamination is present.

9. Do not delay treatment or transport of patients contaminated with radiation, who also have a life-threatening injury or medical condition. Contamination mitigation efforts and decontamination should be done, only if they do not delay treatment or transport.

10. If the incident involves chemical contamination and treatment is required, the provider shall contact the base hospital or Medical Alert Center (MAC). Treatment should be based on the appropriate treatment protocol.



(EMT, PARAMEDIC, MICN)

SUBJECT: **DOCUMENTATION OF PREHOSPITAL CARE** REFERENCE NO. 606

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PURPOSE: To identify the base hospital and Emergency Medical Services (EMS) provider procedures for documentation of prehospital care.

AUTHORITY: California Code of Regulations, Title 22, Sections 100128, 100129, 100170, 100171

DEFINITIONS:

**Patient:** A person who seeks or appears to require medical assessment and/or medical treatment.

**Patient Contact:** An EMS response that results in an actual patient or patients.

**EMS Response:** The physical response of an EMS provider due to activation of the EMS system with a request for medical evaluation.

**Patient Response**: An EMS Response that results in an actual patient or patients.

**Multiple Casualty Incident (MCI):** The combination of numbers of ill/injured patients and the type of injuries going beyond the capability of an entity's normal first response.

PRINCIPLES:

1. The EMS Report Form and the Base Hospital Form are:
   a. Patient care records
   b. Legal documents
   c. Quality improvement instruments
   d. Billing resources
   e. Records of canceled calls, false alarms, and no patient found (EMS Report Form only)

2. Any assessment or treatment provided to, and medical history obtained from, the patient shall be accurately and thoroughly documented on the EMS Report Form.

3. Any person who alters or modifies the medical record of any person, with fraudulent intent, or who, with fraudulent intent, creates any false medical record, is guilty of a misdemeanor (section 471.5 of the California Penal Code).

4. An EMS Report Form must be completed for every EMS response if a provider agency is unable to submit an annual volume report to the EMS Agency for the following types of calls:
   a. canceled calls
   b. No patient(s) found
   c. False alarms



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POLICY:

I. EMS Report Form Completion – Paramedic/EMT Personnel

A. EMS providers shall document prehospital care according to procedures identified in the EMS Report Form Training Manual.

B. Paper-Based EMS Report Form Completion

1. Paramedic/EMT personnel from the first responding agency shall complete one local EMS Agency approved EMS Report Form (one for each patient) for every 9-1-1 patient contact which includes the following:

a. Regular runs
b. DOA (dead on arrival; patients determined or pronounced dead per Ref. No. 814, Determination/Pronouncement of Death in the Field)
c. ALS interfacility transfer patients

C. Electronic EMS Report Form Completion

1. Paramedic/EMT personnel may document and submit prehospital care data electronically in lieu of the standard EMS Report Form if their department has received prior authorization from the EMS Agency.

2. Paramedic/EMT personnel shall complete one EMS Agency approved electronic EMS Report Form (one for each patient) for every patient contact and one for each ALS interfacility transferred patient.

D. Multiple Providers

1. In the event of an automatic or mutual aid incident when two first responding providers have each completed an EMS Report Form, or patient care is transferred from one ALS provider agency to another, each provider agency shall document the Original Sequence Number from the other provider's patient care record in the space designated for Second Sequence Number. DO NOT cross out or line through the imprinted Sequence Number if utilizing a paper EMS Report Form.

2. The provider agency transferring patient care must have a mechanism in place to provide immediate transfer of patient information to the transporting agency.

E. Multiple Casualty Incidents (MCI)

1. One standard EMS Report Form must be initiated for each patient transported in an MCI. Provider agencies may use alternate means of documenting MCIs if the EMS Agency is notified prior to implementation and agrees with the proposed process.

2. Documentation should include the following, at minimum:
   a. Name
   b. Chief Complaint
   c. Mechanism of Injury
   d. Age and units of age
   e. Gender
   f. Brief patient assessment
   g. Brief description of treatment provided
   h. Transporting provider (provider code and unit number) and level of service (ALS, BLS or Helicopter)
   i. Receiving facility

3. Non-transported patients should be documented on a standard EMS Report Form, an EMS Agency-approved MCI Report Form, or a patient log.

4. Each provider agency should submit copies of all records and logs pertaining to an MCI of greater than 5 victims to the EMS Agency within 10 business days of the incident. MCI documents should be hand carried or delivered to the EMS Agency in an envelope clearly marked with the incident date and location.

F. Completion of the EMS Report Form Prior to Distribution

1. EMTs and paramedics responsible for documenting prehospital care shall ensure that EMS Report Forms are completed in their entirety prior to dissemination of copies. In most instances, this means that the form is completed at the scene or upon arrival at the receiving facility.

2. An exception to this is when a first responding agency is giving the receiving hospital (red) copy to a transporting agency. In the interest of expediting the transfer of care, it is recognized that information such as the unit times may not be documented on the receiving hospital (red) copy of the EMS Report Form.

G. Field Transfer of Care

1. When patient care has been transferred from the first responding ALS or BLS provider agency to a BLS provider agency for transport to a receiving facility, the provider agency receiving the patient should **NOT** complete a standard EMS Report Form with an imprinted Sequence Number (will result in the same patient being entered into TEMIS with two different numbers).

2. The provider agency that receives the BLS patient for transport to a receiving facility should complete their agency's PCR/invoice and document the Sequence Number imprinted on the first responding agency's PCR on their PCR.

3. The receiving hospital (red) copy of the EMS Report Form, as well as the PCR from the BLS transport provider (red copy), must accompany the patient to the receiving facility where it becomes part of the patient's medical record.

4. It is the responsibility of the EMS Provider to ensure that a completed copy of the EMS Report form is provided to the receiving facility upon transfer of care.

H. Completion of Advanced Life Support Continuation Form

1. Required for each patient on whom airway management is necessary or cardiopulmonary resuscitation is attempted or patient is pronounced dead following resuscitative efforts if the information is not documented elsewhere on the EMS Report Form.

2. Paramedics completing this form must ensure that the demographic information (patient name, date, provider code/unit) and Sequence Number are legibly and accurately transcribed from the EMS Report Form.

II. Base Hospital Form - MICN and/or Physicians

A. Base hospital personnel (MICNs and physicians) shall document prehospital care according to procedures identified in the Base Hospital Form Training Manual.

B. Base Hospital Form Completion

1. MICNs and/or physicians shall complete at least one EMS Agency approved Base Hospital Form (one for each patient in which medical direction is given) for every base hospital paramedic radio/telephone contact.

2. MICNs and/or physicians shall **NOT** complete a Base Hospital Form when another base hospital calls with notification of an incoming paramedic call.

3. MICNs and/or physicians may document and submit base hospital data electronically in lieu of the standard Base Hospital Form if the base hospital has received prior authorization from the EMS Agency.

C. Base Hospital Directed Multiple Casualty Incidents (MCI)

1. EMS Agency-approved **MCI Base Hospital** Forms may be utilized for incidents involving three or more patients.

2. Physicians and MICNs should limit requested information to **only** that which is essential to determine destination or medical management. Additional information and Sequence Numbers should be obtained after

the MCI has cleared.

3. The following should be documented for MCIs involving three or more patients:

   a. Date
   b. Time
   c. Sequence Number
   d. Provider and unit
   e. Chief complaint
   f. Mechanism of injury
   g. Age
   h. Gender
   i. Brief patient assessment (primary injuries and MOI)
   j. Transporting provider, method of transport (ALS, BLS or helicopter)
   k. Destination

4. Upon request of the EMS Agency the base hospital should submit all records pertaining to an MCI of >5 victims to the EMS Agency within 10 business days.

5. Provider agencies may use alternate means of reporting MCIs. Base Hospitals will be notified by the EMS Agency when alternate reporting methods will be implemented by various provider agencies.

6. MCIs involving **ONLY** BLS patients: BLS patients who are transported to a receiving facility should be documented on one form (provided no medical direction is given).

7. MCIs involving ALS **and** BLS Patients:

   a. One standard Base Hospital Form or one EMS Agency-approved MCI Base Hospital Form must be completed for each ALS patient.

   b. One standard Base Hospital Form must be completed for each SFTP patient when the base hospital provides destination and/or medical direction.

   c. BLS patients on whom no medical direction has been given do not require a Base Hospital Form. The number and disposition of the BLS patients may be documented on the Base Hospital Form of an ALS patient in the Comments Section.

8. Alternate methods of documenting MCIs may be initiated by Base Hospitals with the approval of the EMS Agency.

III. Modification of the EMS Report Form

A. Modifying the EMS Report Form (additions, deletions or changes) after the form has been completed or disseminated:

1. Make corrections by drawing a single line through the incorrect item or narrative (the writing underneath the single line must remain readable).

2. Make the changes on the original, noting the date and time the changes were made, with the signature of the individual making the changes adjacent to the correction. Ideally, changes should be made by the individual who initially completed the form. Under no circumstances should changes to either patient assessment or patient treatment documentation be made by an individual who did not participate in the response.

3. An audit trail of changes made to an electronic record will be included on the EMS Report form.

B. Making substantive changes (documentation of additional medications, defibrillation attempts, pertinent comments, complaints, etc.) to the EMS Report Form:

4. Photocopy the EMS Report Form with the changes and send the copy, along with a cover letter, to all entities that received the original form (EMS Agency, receiving facility). The cover letter should explain the modifications and request that the modified copy be attached to the original copy.

5. Do not re-write the incident on a new EMS Report Form because this would result in a mismatch in Sequence Number. If the form requiring corrections has been mutilated or soiled and cannot be photocopied, then a new form may be used to re-write the incident provided the Sequence Number of the new form has been replaced with the Sequence Number from the original form.

6. For electronic documentation systems, patient care related corrections are to be made as per provider agency policy. Provider agency shall notify its' receiving hospital(s) of the mechanism by which ePCRs are updated. Notification of the updated record will be made to all entities who received the original form (receiving hospital, EMS Agency). If the receiving hospital receives a printed copy of the record, a printed copy of the revised record will be provided directly to them.

CROSS REFERENCES:

Prehospital Care Manual:
Ref. No. 608, **Disposition of Copies of the EMS Report Form**
Ref. No. 607**, Electronic Submission of Prehospital Data**
Ref. No. 519, **Management of Multiple Casualty Incidents**

EMS Report Form Reference Manual

(EMT, PARAMEDIC, MICN)

SUBJECT: **EMERGENCY MEDICAL TECHNICIAN (EMT) SCOPE OF PRACTICE**

REFERENCE NO. 802

*1200 Table of Contents*

PURPOSE: To define the scope of practice for an Emergency Medical Technician (EMT) in Los Angeles County.

AUTHORITY: California Code of Regulations, Title 22, Div 9, Ch 2, Section 100063

DEFINITIONS:

**Approved EMS Provider:** A fire department or a licensed Los Angeles County ambulance provider.

PRINCIPLES:

1. In order to function as an EMT in Los Angeles County, an individual must be certified/licensed in the State of California as an EMT, AEMT, or Paramedic.

2. EMS personnel are responsible to adhere to the scope of practice while functioning as an EMT in Los Angeles County.

3. When EMT personnel arrive prior to an advanced life support (ALS) unit, they shall assess the patient and make appropriate care and transport decisions as per Ref. 1201, Assessment and Ref. 502, Patient Destination.

4. When EMTs assist patients with a physician prescribed medication or administer approved medications (as per section III), an ALS unit must be enroute or the patient must be transported to the most accessible receiving facility that meets the needs of the patient, if the ALS unit estimated time of arrival (ETA) exceeds the ETA to the MAR. The rationale for the decision to transport shall be documented on the EMS patient care record.

5. EMT personnel may immediately transport hypotensive patients with life-threatening, penetrating injuries to the torso to the closest trauma center, not the most accessible receiving (MAR), when the transport time is less than the estimated time of ALS arrival. The transporting unit should make every effort to contact the receiving trauma center.

6. If EMT personnel encounter a life-threatening situation (unmanageable airway or uncontrollable hemorrhage), they should exercise their clinical judgment as to whether it is in the patient's best interest to transport the patient prior to the arrival of an ALS unit if their estimated time of arrival (ETA) exceeds the ETA to the MAR. The rationale for the decision to transport shall be documented on an EMS patient care record.

7. EMT personnel may honor a patient request for transport to a facility other than the MAR if the patient is deemed stable and only requires basic life support (BLS).



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Medical Director, EMS Agency

8. EMTs may transfer care of a patient to another EMT team if necessary

POLICY:

I. Basic Scope of Practice

During training, while at the scene of an emergency, during transport of the sick or injured, or during interfacility transfer, a certified EMT or a supervised EMT student is authorized to do any of the following:

A. Patient Assessment:

1. Evaluate the ill or injured patient

2. Obtain diagnostic signs to include, but not limited to:

a. respiratory rate

b. pulse rate

c. skin signs

d. blood pressure

e. level of consciousness

f. pupil status

g. pain

h. pulse oximetry (if available)

B. Rescue and Emergency Medical Care:

1. Basic emergency care

2. Cardiopulmonary resuscitation (CPR)

3. Mechanical adjuncts for basic cardiopulmonary resuscitation ***(Requires EMS Agency approval)***

4. Use a public access Automated External Defibrillator (AED) ***(Carrying an AED requires EMS Agency approval as an AED Service Provider)***

5. Oral glucose or sugar for suspected hypoglycemia

6. Apply mechanical restraints per Reference No. 838

7. Use various types of stretchers

8. Perform field triage

9. Extricate entrapped persons

10. Set up for ALS procedures under paramedic direction

C. Airway Management and Oxygen Administration:

1. Use the following airway adjuncts:

   a. oropharyngeal airway

   b. nasopharyngeal airway

   c. suction devices

2. Administer oxygen using delivery devices per *Ref. 1302*, including, but not limited to:

   a. nasal cannula

   b. mask – nonrebreather, partial rebreather, simple

   c. blow-by

   d. humidifier

3. Use manual and mechanical ventilating devices

   a. bag-mask ventilation (BMV) device

   b. continuous positive airway pressure (CPAP) ***[Requires EMS Agency approval]***

4. Ventilate advanced airway adjuncts:

   a. endotracheal tube

   b. perilaryngeal airway device (King LTS-D)

   c. tracheostomy tube or stoma

5. Suction tracheostomy tube or stoma

D. Trauma Care:

1. Provide initial prehospital emergency trauma care including, but not limited to:

   a. tourniquets for bleeding control

b. hemostatic dressings ***[State EMSA approved dressings only]***

c. extremity splints

d. traction splints

2. Use spinal motion restriction devices

E. Assist Patients with Prescribed Emergency Medications

Assist patients with the administration of their physician-prescribed emergency devices and medications, provided the indications are met and there are no contraindications, to include but not limited to:

1. Sublingual nitroglycerin

2. Aspirin

3. Bronchodilator inhaler or nebulizer

4. Epinephrine device (autoinjector)

5. Patient-operated medication pump

II. Patient Transport and Monitoring by an Approved EMS Provider

A. Transport and monitor patients in the prehospital setting and/or during an interfacility transfer by an approved EMS Provider

B. Transport patients with one or more of the following medical devices:

1. nasogastric (NG)

2. orogastric tube (OG)

3. gastrostomy tube (GT)

4. saline/heparin lock

5. foley catheter

6. tracheostomy tube

7. ventricular assist device (VAD)

8. surgical drain(s)

9. medication patches

10. indwelling vascular lines

a. pre-existing vascular access device (PVAD)

b. peripherally inserted central catheter (PICC)

c. patient-operated medication pump

C. Monitor, maintain at a preset rate, or turn off if necessary, the following intravenous (IV) fluids:

1. glucose solutions

2. isotonic balanced salt solutions (normal saline)

3. ringer's lactate

III. Additional Therapies Requiring Approval by the Los Angeles County EMS Agency:

Approved EMS Providers may apply for approval authorization to train EMT personnel to administer and add to vehicle inventory the following therapies:

A. Naloxone

B. Epinephrine autoinjector

C. Aspirin

D. Finger stick blood glucose testing

CROSS REFERENCES:

Prehospital Care Manual:

Ref. No. 412, **AED EMT Service Provider Program Requirements**
Ref. No. 502, **Patient Destination**
Ref. No. 510, **Pediatric Patient Destination**
Ref. No. 506, **Trauma Triage**
Ref. No. 517, **Private Provider Agency Transport/Response Guidelines**
Ref. No. 517.1, **Guidelines for Determining Interfacility Level of Transport**
Ref. No. 802.1, **Los Angeles County EMT Scope of Practice – Field Reference**
Ref. No. 838, **Application of Patient Restraints**
Ref. No. 1302, **Medical Control Guideline: Airway Management and Monitoring**

(EMT, PARAMEDIC, MICN)

SUBJECT: **CALIFORNIA POISON CONTROL SYSTEM** REFERENCE NO. 805

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PURPOSE: To ensure that provider agencies and base hospitals have access to the California Poison Control System (CPCS) and have a mechanism in place for quality improvement and problem resolution.

AUTHORITY: California Code of Regulations, Title 22, Chapter 9, Articles 1 and 2.

DEFINITION:

**Poison Control Center:** A facility designated by the EMS Authority that provides information and advice to the public and health professionals regarding the management of individuals who have or may have ingested, inhaled or otherwise been exposed to poisonous or possibly toxic substances.

APPROVED POISON CONTROL CENTERS:

The following site have been designated by the State EMS Authority as answering points for the California Poison Control System:

- UC San Diego Medical Center
- UC Davis Medical Center
- San Francisco General Hospital
- Children's Hospital Central California

CALL THE CALIFORNIA POISON CONTROL SYSTEM TOLL FREE AT: **1-800-222-1222** or access the website at www.calpoison.org.

This number may be accessed by health professionals, 9-1-1 providers, and the public 24 hours, 7 days/week and 365 days/year.

POLICY:

I. Provider Agency Dispatch Centers may:

A. Contact the CPCS to access information and advice regarding the management of individuals who have, or may have, ingested or otherwise been exposed to poisonous or possibly toxic substance.

B. Elect to establish three-way communication between the CPCS, the Dispatch Center and the 9-1-1 caller.

C. Utilize information provided by CPCS to determine whether a 9-1-1 response is indicated and, if so what level, and/or provide pre-arrival instructions to the caller.

D. Relay information to field personnel.



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II. Paramedics shall contact the assigned base hospital for information and advice regarding the management of individuals who have, or may have, ingested or otherwise been exposed to poisonous or possibly toxic substances.

III. Base hospitals may contact the CPCS to access information and advice regarding the management of individuals who have, or may have, ingested or otherwise been exposed to poisonous or possibly toxic substances when the base has been contacted by prehospital personnel.

IV. Quality Improvement/Problem Resolution
Questions or concerns related to the CPCS should be documented on a Los Angeles County EMS Situation Report and referred to the Los Angeles County EMS Agency for follow-up.

(EMT, PARAMEDIC, MICN)

SUBJECT: **DETERMINATION/PRONOUCEMENT OF DEATH IN THE FIELD**

REFERENCE NO. 814

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PURPOSE: This policy is intended to provide EMS personnel with parameters to determine whether or not to withhold resuscitative efforts in accordance with the patient's wishes, and to provide guidelines for base hospital physicians to discontinue resuscitative efforts and pronounce death.

AUTHORITY: California Health and Safety Code, Division 2.5
California Probate Code, Division 4.7
California Family Code, Section 297-297.5
California Health and Safety Code, Division 1, Part 1.8, Section 443 et seq.

DEFINITIONS:

**Advance Health Care Directive (AHCD):** A written document that allows patients who are unable to speak for themselves to provide health care instructions and/or appoint a Power-of-Attorney for Health Care. There is no one standard format for an AHCD. Examples of AHCDs include:

- Durable power of attorney for Healthcare (DPAHC)
- Healthcare proxies
- Living wills (valid in California if dated prior to 7-1-2000; advisory but not legally binding after that date)

**Agent:** An individual, eighteen years of age or older, designated in a durable power of attorney for health care to make health care decisions for the patient, also known as "attorney-in-fact".

**Aid-in-Dying Drug:** A drug determined and prescribed by a physician for a qualified individual, which the qualified individual may choose to self-administer to bring about his or her death due to terminal illness. The prescribed drug may take effect within minutes to several days after self-administration.

**Conservator:** Court-appointed authority to make health care decisions for a patient.

**Determination of Death**: To conclude that a patient has died by conducting an assessment to confirm the absence of respiratory, cardiac, and neurologic function.

**End of Life Option Act:** This California state law authorizes an adult, eighteen years or older, who meets certain qualifications, and who has been determined by his or her attending physician to be suffering from a terminal disease to make a request for an "aid-in-dying drug" prescribed for the purpose of ending his or her life in a humane and dignified manner.

**Immediate Family:** The spouse, domestic partner, parent, adult children, or adult sibling(s) or family member intimately involved in the care of the patient.



APPROVED: Director, EMS Agency

Medical Director, EMS Agency

**Organized ECG Activity**: A narrow complex supraventricular rhythm.

**Pronouncement of Death:** A formal declaration by a base hospital physician that life has ceased.

**Standardized Patient-Designated Directives:** Forms or medallions that recognize and accommodate a patient's wish to limit prehospital treatment at home, in long term care facilities, or during transport between facilities. Examples include:

- Statewide Emergency Medical Services Authority (EMSA) / California Medical Association (CMA) Prehospital DNR Form (ref. No. 815.1)
- Physician Orders for Life-Sustaining Treatment (POLST, Ref. No. 815.2)
- State EMS Authority-approved DNR Medallion

PRINCIPLES:

1. Resuscitative efforts are of no benefit to patients whose physical condition precludes any possibility of successful resuscitation.

2. EMTs and paramedics may **determine** death based on specific criteria set forth in this policy.

3. Base hospital physicians may **pronounce** death based on information provided by the paramedics in the field and guidelines set forth in this policy.

4. If there is any objection or disagreement by family members or EMS personnel regarding terminating or withholding resuscitation, basic life support (BLS) resuscitation, including defibrillation, may continue or begin immediately and paramedics should contact the base hospital for further directions.

5. Aggressive resuscitation in the field to obtain the return of spontaneous circulation (ROSC) is encouraged. Transporting patients without ROSC is discouraged.

6. EMS personnel should honor valid do-not-resuscitate (DNR) orders and other patient designated end-of-life directives in the field and act in accordance with the patient's wishes when death appears imminent.

POLICY:

I. EMS personnel may determine death in the following circumstances:

   A. In addition to the absence of respiration, cardiac activity, and neurologic reflexes, one or more of the following physical or circumstantial conditions exist:

      1. Decapitation

      2. Massive crush injury

      3. Penetrating or blunt injury with evisceration of the heart, lung or brain

4. Decomposition

5. Incineration

6. Pulseless, non-breathing victims with extrication time greater than fifteen minutes, where no resuscitative measures can be performed prior to extrication.

7. Penetrating trauma patients who, based on the paramedic's thorough assessment, are found apneic, pulseless, asystolic, and without pupillary reflexes upon the arrival of EMS personnel at the scene.

8. Blunt trauma patients who, based on a paramedic's thorough patient assessment, are found apneic, pulseless, and without organized ECG activity (narrow complex supraventricular rhythm) due to traumatic mechanism upon the arrival of EMS personnel at the scene.

9. Pulseless, non-breathing victims of a multiple victim incident where insufficient medical resources preclude initiating resuscitative measures.

10. Drowning victims, when it is reasonably determined that submersion has been greater than one hour.

11. Rigor mortis (requires assessment as described in Section I, B.)

12. Post-mortem lividity (requires assessment as described in Section I, B.)

B. If the initial assessment reveals rigor mortis and/or post-mortem lividity only, EMTs and/or paramedics shall perform the following assessments (may be performed concurrently) to confirm the absence of respiratory, cardiac, and neurologic function for determination of death in the field:

1. Assessment of respiratory status:

   a. Assure that the patient has an open airway.

   b. Look, listen and feel for respirations. Auscultate the lungs for a minimum of 30 seconds to confirm apnea.

2. Assessment of cardiac status:

   a. Auscultate the apical pulse for a minimum of 60 seconds to confirm the absence of heart sounds.

   b. Adults and children: Palpate the carotid pulse for a minimum of 60 seconds to confirm the absence of a pulse.

   c. Infants: Palpate the brachial pulse for a minimum of 60 seconds to confirm the absence of a pulse.

3. Assessment of neurological reflexes:

   a. Check for pupillary response with a penlight or flashlight to determine if pupils are fixed and dilated.

   b. Check and confirm unresponsive to pain stimuli.

C. Patients in atraumatic cardiopulmonary arrest who do not meet the conditions described in Section I. A. require immediate BLS measures to be initiated. If one or more of the following conditions is met, resuscitation may be discontinued and the patient is determined to be dead:

1. A valid standardized patient-designated directive indicating DNR.

2. A valid AHCD with written DNR instructions or the agent identified in the AHCD requesting no resuscitation.

3. Immediate family member present at scene:

   a. With a patient-designated directive on scene requesting no resuscitation

   b. Without said documents at scene, with full agreement of immediate family, requesting no resuscitation, and EMS provider concur

4. Parent or legal guardian is on scene and requesting to withhold or terminate resuscitation for patients less than 18 years of age.

II. Patients in atraumatic cardiopulmonary arrest who do not meet the conditions described in Section I require immediate cardiopulmonary resuscitation in accordance with *Ref. No. 1210*, Treatment Protocol: Cardiac Arrest. Base contact for medical direction shall be established when indicated by Ref. No. 1210.

A. EMS Personnel may determine death if a patient is in **asystole** after 20 minutes of quality cardiopulmonary resuscitation on scene and meets ALL of the following criteria:

1. Patient 18 years or greater

2. Arrest not witnessed by EMS personnel

3. No shockable rhythm identified at any time during the resuscitation

4. No ROSC at any time during the resuscitation

5. No hypothermia

B. Base Physician consultation for pronouncement is not required if Section A is met.

C. Base Physician contact shall be established for all patients in cardiopulmonary arrest who do not meet the conditions described in Section I or IIA of this policy.

D. In the event that immediate family members on scene request termination of resuscitation after resuscitation is in progress, and the patient does not meet criteria in section II.A, base physician consultation shall be made for termination and pronouncement. This does not apply to brief initiation of CPR while establishing patient/family wishes as per I.C.3.

III. Physician guidelines for transport versus termination

A. Resuscitation should be continued on-scene until one of the following:

1. ROSC is confirmed with a corresponding rise in $EtCO_2$
2. Base physician determines further resuscitative efforts are futile
3. Base physician determines transport is indicated based on absence of futility in patient without ROSC after 40 minutes of on-scene resuscitation
4. The patient meets criteria for early transport utilizing a mechanical compression device for initiation of extracorporeal membrane oxygenation (ECMO)

B. Patients who have not achieved ROSC after 40 minutes of quality on-scene resuscitation **should** be considered for transport if:

1. Arrest witnessed by EMS personnel
2. Persistent VF/VT rhythm after three (3) shocks delivered

C. Additional considerations for transport of pulseless non-breathing patients **may** include:

1. Suspected reversible non-cardiac etiologies, including hypothermia
2. Paramedic judgment (i.e., unsafe environment, public location)
3. Shock delivered at any time during the resuscitation

IV. Crime Scene Responsibility, Including Presumed Accidental Deaths and Suspected Suicides

A. Responsibility for medical management rests with the most medically qualified person on scene.

B. Authority for crime scene management shall be vested in law enforcement. To access the patient it may be necessary to ask law enforcement officers for assistance to create a “safe path” that minimizes scene contamination.

C. If law enforcement is not on scene, EMS personnel should attempt to create a "safe path" and secure the scene until law enforcement arrives.

V. Procedures Following Pronouncement of Death

A. The deceased should not be moved without the coroner's authorization.
1. Any invasive equipment (i.e., intravenous line, endotracheal tube) used on the patient should be left in place.

2. If it is necessary to move the deceased because the scene is unsafe, the body is creating a hazard, or the body is at risk of loss through fire or flood, the EMS personnel may relocate the deceased to a safer location or transport to the most accessible receiving facility.

B. If law enforcement or the coroner confirms that the deceased will not be a coroner's case and the personal physician is going to sign the death certificate, any invasive equipment used during the resuscitation may be removed.

C. EMS personnel should remain on scene until law enforcement arrives. During this time, when appropriate, the provider should provide grief support to family members.

VI. Required Documentation for Patients Determined Dead/Pronounced in the Field

A. The time and criteria utilized to determine death; the condition, location and position of the body, and any care provided.

B. The location and the rationale if the deceased was moved. If the coroner authorized movement of the deceased, document the coroner's case number (if available) and the coroner's representative who authorized the movement.

C. Time of pronouncement and name of the pronouncing physician if base hospital contact was initiated

D. The name of the agent identified in the AHCD or patient-designated directive or the name of the immediate family member who made the decision to withhold or withdraw resuscitative measures. Obtain their signature on the EMS Report Form.

E. If the deceased is **not** a coroner's case and their personal physician is going to sign the death certificate:

1. Document the name of the coroner's representative who authorized release of the patient, and

2. The name of the patient's personal physician signing the death certificate, and

3. Any invasive equipment removed

VII. End of Life Option Act

A. Resuscitation shall be withheld on patients in cardiopulmonary arrest who have self-administered an aid-in-dying drug (see Ref. No. 815.4, End of Life Option Field Quick Reference Guide).

B. Document the presence of a Final Attestation and attach a copy if available.

CROSS REFERENCE:

Prehospital Care Manual:
Ref. No. 518, **Decompression Emergencies/Patient Destination**
Ref. No. 519, **Management of Multiple Casualty Incidents**
Ref. No. 606, **Documentation of Prehospital Care**
Ref. No. 815, **Honoring Prehospital Do Not Resuscitate Orders**
Ref. No. 815.1, **EMSA/CMA Prehospital Do Not Resuscitate (DNR) Form**
Ref. No. 815.2, **Physician Orders for Life-Sustaining Treatment (POLST) Form**
Ref. No. 815.3, **Sample - Final Attestation For An Aid-In-Dying Drug to End My Life in a Humane and Dignified Manner**
Ref. No. 815.4, **End of Life Option Field Quick Reference Guide**
Ref. No. 819, **Organ Donor Identification**

(EMT, PARAMEDIC, MICN)

SUBJECT: **REGIONAL MOBILE RESPONSE TEAMS** REFERENCE NO. 817

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PURPOSE: To establish a formal mechanism for providing rapid advanced emergency medical care at the scene in which a higher level of on-scene emergency medical expertise, physician field response, is requested by the on-scene prehospital care provider.

AUTHORITY: Health and Safety Code, Division 2.5, Section 1798. (a)

DEFINITIONS:

**9-1-1 Jurisdictional Provider:** The local governmental agency that has jurisdiction over a defined geographic area for the provision of prehospital emergency medical care. In general, these are cities and fire districts that have been defined in accordance with the Health and Safety Code, Division 2.5, Section 1797.201.

**Exclusive Operating Area (EOA) Provider:** Prehospital emergency medical transportation agencies/companies that have the exclusive rights to provide emergency 9-1-1 medical transportation in predefined geographic areas. These include cities and ambulance companies that have exclusive emergency transportation rights as defined by the Health and Safety Code, Division 2.5, Section 1797.201 and Section 1797.224, and referenced in the Los Angeles County EMS Plan.

**Fire Operational Area Coordinator (FOAC):** Los Angeles County Fire Department is the FOAC for the County, which is contacted through its Dispatch Center.

**Hospital Emergency Response Team (HERT):** Organized group of health care providers from a designated Level I Trauma Center, with Emergency Medical Services (EMS) Agency approval as a HERT provider, who are available 24 hours/day to respond and provide a higher level of on-scene surgical and medical expertise.

**Incident Commander:** The highest-ranking official of the jurisdictional agency at the scene of the incident and responsible for the overall management of the incident.

**Medical Alert Center (MAC):** Serves as the control point for the VMED28 and ReddiNet® systems and the point of contact when a HERT is requested. The MAC shall contact an approved HERT provider based on the incident location.

**Mobile Stroke Unit (MSU):** Organized group of health care providers with highly specialized equipment associated with a designated Comprehensive Stroke Center, who are available to respond and provide a higher level on-scene stroke care. A MSU is approved by the EMS Agency to be deployed in the prehospital setting to provide rapid assessment of a suspected stroke patient utilizing a mobile computed tomography (CT) scanner. If indicated, the MSU may also provide rapid treatment with intravenous thrombolytic therapy



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**Physician Field Response:** Is a situation in which a higher level of on-scene emergency medical or surgical expertise is warranted due to the nature of the emergency and requested by the on-scene prehospital care provider.

**Qualified Specialist:** A physician licensed in the State of California who is Board Certified or Board Eligible in the corresponding specialty by American Board of Medical Specialties (ABMS) or American Osteopathic Association (AOA).

**Standard Precautions:** Is a combination of the major features of Universal Precautions (UP) and Body Substance Isolation (BSI). Standard Precautions include a group of infection prevention practices that apply to all patients, regardless of suspected or confirmed infection status, in any setting in which healthcare is delivered. These include: hand hygiene, use of gloves, gown, mask, eye protection, or face shield, depending on the anticipated exposure; and safe injection practices.

**VMED28:** The VMED28 frequency is the primary method of communications with paramedic providers to coordinate patient destination activities with the Medical Alert Center (MAC). The VMED28 also serves as a back-up communication system for intra-hospital communication and between hospitals and the MAC.

POLICY:

I. Hospital Emergency Response Team (HERT):

A. Composition of a HERT

1. The composition of the HERT, and the identification of a Team Leader, shall be a qualified specialist with the training in accordance with the approved HERT provider's internal policy on file with the EMS Agency.

2. The Team Leader is responsible for organizing, supervising, and accompanying members of the team to a scene where a physician field response has been requested.

3. The Team Leader shall be familiar with base hospital operations, scene hazard training, and the EMS Agency's policies, procedures, and protocols.

4. The Team Leader is responsible for retrieving the life-saving equipment and PPE and determining if augmentation is required based upon the magnitude and nature of the incident.

   PPE shall include the following:

   a. Safety Goggles
   b. Leather Gloves
   c. Helmet with HERT labeled on both sides (e.g., Bullard ®, Advent ®);
   d. Jumpsuit (e.g., Nomex®); and
   e. National Fire Protection Association (NFPA) approved safety boot with minimum six-inch rise, steel toe, and steel shank.

The standard life-saving equipment and PPE referenced above shall be predetermined, preassembled, readily available, clearly labeled, and stored in a predetermined location. Based upon the magnitude and nature of the incident, the standard life-saving equipment and PPE may require augmentation.

5. The Team Leader will determine the ultimate size and composition of the team based upon the magnitude and nature of the incident.

6. The Team Leader will report to, and be under the authority of, the Incident Commander or their designee. Other members of the team will be directed by the Team Leader.

B. Purpose of the HERT:

1. A HERT is utilized in a situation where additional medical or surgical expertise is needed on scene.

2. This includes, but is not limited to, the following situations:

   a. A life-saving procedure, such as an amputation, is required due to the inability to extricate a patient by any other means.
   b. Prolonged entrapment of a patient requiring extended scene care
   c. Need for assistance with analgesia, sedation, and difficult airway management
   d. A mass casualty incident with need for field triage of a large number of patients.

C. Activation of the HERT:

1. The Incident Commander or designee shall contact the MAC via the VMED28. The determination of the appropriate mode of transportation of the team (ground versus air) will be mutually agreed upon. The anticipated duration of the incident should be considered in determining the need for a HERT. Before requesting a HERT, the Incident Commander should take into account that it will be a minimum of 30 minutes before a team can be on scene.

2. MAC shall contact an approved HERT provider regarding the request. The Team Leader will organize the team and equipment in accordance with the HERT provider's internal policy, and the magnitude and nature of the incident.

3. HERT members should be assembled and ready to respond within 20 minutes of a request with standard life-saving equipment and in appropriate level of personal protective equipment (PPE) in accordance with the HERT provider's internal policy on file with the EMS Agency.

4. The Team Leader shall inform the MAC once the team has been assembled and indicate the number of team members.

5. MAC will notify the Incident Commander of the ETA of the HERT if they are arriving by ground transportation. When air transport is utilized, MAC will indicate the time that the HERT is assembled with the standard life-saving equipment and prepared to leave the helipad.

D. Transportation of the HERT:

1. MAC will arrange transportation of the HERT through coordination with the Central Dispatch Office or the FOAC.

2. Upon the conclusion of the incident, HERT will contact the MAC and transportation of the team back to the originating facility will be arranged.

E. Responsibilities of a HERT:

1. Upon arrival of the HERT, the Team Leader will report directly to the on-scene Incident Commander or designee (i.e., Medical Group Supervisor). HERT members will, at a minimum, have visible identification that clearly identifies the individual as a health care provider (physician, nurse, etc.) and a member of the HERT.

2. Medical Control for the incident shall be in accordance with Ref. No. 816, Physician at the Scene.

F. Approval Process of a HERT:

Level I Trauma Centers interested in providing a HERT must develop internal policies to comply with all requirements and submit evidence of the ability to meet all requirements of this policy to the EMS Agency for review and approval as a HERT provider.

II. Mobile Stroke Unit (MSU) Program

A. General Requirements:

1. Be approved by the EMS Agency

2. Have, at minimum, one MSU that has been licensed by the California Department of Motor Vehicles as an emergency response vehicle.

3. Designate a MSU Medical Director who shall be responsible for the functions of the MSU. The MSU Medical Director shall be a qualified specialist, licensed in the State of California and Board Certified in Neurology, Neurosurgery or Neuroradiology.

4. Staff the MSU with a critical care transport nurse, paramedic and a CT technician. A stroke neurologist may also be included as part of the response team on the vehicle or by telemedicine.

5. Implement a quality improvement program for program monitoring and evaluation.

6. Designate a MSU Program Manager who shall be responsible for ensuring timely and accurate data collection and who works with the MSU Medical Director to develop a data collection process and a quality improvement program.

B. The MSU Program shall develop an activation and dispatch procedure in collaboration with the 9-1-1 jurisdictional provider.

C. A written Agreement between an Exclusive Operating Area (EOA) Provider and the MSU Program shall be in place if the MSU will be used to transport stroke patients. The written Agreement shall address, at minimum, the following:

1. Dispatch

2. Interaction between staff of the MSU and the 9-1-1 Jurisdictional Provider/EOA Provider

3. Transportation arrangements

4. Billing

5. Data Collection

6. Liability

D. The MSU Program shall develop policies and procedures that address patient care and include the following: patient assessment and identification of patients requiring MSU services; indications for CT and procedures for transmission and reporting, indications and contraindications for thrombolytic therapy, and reporting of adverse events.

E. Approval Process of a MSU

1. MSU Programs shall submit a letter of intent to the EMS Agency outlining the following:

   a. Qualifications of the composition of MSU program
   b. Proposed response area
   c. Deployment and dispatch plan for integration with the 9-1-1 jurisdictional provider
   d. Data collection and quality improvement process

2. If the MSU will be used to transport stroke patients, submit a copy of the written Agreement with the 9-1-1 Jurisdictional Provider/EOA Provider.

3. The EMS Agency will review and verify the submitted information. If the submitted information is satisfactory, the EMS Agency will approve the MSU program.

CROSS REFERENCES:

Prehospital Care Manual:
Ref. No. 201, **Medical Management of Prehospital Care**
Ref. No. 502, **Patient Destination**
Ref. No. 503, **Guidelines for Hospitals Requesting Diversion of ALS Units**
Ref. No. 504, **Trauma Patient Destination**
Ref. No. 506, **Trauma Triage**
Ref. No. 510, **Pediatric Patient Destination**
Ref. No. 519, **Management of Multiple Casualty Incidents**
Ref. No. 521, **Stroke Patient Destination**
Ref. No. 816, **Physician at the Scene**

(EMT, PARAMEDIC, MICN)

SUBJECT: **SUSPECTED CHILD ABUSE/NEGLECT REPORTING GUIDELINES**

REFERENCE NO. 822

*1200 Table of Contents*

PURPOSE: To provide guidelines and procedures for prehospital care personnel to report suspected child abuse.

AUTHORITY: California Penal Code, Chapter 916, Sections 11164-11174.3
County of Los Angeles Department of Children and Family Services

DEFINITIONS:

**Agencies authorized to accept mandated reports**: Any police department or sheriff's department, and the Department of Children and Family Services (DCFS) Child Protection Hotline (CPH). School district police and security departments are not authorized to accept reports.

**Child**: Any person less than eighteen years of age.

**Mandated reporter**: Any healthcare practitioner, child care custodian, or an employee of a child protective agency. This includes EMTs and paramedics.

**Neglect**: The negligent treatment or maltreatment of a child by a person responsible for the child's welfare under circumstances indicating harm or threatened harm to the child's health or welfare. The term includes both acts and omissions on the part of the responsible person.

**Physical abuse**: Physical injury or death inflicted by other than accidental means upon a child by another person.

**Sexual abuse**: Sexual assault or the exploitation of a minor. Sexual assault includes, but is not limited to, any intrusion by one person into the genitals; anal opening of a child; oral copulation intentional touching for the purposes of sexual arousal or gratification, or masturbation in the presence of a child. Sexual exploitation includes conduct involving matters depicting minors engaged in obscene acts; and/or prostitution.

PRINCIPLES:

1. The purpose of reporting suspected child abuse/neglect is to protect the child, prevent further abuse of the child and other children in the home, and to facilitate treatment for the entire family. The presence of abuse, rather than the degree of that abuse is the determinant for intervention by DCFS and law enforcement.

2. California Penal Code, Sections 11166 and 11168, require mandated reporters to promptly report all suspected non-accidental injuries, sexual abuse, or neglect of children that they suspect, have knowledge of, or observe in their professional capacity. A verbal report shall be made to DCFS Child Protection Hotline immediately, or as soon



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as practically possible, and the Suspected Child Abuse Report shall be completed within 36 hours.

In Los Angeles County, it is recommended that a report be made to local law enforcement as well.

3. It is not necessary for the mandated reporter to determine child abuse but only to suspect that it may have occurred. Law enforcement, DCFS and the courts determine whether child abuse/neglect has, in fact, occurred.

4. Current law mandates (CPC 11166) all healthcare professionals to report suspected child abuse/neglect that they know of or observe in their professional capacity. Mandated reporters are required to sign a statement acknowledging their understanding of the law (See Ref. No. 822.3, Sample Employee Acknowledgement as a Mandated Reporter). Any person who fails to report as required may be punished by a fine or imprisonment.

5. When a mandated reporter suspects or has observed child abuse/neglect, that individual is required to report by telephone to local law enforcement and/or to DCFS Child Protection Hotline.

6. When two or more mandated reporters are present at scene and jointly know or suspect an instance of child abuse/neglect, a member of the reporting team may be designated to report on behalf of the team. Any member who knows that the designated reporter failed to uphold their agreement shall thereafter make the report. If paramedics are not selected as the designated reporters, they shall document the name and agency of the designated reporting team member on the EMS Report Form.

7. Persons legally required to report suspected child abuse are immune from criminal or civil liability for reporting as required.

POLICY:

I. Reporting Procedure

a. Notify local law enforcement immediately if a child is suspected to be in imminent danger. Prehospital care providers should be aware of their local law enforcement reporting procedures and telephone numbers for notification.

b. Call the 24-hour Child Protection Hotline at **(800) 540-4000** as soon as possible to make the verbal report. (Refer to 822.1 for reporting options and instructions).

The telephone report shall include the following:

- Name of the person making the report
- Name of the child
- Present location of the child
- Nature and extent of the injury
- Information that led reporting party to suspect child abuse

The reporting party will be provided with a Referral Number (Case Number) that shall to be transcribed onto Form SS8572 in the upper right hand corner under "Case Number"

Within 36 hours:

1. Compete and submit the Suspected Child Abuse Report (SS8572), that is accessible on the DCFS web site at http://dcfs.lacounty.gov

   **OR**

2. Complete a hard copy according to the instructions on the back of the form (Ref. No. 822.2 and 822.2a, SS8572). The completed form must be mailed to local law enforcement and either mailed to DCFS (1933 S. Broadway Avenue, 5th floor, Los Angeles, CA 90007) or faxed to (213) 745-1727 or (213) 745-1728

c. Document the following on the EMS Report Form

1. The name of the DCFS social worker and/or name, department and badge number of the law enforcement officer contacted.

2. Time of notification

3. Disposition of the child

CROSS REFERENCES:

Prehospital Care Manual:
Ref. No. 822.1, **Guide to Suspected Child Abuse Reporting**
Ref. No. 822.2, **Suspected Child Abuse Report Form SS 8572**
Ref. No. 822.2a, **Definitions and General Instructions for Completion of Form SS 8572**
Ref. No. 822.3, **Sample Employee Acknowledgement as a Mandated Reporter**

(EMT, PARAMEDIC, MICN)

SUBJECT: **PATIENT REFUSAL OF TREATMENT OR TRANSPORT** REFERENCE NO. 834

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PURPOSE: To provide guidelines for EMS personnel to determine which patients who do not wish to be transported to the hospital have decision making-capacity to refuse EMS treatment and/or transport, and identify those who may be safely released at scene.

AUTHORITY: California Health and Safety Code, Division 2.5, Sections 1797.220, 1798, (a).
California Welfare and Institution Code, Sections 305,625, 5150, and 5170
Title 22, California Code of Regulations, Section 100169

DEFINITIONS:

**Adult:** A person at least eighteen years of age.

**Minor:** A person less than eighteen years of age.

**Minor Not Requiring Parental Consent is a person who:**

- Is 12 years or older and in need of care for a reportable medical condition or substance abuse
- Is pregnant and requires care related to the pregnancy
- Is in immediate danger of suspected physical or sexual abuse
- Is an emancipated minor

**Emancipated Minor:** A person under the age of 18 years is an emancipated minor if any of the following conditions are met:

- Married or previously married
- On active military duty
- The person has received a declaration of emancipation pursuant to Section 7122 of the California Family Code, which includes all of the following: at least fourteen (14) years of age, living separate and apart from their parents and managing their own financial affairs (may be verified by DMV Identification Card)

**Decision-Making Capacity:** The ability to understand the nature and consequences of proposed health care. This includes understanding the significant risks and benefits, and having the ability to make and communicate a decision regarding the proposed health care. A person has decision-making capacity if they are able to:

- Understand the need for treatment, the implications of receiving and of not receiving treatment, and alternative forms of treatment that are available, and
- Relate the above information to their personal values, and then make and convey a decision.



APPROVED: Director, EMS Agency

Medical Director, EMS Agency

The lack of decision-making capacity may be:

- Temporary lost (e.g., due to unconsciousness, influence of mind altering substances, mental illness or cognitive impairment)
- Permanently lost (e.g., due to irreversible coma, persistent vegetative state, untreatable brain injury or dementia)
- Never existed (i.e., due to profound neurodevelopmental disorder, those who are deemed by the Court as incompetent or a person under conservatorship)

**Emergency Medical Condition**: A condition or situation in which an individual has an immediate need for medical attention. The presence of abnormal vital signs (heart rate and rhythm, respiratory rate, blood pressure – except isolated asymptomatic hypertension, oxygen saturation) are also indications of an emergency medical condition. Patients who meet any criteria for Base Contact or Receiving Hospital Notification are also considered to have an emergency medical condition.

**Implied Consent**: This is a type of consent involving the presumption that an unconscious or a person lacking decision-making capacity would consent to lifesaving care. This shall include minors with an emergency medical condition and a parent or legal representative is not available.

**Medical Home:** A team-based health care delivery model, which is led by a health care provider (i.e., primary care physician) to provide continuous, coordinated and comprehensive medical care.

**Refusing Care Against Medical Advice (AMA)**: A patient or legal representative of a patient who has decision-making capacity to refuse treatment and/or transport for an emergency medical condition.

**Release at Scene (Patients not requiring transport)**: A patient who, after an assessment by EMS personnel, does not have an emergency medical condition and does not appear to require immediate treatment and/or transportation. These patients meet one or more of the following conditions:

- Deny a medical complaint and decline need for treatment
- Called EMS personnel for assistance for non-medical related issues (i.e., public assists)
- Meet criteria for “Treat and Refer”

**Treat and Refer**: A patient who, after an assessment and treatment by EMS personnel, does not have an ongoing emergency medical condition, does not desire transport to the emergency department for evaluation, and is stable for referral to the patient’s regular healthcare provider or a doctor’s office or clinic.

**Psychiatric Hold**: A patient who is held against their will for evaluation under the authority of Welfare and Institutions Code, Section 5150, because the patient is a danger to themselves, a danger to others, and/or gravely disabled (i.e., unable to care for self). This is a written order by law enforcement officer, County mental health worker, or a health worker certified by the County to place an individual on a psychiatric hold.

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PRINCIPLES:

1. An adult or emancipated minor who has decision-making capacity has the right to determine the course of their medical care including the refusal of care. These patients Must advised of the risks and consequences resulting from refusal of medical care.

2. A patient less than eighteen (18) years of age, with the exception of minors not requiring parental consent, must have a parent or legal representative to refuse evaluation, treatment, and/or transport for an emergency medical condition.

3. A patient determined by EMS personnel or the base hospital to lack decision-making capacity may not refuse care AMA or be released at scene. Mental illness, drugs, alcohol, or physical/mental impairment may impair a patient's decision-making capacity but are not sufficient to eliminate decision-making capacity. Patients who have attempted suicide, verbalized suicidal intent, or if other factors lead EMS personnel to suspect suicidal intent, should be regarded as lacking the decision-making capacity. Capacity determinations are specific only to the particular decision that needs to be made.

4. A patient on a psychiatric hold may not be released at scene and cannot sign-out AMA. The patient can refuse any medical treatment as long as it is not an imminent threat to life of limb.

5. At no time are EMS personnel to put themselves in danger by attempting to treat and/or transport a patient who refuses care.

6. A patient or a legal representative of a patient may contact EMS for minor complaints in order to have an assessment performed and determination made of the seriousness of the complaint and need for treatment. In such cases, the EMS personnel may perform an assessment and for those who meet the definition of "Treat and Refer" may be treated at the scene and referred to the patient's medical home or primary care physician. If the patient or legal representative requests that the patient be transported despite assurance that transport is not needed; EMS personnel should honor the request and transport the patient to the most appropriate receiving facility in accordance with applicable patient destination policies.

7. Patients who refuse treatment and/or transport, and all those released at the scene are high risk patients who require additional quality review.

8. Certain patients are at increased risk of having a bad outcome if released on scene. This includes patients with a medical complaint at extremes of age (≤ 12 months or ≥ 70 years old), patients with abnormal vital signs, and patients with high-risk chief complaints including chest pain, shortness of breath, abdominal pain, gastrointestinal or vaginal bleeding, and syncope. These patients are more challenging to fully evaluate in the fields and shall be transported to the emergency department

POLICY:

I. Adult With Decision-Making Capacity or Minor (Not Requiring Parental Consent) Refusing Transport Against Medical Advice

A. EMS personnel shall advise the patient of the risks and consequences which may result from refusal of treatment and/or transport. The patient should be advised to seek immediate medical care.

B. If the patient has an emergency medical condition as defined above and a BLS unit is alone on scene, an ALS unit should be requested prior to AMA.

C. When base hospital contact is made, contact should be made prior to the patient leaving the scene. Paramedics shall advise the base hospital of all the circumstances including care, transportation, reasons for refusal, and the patient's plan for follow-up care.

D. EMS personnel shall have the patient or their legal representative, as appropriate, sign the release (AMA) section of the Patient Care Record (EMS Report Form/Electronic Patient Care Record/ePCR). The signature shall be witnessed, preferably by a family member.

E. A patient's refusal to sign the AMA section should be documented on the Patient Care Record.

II. Individual Lacking Decision-Making Capacity or a Minor (Requiring Parental Consent):

A. The patient should be transported to an appropriate receiving facility under implied consent. A 5150 hold is not required.

B. If EMS personnel or the base hospital determines it is necessary to transport the patient against their will and the patient resists, or the EMS personnel believe the patient will resist, assistance from law enforcement should be requested in transporting the patient. Law enforcement may consider the placement of a 5150 hold on the patient but this is not required for transport.

C. Law enforcement should be involved whenever EMS personnel believe a parent or other legal representative of the patient is acting unreasonably in refusing immediate care and/or transport.

III. Patients Release at Scene:

A. EMS personnel shall ensure that the patient does not have an ongoing emergency medical condition and that they or their legal representative as appropriate have the capacity to decline transport.

B. Patients with a medical complaint, and with the following high-risk features, are not appropriate for Release at the Scene and should be transported or sign a refusal of transport against medical advice:

1. Extremes of age (≤ 12 months or ≥ 70 years old)

2. Abnormal vital signs – except isolated asymptomatic hypertension

3. High-risk chief complaints including chest pain, shortness of breath,

abdominal pain, gastrointestinal or vaginal bleeding, and syncope.

C. EMS personnel shall advise the patient or their legal representative as appropriate to seek follow-up treatment or immediate medical care, including re-contacting 9-1-1 if they develop symptoms at a later time. The advice given should be documented on the Patient Care. The following statement is recommended: “it appears that you do not require immediate care in the emergency department. You should seek care with your regular healthcare provider or a doctor’s office or clinic within 24 hours. If you have worsening symptoms recontact 9-1-1.”

D. EMS personnel should not require patients release at scene, including those treated and referred, to sign the release (AMA) section of the Patient Care Record, as this implies that the patient is at significant risk by not utilizing the EMS system for treatment and/or transportation.

E. If the patient or the patient’s legal representative requests that the patient be transported after assurance that transport is not needed; EMS personnel should honor the requests and transport to the Most Accessible Receiving Facility (MAR) for adults and to the closest Emergency Department Approved for Pediatrics (EDAP) for children.

IV. Documentation:

A Patient Care Record must be completed for each patient encounter, including those refusing emergency medical evaluation, care and/or transportation against medical advice and those released at scene. EMS personnel shall ensure that documentation includes, at a minimum, the following:

A. Patient history and assessment, including absence of findings of an emergency medical condition or requirement to make Base Contact

B. Description of the patient which clearly indicates their decision-making capacity

C. For Refusal of Care Against Medical Advice (AMA):

1. What the patient is refusing (i.e., medical care, transport)

2. Why the patient is refusing care

3. Risk and consequences of refusing care as explained to the patient or legal representative

4. Statement that the patient understands the risks and consequences of refusing care

5. Signature of patient or legal representative refusing care

6. Patient’s plan for follow-up care

7. If Treatment Protocol requires Base contact, Base contact should be made prior to leaving the patient on scene.

D. For Release at Scene:

1. For Treat and Refer

a. Assessment for all patients

b. Field treatments

c. Plan for follow-up care

2. For patients with no medical complaint and do not request for treatment, document situation and assistance provided.

E. For Minors, document the relationship of the person(s) to whom the patient is being released

V. Quality Improvement

Each Provider Agency shall have a quality improvement program to review patient care records for the patient who refuse medical care or transport, or who were treated and released without Base Contact.

CROSS REFERENCE:

Prehospital Care Manual:
Ref. No. 832, **Treatment/Transport of Minors**
Ref. No. 1200, **Treatment Protocols**, et al.

(EMT, PARAMEDIC, MICN)

SUBJECT: **APPLICATION OF PATIENT RESTRAINTS** REFERENCE NO. 838

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PURPOSE: To provide guidelines for emergency procedures and use of restraints in the field or during transport of patients who are violent or potentially violent, or who may harm self or others.

AUTHORITY: California Code of Regulations, Title 22, Sections 100063, 100145, 100169(a)(1,2) and (c)(1)
Welfare and Institutions Code, 5150
California Code of Regulations, Title 13, Section 1103.2
Health and Safety Code, Section 1798(a)

PRINCIPLES:

1. The safety of the patient, community, and responding personnel is of paramount concern when considering the use of restraints.

2. Staff should be properly trained in the appropriate use and application of restraints and in the monitoring of patients in restraints.

3. The application of restraints is a high risk procedure due to the possibility of injury; therefore, the least restrictive method that protects the patient and emergency medical services (EMS) personnel from harm should be utilized. Restraints should be used only when necessary in situations where the patient is potentially violent or is exhibiting behavior that is dangerous to self or others.

4. EMS personnel must consider that aggressive or violent behavior may be a symptom of medical conditions such as head trauma, alcohol, drug related problems, metabolic disorders, stress and psychiatric disorders. Base contact criteria shall be strictly adhered to for those conditions that require it.

5. The responsibility for patient health care management rests with the highest medical authority on scene. Therefore, medical intervention and patient destination shall be determined by EMS personnel according to applicable policies. Authority for scene management shall be vested in law enforcement, where applicable.

6. The method of restraint used shall allow for adequate monitoring of vital signs and shall not restrict the ability to protect the patient's airway or compromise neurological or vascular status.

7. This policy is not intended to negate the need for law enforcement personnel to use appropriate restraint equipment approved by their respective agency to establish scene management control.



APPROVED: Cathy Chidester
Director, EMS Agency

Marianne Gausche-Hill, MD
Medical Director, EMS Agency

POLICY

I. Forms of Restraining Devices

A. Restraint devices applied by EMS personnel (including interfacility transport of psychiatric patients) must be either padded hard restraints or soft restraints (i.e., vest with ties, velcro or seatbelt type). Both methods must be keyless and allow for quick release. Restraints shall be applied as a two point padded wrist and belt restraint or four point padded wrist and ankle restraints.

B. The following methods of restraint shall NOT be utilized by EMS personnel:

1. Hard plastic ties or any restraint device requiring a key to remove.

2. Restraining a patient's hands and feet behind their back.

3. "Sandwich" method (e.g., backboard, scoop stretcher or flats).

4. Materials applied in a manner that could cause vascular, neurological or respiratory compromise (e.g., gauze bandage or tape).

II. Application and Monitoring of Restraints

A. Restraints shall be applied in such a manner that they do not cause vascular, neurological or respiratory compromise.

B. Restrained extremities should be evaluated for pulse quality, capillary refill, color, temperature, nerve and motor function immediately following application and every 15 minutes thereafter. Any abnormal findings require adjustment, removal and reapplication of restraints if necessary. It is recognized that the evaluation of nerve and motor status requires patient cooperation and thus may be difficult to monitor.

C. Under no circumstances are patients to be transported in the prone position regardless of who applies the restraint. EMS personnel must ensure that the patient's position allows for adequate monitoring of vital signs, does not compromise respiratory, circulatory, or neurological status, and does not preclude any necessary medical intervention to protect or manage the airway should vomiting occur.

D. Restraints shall not be attached to movable side rails of a gurney.

E. Restraint methods must allow the patient to straighten the abdomen and chest to take full breaths.

F. Restraint devices applied by law enforcement require the officer's continued presence to ensure patient and scene management safety. The officer shall accompany the patient in the ambulance. In the unusual event that this is not possible, the officer should follow by driving in tandem with the ambulance on a pre-determined route. A method to alert the officer of any problems that may develop during transport should be discussed prior to leaving the scene.

III. Required Documentation on the Patient Care/EMS Report Form

A. Reason restraints were applied.

B. Type of restraints applied.

C. Identity of agency/medical facility applying restraints.

D. Assessment of the overall cardiac and respiratory status of the patient; and the circulatory, motor and neurological status of the restrained extremities every 15 minutes.

E. Reason for removing or reapplying the restraints or any abnormal findings.

CROSS REFERENCE:

Prehospital Care Manual:
Ref. No. 502, **Patient Destination**
Ref. No. 703, **ALS Unit Inventory**

SUBJECT: **CHEMPACK DEPLOYMENT FOR NERVE AGENT RELEASE** REFERENCE NO. 1108

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PURPOSE: To provide guidelines for the release of CHEMPACK to designated personnel during times of medical need.

DEFINITION:

**CHEMPACK:** The CHEMPACK program was created by the Centers for Disease Control (CDC) and designed to place nerve agent antidotes in communities all over the country to support a quick response to a nerve agent attack. The CHEMPACK program is a component of the Strategic National Stockpile (SNS). There are two types of CHEMPACK containers.

1. EMS CHEMPACK materials are designed for prehospital medical providers, and the antidotes contained in the EMS CHEMPACK are mostly auto-injectors for speed and ease of use.

2. Hospital CHEMPACK is designed for hospital medical staff, and the antidotes contained in the hospital CHEMPACK are primarily multi-dose vials.

3. Each CHEMPACK contains Mark 1/DuoDote auto-injector kits, atropine, 2-Pralidoxime, sterile water for injection, and Diazepam/Midazolam.

PRINCIPLES:

1. The County of Los Angeles has fielded 65 CHEMPACK caches that are geographically stored throughout the County.

2. The overall authority to deploy CHEMPACKs or portions of its contents to the field or local hospitals rests with the Emergency Medical Services (EMS) Agency. The EMS Agency will coordinate the overall response and deployment.

3. In any event involving a terrorist attack employing chemical nerve agents, the EMS Agency, hospitals, and provider agencies shall implement their terrorism notification procedures and monitor the situation.

4. CHEMPACK deployment shall be for incidents in which a nerve agent is responsible for the casualties. The incident must be a true mass casualty incident which exceeds the provider agencies' Disaster Pharmaceutical Caches (DPC) for patient use or hospital resources to deal with the patient load. As a general guideline, the incident should involve at least fifty (50) patients.

5. CHEMPACKs may be pre-deployed for special events.



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POLICY:

I. Types of Deployment

A. Field Deployment – This scenario involves the deployment of CHEMPACK resources to an incident site in a public area. This would occur in the case of an overt nerve agent release in a populated area such as a stadium or inside a building.

B. Hospital Deployment – This scenario may involve an overt or covert terrorist attack in which the first sign of an attack will be the unexplained surge of patients seeking treatment at local hospital(s) for symptoms indicating nerve agent exposure.

II. Role of the EMS Agency

A. Coordinate the overall response to the incident

B. Contact the closest CHEMPACK Storage Site to the incident and instruct the storage site staff to prepare the CHEMPACK for deployment.

C. Assist the provider agency and/or hospital requesting the CHEMPACK with coordinating transportation arrangements.

D. Maintain a current inventory of CHEMPACKs and key personnel at storage sites.

E. Coordinate quality assurance of all 65 CHEMPACKs and provide routine reports to the CDC.

III. Role of the CHEMPACK Storage Sites

A. Maintain CHEMPACKs per CDC protocol.

B. Maintain a deployment plan consistent with the EMS Agency's overall deployment plan.

C. When notified by the EMS Agency to deploy, prepare the CHEMPACK as per deployment plan.

D. Notify the EMS Agency to deploy, prepare the CHEMPACK as per deployment plan.

IV. Role of the Provider Agency

A. Determine whether first responder DPCs for patient use are sufficient to handle the incident. If provider agency's DPC resources are adequate to deal with the patient load, generally no other assistance would be requested.

B. Notify the EMS Agency via the Medical Alert Center (MAC) by either telephone at (562) 347-1789, ReddiNet or VMED28. If unable to contact the MAC, EMS personnel shall contact the Fire Operational Area Coordinator (FOAC) – Los Angeles County Fire District (which is contacted through its dispatch center).

C. If additional nerve agent antidotes are required, request the deployment of an EMS CHEMPACK via the MAC. Provide MAC with the following information:

1. Incident location
2. Chemical agent
3. Number and severity of victims
4. Chief complains of patients

D. Coordinate the transport of the EMS CHEMPACK from the CHEMPACK Storage Site to the scene.

E. Coordinate with the local law enforcement agency for force protection and scene control.

V. Role of the affected hospital(s)

A. Notify the EMS Agency via the MAC at (562) 347-1789 or ReddiNet of a possible terrorist attack. The hospital shall provide the MAC with the following instruction:

1. Chemical agent (if known)
2. Number and severity of victims
3. Chief complaint of patients

B. The hospital shall determine whether the hospital's resources are adequate to deal with the patient load, generally no other assistance would be requested.

C. If the hospital requires additional nerve agent antidotes to deal with the patient load, the staff would request deployment of the hospital CHEMPACK from the EMS Agency.

D. Coordinate the transport of the hospital CHEMPACK from the CHEMPACK storage site to the hospital.

VI. Transportation Options: Transport of the CHEMPACK from the storage site to the incident location includes the following:

A. Fire agency transport capabilities
B. Hospital transport capabilities
C. EMS Agency Ambulance Services, requested via the MAC

CROSS REFERENCE:
Prehospital Care Manual:
Ref. No. 519, **Management of Multiple Casualty Incidents**
Ref. No. 807, **Medical Control During Hazardous Material Exposure**
Ref. No. 1104, **Disaster Pharmaceutical Caches Carried by Authorized ALS Providers**
Ref. No. 1106, **Mobilization of Local Pharmaceutical Caches (LPCs)**
Ref. No. 1108.1, **CHEMPACK Inventory List**
Ref. No. 1108.2, **CHEMPACK Photograph**
Ref. No. 1108.3, **CHEMPACK Checklist for Items Deployed**
Ref. No. 1225, **Nerve Agent Exposure**