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TENNESSEE EMERGENCY MEDICAL SERVICES PROTOCOL GUIDELINES - (4)

Introduction

These Protocol guidelines are provided by State of Tennessee Office of Emergency Medical Services and are designed to be used as written or as a guideline for Emergency Medical Directors of Licensed Emergency Medical Services in Tennessee. Protocols provide direction for Emergency Medical Services Personnel to render appropriate care for the sick and injured of all ages. It is recommended that services require EMS Personnel to familiarize themselves with the service approved Protocols.

Administrative Notes:

1. The EMT and Advanced EMT (AEMT) will assist ALS personnel as requested and/or needed.

2. The Emergency Medical Responder will function under the current guidelines as stated in the AHA-BLS Healthcare Provider text. EMRs shall also be responsible for other duties as assigned within their Scope of Practice by the AEMT or the Paramedic.

3. Providers currently licensed as AEMT will continue to function at their current scope of practice until the appropriate "bridge" certification has been obtained through a state accredited program.

4. The Paramedic will be in charge and will be responsible for all of the actions and or activities as it relates to patient care. On the scene of an emergency, the Paramedic will be responsible for patient care. The EMT or AEMT will act within their scope of practice to any request for patient care or maintenance of the unit as directed by the Paramedic. Patient care is limited to acts within their scope of practice as defined by these SOPs. All EMS Personnel are responsible for reviewing all documentation and signing in the required manner

5. It is the responsibility of the most qualified Paramedic caring for the patient to ensure transmission of all aspects of the patient assessment and care to the responding Emergency Unit or Medical Control.

6. When reporting a disposition to Medical Control or the responding unit, provide the following minimum information:
    a. Patient's age and chief complaint
    b. Is the patient stable or unstable, including complete V/S and LOC
    c. Interventions performed
    d. Provide other information as requested.

7. For each and every call, the first directives are scene safety and body substance isolation precautions.

8. For any drug administration or procedures outside these Guidelines, the EMS Provider must receive authorization from Medical Control. Paramedics en-route to the scene are not authorized to issue orders.

9. The minimal equipment required for all patient calls:
    a. When the patient is in close proximity to the unit or Emergency Medical Responder: jump bag, cardiac monitor, and oxygen or other equipment as may be indicated by the nature of the call

   b. When the patient is not in close proximity of the unit or Emergency Medical Responder: the above equipment, stretcher and any other equipment that may be needed as dictated by the nature of the call.

10. The senior Paramedic has the ultimate responsibility to ensure that all records and reports are properly completed. The patient care report should accurately reflect the clinical activities undertaken. If there is a patient refusal, declination, or dismissal of service at the scene of the incident, the incident report should reflect the details as well as the party or parties responsible for the request to terminate any and all evaluations and treatment.

11. Although the Guidelines have a numerical order, it may be necessary to change the sequence order or even omit a procedure due to patient condition, the availability of assistance, or equipment. Document your reason for any deviations from protocol.

12. EMTs and AEMTS are expected to perform their duties in accordance with local, state and federal guidelines in accordance with the State of Tennessee statutes and rules of Tennessee Emergency Services. The Paramedic will work within their scope of practice dependent on available equipment.

13. Each patient care contact will be recorded on the EMS patient care report as completely and accurately as practical and per agency guidelines. A complete copy of the patient out-of-hospital evaluation(s) and treatment(s) will be made available to the emergency department personnel or staff within 24 hours. This will ensure proper documentation of the continuity of care.

14. In potential crime scenes, any movement of the body, clothing, or immediate surroundings should be documented and the on-scene law enforcement officer should be notified of such.

15. All patients should be transported to the most appropriate facility according to the patient or family request or the facility that has the level of care commensurate with the patient's condition. Certain medical emergencies may require transport to a facility with specialized capability.

16. Paramedics may transport the patient in a non-emergency status to the hospital. This should be based on the signs and symptoms of the patient, mechanism of injury or nature of illness.

17. The following refusal situations should be evaluated by a paramedic.
    a. Hypoglycemic patients who have responded to treatment
    b. Any patient refusing transport who has a potentially serious illness or injury
    c. Patients age less than **4** years or greater than **70** years
    d. Chest pain any age or cause
    e. Drug overdose / intoxicated patients
    f. Potentially head injured patients
    g. Psychiatric Disorders

18. The use of a length-based assessment tape is **required** for all pediatric patients as a guide for medications and equipment sizes. The tape will be utilized on all pediatric patients below the age of 8 years and appropriate for their weight. Any child that is small in stature for their age, you should consider utilizing the length-based tape for compiling a complete accurate

assessment of the patient. This information will be passed along to the receiving facility and documented in the PCR.

Clinical Notes:

1. A complete patient assessment, vital signs, treatments and continued patient evaluation are to be initiated immediately upon contact with a patient and continued until patient care is transferred to a Higher Medical Authority. Refer to Patient Assessment Flow Chart.

2. The on-going assessment times are considered:

High Priority	*Low Priority*
Every 3 – 5 minutes	Every 5 – 15 minutes

3. EMTs may utilize the following medications: Narcan, Aspirin, Nitroglycerine, and EPINEPHrine (for Anaphylactic reaction) and assist patient with their own Albuterol or MDI. AEMTs may administer Albuterol, MDI, and Dextrose for hypoglycemia as well as other medications within their scope of practice. Use Nitroglycerine with caution in patients taking erectile dysfunction medications as profound hypotension may occur. EMRs may administer Narcan if properly trained.

4. If glucometer reading of greater than 40 mg/dL and patient is asymptomatic, start an INT and administer oral glucose. If glucometer reading is less than 80 mg/dL and patient is symptomatic, start an IV NS and administer 12.5 – 25 gms of Dextrose. Reassess patient every 5 min, repeat PRN
   Note: Any administration of Dextrose must be done through an IV line, not INTs. Normal blood sugar values for adults are 80 – 120 mg/dL.

5. Blood Glucose and Stroke Screening will be performed on all patients with altered mental status. Glucose should be titrated slowly in order to restore normal levels while avoiding large changes in serum glucose levels. Be aware that elevated glucose levels are detrimental in conditions such as stroke.

6. Supportive care indicates any emotional and/or physical care including oxygen therapy, repositioning patient, comfort measures and patient family education.

7. Upon arrival at the receiving hospital, all treatment(s) and monitoring initiated in the field will be continued until hospital personnel have assumed patient care.

8. The initial blood pressure MUST be taken manually. If subsequent blood pressures taken by machine vary more than 15 points diastolic, then a manual blood pressure will verify the machine reading.

9. EMTs may obtain and transmit EKG monitoring tracings and 12 Lead EKGs in the presence of the treating Paramedic. Paramedics ONLY may interpret and make treatment and destination decisions based on the 12 lead EKG.

10. Indications for football helmet removal:
    - When a patient is wearing a helmet and not shoulder pads
    - In the presence of head and/or facial trauma
    - Patients requiring advanced airway management when removal of the facemask is not sufficient

- When the helmet is loose on the patient's head
- In the presence of cardiopulmonary arrest. (The shoulder pads must also be removed)

When helmet and shoulder pads are both on, the spine is kept in neutral alignment. If the patient is wearing only a helmet or shoulder pads, neutral alignment must be maintained. Either remove the other piece of equipment or pad under the missing piece. *All other helmets must be removed in order to maintain spinal alignment.*

Clinical Notes – Airway:

1. All EMTs have standing orders for insertion of an approved airway device for patients meeting the indications

2. Airway maintenance appropriate for the patient's condition includes any airway maneuver, adjunct, or insertion of tubes that provides a patent airway.

3. Pulse Oximetry should be utilized for all patients complaining of respiratory distress or chest pain (regardless of source).

4. Continuous waveform capnography is **MANDATORY** for all intubations and non-tracheal airways. Reliability may be limited in patients less than 20kg. Use other methods to assist in confirmation.

5. Use of head blocks or other head restraint post intubation (BIAD or ET) is recommended to reduce the chance of accidental extubation. This is in addition to the tube securing devices currently in use. Cervical Collars may impact cerebral blood flow in low flow states, such as cardiac arrest/CPR, and should not be too tightly placed.

Clinical Notes – Cardio Vascular

1. In the adult cardiac arrest:
    a. CPR is most effective when done continuously, with minimum interruption. Maintain rate of 110 BPM (80 bpm if using ResQPump System), depth of 2 inches, and a compression fraction of >80%.
    b. Initiate compressions first, manage airway after effective compressions for two minutes.
    c. All IV/IO drugs given are to be followed by a 10 mL NS bolus.
    d. Elevate the extremity after bolus when given IV.
    e. Consider blind airway devices whenever intubation takes longer than 30 seconds.
    f. Apply NC Oxygen 2-4 L during initial CPR.
    g. Consider use of mechanical CPR device if available. Make sure that placement of the device takes **no longer than 20 seconds**. Longer pauses in CPR substantially decrease the likelihood of a successful resuscitation.
    h. If using Active Compression/Decompression CPR or Mechanical CPR Device, ensure utilization of the impedance threshold device (ITD). After completing 2-3 minutes of CPR in the supine position, elevate head and shoulders of patient to approximately 30 degrees.
    i. Remove impedance threshold device upon ROSC
    j. If CPR needs to be reinitiated, perform 2 minutes of CPR supine prior to head elevation.

2. Treat the patient not the monitor

3. Defibrillation and Synchronized Cardioversion joules are based on the use of the current biphasic monitor.

4. If a change in cardiac rhythm occurs, provide all treatment and intervention as appropriate for the new rhythm.

5. In the case of cardiac arrest where venous access is not readily available, paramedics may use IO as initial access. Humeral access is preferred in medical conditions.

Clinical Notes – IV

1. AEMTs and Paramedics have standing orders for precautionary IV and INTs. AEMTs have a standing order for the insertion of an IV or INT under the following guidelines:
    a. The patient must have some indication that they are unstable (see definitions)
    b. Limited to two attempts in one arm only. (Cannulation of legs or neck is not allowed.)
    c. Drug administration will be followed by a minimum of 10 mL of fluid to flush the catheter.
    d. Blood Glucose will be performed for all patients with altered mental status
    e. IVs should not be attempted in an injured extremity
    f. TKO (To Keep Open) indicates a flow rate of approximately 50 mL/hr ***(peds 5-10 mL/hr)***
    g. IVs will not be started in arms with shunts
    h. IVs appropriate for patient's condition:
        i. if patient is hypotensive, give a bolus if fluid
        ii. if patient's BP is normal run IV TKO or convert to saline lock (INT).
    i. A bolus of fluid is 20 mL/kg for all patients.

2. For external Jugular IVs attempted by paramedics, IV catheters should be 18 gauge or smaller diameter based on the patient.

3. Paramedics, when properly equipped and trained, may utilize indwelling access ports such as Port-A-Cath in an **EMERGENCY ONLY**. This procedure should be done with a Huber needle utilizing sterile technique.

Definitions

Medical Director – the physician that has the ultimate responsibility for the patient care aspects of the EMS System

Unstable (symptomatic) – indicates that one or more of the following are present:

a. Chest pain
b. Dyspnea
c. Hypotension (systolic B/P less than 90 mmHg in a 70 kg patient or greater)
d. Signs and symptoms of congestive heart failure or pulmonary edema
e. Signs and symptoms of a myocardial infarction
f. Signs and symptoms of inadequate perfusion
g. Altered level of consciousness

Stable (asymptomatic) – Indicates that the patient has no or very mild signs and symptoms associated with the current history of illness or trauma.

Emergency Medical Responder – Personnel licensed by the Tennessee Department of Health, Office of EMS and authorized by the service Medical Director to perform lifesaving interventions while awaiting additional EMS response. May also assist higher level personnel at scene and during transport under medical direction and within their scope of practice.

EMT – Personnel licensed by the Tennessee Department of Health, Office of EMS and authorized by the Medical Director to provide basic emergency care according to the Standard of Care and these Guidelines.

AEMT – Personnel licensed by the Tennessee Department of Health, Office of EMS and authorized by the Medical Director to provide limited advanced emergency care according to the Standard of Care and Standing Orders and Protocols.

Paramedic – Personnel licensed by the Tennessee Department of Health, Office of EMS and authorized by the Medical Director to provide basic and advanced emergency patient care according to the standard of care and these guidelines Orders and Protocols

Transfer of Care – Properly maintaining the continuity of care through appropriate verbal and/or written communication of patient care aspects to an equal or higher appropriate medical authority.

Higher Medical Authority – Any medical personnel that possesses a current medical license or certificate recognized by the State of Tennessee with a higher level of medical training than the one possessed by EMS Personnel.

Medical Control (transport) – The instructions and advice provided by a physician, and the orders by a physician that define the treatment of the patient. To access Medical Control, contact the Emergency Department physician on duty of the patient's first choice of destination. If the patient does not have a preference, the patient's condition and/or chief complaint may influence the choice of medical treatment facilities.

All EMRs, EMTs, AEMTs, and Paramedics are expected to perform their duties in accordance with local, state, and federal guidelines.

I have taken great care to make certain that doses of medications and schedules of treatment are compatible with generally accepted standards at time of publication. Much effort has gone into the development, production, and proof reading of the Protocol Guidelines. Unfortunately, this process may allow errors to go unnoticed or treatments may change between the creation of these protocols and their ultimate use. Please do not hesitate to contact your medical director if you discover any errors, typos, dosage, or medication errors.

I look forward to any questions, concerns, or comments regarding these protocols. I expect all EMS personnel to follow these guidelines, but also to utilize and exercise good judgment to provide the best care for all patients.

EMS Medical Director

CARDIAC EMERGENCY

101 Automatic External Defibrillator (AED)

Assessment

Patient in Cardiopulmonary Arrest Basic Life Support in progress AED in use

EMR EMT

1. If AED available, apply to patient and follow prompts
2. 100% oxygen and airway maintenance appropriate to patient's condition. All CPR rates of compression are 100-110 per minute for all ages. Res-Q-Pump compression rate is 80 per minute. Ventilation rates are 2 breaths for every 30 compressions ***(peds – 2 breaths for every 15 compressions)*** if advanced airway is not in place. If an advanced airway IS in place, give 1 breath every six seconds (10 breaths per minute) for all age groups.
3. Continue CPR according to current AHA – Healthcare Provider Guidelines, specific for patient's age.
4. If AED is in use (defibrillating) prior to arrival, allow shocks to be completed, and then evaluate pulse.

   If no pulse, continue to provide CPR and basic life support.

   If a pulse is present, evaluate respirations and provide supportive care appropriate for the patient's condition.

   EMR and EMT STOP

AEMT

5. IV NS Bolus (20 mL/kg), then TKO

   AEMT STOP

PARAMEDIC

6. Monitor patient and treat per SOP specific for the arrhythmia

Notes:

1. AED is relatively **contraindicated** in the following situations:
   a. If the victim is in standing water, remove the victim from the water, and ensure that chest and surrounding area is dry.
   b. Trauma Cardiac Arrest
2. Victims with implanted pacemakers, place pads 1 inch from device.

   If ICD/AICD is delivering shock to the patient, allow 30 to 60 seconds for the ICD/AICD to complete the treatment cycle before using the AED.
3. Transdermal medication patch at site of the AED pads:

   If a medication patch is in the location for an AED pad, remove the medication patch and wipe the area clean before attaching the AED electrode pad.

CARDIAC EMERGENCY

102 New Onset Atrial Fibrillation and Flutter

Assessment

Paroxysmal Atrial Tachycardia
Atrial flutter **new onset**
Atrial fibrillation **new onset**
Symptomatic patient
Dyspnea
Chest pain
Radiating pain
Altered mental status
Hypotension (systolic BP <90 mmHg)
Diaphoresis

EMR

1. Oxygen and airway maintenance appropriate for the patient's condition
2. Supportive care

EMR STOP

EMT

3. Pulse Oximetry

EMT STOP

AEMT

4. Glucose check
5. IV NS TKO or INT
6. Titrate Dextrose PRN slowly until normal levels achieved. Try to avoid large swings in serum glucose levels. ***(peds – see dosage chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

AEMT STOP

PARAMEDIC

7. 12 Lead EKG, Transmit
8. Valsalva maneuver, contact Medical Control to consider Amiodarone 150 mg
9. If patient is unstable consider synchronous cardioversion:
   a. Atrial flutter @ 30 joules ***(peds 0.5 j/kg then 1 j/kg)***
   b. Atrial fib @ 50 joules ***(peds 0.5 j/kg then 1 j/kg)***
   c. Pre-medicate with Diazepam (Valium) 2-5 mg IV ***(peds 0.1 mg/kg)*** or Midazolam (Versed) 2-5 mg IVP ***(peds 0.1 mg/kg)*** and/or Morphine per the chart below

Immediate Synchronized Cardioversion (50, 75, 100, 120 150, 200 joules) ***(peds 0.5 j/kg then 1 j/kg)*** is recommended when there is an unstable rhythm with **serious signs and symptoms:**

- Chest Pain
- Shortness of breath
- Decreased level of consciousness
- Low blood pressure

Doses are approximate	5-9 kg	10 kg	12 kg	15 kg	20 kg	30 kg	40 kg	50-74 kg	≥ 75 kg	Geriatric	
Fentanyl IV/IN/IO		10	12	15	20	30	40	50-75 mcg	75	25	1-2 mcg/kg
Morphine IV/IO		1 mg	1 mg	1.5 mg	2 mg	3 mg	4 mg	4 mg	4 mg	2 mg	0.05-0.1 mg/kg
Ondansetron IV/IO					3 mg	3 mg	4 mg	4 mg	4 mg	4 mg	0.15 mg/kg

If pain not controlled, Morphine and fentanyl dosing may be repeated once after ten minutes. Contraindicated in hemodynamically unstable patients.

- Contacting medical control for children weighing less than 10 kg or children where obesity may affect dosing.

CARDIAC EMERGENCY

103 Bradycardia

Assessment

Heart rate less than 60 beats per minute and symptomatic
Decreased / altered LOC
Chest pain / discomfort
CHF / pulmonary edema
Head Trauma
Elevated Intracranial Pressure
Dyspnea
Hypothermia
Hypoglycemia
Drug overdose
Signs of decreased perfusion
Rhythm may be sinus bradycardia, junctional, or heart block
Heart rates <80/min for infant or <60/min for child

EMR

1. Oxygen and airway maintenance appropriate to patient's condition. If the patient will not tolerate a NRB, apply Oxygen at 6 LPM BNC. ***(peds – 4 LPM. Use bag-valve-mask if no response with oxygen by nasal cannula.)***
2. Supportive care

EMR STOP

EMT

3. Pulse Oximetry

EMT STOP

AEMT

4. Glucose Check
5. INT or IV NS TKO
6. If blood sugar is < 80 mg/dL and symptomatic, infuse 250 cc bag D10 until patient responds. ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

AEMT STOP

PARAMEDIC

7. 12 Lead EKG, transmit
8. If patient is asymptomatic and heart rate is less than 60 beats per minute, transport and observe

9. If PVCs are present with bradycardia, do **NOT** administer Lidocaine.
10. Adults –
    a. If systolic BP <90 mmHG and heart rate <60/min
        i. If 2nd and 3rd degree blocks are present, apply transcutaneous pacer pads (if available), administer Atropine 0.5 mg IV
    b. If systolic BP <90 mmHG and heart rate <60/min continues
        i. Administer Atropine 0.5 mg up to 0.04 mg/kg (3 mg for adults) ***(peds 0.02 mg/kg, repeat once in 3 to 5 minutes PRN, max single dose 0.5 mg, max total dose 1 mg)***
    c. If systolic BP<90 mmHG and heart rate <60/min continues
        i. Notify Medical Control and begin cardiac pacing per protocol
        ii. Consider DOPamine 2-20 mcg/kg/min as a continuous IV infusion to increase heart rate. OR
        Consider EPINEPHrine 2-10 mcg/min.

Pediatric –

a. Heart rates <60/min for infant or <60/min for child

d. Signs of poor perfusion, respiratory distress, or hypotension

Yes – Start chest compression, IV/IO

1. EPINEPHrine 1:10,000 (now 0.1 mg/mL) - 0.01 mg/kg IV/IO q 3-5 min.)

2. Contact Medical Control

a. Consider external cardiac pacing

b. Consider DOPamine 2–20 mcg/kg/min as a continuous IV infusion to increase heart rate

c. Consider EPINEPHrine 0.1-1 mcg/kg/min.

11. If beta blocker ingestion is suspected, consider Glucagon ***0.1-1*** mg IM/IV if unresponsive to Atropine. ***(peds – Glucagon 0.5 mg/dose IM/IV if <20 kg, or 1 mg/dose IM/IV if 20 kg or greater.)***

CARDIAC EMERGENCY

104 Acute Coronary Syndrome/STEMI

Assessment

Determine quality, duration and radiation of pain Substernal Oppressive Chest Pain (crushing or squeezing) Nausea and/or vomiting Shortness of breath Cool, clammy skin Palpitations Anxiety or restlessness Abnormal pulse rate or rhythm History of Coronary Artery Disease or AMI Currently taking cardiac medications JVD Distal pulse for equality/strength to assess for Aneurysm Diaphoresis, pallor, cyanosis Breath sounds – congestion, rales, wheezing Motor deficits	**P –** Placement of pain/discomfort (anything that increases discomfort) **Q –** Quality of pain **R –** Radiation of pain **S –** Severity of pain/discomfort (scale of 1 – 10) **T –** Time of pain/discomfort onset, type of pain The elderly, women, and/or diabetic patients may complain of nausea, weakness, shortness of breath or other vague symptoms. Screen all such patients for possible silent MI

EMR

1. Oxygen at 2 – 6 LPM BNC and airway maintenance appropriate to patient's condition. If the patient is in severe respiratory distress, consider Oxygen 12 – 15 LPM NRB ***(peds – 4 LPM BNC. Use bag-valve-mask if no response with oxygen by nasal cannula.)***
2. Supportive Care

EMR STOP

EMT

3. Pulse oximetry, provide O_2 sufficient to keep SATs >94%
4. Administer 324 mg of aspirin (chewable non-enteric coated) if patient has no contraindications or has not already self-dosed. May assist with patient's sublingual nitroglycerine.
5. Cardiac monitor – assist with 12 Lead EKG and transmit. Obtain and transmit EKG to PCI capable hospital within the first 10 minutes of patient contact.

EMT STOP

AEMT

6. Glucose Check
7. INT or IV Normal Saline TKO
8. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

9. If systolic BP is >110 and the patient is symptomatic, administer 1 nitroglycerine 0.4 mg sublingually and reassess every 5 minutes. Maximum of 3 doses.
10. Contact Medical Control to request orders for additional Nitroglycerine in excess of three doses.
    NOTE: The maximum dosage of Nitroglycerine is three. The total dosage is the total doses the patient has taken on their own combined with your subsequent dosages. Use with caution in patients taking erectile dysfunction medications as this may cause profound hypotension

AEMT STOP

PARAMEDIC

11. Patients with positive AMI should be transported to an appropriate cardiac facility as soon as possible. Treat arrhythmia appropriately. Transmit EKG to PCI capable hospital within 10 minutes of patient contact. Perform serial EKGs in order to document progression of EKG changes. Treat arrhythmia appropriately.
12. Aspirin (nonenteric coated), 324 mg chewed then swallowed if not self-dosed within last 24 hr
13. Nitroglycerine – If patient is not Hypotensive (BP <100 mmHg), administer 0.4 mg Nitroglycerine SL and apply 1" of Nitroglycerine to chest wall. Repeat Nitroglycerine spray once 5 minutes after initial spray and application of paste. Continue nitrate therapy until pain relieved or systolic BP<100 mmHg.
14. Systolic BP is <100 mmHg, give 250 mL NS bolus (assess for signs of pulmonary congestion)
    If PVCs >15/min – Lidocaine 1 – 1.5 mg/kg over 2 min, repeat to total of 3 mg/kg
15. If chest pain/discomfort continues
    - Continue Nitrate therapy
    - Complete thrombolytic screening
    - If chest pain greater than 7 on scale of 1-10, treat pain per chart below until pain is tolerated by patient
    - Contact Medical Control
    - Transport

Doses are approximate	5-9 kg	10 kg	12 kg	15 kg	20 kg	30 kg	40 kg	50-74 kg	≥ 75 kg	Geriatric	
Fentanyl IV/IN/IO		10	12	15	20	30	40	50-75 mcg	75	25	1-2 mcg/kg
Morphine IV/IO		1 mg	1 mg	1.5 mg	2 mg	3 mg	4 mg	4 mg	4 mg	2 mg	0.05-0.1 mg/kg
Ondansetron IV/IO					3 mg	3 mg	4 mg	4 mg	4 mg	4 mg	0.15 mg/kg

If pain not controlled, Morphine and fentanyl dosing may be repeated once after ten minutes. Contraindicated in hemodynamically unstable patients.

Note: If EMS suspects a true Acute Coronary Syndrome/STEMI in a patient less than 18 years old, immediately contact online medical control.

CARDIAC EMERGENCY

105 Chest Pain / NON-Cardiac

Assessment

Determine quality, duration and radiation of pain Atypical Chest Pain NO Nausea and/or Vomiting NO Shortness of breath NO Cool, clammy skin History of chest injury, persistent cough NO History of Coronary Artery Disease or AMI NOT currently taking cardiac medications Distal pulse for equality/strength to assess for aneurysm NO Diaphoresis, pallor, cyanosis Normal Breath sounds	**P –** Placement of pain/discomfort **Q –** Quality of pain **R –** Radiation of pain **S –** Severity of pain/discomfort (scale of 1 – 10) **T –** Time of pain/discomfort onset, type of pain The elderly, women, and/or diabetic patients may complain of nausea, weakness, shortness of breath or other vague symptoms. Screen all such patients for possible silent MI

EMR

1. Oxygen at 2 – 6 LPM BNC and airway maintenance appropriate to patient's condition. If the patient is in severe respiratory distress, consider Oxygen 12 – 15 LPM NRB ***(peds – 4 LPM BNC. Use bag-valve-mask if no response with oxygen by nasal cannula.)***
2. Supportive Care

EMR STOP

EMT

3. Pulse oximetry
4. Administer Aspirin (325 mg of chewable non-enteric coated if patient has not self-administered in the last 24 hours.) Assist with TNG SL up to 3 doses.
5. Cardiac monitor – assist with 12 lead EKG and transmit. Obtain and transmit EKG to PCI capable hospital within first 10 minutes of patient contact.

EMT STOP

AEMT

6. Glucose check
7. INT or IV Normal Saline TKO
8. Titrate Dextrose PRN slowly until normal levels achieved. Try to avoid large swing in serum glucose levels. ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

9. If systolic BP is >110 and the patient is symptomatic, administer 0.4 mg nitroglycerine sublingually and reassess every 5 minutes. (Refer to the medication assist procedure.) Maximum of three doses.
10. Contact Medical Control to request orders for additional Nitroglycerine in excess of three doses

    NOTE: The maximum dosage of Nitroglycerine is three sublingual administrations, whether before or after your arrival. Use with caution in patients taking erectile dysfunction medications. Profound hypotension may occur.

AEMT STOP

PARAMEDIC

11. Cardiac monitor, obtain 12 lead, transmit if available
12. If patient is not Hypotensive (BP <100 mmHg) administer one Nitroglycerine SL/spray
13. If no effect, consider:

    If chest pain greater the 7 on scale of 1-10, treat per chart below until pain is tolerated by patient
14. Contact Medical Control
15. Transport

CAUTION: Patients with true cardiac disease may have subtle, atypical symptoms. Always err on the side of patient safety.

Doses are approximate	5-9 kg	10 kg	12 kg	15 kg	20 kg	30 kg	40 kg	50-74 kg	≥ 75 kg	Geriatric	
Fentanyl IV/IN/IO		10	12	15	20	30	40	50-75 mcg	75	25	1-2 mcg/kg
Morphine IV/IO		1 mg	1 mg	1.5 mg	2 mg	3 mg	4 mg	4 mg	4 mg	2 mg	0.05-0.1 mg/kg
Ondansetron IV/IO					3 mg	3 mg	4 mg	4 mg	4 mg	4 mg	0.15 mg/kg

If pain not controlled, Morphine and fentanyl dosing may be repeated once after ten minutes. Contraindicated in hemodynamically unstable patients.

Note: For pediatric patients complaining of chest pain, please contact online medical control before administering aspirin, nitroglycerine, or morphine

CARDIAC EMERGENCY

106 Pulseless Electrical Activity (P.E.A.)

Assessment

Presence of electrical cardiac rhythm without palpable pulse Confirm rhythm electrodes in two leads

EMR **EMT**

1. Utilize AED if available
2. Oxygen and airway maintenance appropriate to the patient's condition
3. CPR as indicated

EMR and EMT STOP

AEMT

4. Glucose Check if time allows
5. IV NS, bolus of fluid (20 mL/kg)
6. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

AEMT STOP

PARAMEDIC

7. 12 Lead EKG, transmit
8. EPINEPHrine 1:10,000 (now 0.1 mg/mL) 1 mg IVP/IO ***(peds – EPINEPHrine 1: 10,000 (now 0.1 mg/mL) - 0.01 mg/kg IV/IO q 3-5 min)***
9. Search for underlying cause of arrest and provide the related therapy:
   a. Hypoxia – ensure adequate ventilation
   b. Hypovolemia – fluid administration/fluid challenge adult 20 mL/kg, ***(peds 20 mL/kg bolus)***
   c. Cardiac tamponade…adult up to 2 liter bolus, ***(peds 20 mL/kg bolus)***
   d. Tension pneumothorax – needle decompression
   e. **KNOWN** hyperkalemia or tricyclic antidepressant overdose – Sodium Bicarbonate 8.4% 1 mEq/kg, may repeat @ 0.5 mEq/kg q 10 min ***(peds <1 month use Sodium Bicarbonate 4.2% - 1 mEq/kg), (peds >1 month use Sodium Bicarbonate 8.4% - 1 mEq/kg may repeat at 0.5 mEq/kg q 10 min)*** and CaCl 500 mg IVP ***(peds 20 mg/kg)***
   f. **Known** Acidosis in prolonged arrest: consider Sodium Bicarbonate 8.4% 1-2 mEq/kg IV
   g. Drug Overdose: Naloxone (Narcan) 0.4-2.0 mg IV/IO/IM/IN titrated to adequate ventilation. ***(peds 0.1 mg/kg IV/IO/IM/IN titrated to adequate ventilation, max dose 2 mg)***. If utilizing pre-filled delivery systems, dose per manufacturer's instructions. May repeat dose. Synthetic Opiate overdoses may require much larger doses of Narcan. Physically manage airway if no response after 8 mg Narcan.

   h. Severe Hypothermia: Initiate patient rewarming, avoid chest compressions if spontaneous circulation.
10. Consider External Cardiac Pacing per Protocol
11. PEA continues: Continue CPR, transport to appropriate facility.

CARDIAC EMERGENCY

107 Premature Ventricular Contractions (PVC)

Assessment

Any PVC in acute MI setting with associated chest pain Multi-focal PVCs Unifocal and >15/min Salvos/couplets/runs of V-Tach (three or more PVCs in a row) and symptomatic PVCs occurring near the "T-wave"

EMR

1. Oxygen and airway maintenance appropriate for the patient's condition
2. Supportive care

EMR STOP

EMT

3. Pulse oximetry

EMT STOP

AEMT

4. Glucose check, administer oral glucose if appropriate
5. INT or IV NS TKO
6. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds – see glucose dosage chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

AEMT STOP

PARAMEDIC

7. EKG monitor, 12 lead, transmit if available
8. If PVCs are present with heart rate >60/min:
   a. Either Lidocaine 1.5 mg/kg over 1 min ***(peds 1 mg/kg, max dose 2 mg/kg)***, repeat up to 3 mg/kg
      i. If PVCs abolished, initiate Lidocaine drip @ 2-4 mg/min
      NOTE: Use ½ of initial dose for subsequent doses for patients <70 y/o or with history of hepatic disease.
   b. OR Amiodarone 150-300 mg IV/IO ***(peds 5 mg/kg, may repeat up to total of 15 mg/kg)***

CARDIAC EMERGENCY

108 Supraventricular Tachycardia (SVT)

Assessment

Adult patients with heart rates in excess of 160 bpm ***(peds rates: infant >220 bpm, child >180 bpm)*** (QRS width <12 sec [3 small blocks]) ***(Pediatric SVT typically has no P waves and no beat to beat variability)***
Patients may exhibit symptoms of dyspnea, chest pain, radiating pain, altered mental status, hypotension (Systolic BP <90 mm/Hg) ***(peds – systolic BP 70+2x age)***

EMR

1. Oxygen and airway maintenance appropriate for the patient's condition, pulse oximetry.
2. Supportive care

EMR STOP

EMT

3. Pulse oximetry

EMT STOP

AEMT

4. Glucose check
5. INT or IV, NS TKO
6. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

AEMT STOP

PARAMEDIC

7. 12 Lead EKG, transmit if available
8. Valsalva maneuver for 15 seconds, then immediately lie patient flat, administer Adenosine, and lift legs 45° for 15 seconds.
9. Adenosine 12 mg rapid IV ***(peds 0.1 mg/kg 6 mg max initial dose. May repeat at 0.2 mg/kg with 12 mg max dose if needed.)***. If no conversion, repeat 12 mg dose.
   Flush with 10 mL NS after each dose
   a. If rhythm does not convert to <150/min (Peds: <220/min infant and <180/min child), or if patient is unstable or significantly symptomatic prepare for synchronized cardioversion (Peds: Begin with 0.5-1 j/kg; if not effective, then increase to 2 j/kg)
      Sedate as necessary:
      Diazepam (Valium) 2-5 mg IV ***(peds 0.1 mg/kg)*** or Midazolam (Versed) 2-5 mg IV ***(peds 0.1 mg/kg IV)*** and/Pain Medication per the chart below.

b. If rhythm converts to rate <150/min (Peds: <220/min infant and <180/min child): reassess for changes, maintain systolic BP >90 mmHg, transport, and contact Medical Control

NOTE: Due to increased sensitivity to drug effects in heart transplant patients and those on Tegretol (Carbamazepine), give ½ the normal dose of Adenosine.

NOTES:

1. Adenosine is administered through large bore IV in the Antecubital Fossa
2. Other vagal maneuvers may include asking the patient to hold their breath, Trendelenburg position.
3. Carotid Sinus Pressure should be applied on the right if possible. If no effect, then try the left side. **NEVER** massage both sides at once.
4. Unstable SVT may be synchronized cardioverted immediately in frankly unstable patients prior to IV access. Assess the situation and make a good decision. Cardioversion hurts!
5. Significant symptoms include diaphoresis, hypotension, poor color or perfusion, mental status changes, chest pain >7/10

Doses are approximate	5-9 kg	10 kg	12 kg	15 kg	20 kg	30 kg	40 kg	50-74 kg	≥ 75 kg	Geriatric	
Fentanyl IV/IN/IO		10	12	15	20	30	40	50-75 mcg	75	25	1-2 mcg/kg
Morphine IV/IO		1 mg	1 mg	1.5 mg	2 mg	3 mg	4 mg	4 mg	4 mg	2 mg	0.05-0.1 mg/kg
Ondansetron IV/IO					3 mg	3 mg	4 mg	4 mg	4 mg	4 mg	0.15 mg/kg

If pain not controlled, Morphine and fentanyl dosing may be repeated once after ten minutes. Contraindicated in hemodynamically unstable patients.

CARDIAC EMERGENCY

109 Torsades de Pointe

Assessment

Decreased / altered LOC
Dyspnea
Chest Pain / discomfort, suspected AMI
Hypotension (systolic BP <90 mmHg) ***(peds – systolic BP 70+2x age)***
CHF / Pulmonary edema
Heart rate >160/min with QRS >.12 sec (3 small blocks, wide complex) and twisting of points

EMR

1. Oxygen and airway maintenance appropriate for the patient's condition, pulse oximetry.
2. Supportive Care

EMR STOP

EMT

3. Pulse oximetry

EMT STOP

AEMT

4. Glucose check
5. INT or IV NS TKO
6. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds –see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

AEMT STOP

PARAMEDIC

7. 12 Lead EKG, transmit
8. Systolic BP
   a. If <90 mmHg – unstable/symptomatic:
      i. Prepare for cardioversion at 100 j, escalate as needed. **(Peds: begin with 0.5-1 j/kg: if not effective, then increase to 2 j/kg)**
      ii. Sedation as necessary:
      Diazepam (Valium) 2-5 mg IV ***(peds 0.1 mg/kg)*** OR Midazolam (Versed) 2-5 mg IV ***(peds 0.1 mg/kg)*** and/or Pain Medications per the Chart below
         1. If rate <160/min – monitor for changes, transport, Magnesium Sulfate 1-2 g IVP over 2 minutes ***(peds – 50 mg/kg IV, max 2 g)***

2. If rate >160/min – contact Medical Control, consider Amiodarone 150 – 300 mg IV/IO ***(peds 5 mg/kg, may repeat up to total of 15 mg/kg)***, transport.

b. If >90 mmHg –stable/asymptomatic:

i. Magnesium Sulfate 1-2 gram IVP over 2 min

1. If rate <160/min – monitor for changes, Magnesium Sulfate may repeat 1-2 gram IVP over 2 minutes, transport
2. If rate >160/min – contact Medical Control, consider Amiodarone 150-300 mg IV/IO ***(peds 5 mg/kg, may repeat up to total of 15 mg/kg)***, maintain systolic BP >90 mm/Hg, transport

Doses are approximate	5-9 kg	10 kg	12 kg	15 kg	20 kg	30 kg	40 kg	50-74 kg	≥ 75 kg	Geriatric	
Fentanyl IV/IN/IO		10	12	15	20	30	40	50-75 mcg	75	25	1-2 mcg/kg
Morphine IV/IO		1 mg	1 mg	1.5 mg	2 mg	3 mg	4 mg	4 mg	4 mg	2 mg	0.05-0.1 mg/kg
Ondansetron IV/IO					3 mg	3 mg	4 mg	4 mg	4 mg	4 mg	0.15 mg/kg

If pain not controlled, Morphine and fentanyl dosing may be repeated once after ten minutes. Contraindicated in hemodynamically unstable patients.

CARDIAC EMERGENCY

110 Ventricular Asystole

Assessment

No pulse or respirations Confirm cardiac rhythm with electrodes Record in two leads to confirm Asystole and to rule out fine V-Fib.

EMR **EMT**

1. AED
2. CPR appropriate for patient age
3. Oxygen and airway maintenance appropriate to patient's condition

EMR and EMT STOP

AEMT

4. Glucose check
5. IV NS bolus (20 mL/kg bolus fluids)
6. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

AEMT STOP

PARAMEDIC

7. EPINEPHrine 1:10,000 (now 0.1 mg/mL) - 1 mg IO/IVP every 3-5 minutes ***(peds EPINEPHrine 1: 10,000 (now 0.1 mg/mL) - 0.01 mg/kg IV/IO q 3-5 min)***
8. For prolonged resuscitation, with known acidosis consider: Sodium Bicarbonate 8.4% 1 mEq/kg IV/IO followed by 0.5 mEq/kg q 10 min ***(peds < 1 mo, use Sodium Bicarbonate 4.2% - 1 mEq/kg) (peds >1 mo, use Sodium Bicarbonate 8.4% - 1 mEq/kg may repeat at 0.5 mEq/kg q 10 min)***.
9. Consider:
   a. Magnesium Sulfate 1-2 gm Slow IV push over two minutes ***(No peds dosing)***
   b. Defibrillation for possible fine ventricular fibrillation masquerading as asystole
   c. Consider external pacing under the following circumstances:
   If cardiopulmonary arrest was witnessed by an experienced provider, and the patient is in asystole, prompt application of the transcutaneous cardiac pacemaker is appropriate prior to the administration of EPINEPHrine when a patient converts to asystole as a primary rhythm during EKG monitoring.
   d. CaCl if arrest secondary to renal failure, or history of hemodialysis, adult 500 mg IV ***(peds 20 mg/kg IV/IO bolus. Non-arrest infuse over 30-60 min)***
   e. Consider discontinuing efforts if criteria are met under Discontinuation/Withholding of Life Support standing order.

f. Consider Naloxone (Narcan)

Reversible Causes:
Hypovolemia
Hypoxia
Hydrogen ion (acidosis)
Hyperkalemia/Hypokalemia
Hypothermia
Tablets (drug overdose)
Tamponade (cardiac)
Tension pneumothorax
Thrombosis – Heart
Thrombosis – Lungs

CARDIAC EMERGENCY

111 Ventricular Fibrillation / Pulseless Ventricular Tachycardia

Assessment

Ventricular Fibrillation, Ventricular Tachycardia Pulseless, apneic Confirm and record cardiac rhythm with electrodes verified in two leads on monitor

EMR **EMT**

1. AED
2. CPR appropriate for patient's age
3. Oxygen and airway maintenance appropriate to the patient's condition

EMR and EMT STOP

AEMT

4. IV NS TKO

AEMT STOP

PARAMEDIC

5. EPINEPHrine 1:10,000 (now 0.1 mg/mL) - 1 mg IVP/IO (only if no other option) q 4 mins ***(peds EPINEPHrine 1:10,000 (now 0.1 mg/mL) - 0.01 mg/kg IV/IO q 3-5 min)***.
6. Defibrillate @ 150, then 200 J, immediately perform two minutes of CPR and evaluate rhythm. If no change in rhythm, repeat defibrillation, perform two minutes of CPR and evaluate rhythm. If no change in rhythm, continue 5 cycles of CPR then defibrillation cycle. ***(peds begin at 2 j/kg)***.
7. Administer:
   a. Amiodarone 300 mg IV or IO, repeat after 5 min at 150 mg ***(peds 5 mg/kg, may repeat up to total of 15 mg/kg)***
   b. For prolonged resuscitation or known acidosis consider: Sodium Bicarbonate 8.4% 1 mEq/kg IV/IO followed by 0.5 mEq/kg q 10 min, ***(peds <1 mo, use Sodium Bicarbonate 4.2% - 1 mEq/kg), (peds >1 mo, use Sodium Bicarbonate 8.4% - 1 mEq/kg may repeat at 0.5 mEq/kg q 10 min).***
   c. Optional: Instead of Amiodarone, Lidocaine 2% ***(peds 1 mg/kg, max dose 3 mg/kg. Repeat if infusion initiated more than 15 after the initial dose).***
8. CaCL 500 mg IVP ***(peds 20 mg/kg)*** if arrest secondary to renal failure, or history of hemodialysis.
9. Magnesium Sulfate 1-2 gm slow IV push over two minutes ***(peds 50 mg/kg IV/IO, max dose 2 g, administer over 1-2 minutes)***.
10. Consider Naloxone (Narcan)

NOTES:

- Defibrillation should not be delayed for any reason other than rescuer or bystander safety.
- Prompt defibrillation is the major determinant of survival. Time on scene should be taken to aggressively treat ventricular fibrillation. Consider transport of patient after performing 2 CPR/defibrillation cycles, securing the airway, obtaining IV/IO access, and administering two rounds of drugs. This will provide the best chance of return of a perfusing rhythm.

CARDIAC EMERGENCY

112 Persistent Ventricular Fibrillation/Pulseless Ventricular Tachycardia

Assessment

Verified execution of resuscitation checklist Unresponsive, pulseless Persisted in ventricular fibrillation/tachycardia or returned to this rhythm post ROSC/other rhythm changes

For use after Guideline 111 Ventricular Fibrillation/Pulseless Ventricular Tachycardia Protocol has been ineffective

PARAMEDIC

If there is no change in V-Fib

1. Complete 5 cycles of CPR, check rhythm and pulse
2. Repeat defibrillation. After defibrillation resume CPR without further pulse checks.

If there IS a change in V-Fib

1. Apply new defibrillation pads at new sites
2. Complete 5 cycles of CPR, check rhythm and pulse
3. Repeat defibrillation, pause 5 seconds maximum to check rhythm, pulse
4. Resume CPR

NOTES:

- Recurrent ventricular fibrillation/tachycardia is successfully broken by standard defibrillation techniques, but subsequently returns. It is managed by ongoing treatment of correctible causes and use of anti-arrhythmic medication therapies.
- Refractory ventricular fibrillation/tachycardia is an arrhythmia not responsive to standard external defibrillation techniques. It is initially managed by treating correctable causes and antiarrhythmic medications.
- Prolonged cardiac arrests may lead to tired providers and decreased quality. Ensure compressor rotation, summon additional resources as needed, and ensure provider rest and rehab during and post event.

CARDIAC EMERGENCY

113 Ventricular Tachycardia with a Pulse

Assessment

Confirm and record cardiac rhythm with electrodes in two leads Check for palpable carotid pulse Decreased/altered mental status Dyspnea Chest pain/discomfort, suspected AMI Hypotension (systolic BP <90 mmHg) CHF/pulmonary edema Heart rate >150/min ***(peds >200 min)*** and QRS >.12 sec (3 small blocks) ***(peds >.09 sec)***

EMR

1. Oxygen and airway maintenance appropriate to the patient's condition
2. Supportive care

EMR STOP

EMT

3. Pulse oximetry

EMT STOP

AEMT

4. Glucose check
5. INT or IV NS TKO
6. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds- see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

AEMT STOP

PARAMEDIC

7. EKG monitor - 12 lead, transmit
8. If rhythm is stable, regular and monomorphic, administer 12 mg Adenosine Rapid IV Push
9. If rhythm is possibly Torsades de Point – Go to Torsades de Point protocol.
10. If systolic BP <90 mmHg, prepare for synchronized cardioversion
    a. Administer sedative as necessary – Diazepam (Valium) 2-5 mg IV ***(peds 0.1 mg/kg)*** OR Midazolam (Versed) 2-5 mg IV ***(peds 0.1 mg/kg)*** and/or Pain Medications per chart below.
    b. Synchronize cardiovert beginning at 50 j initial energy level, until heart rate <150/min ***(peds begin at 0.5 j/kg)***.

c. If rhythm converts, monitor for changes, transport. If rhythm does not convert, administer Amiodarone 150 mg over 10 minutes ***(peds 5 mg/kg, may repeat up to total of 15 mg/kg)***. Reattempt cardioversion at 100 j.
d. Contact Medical Control

11. If systolic BP >90 mmHg – stable/asymptomatic
    a. Have patient perform Valsalva maneuver for 10 seconds and administer Amiodarone 150 mg ***(peds 5 mg/kg, may repeat up to total of 15 mg/kg)*** over 10 minutes.
    b. If rhythm converts, monitor for changes, transport. If rhythm does not convert, administer Amiodarone 150 mg over 10 minutes (maximum three 150 mg doses) ***(peds 5 mg/kg, may repeat up to total of 15 mg/kg)***

Doses are approximate	5-9 kg	10 kg	12 kg	15 kg	20 kg	30 kg	40 kg	50-74 kg	≥ 75 kg	Geriatric	
Fentanyl IV/IN/IO		10	12	15	20	30	40	50-75 mcg	75	25	1-2 mcg/kg
Morphine IV/IO		1 mg	1 mg	1.5 mg	2 mg	3 mg	4 mg	4 mg	4 mg	2 mg	0.05-0.1 mg/kg
Ondansetron IV/IO					3 mg	3 mg	4 mg	4 mg	4 mg	4 mg	0.15 mg/kg

If pain not controlled, Morphine and fentanyl dosing may be repeated once after ten minutes. Contraindicated in hemodynamically unstable patients.

CARDIAC EMERGENCY

114 Post Resuscitation

Assessment

Completion of arrhythmia treatment

EMR **EMT**

1. Oxygen and airway maintenance appropriate to the patient's condition
2. Supportive care

EMT STOP

AEMT

3. IV NS TKO
4. Assess BP – If systolic <90 mmHg, administer 250 mL NS bolus ***(peds systolic BP 70 + 2x age, 20 mL/kg NS bolus)*** repeat until BP >90 mmHg or appropriate for pediatric age.
5. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

6. Raise head of bed 30°

AEMT STOP

PARAMEDIC

7. 12 Lead EKG, transmit
8. Ensure head of bed is raised 30°
9. Medications:
   a. If anti-arrhythmic administered:
      i. Amiodarone – 300 mg IV ***(peds 5 mg/kg, may repeat x 2)***, if one dose given and arrhythmia persists, give second dose 150 mg
      ii. If Lidocaine administered, start infusion drip at 2-4 mg/min ***(peds – 20-50 mcg/kg/min)***
   b. If continued hypotension and/or bradycardia despite volume replacement:
      i. EPINEPHrine 2–20 mcg/min ***(peds 0.1-1 mcg/kg/min)***
10. Continue ventilatory support to maintain ETCO2>20, Respirations <12 ideally ***(peds – infant-preschool min respiratory rate should be 30. school age – min respiratory rate should be 20)***
11. Initiate Induced Hypothermia protocol if appropriate

Treatment - Protocol

If patient does not tolerate ET tube, contact Medical Control for: Diazepam (Valium) 2-10 mg ***(peds 0.1 mg/kg)*** or Midazolam (Versed) 2-5 mg IV ***(peds 0.1 mg/kg)*** for patient sedation.

Note: Use soft restraints if necessary for patient safety (to prevent extubation)

ENVIRONMENTAL EMERGENCY

201 Chemical Exposure

Special Note: Personnel safety is the highest priority. **Do not handle the patient unless they have been decontaminated.** All EMS treatment should occur in the Support Zone after decontamination of the patient. Appropriate PPE will be utilized.

Assessment

History of exposure to chemical Identify substance and verify with documentation if possible Material Safety Data Sheets (M.S.D.S.) if available Stay within the appropriate zone for protection

EMR EMT AEMT PARAMEDIC

1. Oxygen and airway maintenance appropriate to patient's condition
2. Supportive care
3. IV NS TKO or INT PRN
4. <u>Treatment – Standing Order</u>

   If Internal Exposure and Conscious:
   1. Treat as Drug Ingestion
   2. Contact Medical Control

   If External Exposure:
   1. Remove victims clothing, jewelry, glasses, and contacts
   2. Decontaminate – EMS personnel must be wearing proper protective clothing prior to helping with the decontamination process.

   Powder or like substance
   1. Brush off patient
   2. Flush with copious amounts of water for at least 20 minutes, assess for hypothermia q 5 min
   3. Transport and continue flushing if necessary and if possible

   Liquid substance
   1. Flush with copious amounts of water for at least 20 minutes, assess for hypothermia q 5 min
   2. Transport and continue if necessary and if possible

   If Inhalation:
   1. Reconsider Self-Contained Breathing Apparatus
   2. Remove victim from source ensuring there is no danger to personnel
   3. Oxygen and airway maintenance appropriate to patient's condition

   If Ocular:
   1. Immediately flush eye with tap water or normal saline for 15 minutes
   2. Contact Medical Control

   NOTE: When appropriate consult with HazMat prior to transport to ensure proper treatment and decontamination.

ENVIRONMENTAL EMERGENCY

202 Drug Ingestion

Assessment

History of drug ingestion
Level of consciousness (**A**lert, **V**erbal, **P**ain, or **U**nresponsive)
Neurological status (LOC, pupils)
General appearance (sweating, dry or flushed skin, signs of trauma)

EMR

1. Oxygen and airway maintenance appropriate to patient's condition
2. Ensure personnel protection from toxin and/or unruly patient
3. Supportive care
4. Utilize Narcan autoinjector. If utilizing pre-filled delivery systems, dose per manufacturer's instructions.

   EMR STOP

EMT

5. Pulse oximetry
6. Utilize Naloxone (Narcan) 0.4-2.0 mg IM/IN, if not previously administered. If utilizing pre-filled delivery systems, dose per manufacturer's instructions.

   EMT STOP

AEMT

7. Glucose check
8. IV NS TKO or INT PRN
9. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. If no IV/IO, then Glucagon 1-2 mg IM ***(peds – Glucagon 0.5 mg/dose IM/IV if <20 kg, or 1 mg/dose IM/IV if 20 kg or greater.)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

10. Naloxone (Narcan) 0.4 mg IV/IO/IM/IN titrated to adequate ventilation ***(peds 0.1 mg/kg IV/IO/IM/IN)*** if narcotic use is suspected. If utilizing pre-filled delivery systems, dose per manufacturer's instructions. May repeat dose. Synthetic opiates may require substantially larger dosages of Narcan. Physically manage airway if no response after 8 mg Narcan.

    AEMT STOP

PARAMEDIC

11. 12 lead EKG
12. Consider Diazepam (Valium) 2-5 mg IV ***(peds 0.1 mg/kg)*** or Midazolam (Versed) 2-5 mg ***(peds 0.1 mg/kg)*** IVP if patient is having seizures.

NOTES: Poison Control may be contacted for **INFORMATION ONLY (1-800-222-1222).** Treatment modalities are given within these protocols. Further treatments will be received through Medical Control.

ENVIRONMENTAL EMERGENCIES

 # 203 Electrocution / Lightning Injuries

Assessment

Presence of signs and symptoms of electrical injury Entry / exit wounds

EMR

1. Oxygen and airway maintenance appropriate to the patient's condition
2. Spinal protection if electrocution/lightning over 1000 volts or suspicion of spinal injury
3. Supportive care
4. Treat burn per burn protocol

EMR STOP

EMT

5. Control any gross hemorrhage and dress wounds
6. Pulse oximetry

EMT STOP

AEMT

7. IV NS/LR if signs of shock 20 mL/kg bolus of fluid ***(peds 20 mL/kg bolus)***

AEMT STOP

PARAMEDIC

8. 12 Lead EKG, transmit
9. Consider 2nd IV en-route to hospital
10. Consider pain medications per chart below

Doses are approximate	5-9 kg	10 kg	12 kg	15 kg	20 kg	30 kg	40 kg	50-74 kg	≥ 75 kg	Geriatric	
Fentanyl IV/IN/IO		10	12	15	20	30	40	50-75 mcg	75	25	1-2 mcg/kg
Morphine IV/IO		1 mg	1 mg	1.5 mg	2 mg	3 mg	4 mg	4 mg	4 mg	2 mg	0.05-0.1 mg/kg
Ondansetron IV/IO					3 mg	3 mg	4 mg	4 mg	4 mg	4 mg	0.15 mg/kg

If pain not controlled, Morphine and fentanyl dosing may be repeated once after ten minutes. Contraindicated in hemodynamically unstable patients.

ENVIRONMENTAL EMERGENCY

204 Hyperthermia

Assessment

History of exposure to warm temperature
Usually seen with increased exertion
Febrile
May have hot and dry **or** warm and moist skin
May be hypotensive
Determine history of therapeutic drug use (antipsychotics); history of substance abuse (cocaine, amphetamines, etc.)
Poor skin turgor
Signs of hypovolemic shock
History of infection or illness
Drug use
Dark urine – Suggest muscle breakdown and possible kidney damage
Tachycardia, Hyperventilation, Hypertension
Neurologic – Light headedness, confusion to coma, seizures

EMR

1. Oxygen and airway maintenance appropriate to the patient's condition
2. Remove clothing, apply wet linen or wet abdominal pads to groin and axillary areas
    a. Expose to circulating air
    b. **DO NOT** cool patient to the point of shivering
3. Move patient to protected environment (shade, AC, etc.)

EMR STOP

EMT

4. Pulse oximetry

EMT STOP

AEMT

5. Glucose check
6. IV NS or LR 20 mL/kg bolus ***(peds 20 mL/kg bolus)***
    a. Repeat second bolus of fluids if needed
    b. Oral rehydration if patient able to maintain airway IV NS – rate proper for patient condition
7. GENTLY massage extremities to prevent cold induced vasoconstriction
8. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		

***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic

AEMT STOP

PARAMEDIC

9. 12 Lead EKG, transmit

NOTES:

- Time is of the essence in decreasing the patient's body temperature
- Do not use IV iced saline for cooling patient. Use of fluids cooled slightly below ambient temperature is appropriate.
- Hyperthermia may be cause by one of the following:
    - Antipsychotic medications and major tranquilizers: Phenothiazine (Thorazine®), Butyrophenones (Haldol®)
    - SSRI (Selective Serotonin Reuptake Inhibitors) Citalopram (Celexa®), Escitalopram (Lexapro®), Fluoxetine (Prozac®), Paroxetine (Paxil®, Pexeva®), Sertraline (Zoloft®), Vilazodone (Viibryd®)
    - Cyclic antidepressants such as: Elavil®, Norpramin®, Tofranil®
    - Amphetamines
    - Monoamine oxidase inhibitors such as: Nardil®, Marplan®
    - Anticholinergic drugs such as: Atropine, Congentin, Scopolamine
    - Illicit drugs: Cocaine, PCP, LSD, Ecstasy (MDMA)

ENVIRONMENTAL EMERGENCY

205 Hypothermia

Assessment

History of exposure to cold temperature including duration Core body temperatures <92° Drug/Alcohol use CNS Depressants Examine for associated trauma Immersion in cold water Predisposing medical condition Signs: Vital signs, Bradycardia, Hypotension, Cold extremities, Neurologic (confusion, altered LOC, coma)

EMR **EMT**

1. Oxygen and airway maintenance appropriate to patient's condition. Remove the patient from the cold environment
2. Remove wet clothing and cover with warm, dry blankets
3. Evaluate pulse for one full minute (Do not perform CPR until NO PULSE is confirmed)
4. Handle patient gently *(aggressive movement may trigger V-Fib)*
5. Do not allow patient to walk or exert themselves
6. Do not massage extremities

EMR and EMT STOP

AEMT

7. Glucose check
8. IV NS 75 mL/hr warmed if possible ***(peds 4 mL/kg/hr max 150 cc/hr)***
9. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

10. If patient in coma, Naloxone (Narcan) 0.4 mg IV/IO/IM/IN titrated to adequate ventilation ***(peds 0.1 mg/kg slow IVP/IN/IO/IN. If no response, may repeat q 2-3 min with maximum single dose of 2 mg).*** If utilizing pre-filled delivery systems, dose per manufacturer's instructions. May repeat dose.

AEMT STOP

PARAMEDIC

11. EKG Monitor, No CPR if bradycardic rhythm exists
12. If body temperature >85° F – follow normal arrest protocols
13. If body temperature <85° F and patient in V-Fib:

a. Defibrillate @ 100 j, if no change, begin CPR ***defib at 2 min intervals, increase joules at each interval until 200 j max*** (120 j, 150 j, 200 j) ***(peds 2 j/kg then 4 j/kg)***
b. Withhold meds until and further shocks until patient warmed to >85° F
c. Continue CPR and rewarming attempts

NOTES:

- If patient is alert and responding appropriately, rewarm actively:
  - Heat packs or warm water bottles to the groin axillary and cervical areas
- If patient is unresponsive, rewarm passively:
  - Increase the room temperature gradually, cover with blankets

- If the following are signs and symptoms found at varying body temperature:
  - 95° - amnesia, poor judgment, hyperventilation, bradycardia, shivering
  - 90° - loss of coordination (drunken appearance), decreasing rate and depth of respirations, shivering ceases, bradycardia
  - 85° - decreased LOC, slow respirations, atrial fibrillation, decreased BP, decreased heart rate, ventricular irritability

ENVIRONMENTAL EMERGENCY

206 Near Drowning

Assessment

History compatible with near drowning Suspect hypothermia in "cold water" near drowning Suspect cervical spine injury

EMR EMT

1. Oxygen and airway maintenance appropriate to patient's condition
   The Heimlich Maneuver may be indicated for airway obstruction
   Gastric decompression may be necessary to ensure adequate respirations or ventilations
   If necessary, ventilations may be started prior to patient's removal from water
2. Remove patient from water, clear airway while protecting the C-spine ASAP
3. If patient is unconscious and pulseless – refer to the Cardiac Arrest Protocol
4. If Hypothermic – go to hypothermia protocol
5. Supportive care
   EMT STOP

AEMT

6. INT or IV NS TKO, if hypotensive give 20 mL/kg bolus of fluid ***(peds 20 mL/kg NS bolus)***
   AEMT STOP

PARAMEDIC

7. EKG Monitor and treatment specific for the arrhythmia

NOTE: Reinforce the need to transport and evaluation for all patients with a submersion incident. Consider C-Spine protection

ENVIRONMENTAL EMERGENCY

207 Nerve Agent Exposure

Special Note: Personnel safety is the highest priority. Do not handle the patient unless they have been decontaminated. All EMS treatment should occur in the Support Zone after decontamination of the patient. Appropriate PPE will be utilized.

Assessment

History of exposure Hyper-stimulation of muscarinic sites (smooth muscles, glands) and nicotinic sites (skeletal muscles, ganglions) Increased secretions: Saliva, tears, runny nose, secretions in airways, secretions in GI tract, sweating Pinpoint pupils Narrowing airway Nausea, vomiting, diarrhea Fasciculations, Flaccid paralysis, general weakness Tachycardia, hypertension Loss of consciousness, convulsions, apnea

EMR

1. Oxygen and airway maintenance appropriate to the patient's condition
2. Depending on signs and symptoms administer Nerve Agent Antidote kit
    a. Mild – Increased secretions, pinpoint pupils, general weakness
        i. Decontamination, supportive care
    b. Moderate – mild symptoms and respiratory distress
        i. 1 Nerve Agent antidote kit
        ii. May be repeated in 5 min, prn
    c. Severe – unconsciousness, convulsions, apnea
        i. 3 Nerve Agent Antidote Kits
3. Keep patient warm

EMR STOP

EMT

4. Pulse oximetry
5. **EMT STOP**

AEMT

6. IV NS TKO

AEMT STOP

PARAMEDIC

7. 12 Lead EKG, transmit
8. 10 mg Diazepam (Valium) ***(peds 0.1 mg/kg)*** or 2-5 mg Midazolam (Versed) IV for seizures ***(peds 0.1 mg/kg)***

Treatment – Protocol:

Repeated doses of Atropine ***(peds: 0.05 mg/kg IV/IO/IM)*** may be required after Nerve Agent Antidote Kit(s) given. Give repeat doses every 5 to 10 minutes until response has been achieved and SLUDGE symptoms have resolved.

NOTES:

- This is for mass casualty situations and is dependent on supplies available.
- There is no contraindication for the use of a Nerve Agent Antidote Kit in the case of true nerve agent exposure.

ENVIRONMENTAL EMERGENCY

208 Poisonous Snake Bite

Assessment

Protect yourself from the exposure of snakebite. Snakes can envenomate up to one hour after death.
Determine type of snake if possible, time of bite, and changes in signs and symptoms since occurrence.
If possible, transport the **DEAD** snake in a secured vessel with the victim for identification
Paresthesias (numbing or tingling of mouth, tongue, or other areas)
Local pain
Peculiar or metallic taste
Chills, nausea and vomiting, headache, dysphagia
Hypotension
Fever
Local edema, blebs (blister or pustule jewel), discoloration
Bite wound configuration

EMR

1. Oxygen and airway maintenance appropriate to patient's condition
2. Remove rings and bracelets from the patient
3. Immobilize affected area keeping extremities in neutral position
4. Mark progression of swelling at the time of initial assessment and q 5 minutes
5. Supportive care

EMR STOP

EMT

6. Pulse oximetry

EMT STOP

AEMT

7. INT or IV NS TKO, if hypotensive 20 mL/kg ***(peds 20 mL/kg NS bolus)***

AEMT STOP

PARAMEDIC

8. 12 Lead EKG, transmit

Treatment – Protocol:

Diazepam (Valium) or Midazolam (Versed) may be indicated if anxiety is overwhelming. Contact Medical Control prior to initiating therapy. ***(peds Diazepam (Valium) 0.1 mg/kg IV, Midazolam (Versed) 0.1 mg/kg IV for anxiety)***

NOTE: DO NOT USE ice, tourniquets, hemorrhage control clamp or constricting bands at the bite site or proximal to bite site. If already applied, remove. Do NOT place IV in affected extremity if possible.

ENVIRONMENTAL EMERGENCY

209 Radiation/Hazmat

Special Note: Personnel safety is the highest priority. **Do not handle the patient unless they have been decontaminated.** All EMS treatment should occur in the Support Zone after decontamination of the patient. Appropriate PPE will be utilized.

Assessment

Extent of radiation/chemical exposure (number of victims, skin vs. inhalation exposure)
Nature of exposure
Symptoms exhibited by patient
Neurologic status (LOC, pupil size)
General appearance (dry or sweaty skin, flushed, cyanotic, singed hair)
Associated injuries
Decontamination prior to treatment

EMR

1. If eye exposure, irrigate for a minimum of 20 minutes with NS
2. Treat associated injuries (LSB, limb immobilization, wound treatment)
3. Supportive care
4. Treat per burn protocol
5. Oxygen and airway maintenance appropriate to the patient's condition

EMR STOP

EMT

6. Pulse oximetry (keep sats >94%)

EMT STOP

AEMT

7. INT or IV NS/LR, if hypotensive 20 mL/kg ***(peds 20 mL/kg)***

AEMT STOP

PARAMEDIC

8. 12 Lead EKG, transmit

ENVIRONMENTAL EMERGENCY

210 Carbon Monoxide Exposure

Assessment

Known or suspected CO exposure (Active fire scene)
Suspected source/duration exposure
Known or possible pregnancy
Measured atmospheric levels
Past medical history, medications
Altered mental status/dizziness
Headache, Nausea/vomiting
Chest pain/respiratory distress
Neurological impairments
Vision problems/reddened eyes
Tachycardia/tachypnea
Arrhythmias, seizures, coma

EMR EMT AEMT PARAMEDIC

Measure Carbon Monoxide COHb % (SpCO)

If SpCO is 0%-5% nor further medical evaluation of SpCO is required*

SpCO <15% **and** SpO_2 >90%

If patient has NO symptoms of CO and/or Hypoxia no treatment for CO exposure is required*
Recommend that smokers seek smoking cessation treatment
Recommend evaluation of home/work environment for presence of CO

SpCO <15% and SpO2 >90% that show symptoms of CO and/or Hypoxia; transport to ED
>15% Oxygen and NRB and transport to ED
If cardiac/respiratory/neurological symptoms are also present, go to the appropriate protocol

NOTES:

- If monitoring responders at fire scene, proceed with Scene Rehabilitation Protocol where applicable.
- *****Fetal hemoglobin has a greater attraction for CO than maternal hemoglobin. Females who are known to be pregnant or who could be pregnant should be advised that EMS measured SpCO levels reflect the adult's level, and that fetal COHb levels may be higher. Recommend transport for a hospital evaluation for any CO exposed pregnant person.
- The absence (or low detected levels of COHb is not a reliable predictor of firefighter or victim exposure to other toxic byproducts of fire.
- In obtunded fire victims, consider HazMat Cyanide treatment protocol.
- The differential list for CO toxicity is extensive. Attempt to evaluate other correctable causes when possible.

MEDICAL EMERGENCIES

300 Medical Complaint Not Specified under other Protocols

Assessment

Pertinent history to complaint
Allergies/Medications taken or prescribed
Provocation
Quality of Pain / Discomfort
Relieved by
Signs and symptoms
Onset, type, and duration of pain

EMR

1. Oxygen and airway maintenance appropriate for the patient's condition
2. Patient positioning appropriate for condition
3. Supportive care

EMR STOP

EMT

4. Pulse oximetry

EMT STOP

AEMT

5. Glucose check. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

6. If indicated, INT or IV NS TKO unless signs of shock, then 20 mL/kg NS fluid bolus

AEMT STOP

PARAMEDIC

7. 12 Lead EKG, transmit

MEDICAL EMERGENCY

301 Abdominal Pain (non-traumatic)/Complaint/Nausea and Vomiting

Assessment

Description of pain, onset, duration, location, character, radiation
Aggravating factors, last menstrual periods in females, vaginal bleeding in females
Recent trauma
History of abdominal surgery or problems
Blood in urine, vomitus, or stool
Nausea, vomiting, diarrhea
Fever, diaphoresis, jaundice
Abdomen: tenderness, masses, rigidity, hernia, pregnancy, distension, guarding

EMR

1. Oxygen and airway maintenance appropriate to the patient's condition
2. Allow patient to assume comfortable position or place patient supine, with legs elevated with flexion at hip and knees unless respiratory compromise or a procedure contraindicates
3. Supportive care

EMR STOP

EMT

4. Pulse oximetry

EMT STOP

AEMT

5. IV NS 20 mL/kg, if signs of shock ***(peds 20 mL/kg NS bolus)***
6. Glucose Check, treat if appropriate.

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

AEMT STOP

PARAMEDIC

7. 12 Lead EKG, transmit
8. Ondansetron (Zofran) 2-4 mg IV ***(peds >20 kg, 0.15 mg/kg IV, max single dose 8 mg)*** if intractable nausea and persistent vomiting and no signs of shock. May use Zofran OTD as an alternative to Zofran IV for the treatment of nausea in the prehospital setting. In situations where IV access is unavailable or IV fluids are not necessary, consider the use of Zofran ODT at the following doses:
    a. Adults and Pediatrics > 31kg, give 8mg PO as a one-time dose.
    Pediatrics 15-30kg, give 4mg PO as a one-time dose.
    Pediatrics < 15kg, contact medical control.

Use lower dose initially especially in the elderly.

9. Consider second IV en route if patient exhibits signs of shock

MEDICAL EMERGENCY

302 Acute Pulmonary Edema / CHF

Assessment

Focus assessment of Airway, Breathing, and Circulation
Shortness of breath
Cyanosis
Pedal Edema
Profuse sweating, or cool and clammy skin
Erect posture
Distended neck veins (engorged, pulsating) – late sign
Bilateral rales/wheezes
Tachycardia (rapid pulse >100 bpm)
History of CHF or other heart disease, or renal dialysis
Lasix or Digoxin on medication list

EMR

1. Oxygen and airway maintenance appropriate to patient's condition. If respiration is less than 10/min, or greater than 30/min, consider assisting breathing with BVM and 100% Oxygen. ***(peds: NRB or 4 L/min BNC or assist with BVM as needed. Contact medical control if CHF suspected in a pediatric patient)***
2. Keep patient in upright seated position

EMR STOP

EMT

3. If the patient has Albuterol Inhalation Treatment prescribed, assist them with one treatment. May assist with patient's sublingual nitroglycerine.

EMT STOP

AEMT

4. INT
5. If Systolic BP is >100 and the patient is symptomatic, **assist** patient with 1 nitroglycerine dose sublingually and reassess every 5 minutes. (Refer to the medication assist procedure) Maximum of three doses. Use caution in patients taking erectile dysfunction medications. Profound hypotension may occur.
6. If Systolic BP >100 mmHg
    a. Assess for crackles, wheezes, or rales, JVD, peripheral edema, cyanosis, diaphoresis, respiratory rate >25/min or <10/min then:
        i. One Nitroglycerine spray or tablet sublingually. Repeat Nitroglycerine spray q 5 minutes after initial dose. Discontinue therapy if systolic BP <100 mmHG;
        ii. Albuterol 2.5 mg/3 mL NS via nebulizer q 5 minutes, to maximum of 3 doses;
7. If Systolic BP <100 mmHg
    a. Continue oxygen and initiate rapid transport, see hypotension protocol, contact Medical Control immediately

AEMT STOP

PARAMEDIC

8. If severe respiratory distress and no contraindications. Begin CPAP
9. May continue Nitroglycerine spray/tablet and apply 1" of Nitropaste to chest wall. Discontinue therapy if systolic BP < 100 mmHg.

Treatment – Protocol:

DOPamine 400 mg/250 mL D5W IV admix, begin @ 15 mL/hr (titrate) if patient is hypotensive and symptomatic. (Systolic pressure <90 mmHg)

MEDICAL EMERGENCY

303 Anaphylactic Shock

Assessment

Contact with a known allergen or with substances that have a high potential for allergic reactions Sudden onset with rapid progression of symptoms Dyspnea, presents with an audible wheeze on confrontation, generalized wheeze on auscultation, decreased air exchange on auscultation Generalized urticaria, erythema, angioedema especially noticeable to face and neck Complaint of chest tightness or inability to take a deep breath

EMR

1. Position of comfort, reassure
2. Oxygen and airway maintenance appropriate for patient's condition, pulse oximetry

EMR STOP

EMT

3. Pulse oximetry
4. If patient has a prescribed EPINEPHrine for Anaphylaxis, assist patient with administration

EMT STOP

AEMT

5. IV NS or LR, large bore @ TKO – If hypotensive 20 mL/kg bolus ***(peds 20 mL/kg bolus)***
6. EPINEPHrine 1:1,000 (now 1 mg/mL) - 0.3 mg IM, ***(peds EPINEPHrine 1:1,000 (now 1 mg/mL) - 0.01 mg/kg IM, max dose is 0.3 mg)***
7. Albuterol Inhalation Treatment if wheezing is present and persists post EPINEPHrine IM

AEMT STOP

PARAMEDIC

8. 12 Lead EKG, transmit
9. EPINEPHrine 1:1,000 (now 1 mg/mL) - 0.3 mg IM or IV/IO EPINEPHrine 1: 10,000 (now 0.1 mg/mL), ***(peds*** EPINEPHrine ***1: 1,000 (now 1 mg/mL) - 0.01 mg/kg IM, max dose is 0.3 mg).*** IV/IO route should be reserved for unstable patients, especially Pediatric.
    a. If repeat IM doses are required, consider:
        i. EPINEPHrine 2–20 mcg/min ***(peds 0.1-1 mcg/kg/min.)***
10. DiphenhydrAMINE (Benadryl) 25-50 mg IV or deep IM ***(peds 1 mg/kg IVP)***
11. Methylprednisolone (Solu-Medrol) 62.5 mg (if small in stature, sensitive to steroids, on chronic steroid therapy) or 125 mg IVP ***(peds contact Medical Control)***
12. Consider Glucagon 1-2 mg IM/IV/IN ***(peds – Glucagon 0.5 mg/dose IM/IV if <20 kg, or 1 mg/dose IM/IV if 20 kg or greater.)*** if unresponsive to EPINEPHrine, especially if taking Beta Blockers

MEDICAL EMERGENCY

304 Cerebrovascular Accident (CVA)

Assessment

Altered Level of consciousness (coma, stupor, confusion, seizures, delirium)
Intense or unusually severe headache of sudden onset or any headache associated with decreased level of consciousness or neurological deficit, unusual and severe neck or facial pain
Aphasia/Dysphasia (unable to speak, incoherent speech, or difficulty speaking)
Facial weakness or asymmetry (paralysis of facial muscles, usually noted with the patient speaks or smiles); may be on the same side or opposite side from limb paralysis
In-coordination, weakness, paralysis, or sensory loss of one or more limbs; usually involves one half of the body particularly the hand
Ataxia (poor balance, clumsiness, or difficulty walking)
Visual loss (monocular or binocular); may be a partial loss of visual field
Intense vertigo, double vision, unilateral hearing loss, nausea, vomiting, photophobia, or phonophobia

EMR

1. Oxygen and airway maintenance appropriate for the patient's condition
2. Continually monitor airway due to decreased gag reflex and increased secretions
3. Conduct a brief targeted history and physical exam. Establish time of onset. Document witness to Time of Onset and their contact information. Include the C-STAT Stroke Assessment (next page)

   EMR STOP

EMT

4. Maintain body heat, protect affected limbs from injury, anticipate seizures
5. If seizure present, follow seizure protocol
6. If shock signs present, follow shock protocol
7. If trauma suspected, spinal stabilization. Elevate head 30° if no evidence of spinal injury
8. Pulse oximetry

   EMT STOP

AEMT

9. Glucose check
10. IV NS TKO (30 mL/hr) or INT
11. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

12. Naloxone (Narcan) 0.4 mg IV/IO/IM/IN titrated to adequate ventilation ***(peds 0.1 mg/kg slow IVP/IN)***. If utilizing pre-filled delivery systems, dose per manufacturer's instructions. May repeat dose if narcotics suspected.

AEMT STOP

PARAMEDIC

13. 12 Lead EKG, transmit
14. Complete thrombolytic screening protocol
15. Complete Stroke assessment scale
16. If positive for CVA, recommend transport to stroke center
17. Contact Medical Control if SBP >220 or DBP>140 if authorized to give 0.4 mg Nitro q 5 min. Goal is to reduce blood pressure by no more than 15%.

REFERENCE

C-STAT Stroke Assessment Tool

CINCINNATI PREHOSPITAL STROKE SEVERITY SCALE		
CPSSS Exam Domain	**Scoring Method**	**Possible Score**
Conjugate Gaze Deviation	Normal; no gaze deviation	0
	Partial gaze palsy	1
	Forced deviation	2
LOC Questions and LOC Commands	Normal responses to both LOC Questions and to both LOC Commands	0
	Incorrect responses to at least 1 of 2 LOC Q **and** at least 1 of 2 LOC C	1
Arm Drift	Holds arms above the bed for 10 seconds	0
	Cannot hold arm (L, R or Both) up for 10 seconds before arm(s) falls to bed	1
Total Score		0-4

Katz BS, et al. Stroke. 2015; 46: 1508-1512.
doi: 10.1161/STROKEAHA.115.008804..

The C-STAT score more accurately identifies patients with Large Vessel Occlusion (L.V.O.)
If C-STAT Score ≥ 2, patient should be transported to a stroke center with interventional capability.

PREHOSPITAL SCREEN FOR THROMBOLYTIC THERAPY

EMR EMT AEMT PARAMEDIC

Complete this report for all patients symptomatic for Acute Coronary Syndrome or CVA.
Report to the Emergency Department Physician/Nurse any positive findings. Document all findings in the PCR.

Witness/next of kin contact info: _____		
Time of onset of the symptoms: _____		
Systolic BP >240 mmHg	□ **Yes**	□ **No**
Diastolic BP >110 mmHg	□ **Yes**	□ **No**
Right arm vs. Left arm Systolic BP difference >15 mmHg	□ **Yes**	□ **No**
History of recent brain/spinal cord surgery, CVA, or injury	□ **Yes**	□ **No**
Recent trauma or surgery	□ **Yes**	□ **No**
Bleeding disorder that causes the patient to bleed excessive	□ **Yes**	□ **No**
Prolonged CPR (>10 minutes)	□ **Yes**	□ **No**
Pregnancy	□ **Yes**	□ **No**
Taking Coumadin, Aspirin, or other blood thinners	□ **Yes**	□ **No**

MEDICAL EMERGENCY

305 Croup

Assessment

History - Viral infections resulting in inflammation of the larynx, trachea
Seasonal – Late fall/early winter
Children under 6 yrs. old with cold symptoms for 1-3 days
Hoarseness
Barking, Seal-like cough
Stridor, NOT wheezes
Low grade fever
No history of obstruction, foreign body, trauma

EMR EMT AEMT

1. Oxygen and airway maintenance appropriate to the patient's condition
2. Allow patient to assume comfortable position or place patient supine
3. Supportive care

   EMR, EMT and AEMT STOP

PARAMEDIC

4. Nebulized EPINEPHrine 1:1,000 (now 1 mg/mL)
   a. 1 mg diluted to 2.5-3 mL with saline flush, nebulized (mask or blow-by)
   b. May repeat up to 3 total doses
   c. If the patient has significant distress, 3 mL (3 mg) diluted with 2.5 to 3 mL saline flush may be administered as initial aerosol
5. Contact Medical Control for subsequent aerosols

MEDICAL EMERGENCY

306 Family Violence

Assessment

Fear of household member
Reluctance to respond when questioned
Unusual isolation, unhealthy, unsafe living environment
Poor personal hygiene/inappropriate clothing
Conflicting accounts of the incident
History inconsistent with injury or illness
Indifferent or angry household member
Household member refused to permit transport
Household member prevents patient from interacting openly or privately
Concern about minor issues but not major ones
Household with previous violence
Unexplained delay in seeking treatment

EMR EMT AEMT PARAMEDIC

*Direct questions to ask when alone with patient and time available:

1. Has anyone at home every hurt you?
2. Has anyone at home touched you without your consent?
3. Has anyone ever made you do things you didn't want to do?
4. Has anyone taken things that were yours without asking?
5. Has anyone scolded or threatened you?
6. Are you afraid of anyone at home?

**Signs and Symptoms

- Injury to soft tissue areas that are normally protected
- Bruise or burn in the shape of an object
- Bite marks
- Rib fracture in the absence of major trauma
- Multiple bruising in various stages of healing

<u>Treatment – Standing Order</u>

1. Patient care is first priority
2. If possible, remove patient from situation and transport
3. Police assistance as needed
4. If sexual assault, follow sexual assault protocol
5. Obtain information from patient and caregiver
6. Do not judge
7. Report suspected abuse to hospital after arrival. Make verbal and written report.

NOTE: National Domestic Violence Hotline 1 (800) 799- SAFE (7233)

MEDICAL EMERGENCY

307 Hyperglycemia Associated with Diabetes

Assessment

History of onset
Altered level of consciousness
Pulse: tachycardia, thready pulse
Respirations (Kussmaul-Kien – air hunger)
Hypotension
Dry mucous membranes
Skin may be cool (consider Hypothermia)
Ketone odor on breath (Acetone smell)
Abdominal pain, nausea and vomiting
History of polyuria or polydipsia (excessive urination or thirst)
Blood glucose determination

EMR

1. Oxygen and airway maintenance appropriate to patient's condition
2. Supportive care

   EMR STOP

EMT

3. Suction airway as needed.
4. Pulse oximetry

   EMT STOP

AEMT

5. Glucose check
6. IV NS TKO or INT. Consider 250-500 mL NS bolus, only in patients with signs of dehydration, vomiting or DKA
7. If BS >250 mg/dL, start 10-20 cc/kg infusions of NS ***(peds 4 mL/kg/hr max 150 mL/hr. DO NOT bolus),*** then reassess blood sugar

   AEMT STOP

PARAMEDIC

8. 12 Lead EKG, transmit

MEDICAL EMERGENCY

308 Hypertensive Crisis

Assessment

Decreased/altered LOC
Headache, blurred vision, dizziness, weakness
Elevated blood pressure (if systolic BP >220 mmHg and/or Diastolic BP >140 mmHg)
Dyspnea, peripheral or pulmonary edema
Cardiac dysrhythmia, Neurological deficits

EMR **EMT**

1. Oxygen and airway maintenance appropriate for patient's condition
2. Position of comfort, elevation of head is preferred
3. Keep patient calm, reassure

EMT STOP

AEMT

4. Glucose check
5. INT or IV NS TKO
6. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

AEMT STOP

PARAMEDIC

7. 12 Lead EKG, transmit
8. Evaluate cardiac rhythm for dysrhythmia and treat appropriately with medical direction (contact Medical Control prior to initiation of anti-arrhythmic therapy)
9. If motor/neuro deficits present, go to stroke protocol
   If no motor/neuro deficits:
   a. If systolic BP is < 220 mmHg, contact Medical Control, monitor patient for changes
   b. If systolic BP is > 220 mmHg and/or diastolic BP is greater than 140 mmHg, Nitroglycerine 0.4 mg SL q 3-5 min until noted decrease in BP by 15%. May use nitro paste 1 inch to chest wall, remove if BP drops 15% from the original reading. Use with caution in patients taking erectile dysfunction medications. Profound hypotension may occur.

MEDICAL EMERGENCY

309 Hypoglycemia

Assessment

History of onset of event
History of Insulin excess (overdose, missed meal, exercise, vomiting, or diarrhea)
Confusion, agitation, headaches, or comatose
Pulse rate (normal to tachycardia)
Respirations (shallow, slow)
Skin (sweaty, often cool)
Flaccid muscle tone
Grand Mal seizure
Fecal, urinary incontinence

EMR

1. Oxygen and airway maintenance appropriate to patient's condition (snoring respirations is a sign of an INADEQUATE airway)
2. Supportive care

EMR STOP

EMT

3. If patient is known diabetic and is conscious with an intact gag reflex, administer one tube of instant Glucose and reassess
4. Pulse oximetry

EMT STOP

AEMT

5. Glucose check
6. IV NS TKO
7. If blood sugar is <80 mg/dL and symptomatic: titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels, ***(peds 2 mL/kg D_{25} IV/IO; if needed an admixture of D_{50} and Normal Saline can be obtained through mixing 1 mL to 1 mL for the treatment of symptomatic hypoglycemia in pediatric patients)***. Reassess blood sugar level q 15 min.

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

8. If unable to establish IV access, consider Glucagon 1-2 mg IM ***(peds – Glucagon 0.5 mg/dose IM/IV if <20 kg, or 1 mg/dose IM/IV if 20 kg or greater.)***

AEMT STOP

PARAMEDIC

9. 12 Lead EKG, transmit if appropriate

MEDICAL EMERGENCY

310 Medications at Schools

To provide authorization for the use of medications not commonly used. **For emergency use only.**

Assessment

The patient must exhibit the signs and symptoms for which the medication is prescribed

EMR EMT AEMT

1. Oxygen and airway maintenance appropriate to the patient's condition
2. Other treatments will be in accordance with the EMS BLS/ALS SOPs

PARAMEDIC

3. Necessary medication(s) administration as requested by school official(s)
    a. Schools must provide the medication(s) to be administered
    b. Schools must provide a written copy of the physician order and care plan for attachment to the patient care report
    c. This documentation by the patient's primary physician should list the following:
        i. Name of the patient
        ii. Name of the primary physician
        iii. Document must be signed by the primary physician
        iv. Contact phone number of the primary physician
        v. Name of medication(s)
        vi. Signs and symptoms for which the medication(s) is/are prescribed
        vii. Dosage of the medication(s)
        viii. Number of repeat doses of the medication(s)
        ix. Route(s) of administration(s)
        x. Potential side effects of the medication(s)
4. Medication(s) will only be administered if the patient meets the signs and symptoms for that medication
5. Copies of the care plan and physician order must be attached to the patient care report
6. If the medication(s) is/are not administered documentation must include reasons for withholding
7. Whenever medication is administered under these circumstances transport is mandatory

NOTE: If you have any additional questions or concerns please contact Medical Control.

MEDICAL EMERGENCY

311 Non-Formulary Medications

To provide authorization for the use of medications not commonly used within the current guidelines.
For Emergency Use Only.

Assessment

The patient must exhibit the signs and symptoms for which the medication is prescribed

EMR EMT AEMT

1. Oxygen and airway maintenance appropriate for patient's condition
2. Other treatment will be in accordance with the BLS/ALS SOPs

PARAMEDIC

3. Necessary medication(s) administration as requested by caregiver(s):
    a. Caregiver must provide the medication(s) to be administered
    b. Caregiver must provide a written copy of the physician order and care plan for attachment to the patient care report
    c. This documentation by the patient's physician should list the following:
        i. Name of the patient
        ii. Name of primary physician
        iii. Document must be signed by the primary physician
        iv. Contact phone number of the primary physician
        v. Name of the medication(s)
        vi. Signs and symptoms for which the medication(s) is prescribed
        vii. Dosage of the medication(s)
        viii. Number of repeat doses of the medication(s)
        ix. Route(s) of administration(s)
        x. Potential side-effects of medication(s)
4. Medication(s) will only be administered if the patient meets the signs and symptoms for that medication.
5. Copies of the care plan and physician order must be attached to the patient care report
6. If the medication(s) is/are not administered documentation must include those reasons for withholding
7. Whenever medication is administered under these circumstances, transport is mandatory

NOTE: If you have any additional questions or concerns please contact Medical Control.

MEDICAL EMERGENCY

312 Respiratory Distress (Asthma/COPD)

Assessment

Mild attack – Slight increase in respiratory rate. Mild wheezes. Good skin color.
Moderate attack – Marked increase in respiratory rate. Wheezes easily heard. Accessory muscle breathing
Severe attack – Respiratory rate more than twice normal. Loud wheezes or so tight no wheezes are heard, patient anxious. Grey or ashen skin color.
Hx – COPD, Emphysema, Asthma, or other restrictive lung disease
Respiratory rate greater than 25 per minute or less than 10 per minute
Labored respiration, use of accessory muscles or tripoding
Breath sounds: Bilaterally diminished, dry crackles, wheezing
Cyanosis/Diaphoresis
Use of short sentences
Unilateral breath sounds

EMR

1. Oxygen and airway maintenance appropriate for patient's condition

EMR STOP

EMT

2. If the patient has prescribed Albuterol Inhalation treatment, assist the patient with 2.5 mg/ 3 mL NS and start the oxygen flow rate at 6 LPM or until the appropriate mist is achieved.
3. If patient uses a MDI, assist patient with one dose
4. Pulse Oximetry

EMT STOP

AEMT

5. INT or IV NS TKO
6. Administer Albuterol 2.5 mg/ 3 mL NS ***(peds 2.5 mg/ 3 mL NS q 5-15 min)*** and start the oxygen flow rate at 6 LPM or until the appropriate mist is achieved
7. EPINEPHrine 1:1,000 (now 1 mg/mL) IM or 1:10,000 (now 0.1 mg/mL) IV 0.3-0.5 mg, ***(peds 1:1,000 (now 1 mg/mL) - 0.01 mg/kg IM or 1:10,000 (now 0.1 mg/mL) IV, max dose is 0.3 mg)*** for patients in severe distress. Be mindful of cardiac side effects.

AEMT STOP

PARAMEDIC

8. 12 lead, transmit if available
9. Capnography
10. In severe cases consider Methylprednisolone (Solu-Medrol) 62.5 mg (if small in stature, sensitive to steroids, on chronic steroid therapy) or 125 mg IV ***(peds contact Medical Control)***
11. Use CPAP if no contraindications

Peds: consult Medical Control prior to administering Methylprednisolone (Solu-Medrol)

MEDICAL EMERGENCY

313 Seizures

Assessment

Seizure (onset, duration, type, post-seizure, level of consciousness)
Medical (diabetes, headaches, drugs, alcohol, seizure history)
Physical (seizure activity, level of consciousness, incontinence, head and mouth trauma, vital signs)
Trauma (head injury or hypoxia secondary to trauma)

EMR

1. Oxygen and airway maintenance appropriate to patient's condition
2. Protect patient from injury during active seizures
3. If patient is actively seizing, consider therapy if:
   Unstable ABC's exist, patient has been actively seizing for 5 or more minutes, patient has underlying disease or condition that will be adversely affected if seizures continue (trauma, COPD, pregnancy, severely hypertensive).
4. C spine precautions if appropriate

EMR STOP

EMT

5. If febrile, cool as per hyperthermia protocol and monitor

EMT STOP

AEMT

6. Glucose check
7. IV NS TKO or INT
8. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

9. If no IV available and blood glucose levels are <80 mg/dl, Glucagon 1-2 mg IM ***(peds – Glucagon 0.5 mg/dose IM/IV if <20 kg, or 1 mg/dose IM/IV if 20 kg or greater.)***
10. If narcotic overdose, Naloxone (Narcan) 0.4 mg IV/IO/IM/IN titrated to adequate ventilation. ***(peds 0.1 mg/kg, titrated to adequate ventilation)***. If utilizing pre-filled delivery systems, dose per manufacturer's instructions. May repeat dose. Synthetic opiates may require larger Narcan doses. Physically manage the airway if no response after 8 mg Narcan.

AEMT STOP

PARAMEDIC

11. EKG monitor- treat dysrhythmia per protocol
12. Adults – If actively seizing:

Diazepam (Valium) SLOW IVP/IO 2-5 mg or Midazolam (Versed) 2-5 mg IV/IO may repeat if seizure continues.
LORazepam 1-2 mg IV, every 5 minutes or; 2-4 mg IM, every 10 minutes (maximum dose 8 mg)

13. ***Peds:***
    a. ***Diazepam (Valium) 0.1 mg/kg or Midazolam (Versed) 0.1 mg/kg IV/IO***
    b. ***Midazolam (Versed) IM 0.2 mg/kg IM (max single dose 6 mg) Repeat once if seizure activity persists after 10 minutes. Contact MEDICAL CONTROL if seizure activity persists after repeat dose.***
    c. ***Midazolam (Versed) IN 0.3 mg/kg IN (max single dose 10 mg) with maximum total dose of 0.4 mg/kg.***
    d. ***LORazepam (peds 0.1 mg/kg IV/IO, max single dose 4 mg, may repeat in 5 minutes if seizure activity continues; not to exceed 0.2 mg/kg total (maximum of 8 mg)***
    e. ***If seizure persists for 4 minutes repeat medication once***

NOTES:

- Specifically evaluate for: active bleeding, trauma, eye deviation, pupil equality, mouth or tongue bleeding, Urinary or fecal incontinence, lack of arm or leg movement or tone.
- The goal of Narcan therapy is to restore adequate ventilation. Patients, particularly those on chronic opiate therapy, often need very small doses of Narcan in the event of overdose. Larger doses of Narcan usually create more agitation and behavioral symptoms

MEDICAL EMERGENCY

314 Sexual Assault

Assessment

Traumatic Injuries

EMR EMT AEMT PARAMEDIC

1. Oxygen and airway maintenance appropriate to patient's condition
2. Be calm and assuring with sensitivity toward the patient
3. DO NOT make unnecessary physical contact with the patient
4. If possible, have a witness the same gender as the victim present at all times
5. Wrap a plastic sheet around the victim if possible
6. DO NOT inspect genitals unless evidence of uncontrolled hemorrhage, trauma, or severe pain is present
7. DO NOT allow patient to shower or douche
8. Collect patient's clothing when possible
    a. Place clothing in plastic sheet or separate plastic/paper bags with ID labels and found location
    b. Leave all sheets placed in plastic/paper bag with patient at facility
    c. Notify all staff of clothing samples
9. Transport patient to appropriate facility for treatment and examination
10. Contact dispatch to notify Police of possible Sexual Assault

MEDICAL EMERGENCY

315 Sickle Cell Crisis

Assessment

History of Sickle Cell Anemia
Signs of infection
Hypoxia
Dehydration
Painful joint(s)
Limited movement of joints

EMR

1. Oxygen and airway maintenance appropriate to patient's condition
2. Supportive care

EMR STOP

EMT

3. Pulse oximetry (keep oxygen sats >95%)

EMT STOP

AEMT

4. IV NS bolus 20 mL/kg ***(peds 20 mL/kg bolus)***

AEMT STOP

PARAMEDIC

5. 12 Lead transmit, if appropriate
6. If pain persists – Administer medications per chart below

Doses are approximate	5-9 kg	10 kg	12 kg	15 kg	20 kg	30 kg	40 kg	50-74 kg	≥ 75 kg	Geriatric	
Fentanyl IV/IN/IO		10	12	15	20	30	40	50-75 mcg	75	25	1-2 mcg/kg
Morphine IV/IO		1 mg	1 mg	1.5 mg	2 mg	3 mg	4 mg	4 mg	4 mg	2 mg	0.05-0.1 mg/kg
Ondansetron IV/IO					3 mg	3 mg	4 mg	4 mg	4 mg	4 mg	0.15 mg/kg

If pain not controlled, Morphine and fentanyl dosing may be repeated once after ten minutes. Contraindicated in hemodynamically unstable patients.

NOTES:
Use caution in administering narcotic to a patient with SpO2 <95%

ALL PATIENTS WHO RECEIVE NARCOTIC MEDICATION *MUST* BE TRANSPORTED FOR FURTHER EVALUATION

MEDICAL EMERGENCY

316 Unconscious / Unresponsive / Altered Mental Status

Assessment

Unconscious or unresponsive with vital signs Any patient not responding appropriately to verbal or painful stimulus Altered level of consciousness with vital signs Assess for head trauma Assess for Hypothermia or Hyperthermia, hemiparesis, and fever, OD, Hypoglycemia Peds – less commonly associated with intussusception (fold of one intestine into another), intracranial catastrophe, metabolic disorder

EMR

1. Oxygen and airway maintenance appropriate for patient's condition
2. Assess for underlying causes: head trauma, hypovolemia, hypothermia, hemiparesis, and fever and treat accordingly

   EMR STOP

EMT

3. Pulse oximetry

   EMT STOP

AEMT

4. Glucose check
5. IV NS TKO or INT
6. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

7. Administer Naloxone (Narcan) 0.4 mg IV/IM/IN/IO titrated to adequate ventilation ***(peds 0.1 mg/kg IV, max single dose 2 gm)***. If utilizing pre-filled delivery systems, dose per manufacturer's instructions. May repeat dose, with the exception of synthetic opioids which may require larger doses of Narcan. Physically manage the airway if no response after 8mg of Narcan.

   AEMT STOP

PARAMEDIC

8. EKG Monitor
9. If no IV access Glucagon 1-2 mg IM, ***(peds if no IV access, Glucagon 0.5 mg/dose IM/IV if <20 kg, or 1 mg/dose IM/IV if 20 kg or greater.)***
10. Contact Medical Control for further orders

11. 20 mL/kg NS fluid challenge ***(peds 20 mL/kg)***

NOTE:

The goal of Narcan therapy is to restore adequate ventilation. Patients, particularly those on chronic opiate therapy, often need very small doses of Narcan in the event of overdose. Larger doses of Narcan usually create more agitation and behavioral symptoms, except in the case of synthetic opioids.

MEDICAL EMERGENCY

317 Syncope

Assessment

Loss of consciousness with recovery
Lightheadedness, dizziness
Palpitations, slow or rapid pulse, irregular pulse
Decreased blood pressure

EMR

1. Oxygen and airway maintenance appropriate to the patient's condition
2. Supportive Care

EMR STOP

EMT

3. Pulse oximetry

EMT STOP

AEMT

4. Glucose check
5. INT or IV NS TKO – if hypotensive 20 mL/kg bolus ***(peds 20 mL/kg bolus)***
6. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

AEMT STOP

PARAMEDIC

7. 12 Lead EKG, treat any cardiac dysrhythmia per appropriate protocol
8. Assess neuro status; if abnormal refer to appropriate protocol

SHOCK / TRAUMA

401 Air Ambulance Transport

EMR EMT AEMT PARAMEDIC

Request for an Air Ambulance must be in accordance with approved service policy.

A scene flight by air ambulance MAY be indicated IF:

- The level I trauma patient's condition warrants immediate and extreme action **and** the extrication **and/or** transport time is greater than 30 minutes **and** if the patient **is not** in trauma full arrest.
- Transport time is defined as the length of time beginning when the emergency unit would leave the scene transporting until time of arrival at the trauma center.

The on-scene Paramedic or EMS Supervisory Personnel shall have the authority to disregard the response of an air ambulance in accordance with approved service policy.

Additional Criteria:

- Multi-system blunt or penetrating trauma with unstable vital signs
- Greater than 25% TBSA burns
- Paralysis or spinal injury
- Amputation proximal to wrist or ankle
- Flail or crushed chest

Situational Criteria:

- High energy mechanisms
- Prolonged entrapment
- Multiple casualty incident

Patients will be categorized according to the current Tennessee Trauma Destination Determinates.

- **DO NOT** request an air ambulance transport if patient is in traumatic cardiopulmonary arrest. If the patient has no vital signs, they are in trauma full-arrest.
- The Paramedic in charge of the patient shall have the authority **through** the Incident Commander to disregard the response of the air ambulance.
- The Paramedic will coordinate with the Incident Commander to insure the helicopter receives patient information and landing zone location.

NOTE: Medical responsibility will be assumed by the medical flight crew personnel upon arrival at the scene.

The following may impact transport by helicopter:

a. Adults who have traction splint(s) applied
b. Patients over 6'4"
c. Patients whose girth exceeds 27"
d. Any splint or device that exceeds the boundary of the long spine board

SHOCK / TRAUMA

402 Abdominal/Pelvic Trauma

Assessment

Abdominal / retroperitoneal abrasions/contusions
Penetrating injuries
Hypotension
Abdominal evisceration(s)
Abdominal pain on palpation
Hematuria, bloody stool
Altered bowel sounds
Vomiting blood
History of abdominal injury/trauma
Suspected injury secondary to mechanism of trauma

EMR

1. Oxygen and airway maintenance appropriate for the patient's condition
2. C-Spine protection
3. Stop any life-threatening hemorrhaging

EMR STOP

EMT

4. Systolic BP or peds normal for age:
   a. If Systolic BP >90 mmHg place patient supine with legs elevated and flexed at knees and hips. If no C-Spine concerns, contact Medical Control
5. Patient Pregnant:
   a. If patient is not past 1st trimester: place patient supine with legs elevated and flexed at knees and hips. If no C-Spine concerns, contact Medical Control
   b. If patient is past 1st trimester: place patient in left lateral recumbent position
6. Penetrating object:
   a. If no penetrating object: place patient supine with legs elevated and flexed at knees and hips. If no C-Spine concerns, contact Medical Control
   b. If penetrating object present: stabilize object(s)
7. Evisceration:
   a. If present: place patient supine with legs elevated and flexed at knees and hips. If no C-Spine concerns, contact Medical Control. Cover evisceration(s) with saline soaked trauma dressing
8. Pulse oximetry

EMT STOP

AEMT

9. IV NS/LR TKO

   If systolic BP <90 mmHg, IV NS/LR 20 mL/kg bolus ***(peds 20 mL/kg bolus)***. Target SBP is 90-110 mmHg in adult trauma patients

AEMT STOP

PARAMEDIC

10. 12 Lead EKG, transmit if appropriate

SHOCK / TRAUMA

403 Avulsed Teeth – Standing Order

Assessment

Avulsed teeth may be handled in much the same manner as small parts; i.e. rinse in normal saline (do not rub or scrub) and place in gauze moistened with saline Do not cool tooth/teeth with ice

EMR EMT AEMT

1. Oxygen and airway maintenance appropriate to patient's condition
2. C-Spine stabilization
3. Treat other associated injuries
4. Pay attention to the airway, bleeding and avulsed teeth may cause obstruction.
5. Supportive care
6. Avulsed teeth may be handled in much the same manner as small body parts; i.e. rinse in normal saline (do not rub or scrub) and place in moistened gauze, but there is no need to cool with ice.

   EMR, EMT, and AEMT STOP

PARAMEDIC

7. Re-implantation at the scene is recommended as this creates maximum possibility of reattachment. The following guidelines pertain to re-implantation at the scene:
   a. Applicable only for permanent teeth (i.e. with patients over 6.5 years of age)
   b. Applicable when only one or two teeth are cleanly avulsed and the entire root is present
   c. Applicable only to anterior teeth (front 6, upper and lower)
   d. The patient must be conscious
   e. Should be attempted within the first 30 mins. (The sooner performed the greater the success rate.)
   f. Do not force re-implantation. Gentle insertion is all that is necessary. Slight incorrect positioning can be corrected later.
8. If re-implantation is not feasible and the patient is a fully conscious adult then the best procedure is to place the tooth in the mouth, either under the tongue or in the buccal vestibule. This is not recommended for children.

SHOCK / TRAUMA

404 Cardiogenic Shock

Assessment

Frequently associated with tachy/brady dysrhythmia, acute MI, or blunt chest trauma
Neck vein distension in sitting position
Moist sounding lungs (rales, rhonchi)
Peripheral edema (if chronic heart failure)
Determine if cardiac dysrhythmia exists
Consider tension pneumothorax
Consider cardiac tamponade
Increased heart rate
Decreased BP
Altered LOC

EMR

1. Semi Fowlers or position of comfort
2. Oxygen and airway maintenance appropriate to patient's condition

EMR STOP

EMT

3. Pulse oximetry

EMT STOP

AEMT

4. IV NS or LR, if hypotensive give 20 mL/kg bolus ***(peds 20 mL/kg bolus)***

AEMT STOP

PARAMEDIC

5. 12 lead EKG, transmit if appropriate
6. Treat cardiac rhythm appropriately

Treatment – Protocol

Contact Medical Control, consider:

DOPamine 400 mg / 200 mL or 800 mg/ 500 mL D5W IV admix, begin 2 -2 0 mcg/kg/min ***(peds 2-20 mcg/kg/min)***

OPTIONAL: EPINEPHrine 2-10 mcg/min, ***(peds 0.1-1 mcg/kg/min)***

SHOCK / TRAUMA

405 Eye Trauma

Assessment

Impaled object Inability to open eye(s) Swollen, edematous eye(s) Photophobia Visual defects, loss of vision Redness

EMR EMT AEMT PARAMEDIC

Treatment – Standing Order

1. Oxygen and airway maintenance appropriate for patient's condition
2. C-Spine protection if needed
3. If thermal or chemical
    a. Flush eye(s) with NS or water for 15 min
    b. Cover both eyes
    c. Transport
4. Penetration
    a. Stabilize
    b. Do not apply tight dressing to penetrating eye injury. Simply cover with eye shield
    c. Consider covering both eyes
    d. Transport
5. Blunt trauma
    a. Consider covering both eyes
    b. Transport
6. Is loss of vision present:
    a. No – Contact Medical Control
    b. Yes – If loss of vision was sudden, painless and non-traumatic, consider Retinal Artery Occlusion. Contact Medical Control and:
        i. Apply cardiac monitor and assess for changes (EMT and above only)
        ii. Apply vigorous pressure using heel of hand to affected eye for 3-5 seconds, then release (patient may perform this procedure and may be repeated as necessary)

SHOCK / TRAUMA

406 Hypovolemic Shock

Assessment

Blood loss due to penetrating injuries to torso or other major vessel Fracture of femur or pelvis G.I. Bleeding, vaginal bleeding, or ruptured ectopic pregnancy Dehydration cause by vomiting, diarrhea, inadequate fluid intake, excessive fluid loss due to fever, uncontrolled diabetes, or burns Pulse may be greater than 120 beats per minute Blood pressure may be less than 90 mmHg Systolic Orthostatic (Tilt) changes in vital signs (consider possible spinal injury) pulse increase of 20 beats per minute, B decrease of 10 mmHg systolic Severe shock (hypovolemia) is defined as decreased level of consciousness, absent radial pulse, capillary refill greater than 2 seconds, no palpable blood pressure

EMR

1. Oxygen and airway maintenance appropriate to patient's condition
2. Consider spinal protection
3. Control gross hemorrhage – consider tourniquet or hemorrhage control clamp
4. Trendelenburg patient if no suspected spinal injury

EMR STOP

EMT

5. Pulse oximetry

EMT STOP

AEMT

6. IV NS bolus (20 mL/kg)

AEMT STOP

PARAMEDIC

7. 12 Lead EKG, transmit if appropriate
8. IV NS or LR x2 large bore titrated to restore patient's vital signs (in patients with ongoing blood loss maintain patient's systolic blood pressure 90-110 mmHg).
9. ***Pediatrics***
    a. ***IV/IO NS 20 mL/kg bolus***
    b. ***Reassess patient***
    c. ***Repeat fluid bolus 20 mL/kg if no improvement***
    d. ***Place a second IV as needed***
    e. ***Maintain temperature >97°***

Treatment – Protocol

Contact Medical Control, Consider:

Adults and ***peds – DOPamine 2-20 mcg/kg/min***

OPTIONAL: Adults EPINEPHrine 2–20 mcg/min and

(peds EPINEPHrine 0.1-1 mcg/kg/min)

NOTE: Cervical spine immobilization is not necessary in patients suffering penetrating trauma (stab or gunshot wound) below the nipple line **AND** no evidence of spinal or head injury. Do not delay transport of patients meeting these criteria for immobilization.

SHOCK / TRAUMA

407 Major Thermal Burn

Major Burn:

Greater than 20% BSA, partial thickness surface involvement
Greater than 10% BSA, full thickness burn
Full thickness burns of the head, face, feet, hands or perineum
Inhalation burn or electrical burns
Burns complicated by fractures or other significant injury
Elderly, pediatric, or compromised patients

Assessment

Remove clothing from affected parts
DO NOT pull material out of the burn site: Cut around it
Look for burns of the nares, oropharyngeal mucosa, face or neck
Listen for abnormal breath sounds
Note if burn occurred in closed space
Determine extent of injury (including associated injuries)
Cardiac monitor for all major burn patients
Respiratory distress
ETOH/drug use
Associated injuries/trauma
Hypotension
Past medical history
Oropharyngeal burns

EMR

1. Stop the burn process with tepid water or normal saline solution and remove any smoldering clothing
2. Oxygen and airway maintenance appropriate to the patient's clothing
    a. Edema may cause patient's airway to close almost instantly without warning signs
    b. Be prepared to assist ventilation with a BVM
3. Monitor all vital signs and continue reassessment with emphasis on the respiratory rate, peripheral pulses (circulation) and level of consciousness
4. Remove any jewelry
5. Cover burned area with dry sterile dressing or burn sheet. Attempt to keep blisters intact
6. DO NOT use Water-Jel or any other commercially manufactured burn products. DO NOT remove if applied prior to arrival.
7. Monitor to prevent hypothermia
8. Stabilize all associated injuries (e.g. chest, potential spinal injury, fractures, dislocations, etc.)

EMR STOP

EMT

9. Pulse oximetry

EMT STOP

AEMT

10. INT or IV NS, if hypotensive 20 mL/kg ***(peds 20 mL/kg)***

    AEMT STOP

PARAMEDIC

11. 12 Lead EKG, transmit
12. For major burns, Administer Pain Medications per chart below (contact medical control in multi-system trauma/pregnancy), transport (all additional doses must be approved by Medical Control)
13. If extremity injured, cover open fractures/lacerations/injuries with sterile dressing, splint fractures prn, avoid unnecessary movement, transport
14. Consider contacting Medical Control for sedating agents especially in pediatric patients
15. Consider cyanide poisoning in obtunded patients and administer Cyanide Antidote if suspected.

    Administer IV fluids using the following guide:

    - 500 mL per hour for patients over 15 years old
    - ***250 mL per hour for patients 5 - 15 years old***
    - ***125 mL per hour for patients under 5 years old***

    Excessive or overly aggressive amounts of fluid administration may increase third-spacing shock

Doses are approximate	5-9 kg	10 kg	12 kg	15 kg	20 kg	30 kg	40 kg	50-74 kg	≥ 75 kg	Geriatric	
Fentanyl IV/IN/IO		10	12	15	20	30	40	50-75 mcg	75	25	1-2 mcg/kg
Morphine IV/IO		1 mg	1 mg	1.5 mg	2 mg	3 mg	4 mg	4 mg	4 mg	2 mg	0.05-0.1 mg/kg
Ondansetron IV/IO					3 mg	3 mg	4 mg	4 mg	4 mg	4 mg	0.15 mg/kg

If pain not controlled, Morphine and fentanyl dosing may be repeated once after ten minutes. Contraindicated in hemodynamically unstable patients.

SHOCK / TRAUMA

408 Musculoskeletal Trauma

Assessment

Hypotension
Past medical history
Deformity, swelling, tenderness, crepitus, open or closed fractures
Hemorrhaging, lacerations, ecchymosis, instability
Decreased function, pulses
Loss of sensation of distal extremities
ETOH/drug use
Mechanism of Injury

EMR

1. Oxygen and airway maintenance appropriate for the patient's condition
2. C-Spine protection PRN
3. Control any life-threatening hemorrhaging, consider a tourniquet or hemorrhage control clamp

EMR STOP

EMT

4. Splint PRN, stabilize penetrating objects
5. Pulse oximetry

EMT STOP

AEMT

6. INT or IV, LR TKO, if hypotensive 20 mL/kg ***(peds 20 mL/kg)***

AEMT STOP

PARAMEDIC

7. 12 Lead EKG, transmit if appropriate
8. Trauma: **Isolated extremity trauma only – consider tourniquet or hemorrhage control clamp. Clamp is approved for scalp use.**
    a. If systolic BP >90 mmHg or peds normal range for age,
        i. Consider pain medications per chart below
        ii. Cover open fractures/lacerations, check distal motor/sensory/pulse pre/post splinting, avoid unnecessary movement
    b. If systolic BP <90 mmHg, IV NS/LR 20 mL/kg ***(peds 20 mL/kg)***
    c. If patient pregnant: Isolated extremity trauma only
        i. If past the 1st trimester and systolic BP >90 mmHg contact Medical Control
        ii. If systolic BP <90 mmHg place patient in left lateral recumbent position, IV NS/LR 20 mL/kg

Doses are approximate	5-9 kg	10 kg	12 kg	15 kg	20 kg	30 kg	40 kg	50-74 kg	≥ 75 kg	Geriatric	
Fentanyl IV/IN/IO		10	12	15	20	30	40	50-75 mcg	75	25	1-2 mcg/kg
Morphine IV/IO		1 mg	1 mg	1.5 mg	2 mg	3 mg	4 mg	4 mg	4 mg	2 mg	0.05-0.1 mg/kg
Ondansetron IV/IO					3 mg	3 mg	4 mg	4 mg	4 mg	4 mg	0.15 mg/kg

If pain not controlled, Morphine and fentanyl dosing may be repeated once after ten minutes. Contraindicated in hemodynamically unstable patients.

NOTES:

- AEMTs and Paramedics may also utilize patient controlled Nitrous Oxide for pain Management.
- Cervical spine immobilization is not necessary in patients suffering penetrating trauma (stab or gunshot wound) If no evidence of neurological injury. Do not delay transport of patients meeting these criteria for immobilization.

SHOCK / TRAUMA

409 Multi-System Trauma

EMR

1. Initiate in-line C-Spine protection while simultaneously evaluating and controlling the patient's ABCs. Incorporate the Mechanism of Injury into the patient care scheme.
2. Control any hemorrhage and simultaneously provide: Oxygen and airway maintenance appropriate to the patient's condition.
3. Spine injuries in the adult population may be present at more than one level simultaneously. SMR, when indicated, should apply to the entire spine. An appropriately-sized cervical collar is a critical component of SMR and should be used to limit movement of the cervical spine whenever SMR is employed. The remainder of the spine can be stabilized using an ambulance cot, a vacuum mattress, a long back board or a similar device.

EMR STOP

EMT

4. Pulse oximetry

EMT STOP

AEMT

5. INT or IV NS, if hypotensive 20 mL/kg ***(peds 20 mL/kg).*** If not hypotensive, avoid administering more than 500 mL crystalloid.

AEMT STOP

PARAMEDIC

6. 12 Lead EKG, transmit if appropriate
7. Consider use of tourniquet or hemorrhage control clamp

NOTE: Cervical spine protection is not necessary in patients suffering penetrating trauma (stab or gunshot wound) if no evidence of neurological injury. Do not delay transport of patients meeting these criteria for immobilization.

SHOCK / TRAUMA

410 Neurogenic Shock

Assessment

Associated with spinal cord injuries, closed head injuries and overdoses Signs of hypovolemic shock without pale diaphoretic skin (warm shock)

EMR

1. Oxygen and airway maintenance appropriate for patient's condition
2. Establish and maintain C-Spine protection
3. Hemorrhage control
4. Supportive care

EMR STOP

EMT

5. Pulse oximetry

EMT STOP

AEMT

6. INT or IV NS, if hypotensive 20 mL/kg ***(peds 20 mL/kg)***

AEMT STOP

PARAMEDIC

7. 12 Lead EKG, transmit

Treatment – Protocol

Contact Medical Control to consider:

Adult and pediatric – DOPamine at 2-20 mcg/kg/min

OPTIONAL: Adult EPINEPHrine 2-10 mcg/min, *(peds 0.1-1 mcg/kg/min)*

SPECIAL NOTE: Consider occult bleeding and treat as Hypovolemic Shock Protocol

SHOCK / TRAUMA

411 Septic Shock

Assessment

Hot and dry or cool and clammy skin Poor capillary refill Tachycardia/Hypotension Potential for underlying infection

EMR

1. Oxygen and airway maintenance appropriate for patient's condition
2. Obtain and record oral or axillary temperature if possible

EMR STOP

EMT

3. Pulse oximetry
4. Maintain body temperature above 97°F

EMT STOP

AEMT

5. Glucose check
6. INT or IV NS, if hypotensive 20 mL/kg ***(peds 20 mL/kg)***
7. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

AEMT STOP

PARAMEDIC

8. 12 Lead EKG, transmit if appropriate

Treatment – Protocol

If no improvement after two boluses of IV fluids, contact Medical Control and consider:

DOPamine 2-20 mcg/kg/min ***(peds 2-20 mcg/kg/min)***

OPTIONAL: Adult EPINEPHrine 2-10 mcg/min, ***(peds 0.1-1 mcg/kg/min)***

NOTE: Ensure Body Substance Isolation precautions

SHOCK / TRAUMA

412 Soft Tissue / Crush Injuries

Assessment

Hypotension
Past medical history
Deformity, swelling, tenderness, crepitus, open or closed fractures
Hemorrhaging, lacerations, ecchymosis, instability
Decreased function, pulses
Loss of sensation of distal extremities
ETOH/drug use
Mechanism of Injury

EMR

1. Oxygen and airway maintenance appropriate for patient's condition
2. C-Spine protection PRN
3. Control any life-threatening hemorrhaging

EMR STOP

EMR

4. Other splints PRN, stabilize penetrating objects
5. Pulse oximetry

EMT STOP

AEMT

6. INT or IV, NS LR, if hypotensive 20 mL/kg ***(peds 20 mL/kg)***

AEMT STOP

PARAMEDIC

7. 12 Lead EKG transmit if appropriate
8. Trauma: **Isolated extremity trauma only – consider tourniquet or hemorrhage control clamp use. (iTClamp may be used on scalp lacerations as well.)**
    a. If systolic BP >90 mmHg or peds normal range for age,
        i. Consider pain medications per chart below
        ii. Cover open fractures/lacerations, check distal motor/sensory/pulse pre/post splinting, avoid unnecessary movement
    b. If systolic BP <90 mmHg, IV NS LR 20 mL/kg ***(peds 20 mL/kg)***
    c. If patient pregnant: Isolated extremity trauma only
        i. If past 1st trimester and systolic BP <90 mmHg contact Medical Control
        ii. If systolic BP <90 mmHg place patient in left lateral recumbent position, IV NS LR 20 mL/kg

Doses are approximate	5-9 kg	10 kg	12 kg	15 kg	20 kg	30 kg	40 kg	50-74 kg	≥ 75 kg	Geriatric	
Fentanyl IV/IN/IO		10	12	15	20	30	40	50-75 mcg	75	25	1-2 mcg/kg
Morphine IV/IO		1 mg	1 mg	1.5 mg	2 mg	3 mg	4 mg	4 mg	4 mg	2 mg	0.05-0.1 mg/kg
Ondansetron IV/IO					3 mg	3 mg	4 mg	4 mg	4 mg	4 mg	0.15 mg/kg

If pain not controlled, Morphine and fentanyl dosing may be repeated once after ten minutes. Contraindicated in hemodynamically unstable patients.

NOTES:

- Cervical spine protection is not necessary in patients suffering penetrating trauma (stab or gunshot wound) below the nipple line **AND** no evidence of spinal or head injury. Do not delay transport of patients meeting these criteria for immobilization.

SHOCK / TRAUMA

413 Spinal Cord Injuries

Assessment

Hypotension without actual volume loss
Warm/flushed skin despite hypotension
Paralysis
Loss of reflexes
Posturing
Priapism
Diaphragmatic breathing

EMR

1. Oxygen and airway maintenance appropriate for the patient's condition
2. C-Spine protection
3. Control hemorrhaging

EMR STOP

EMT

4. Pulse oximetry

EMT STOP

AEMT

5. IV fluid NS LR, if hypotensive bolus 20 mL/kg (repeat bolus once if needed)

AEMT STOP

PARAMEDIC

6. 12 Lead EKG, transmit if appropriate

Treatment – Protocol

Contact Medical Control and consider DOPamine 2-20 mcg/kg/min then titrated

OPTIONAL: Adult EPINEPHrine 2-10 mcg/min, ***(peds 0.1-1 mcg/kg/min)***

SHOCK / TRAUMA

414 Traumatic Cardiac Arrest

Assessment

Cardiac arrest secondary to trauma

EMR

1. Oxygen and airway maintenance appropriate for the patient's condition
2. CPR

EMR STOP

EMT

3. Pulse oximetry

EMT STOP

AEMT

4. IV NS/LR give 20 mL/kg bolus
5. Consider second IV access

AEMT STOP

PARAMEDIC

6. 12 Lead EKG, transmit if appropriate
7. Treat cardiac rhythms per specific protocols
8. If suspected pneumothorax, perform needle chest decompression
9. Consider viability of patient prior to transport

SHOCK / TRAUMA

415 Tension Pneumothorax

Patient must meet AT LEAST THREE of the below assessment findings to qualify for this standing order, otherwise, contact Medical Control

Assessment

Acute respiratory distress, cyanosis
Unilaterally decreased breath sounds or absent breath sounds
Hyper-Resonance of chest unilaterally
Jugular vein distension
Subcutaneous Emphysema
Acute traumatic chest injury, ecchymosis or obvious rib fractures
History of COPD or other chronic lung disease which predisposes patient to spontaneous pneumothorax
Hypotension
Tracheal deviation away from the affected side
Arrhythmia
Oxygen saturation - <90%
Mechanism of Injury

EMR

1. Oxygen and airway maintenance appropriate to patient's condition
2. Perform frequent evaluation of the breath sounds and blood pressure
3. Control any life-threatening hemorrhaging

EMR STOP

EMT

4. Consider institution of the multiple trauma protocol, if indicated. Remember this order may be indicated for the medical patient as well.
5. Follow the trauma treatment priority reference as needed
6. If the traumatic tension pneumothorax is secondary to a sucking chest wound, apply an occlusive dressing and treat appropriately
7. Pulse oximetry

EMT STOP

AEMT

8. IV NS LR, If hypotensive 20 mL/kg ***(peds 20 mL/kg)***

AEMT STOP

PARAMEDIC

9. 12 Lead EKG, transmit if appropriate
10. If tension pneumothorax suspected, perform needle decompression. Use 14 g 3.5" needle ***(peds may use smaller 18 g needle)***

SHOCK / TRAUMA

416 Traumatic Amputation(s)

Assessment

Hypotension
Past medical history
Deformity, swelling, tenderness, crepitus, open or closed fractures
Hemorrhaging, lacerations, ecchymosis, instability
Decreased function, pulses
Loss of sensation of distal extremities
ETOH/Drug use
Mechanism of Injury

EMR

1. Oxygen and airway maintenance appropriate for patient's condition
2. C-Spine protection PRN
3. Control any life-threatening hemorrhaging

EMR STOP

EMT

4. Consider applying MAST as a splint
5. Other splints PRN
6. Amputated part: If recovered rinse with NS, wrap in moist dressing, place in plastic bag, and transport with patient.
7. Pulse oximetry

EMT STOP

AEMT

8. INT or IV, NS LR, if hypotensive 20 mL/kg ***(peds 20 mL/kg)***

AEMT STOP

PARAMEDIC

9. 12 Lead EKG, transmit if appropriate
10. Amputation – consider tourniquet use
    a. If systolic BP >90 mmHg or peds normal range for age, consider medications per chart below
    b. Cover open fractures/lacerations, check distal motor/sensory/pulse pre/post splinting, avoid unnecessary movement

Doses are approximate	5-9 kg	10 kg	12 kg	15 kg	20 kg	30 kg	40 kg	50-74 kg	≥ 75 kg	Geriatric	
Fentanyl IV/IN/IO		10	12	15	20	30	40	50-75 mcg	75	25	1-2 mcg/kg
Morphine IV/IO		1 mg	1 mg	1.5 mg	2 mg	3 mg	4 mg	4 mg	4 mg	2 mg	0.05-0.1 mg/kg
Ondansetron IV/IO					3 mg	3 mg	4 mg	4 mg	4 mg	4 mg	0.15 mg/kg

If pain not controlled, Morphine and fentanyl dosing may be repeated once after ten minutes. Contraindicated in hemodynamically unstable patients.

REFERENCE

OBSTETRICAL EMERGENCIES

BASIC IV PARAMEDIC

APGAR Scoring

Clinical Sign	0 Points	1 Point	2 Points
Appearance	Blue/Pale	Body Pink Extremities Blue	Completely Pink
Pulse	Absent	Below 100/minute	Above 100/minute
Grimace	No response	Grimace	Cries
Activity	Limp	Some flexion of extremities	Action motion
Respiratory	Absent	Slow/Irregular	Good strong cry

The APGAR score should be calculated after birth of the infant. The five (5) clinical signs are evaluated according to the scoring system detailed above. Each sign is assigned points to be totaled. A total score of 10 indicates that the infant is in the best possible condition. A score of 4 to 6 indicates moderate depression and a need for resuscitative measures.

DO NOT delay resuscitation efforts to obtain APGAR score. Obtain APGAR at 1 and 5 minutes after delivery.

OBSTETRICAL EMERGENCIES

500 Obstetrical / Gynecological Complaints (Non-Delivery or Gynecological Only)

Assessment

Patient Para (number of live births) and Gravida (number of pregnancies)
Term of pregnancy in weeks, EDC, Multiple births expected or history
Vaginal bleeding (how long and approximate amount)
Possible miscarriage/products of conception
Pre-natal medications, problems, and care
Last menstrual cycle
Any trauma prior to onset?
Lower extremity edema

EMR

1. Oxygen and airway maintenance appropriate for the patient's condition
2. Patient positioning appropriate for condition

EMR STOP

EMT

3. Control hemorrhage as appropriate
4. Pulse oximetry

EMT STOP

AEMT

5. Glucose check
6. INT or IV NS TKO unless signs of shock, then 20 mL/kg fluid bolus

AEMT STOP

PARAMEDIC

7. 12 Lead EKG, transmit if appropriate

OBSTETRICAL EMERGENCIES

501 Normal Delivery

Assessment

Patient Para (number of live births) and Gravida (number of pregnancies)
Term of pregnancy in weeks, EDC
Vaginal Bleeding
Pre-natal medications, problems, and care
Membrane ruptured
Lower extremity edema

EMR

Mother:

1. Oxygen and airway maintenance appropriate for patient's condition

EMR STOP

EMT

Mother:

2. Pulse oximetry
3. Check mother for crowning, PRN
4. Use gentle pressure to control delivery. When head delivers, suction airway and check for cord around neck
5. After delivery, keep mother and infant on same level, camp cord @ 8 and 10 inches from the baby and cut between clamps
6. Dry infant and wrap to keep warm. Maintain airway
7. Check APGAR at 1 and 5 minutes post-delivery
8. DO NOT allow mother to nurse until both have been evaluated in the Emergency Department
9. Allow placenta to deliver
    a. Massage uterine fundus (lower abdomen)
    b. Observe and treat signs of shock with increased delivery of oxygen and IV fluids
    c. Be alert to the possibility of multiple births
10. Re-Evaluate vaginal bleeding

Infant:

1. Protect against explosive delivery
2. When head delivers suction airway (mouth first then nose) & check for cord around neck
3. After delivery camp cord @ 8 and 10 inches from baby and cut between clamps
4. Dry infant and wrap to keep warm (silver swaddler). Maintain airway, suction PRN
5. Check APGAR Score at 1 and 5 minutes after delivery
6. Re-Evaluate cord for bleeding, if bleeding add additional clamp and re-evaluate.

EMT STOP

AEMT PARAMEDIC

7. INT or IV LR TKO, if patient in active labor defined as: regular contractions q 3-5 mins with 30-60 second duration.

NOTE: Considerations

1. The greatest risks to the newborn infant are airway obstruction and hypothermia. Keep the infant warm (silver swaddler), dry, covered, and the infant's airway maintained with bulb syringe. Always remember to squeeze the bulb prior to insertion into the infant's mouth or nose.
2. The greatest risk to the mother is post-partum hemorrhage. Watch closely for signs of hypovolemic shock and excessive vaginal bleeding.
3. Spontaneous or induced abortions may result in copious vaginal bleeding. Reassure the mother, elevate legs, treat for shock, and transport.
4. Record a blood pressure and the presence or absence of edema in every pregnant woman you examine, regardless of chief complaint

Complete patient care reports on BOTH mother and child.

OBSTETRICAL EMERGENCIES

502 Abruptio Placenta

Assessment

Multiparity
Maternal hypertension
Trauma
Drug use
Increased maternal age
History
Vaginal bleeding with no increase in pain
No bleeding with low abdominal pain

EMR

1. Oxygen and airway maintenance appropriate to the patient's condition
2. Position patient in the left lateral recumbent position

EMR STOP

EMT

3. Pulse oximetry

EMT STOP

AEMT

4. IV NS TKO, if hypotensive 20 mL/kg ***(peds 20 mL/kg)***

AEMT STOP

PARAMEDIC

5. 12 Lead EKG

OBSTETRICAL EMERGENCIES

503 Amniotic Sac Presentation

Assessment

Amniotic sac visible
Membrane not broken
Fetus may or may not be visible
Pre-natal medications, problems, and care
Usually third trimester
Applies to greater than 20 weeks gestation
Abdominal pain
Indications of immediate delivery

EMR

1. Oxygen and airway maintenance appropriate to the patient's condition
2. Place patient in a position of comfort

   EMR STOP

EMT

3. Amniotic sac

   If no fetus visible, cover presenting part with moist, sterile dressing

   If head of the fetus has delivered, tear sac with fingers and continue steps for delivery
4. Contact Medical Control ASAP
5. Pulse oximetry

   EMT STOP

AEMT

6. IV NS TKO, if hypotensive 20 mL/kg ***(peds 20 mL/kg)***

   AEMT STOP

PARAMEDIC

7. 12 Lead EKG if appropriate

OBSTETRICAL EMERGENCIES

504 Breech or Limb Presentation

Assessment

Patient para (number of live births) and gravida (number of pregnancies)
Term of pregnancy in weeks, EDC
Vaginal bleeding
Pre-natal medications, problems, and care
Water broken
Buttock, arm or leg presentation

EMR

1. Oxygen and airway maintenance appropriate to patient's condition

EMR STOP

EMT

2. Pulse oximetry

Breech Presentation – Treatment – Standing Order – All EMTs

3. Allow the delivery to progress spontaneously – DO NOT PULL!
4. Support the infant's body as it delivers
5. If the head delivers spontaneously, deliver the infant as noted in 'Normal Delivery'
6. If the head does not deliver within 3 minutes, insert a gloved hand into the vagina an airway for the infant
7. DO NOT remove your hand until relieved by a Higher Medical Authority.

Limb Presentation – Treatment – Standing Order – All EMTs

8. Position the mother in a supine position with the head lowered and pelvis elevated

EMT STOP

AEMT

9. IV NS TKO, if hypotensive 20 mL/kg ***(peds 20 mL/kg)***

AEMT STOP

PARAMEDIC

10. 12 Lead EKG, transmit if appropriate
11. Transport ASAP

OBSTETRICAL EMERGENCIES

505 Meconium Stain

Assessment

Patient para (number of live births) and gravida (number of pregnancies)
Term of pregnancy in weeks, EDC
Vaginal bleeding
Pre-natal medications, problems, and care
Membrane ruptured
Amniotic fluid that is greenish or brownish yellow
Fecal material expelled with the amniotic fluid

EMR

1. Do not stimulate respiratory effort before suctioning the oropharynx
2. Suction the **mouth then the nose** (using a meconium aspirator) while simultaneously providing Oxygen by blow by method and while maintaining the airway appropriate to the patient's condition

   EMR STOP

EMT

3. Pulse oximetry
4. Obtain and APGAR score after airway treatment priorities. Score one minute after delivery and at five minutes after delivery. (Time permitting)
5. Repeat initial assessment and complete vital signs until patient care is transferred to the appropriate ER staff.

   EMT STOP

AEMT

6. IV NS TKO, if hypotensive 20 mL/kg ***(peds 20 mL/kg)***

   AEMT STOP

PARAMEDIC

7. 12 Lead EKG, if appropriate

OBSTETRICAL EMERGENCIES

506 Placenta Previa

Assessment

Painless bleeding which may occur as spotting or recurrent hemorrhage
Bright red vaginal bleeding usually after 7th month
History
Multiparity
Increased maternal age
Recent sexual intercourse or vaginal exam
Patient para (number of live births) and gravida (number of pregnancies)
Term of pregnancy in weeks
Pre-natal medications, problems, and care
History of bed rest
Placenta protruding through the vagina

EMR

1. Oxygen and airway maintenance appropriate to patient's condition
2. Position of comfort

EMR STOP

EMT

3. Pulse oximetry

EMT STOP

AEMT

4. IV NS TKO, if hypotensive 20 mL/kg ***(peds 20 mL/kg)***

AEMT STOP

PARAMEDIC

5. 12 Lead EKG if appropriate

NOTE: Any painless bleeding in the last trimester should be considered Placenta Previa until proven otherwise. If there are signs of eminent delivery membrane rupture is indicated followed by delivery of the baby. The diagnosis of eminent delivery depends on the visual presence of the baby's body part through the membrane.

OBSTETRICAL EMERGENCIES

507 Prolapsed Umbilical Cord

Assessment

Cord emerges from the uterus ahead of baby
With each uterine contraction, the cord is compressed between the presenting part and the pelvis
Pulse on exposed cord may or may not be palpable
Patient Para (number of live births) and Gravida (number of pregnancies)
Term of pregnancy in weeks, EDC
Vaginal bleeding
Pre-natal medications, problems, and care
Membrane ruptured

EMR

1. Oxygen and airway maintenance appropriate for the patient's condition

EMR STOP

EMT

2. Palpate pulses in the cord
3. Pulse oximetry
4. Position the mother with hips elevated
    a. Knee to chest
    b. Hips elevated as much as possible on pillows
5. Instruct mother to pant with each contraction, which will prevent her from bearing down
6. Check for a pulse in the cord
    a. If no pulse – insert a gloved hand into the vagina and gently push the infant's head off the cord. While pressure is maintained on the head cover the exposed cord with a sterile dressing moistened in saline. Transport immediately and **DO NOT** remove your hand until relieved by hospital staff.
    b. If pulse present – cover exposed cord with moist dressing
7. Contact Medical Control as soon as possible if time and patient condition allows

EMT STOP

AEMT

8. IV NS TKO, if hypotensive 20 mL/kg ***(peds 20 mL/kg)***

AEMT STOP

PARAMEDIC

9. 12 Lead EKG if appropriate

OBSTETRICAL EMERGENCIES

508 Pre-eclampsia and Eclampsia

Assessment

Patient Para (number of live births) and Gravida (number of pregnancies)
Term of pregnancy in weeks, EDC
Vaginal bleeding
Pre-natal medications, problems, and care
Membrane ruptured
Usually begins after the twentieth week of pregnancy
Most often affects women during their first pregnancy
May have a history of chronic hypertension and/or diabetes
May experience hypertension and edema
May experience headaches, blurred vision, and abdominal pain
May experience seizures which indicates a progression from pre-eclampsia to eclampsia

EMR

1. Oxygen and airway maintenance appropriate for the patient's condition
2. Place patient in left lateral recumbent position

EMR STOP

EMT

3. Pulse oximetry

EMT STOP

AEMT

4. Glucose check
5. IV NS TKO, if hypotensive 20 mL/kg ***(peds 20 mL/kg)***

AEMT STOP

PARAMEDIC

6. EKG monitor
7. Diazepam (Valium) 5 mg slow IV or Midazolam (Versed) 2-5 mg IVP per seizure protocol if generalized seizure activity
8. Contact Medical Control and consider:
   Magnesium Sulfate 1-2 grams IV Slowly

NOTE: Record a blood pressure and the presence or absence of edema in every pregnant woman you examine no matter what the chief complaint.

MISCELLANEOUS

601 Discontinuation / Withholding of Life Support

EMR EMT AEMT PARAMEDIC

Once life support has been initiated in the field, **Non** ALS personnel **CAN NOT** discontinue resuscitative measures unless directed to do so by the on-scene physician, EMT-Paramedic or presented with a valid Physician Orders for Scope of Treatment (POST/DNR).

Withholding Resuscitation – Standing Orders

If there is no CPR in progress, CPR may be withheld if one or more of the following conditions are met:

a. Obviously dead patients with dependent lividity, rigor mortis, or massive trauma (i.e., evacuation of the cranial vault, crushed chest, crushed head, etc.)
b. Obviously dead patients with tissue decomposition
c. Patients without vital signs who cannot be accessed for treatment due to entrapment for prolonged time. (12-15 minutes or greater)
d. Severe blunt trauma with absence of BP, pulse, respiratory effort, neurologic response, and pupillary response
e. When presented a valid POST/DNR order or a copy as approved by the Tennessee Department of Health. DNR and POST orders not on the official state form can be accepted if it is documented in a medical record such as a nursing chart, hospice care, or home nursing
f. Instructed to do so by the on-scene Paramedic

Discontinuing Life Support

Once life support has been initiated in the field, in order to discontinue life support, the following conditions must be met:

1. Asystole is present on the EKG monitor in two leads **and**
2. There is an absence of pulse, respirations, and neurological reflexes **and**
3. At least one of the following conditions are met:
    a. Appropriate airway management has been confirmed, the patient has been well ventilated with 100% oxygen and multiple (at least three) administrations of medications have not been effective in generating an EKG complex
    b. Transcutaneous pacing, if available, has not been effective in generating a pulse
    c. Obvious signs of death in the absence of hypothermia, cold water drowning, or induced coma, **or**
    d. The Paramedic can document lack of CPR for at least 10 minutes, **or**
    e. Prolonged resuscitation (25 minutes of resuscitation with agonal or asystolic rhythm) in the field without hope for survival, **or**
    f. Massive trauma such as evacuation of cranial vault, etc., **or**
    g. Sever blunt trauma with absence of vital signs and pupillary response
    h. End tidal CO_2 less than 20 while performing effective CPR

Upon termination in the field any tubes, needles and IV lines will be left in place (IV lines to be tied off and cut with catheter left in place).

NOTES:

- Personnel shall give careful consideration when using this standing order. Conditions such as: overdose, electrical shock, hypothermia, and hypoglycemia may mimic some of the above signs and symptoms.
- All deaths must be confirmed by a Paramedic

MISCELLANEOUS

602 Field Determination of Death

Assessment

Pulseless, non-breathing with definitive signs of death:
Rigor Mortis
Dependent lividity
Decomposition of body tissue
Devastating, un-survivable injury
Decapitation
Incineration
Separation of vital internal organ(s) from the body or total destruction of organs
Gunshot wound to the head that crosses the midline (entrance and exit)

EMR EMT AEMT PARAMEDIC

If patient is pulseless, non-breathing without definitive signs of death:

Must receive resuscitation unless a properly executed DNR or POST form is present

Treatment – Standing Order

DNR Orders:

- If family member or caregiver can produce a properly executed DNR or POST order, resuscitation can be withheld.
- Treat patients with known DNR orders appropriately; just do not initiate CPR if they develop cardiovascular or respiratory arrest.
- When there is any doubt about what to do, begin resuscitative efforts with all skill available.

Resuscitation has been initiated prior to EMS arrival:

Anytime CPR or an attempt at resuscitation has been initiated by anyone at the scene, resuscitative efforts will be continued until:

- Medical Control directs the team to stop (either on line or on-scene)
- It is determined the patient meets criteria for “definitive signs” of death
- A properly executed DNR or POST form is presented

MISCELLANEOUS

603 Mandatory EKG

EMT AEMT PARAMEDIC

EKGs will be mandatory under the following conditions

Patients

- Complaining of chest pain regardless of source
- In cardiac arrest with or without CPR in progress
- That are non-viable (other than those exhibiting body decomposition, dependent lividity, rigor mortis, decapitation)

EKGs will have the following information printed on the recording:

- Name or report number
- Age (if possible)
- Unit number and date

EKGs will be appended to the PCR appropriately

12 Lead EKGs may be applied and transmitted by any provider EMT or higher on scene, however treatment decisions may only be made by a paramedic.

MISCELLANEOUS

604 Patient Refusal or Declination of Care / Patient Non-Transport Situations

Assessment

Determine presence of injury or illness and desire for transport Identify the person who made the EMS call Reason for refusal

EMR EMT AEMT PARAMEDIC

Standing Orders

1. Utilize the mini-mental status exam on any patient where you have concerns regarding the decision-making capacity of the patient.
2. Confirm and document the absence of intoxicating substance or injury
3. Confirm patient is of legal age of majority, or emancipated minor
4. Document mechanism of injury or circumstances of illness
5. Document pertinent past history
6. Perform vital signs and problem directed exam

The following may not refuse transport:

1. Patients with impaired judgment and decreased mental status (Utilize the mini mental status exam to determine; document)
2. Minors (less than 18 years of age or older unless they are emancipated by the courts)
3. All minors must have refusal from parent or guardian, not older sibling or other relative, unless every effort has been made to contact parent/guardian and was not successful
4. Do not release minor on the scene without parent/guardian consent

Reasons for Non-Transport

Minor illness or injury and acceptable alternative transportation available

No Patient Found on the Scene

Definition: No person found to have any complaint of injury/illness of any type or degree

PCR is to be completed in detail as to why no patient was found, i.e.: no person found on scene, person located with no complaint of injury/illness and denies needing medical assistance.

REFERENCE

Mini Mental Status Exam

1. Orientation to time – time of day, day, week, month, year	5 pts max
2. Orientation to place – building, street, city, state, country	5 pts max
3. Say “boy, dog, ball” and have the patient repeat it	3 pts max
4. Ask the patient to spell would backward, or do serial 3s backward from 20	5 pts max
5. Without repeating the words, ask them to repeat the previous three words (boy, dog, ball)	3 pts max
6. Ask the patient to do the following after you have completed the request “stick out your tongue and touch your right hand to your left ear”	3 pts max
7. Ask the patient to identify your pen and watch	2 pts max
8. Ask the patient to read the following sentence then do as it says “Shut your eyes”	1 pt
9. Ask the patient to write a sentence	1 pt
10. Ask the patient to draw two overlapping pentagons (show them an example)	1 pt

A score of 21 or better is considered mentally competent by most psychiatrists for a patient to make reasonable decisions.

MISCELLANEOUS

605 Physical Restraint

EMR EMT AEMT PARAMEDIC

All Patients:

1. Safety of EMS personnel is the main priority in any situation where a patient exhibits aggressive or combative behaviors and needs to be restrained.
2. Use the minimum amount of force and restraint necessary to safely accomplish patient care and transportation with regard to the patient's dignity. Avoid unnecessary force.
3. Assure that adequate personnel are present and that police assistance has arrived, if available, before attempts to restrain patient.
4. Plan your approach and activities before restraining the patient.
5. Have one person talk to and reassure the patient throughout the restraining procedure.
6. Approach with a minimum of four persons, one assigned to each limb, all to act at the same time.
7. Initial take down may best be accomplished leaving the patient in the prone position. After restraint, the patient should be placed in a supine position.
8. Call for additional help if patient continues to struggle against restraint.
9. Restrain all 4 extremities with patient supine on stretcher.
10. Use soft restraints to prevent the patient from injuring him or herself or others.
11. A police officer or other law enforcement personnel shall always accompany a patient in the ambulance if the patient has been restrained.
12. Do not place restraints in a manner that may interfere with evaluation and treatment of the patient or in any way that may compromise patient's respiratory effort.
13. Evaluate circulation to the extremities frequently.
14. Thoroughly document reasons for restraining the patient, the restraint method used, and results of frequent reassessment.
15. Initial "take down" may be done in a prone position to decrease the patient's visual field and stimulation, and the ability to bite, punch, and kick. After the individual is controlled, he/she shall be restrained to the stretcher or other transport device in the supine position.
16. **DO NOT** restrain patient in a hobbled, hog-tied, or prone position.
17. **DO NOT** sandwich patient between devices, such as long boards or Reeve's stretchers, for transport. Devices like backboards should be padded appropriately.
18. A stretcher strap that fits snuggly just above the knees is effective in decreasing the patient's ability to kick.
19. Padded or leather wrist or ankle straps are appropriate. Handcuffs and plastic ties are not considered soft restraints.
20. Never apply restraints near the patient's neck or apply restraints or pressure in a fashion that restricts the patient's respiratory effort.
21. Never cover a patient's mouth or nose except with a surgical mask or a NRB mask with high flow oxygen. A NRB mask with high flow oxygen may be used to prevent spitting in a patient that also may have hypoxia or another medical condition causing his/her agitation, but a NRB should never be used to prevent spitting without also administering high flow oxygen through the mask.

Performance Parameters

1. Verbal techniques include:
    a. Direct empathetic and calm voice.
    b. Present clear limits and options.
    c. Respect personal space.
    d. Avoid direct eye contact.
    e. Non-confrontational posture.
2. There is a risk of serious complications or death if patient continues to struggle violently against restraints. Chemical restraint by sedation may be indicated in some dangerous, agitated patients.

AEMT

3. INT or IV NS/LR, if hypotensive 20 mL/kg ***(peds 20 mL/kg)***
   AEMT STOP

PARAMEDIC

4. Administer the following if needed:
    a. Diazepam (Valium): 2-5 mg IV only, repeat once
    b. Midazolam (Versed): 2-5 mg IV/IM/IN/IO, repeat once
    c. Additional doses must be authorized by Medical Control

Documentation:

Review for documentation of frequent reassessment of vital signs, cardiopulmonary status, and neurovascular status or restrained extremities, reason for restraint and method used.

MISCELLANEOUS

606 Physician On Scene

EMR EMT AEMT PARAMEDIC

If private physician intervenes by phone the EMT-Basic/EMT-Paramedic shall:

- Request the physician contact Medical Control and relay any orders through them.
- **NO ORDERS** will be taken over the phone from the private physician.

Standing Order:

1. No one will be recognized as a physician without proof of license. This must be in the form of a wallet card or visual personal recognition. NO ORDERS will be accepted until proof of license is verified.
2. Consider need for Law Enforcement if any difficulty with person occurs.
3. The EMT or above shall:
    a. Inform the physician that they must contact Medical/Trauma Control.
    b. Inform Medical/Trauma Control of the presence of a physician on scene.
4. Medical/Trauma Control may:
    a. Speak to the physician to determine the qualifications.
    b. Request the EMT. AEMT, or Paramedic to verify licensure of the physician.
    c. Relinquish total responsibility for the patient to the on-scene physician.
5. Physician (intervening) may:
    a. Assist the EMT, AEMT, or Paramedic and allow you to operate under EMS standing orders and protocols. Offer assistance by allowing the EMS Provider to remain under Medical/Trauma Control; or
    b. Request to talk to Medical/Trauma Control to offer advice and assistance; or
    c. Take responsibility for the care given by the EMS Provider if okay with Medical/Trauma Control, then physically accompany the patient to the Emergency Department where responsibility is assumed by the receiving physician; and shall,
    d. Sign for all instructions given to the EMS Provider
    e. Contact should be made with Medical/Trauma Control if this happens.
6. If private physician intervenes by phone or in person the EMS provider shall:
    a. Inform the physician that the EMS Provider must contact Medical/Trauma Control.
    b. Request the physician contact Medical Control and relay any orders through them.
    c. NO ORDERS should be taken over the phone from the private physician. At no time should any order be taken over the telephone except from Medical/Trauma Control.

MISCELLANEOUS

607 By-standers On Scene

EMR EMT AEMT PARAMEDIC

Standing Order:

By-stander participation – You may use them at your discretion. However, YOU will be responsible for their actions and treatment. This includes other medical professionals. In any situation, you need assistance you may utilize their expertise and skills.

NOTE: Request proof of their licensure by visualization of their current license, if possible. Remember, YOU are responsible for the patient. If any by-stander is trying to take over direction of patient care, other than a Physician (follow Guideline 606 Physician on Scene in this situation) you may have law enforcement remove the person for "Obstruction of Emergency Services".

MISCELLANEOUS

608 Procedure for Deviation from Standing Orders

EMR EMT AEMT PARAMEDIC

NEVER simply disregard a standing order or protocol.

These Standing Orders have been established so that EMS Personnel may provide the best care possible for our patients. Most of our patients will be covered by a single Standing Order. However, some patients may have signs and symptoms of illness and/or injury that are covered by more than one Standing Order or, in rare cases, following a Standing Order may not be in the best interest of the patient. In these cases, you must be aware that combining Standing Orders may lead to medication errors, overdose, and medication incompatibility. You are expected to use your judgment and to always make decisions that are in the best interest of the patient.

If you use more than one standing order when treating your patient, you must document your reasoning in the NARRATIVE SECTION of the Patient Care Report.

If in your judgment, following a standing order is not in the best interest of the patient, CONTACT MEDICAL CONTROL, regarding your treatment. Document the rationale for deviation, and the name of the physician giving the order.

MISCELLANEOUS

SOP # 609 Spinal Protection

EMR EMT AEMT PARAMEDIC

The intent of this guideline is to decrease injury and discomfort to patients caused by unnecessary spinal immobilization and use of long spine boards.

- Studies show that immobilizing trauma victims may cause more harm than good to the patient.
- Penetrating trauma victims benefit the most from rapid assessment and transport to a trauma center without **spinal motion restriction (SMR).**
- There is evidence that backboards result in harm by causing pain, changing the normal anatomic lordosis of the spine, inducing patient agitation, causing pressure ulcers, and compromising respiratory function
- **Use of the backboard is recommended in the event of CPR**

Spinal Injury Assessment
Introduction:

- Perform **SMR** for a patient who is suspected of having a traumatic unstable spinal column injury. Have a high index of suspicion for pediatrics and patients with degenerative skeletal/connective tissue disorders (i.e. osteoporosis, elderly, previous spinal fractures, etc.)
- Penetrating trauma such as a gunshot wound or stab wound should **NOT** be immobilized on a long board unless there are signs of spinal injury. Emphasis should be on airway and breathing management, treatment of shock, and rapid transport to a Level 1 trauma center.
- Determination that immobilization devices should be used or removed should be made by the highest-level provider on scene.
- If the immobilization process is initiated prior to the arrival and assessment by the highest level of provider, STOP and perform spine injury assessment to determine the best course of action.

Spinal Motion Restriction
The term spinal motion restriction (**SMR**) better describes the procedure used to care for patients with possible unstable spinal injuries. SMR includes:

- Reduction of gross movement by patient
- Prevention of duplicating the damaging mechanism to spine
- Regular reassessment of motor/sensory function

Procedure:
1. Assess the scene to determine the risk of injury. Mechanism alone should not determine if a patient requires cervical spine immobilization. However, mechanisms that have been associated with higher risk of injury are the following:
    a. Motor vehicle collisions, including automobiles, all-terrain vehicles, and snowmobiles
    b. Axial loading injuries to the spine
    c. Associated, substantial torso injuries
    d. Falls >10 feet
2. Assess the patient in the position he/she was found. Initial assessment should focus on determining whether or not a cervical collar needs to be applied.

3. **Assess for mental status, neurologic deficits, spinal pain or tenderness, any evidence of intoxication, or other severe injuries**

Treatment and Interventions

1. Immobilize patient with cervical collar if there is **any** of the following:
   a. Patient complains of midline neck or spine pain
   b. Any midline neck or spinal tenderness with palpation
   c. Any abnormal mental status (including extreme agitation) or neurologic deficit
   d. Any evidence of alcohol or drug intoxication
   e. Another severe or painful distracting injury is present
   f. Torticollis in children
   g. A communication barrier that prevents accurate assessment

   If none of the above apply, patients should not have a cervical collar placed.

2. Patients with penetrating injury to the neck should not receive spinal immobilization, regardless of whether they are exhibiting neurologic symptoms or not. Doing so can lead to delayed identification of injury or airway compromise, and has been associated with increased mortality
3. If extrication may be required
   a. From a vehicle: After placing a cervical collar, if indicated, children in a booster seat and adults should be allowed to self-extricate. For infants and toddlers already strapped in a car seat with a built-in harness, extricate the child while strapped in his/her car seat
   b. Other situations requiring extrication: A padded long board may be used for extrication, using the lift and slide (rather than a logroll) technique

4. Patients should not routinely be transported on long boards, unless the clinical situation warrants long board use. An example of this may be facilitation of immobilization of multiple extremity injuries or an unstable patient where removal of a board will delay transport and/or other treatment priorities. In these rare situations, long boards should be padded or have a vacuum mattress applied to minimize secondary injury to the patient. Spine injuries in the adult population may be present at more than one level simultaneously. SMR, when indicated, should apply to the entire spine. An appropriately-sized cervical collar is a critical component of SMR and should be used to limit movement of the cervical spine whenever SMR is employed. The remainder of the spine can be stabilized using an ambulance cot, a vacuum mattress, a long back board or a similar device.

If patient experiences negative effects of SMR methods used, alternative methods should be utilized.

1. If hard backboard utilized for extrication, patient should be removed from the backboard when possible and placed on the ambulance stretcher.
2. Patient positions and/or methods/tools to achieve SMR that are allowable (less invasive to more invasive)
   a. Patient position: supine, lateral, semi fowlers, fowlers
   b. Tools/methods to achieve position of comfort include, but not limited to: pillows, children's car seat, scoop, vacuum mattress
3. Provide manual stabilization restricting gross motion. Alert and cooperative patients may be allowed to self-limit motion if appropriate with or without cervical collar.
4. Apply cervical collar; patients who are unable to tolerate cervical collar may benefit from soft collars, pillows, or other padding.

5. Considerations for patient movement when decision to SMR has been made:
    a. Keeping with the goal of restricting gross movement of spine and preventing increased pain and discomfort, self-extrication of the patient is allowable.
    b. If needed, extricate patient limiting flexion, extension, rotation and distraction of spine
    c. Pull sheets, other flexible devices, scoops, and scoop like devices can be employed if necessary. Hard backboards should only have limited utilization.

6. **Standing take downs of ambulatory patients is unnecessary.** Ambulatory patients who meet the above criteria for cervical immobilization should have c-collar applied and be allowed to sit onto the stretcher.
7. Apply adequate padding to prevent tissue ischemia and increase comfort. **Patients should be allowed to be in a position of comfort if they do not meet the requirements for immobilization.**
8. Place patient in position best suited to protect airway
9. Regularly reassess motor/sensory function (include finger abduction, wrist/finger extension, plantar/dorsal flexion, and sharp/dull exam if possible.
10. Consider the use of SpO_2 and $EtCO_2$ to monitor respiratory function.
11. Delivery to hospital: movement of patient to hospital stretchers should be done by limiting motion of the spine.

Special Considerations:

- **Patients with acute or chronic difficulty breathing:** SMR has been found to limit respiratory function an average of 17% with the greatest effect experienced by geriatric and pediatric subjects restricted to a hard backboard. **USE SMR WITH CAUTION with patients presenting with dyspnea and position appropriately.**
- **Pediatric patients, < 9 years of age:**
    - Consider use of padded pediatric motion restricting board
    - Avoid methods that provoke increased spinal movement
    - If choosing to apply SMR to patient in car seat, ensure that proper assessment of patient posterior is performed
- **Combative patients:** Avoid methods that provoke increased spinal movement and/or combativeness

Pediatric Patients and Car Seats

- **Infants restrained in a rear-facing car seat** and **Children restrained in a car seat (with a high back – convertible or booster)** may receive SMR and be extricated in the car seat. The child may remain in the seat if the SMR is secure and his/her condition allows (no signs of respiratory distress or shock)
- **Children restrained in booster seat (without a back)** need to be extricated and receive standard SMR procedures.

Helmet Removal

Safe and proper removal of the helmet should be done following the steps outlined in an approved trauma curriculum.

Indications for football helmet removal:

- When a patient is wearing a helmet and not shoulder pads

- In the presence of head and/or facial trauma, and removal of the face piece is not sufficient
- Patients requiring advanced airway management when removal of the facemask is not sufficient
- When the helmet is loose on the patient's head
- In the presence of cardiopulmonary arrest. (The shoulder pads must also be removed.)

When helmet and shoulder pads are both on the spine is kept in neutral alignment. If the patient is wearing only a helmet or shoulder pads, neutral alignment must be maintained. Either remove the other piece of equipment or pad under the missing piece. *All other helmets must be removed in order to maintain spinal alignment.*

MISCELLANEOUS

610 Stretcher Transport

PARAMEDIC

The following conditions require patients to be transported by stretcher or stair chair. Other patients may be transported ambulatory unless their condition warrants stretcher use.

1. Pregnant greater than 20 weeks
2. Possible cardiac chest pain
3. Shortness of breath
4. Asthma
5. Chronic Obstructive Pulmonary Disease
6. Stroke
7. Patients requiring spinal immobilization
8. Penetrating trauma to the torso, neck, or head
9. Lower extremity, pelvis trauma
10. Low back trauma
11. Unconscious, unresponsive patients
12. Seizures within past hour or actively seizing
13. Generalized weakness
14. Patients unable to ambulate secondary to pain or weakness
15. Altered level of consciousness, except psychiatric patients
16. Psychiatric patients requiring restraint

MISCELLANEOUS

611 Terminally Ill Patients

EMR EMT AEMT PARAMEDIC

Standing Order

1. Maintain a calm environment and avoid performing measures beyond basic life support.
2. Elicit as much information from persons present who are familiar with the patient's condition as possible.
3. Obtain and document the name and telephone number of the patient's physician if possible.
4. Maintain BLS procedures and contact Medical Control as soon as possible. Provide full information on the patient's present condition, history, and name of the patient's physician and telephone number.
5. Medical Control will direct the management of the call
6. Accept DNR/POST forms (original or copy):
    a. State approved forms
    b. Signed order in patient's medical records: nursing home, hospice, or home care

Note: If DNR/POST for is used to withhold or terminate resuscitation efforts, a copy must be attached to the PCR.

MISCELLANEOUS

612 "Excited Delirium" / Taser Use

Assessment

Changes in LOC
Ongoing disorientation
Agitation
Hallucination
Hyperthermia
Seizure
Chest pain or difficulty breathing
Significant injury from fall or takedown

EMR

1. Oxygen and airway maintenance appropriate for patient's condition
2. Supportive care

EMR STOP

EMT

3. Pulse oximetry

EMT STOP

AEMT

4. Glucose check
5. IV LR or NS, bolus (20 mL/kg)
6. If hypoglycemic, titrate D10 slowly until patient responds. Try to avoid large swings in serum glucose levels. ***(peds – see glucose dosing chart)***

Glucose (dextrose)	D50 1-2 mL/kg D25 2-4 mL/kg D10 2-4 mL/kg	>8 years 6 months - 8 years Neonate - 6 months Max Rate 2 ml/kg/Min
If D25 or D10 are not available utilize a syringe of D50. To make D25 expel 25 mL of D50 and draw up 25 mL of NS. To make D10 expel 40 mL of D50 and draw up 40 mL of NS.		
***Reminder:** Consider IO if other access unavailable and patient significantly symptomatic		

AEMT STOP

PARAMEDIC

7. 12 Lead EKG if appropriate
8. Diazepam (Valium) 2-10 mg ***(peds 0.1 mg/kg)*** slow IVP PRN or Midazolam (Versed) 2-5 mg ***(peds 0.1 mg/kg)*** IVP if generalized seizure activity

NOTES:

- All persons subjected to use of the device should be medically evaluated and monitored regularly.
- Darts should be treated as biohazard, and not be removed in the field except by trained personnel.

- Darts to eyes, mouth, face, neck and genitals or near indwelling medical devices or lines should not be removed in the field.

PEDIATRIC CARDIAC EMERGENCY

613 Neonatal Resuscitation

Assessment

Newborn with respiratory or circulatory distress

EMR

1. Dry and place in face up head down position
2. Keep infant level with mother until cord is clamped
3. Suction mouth, then nose, if obvious obstruction to spontaneous breathing or requiring or requiring positive pressure ventilation
4. Respirations
    a. If spontaneous
        i. Wait 1-2 minutes then complete clamping cord and cut between clamps
        ii. Cover infant head
        iii. Wrap and keep warm
        iv. Provide Oxygen
        v. Transport without delay
    b. If no respirations
    Stimulate respirations: rub back, snap bottom of feet gently, if no change or respirations become depressed (<20 bpm)
        i. Re-suction mouth, then nose
        ii. Ventilate with BVM at 30/min, Oxygen as appropriate
        iii. Wait 1-2 minutes then clamp cord and cut between clamps
        iv. Transport Immediately
5. Pulse
    a. If pulse rate is less than 60 perform CPR at rate of 120 compressions/min, transport
        i. Continue chest compressions

EMR STOP

EMT

6. Pulse oximetry

EMT STOP

AEMT

7. INT or IV NS, if hypotensive bolus 20 mL/kg
8. If pulse rate is >60 keep warm, ventilate with BVM if necessary, transport

AEMT STOP

PARAMEDIC

9. 12 Lead EKG, if appropriate
10. The dose of EPINEPHrine 1:10,000 (now 1 mg/mL) is 0.01 mg/kg IV/given q 3-5 minutes and repeat until heart rate is above 60/minute. Refer to the length-based tape to confirm dosage.

    Note: Pulse oximetry readings may be inaccurate within the first 10 minutes of life. Readings below 65% at birth are abnormal, and saturation should trend towards 95% at ten minutes of life. Use other methods of oxygenation assessment.

PROCEDURE

Capnography

PARAMEDIC

Indications:

- Capnography shall be used as soon as possible in conjunction with any airway management adjunct, including endotracheal, cricothyrotomy, Blind Insertion Airway Device (BIAD) or BVM
- Capnography is recommended to be used on all patients treated with CPAP, Magnesium, and/or EPINEPHrine for respiratory distress.

Procedure:

1. Attach capnography sensor to the BIAD, endotracheal tube, or oxygen delivery device.
2. Note CO_2 level and wave form changes. These will be documented on each respiratory failure, cardiac arrest, or respiratory distress patient.
3. Capnography shall remain in place with the airway and be monitored throughout the prehospital care and transport.
4. Any loss of CO_2 detection or waveform indicates an airway problem and should be documented.
5. Capnography should be monitored as procedures are performed to verify or correct the airway problem.
6. Document the procedure and results on/with the Patient Care Report.
7. In all patients with a pulse, an $ETCO_2$>20 is anticipated. In the post-resuscitation patient, no effort should be made to lower $ETCO_2$ by modification of the ventilatory rate. Further, in post-resuscitation patients without evidence of ongoing, severe bronchospasm, ventilatory rate should never be <6 breaths per minute.
8. In the pulseless patient, and $ETCO_2$ waveform with an $ETCO_2$ value >10 may be utilized to confirm the adequacy of an airway to include BVM and advanced devices with SpO_2 will not register.

PROCEDURE

Chest Decompression

PARAMEDIC

1. Cleanse skin on affected side using aseptic technique
2. Using a 14 or 16 gauge 3 ½" angiocath, insert between the 2nd/3rd mid clavicular or 4th/5th mid-axillary spaces
3. Advance needle until "pop" is felt while the needle is entering the pleural space
4. Advance catheter until hub contacts skin
5. Cover catheter hub with Chest Seal (ensure one-way valve effect)
6. Reassess patient for breath sound changes
7. If signs of tension reoccur check chest seal, consider repeating chest decompression per above steps
8. Contact Medical Control
9. Transport

Use the same procedure for pediatric patients: use 18 or 20 gauge angiocath

PROCEDURE

Continuous Positive Airway Pressure (CPAP)

PARAMEDIC

Continuous **P**ositive **A**irway **P**ressure has been shown to rapidly improve vital signs, gas exchange, reduce the work of breathing, decrease the sense of dyspnea, and decrease the need for endotracheal intubation in patients who suffer from shortness of breath from asthma, COPD, pulmonary edema, CO poisoning, Near Drowning, CHF, and pneumonia. In patients with CHF, CPAP improves hemodynamics by reducing left ventricular preload and afterload.

Indications

- Any patient who is respiratory distress for reasons other than trauma or pneumothorax, and;
- Is awake and able to follow commands
- Is over 12 years old and the CPAP mask fits appropriately
- Has the ability to maintain an open airway
- Has a systolic blood pressure above 90 mmHg
- Uses accessory muscles during respirations
- Shows signs and symptoms consistent with asthma, COPD, pulmonary edema, CHF or pneumonia

AND who exhibit **two or more** of the following:

- A respiratory rate greater than 25 breaths per minute
- Pulse Oximetry of less than 94% at any time
- Use of accessory muscles during respirations

Contraindications

- Patient is in respiratory arrest/apneic
- Patient is suspected of having a pneumothorax or has suffered trauma to the chest
- Patient has a tracheostomy
- Patient is actively vomiting or has upper GI bleeding
- Patient has decreased cardiac output, obtundation and questionable ability to protect airway (e.g. Stroke, etc.), penetrating chest trauma, gastric distention, severe facial injury, uncontrolled vomiting, and hypotension secondary to hypovolemia

Precautions

Use care if patient:

- Has impaired mental status and is not able to cooperate with the procedure
- Has failed at non-invasive ventilation
- Has active upper GI bleeding or history
- Complains of nausea or vomiting
- Has inadequate respiratory effort
- Has excessive secretions
- Has a facial deformity that prevents the use of CPAP

Procedure

Explain the procedure to the patient

1. Connect O_2 tubing nipple to gas source
2. Place the face mask securely to the patient's face using head harness

3. With nebulizer in the OFF position slowly increase gas flow to 6 or 8 LPM. Check face mask fit to patient and device connections for leaks.
4. Adjust the flow meter until desired pressure is obtained. **Maximum benefit is usually achieved at about 7.5 mm H_2O. Higher pressures result in more side effects with minimal improvements in benefits.** Flow of 12-14 LPM is required to reach CPAP pressure of 8.5-10 cm H_2O
5. Do not exceed 33 LPM
6. Patient SaO_2 should be monitored using a pulse oximeter.
7. To activate nebulizer, rotate knob to the ON position.
8. If necessary, readjust flow meter to obtain desired CPAP pressure. Up to 25 LPM may be required.
9. Consider Ondansetron (Zofran) 2-4 mg IV ***(peds 0.15 mg/kg IV)***

Measuring Pressure

- Pressure relief limits maximum CPAP pressure to 25 cm H_2O @ 25 LPM
- Do not exceed pressure limit of manometer (25 cm H_2O)
- Manometer accuracy ± 3 cm H_2O up to 15 cm H_2O and ± 5 cm H_2O over 15 cm H_2O

Specifications

Sample guidelines for preparing Rx Dosing

Flow meter setting L/min	14 - 15								23 - 24							
CPAP Pressure cm H_2O	4 - 5								9 - 10							
Output	12 mL/hour								16 mL/hour							
Rx (mg/hr)	5		10		15		20		5		10		15		20	
Treatment Duration (hours)	1	2	1	2	1	2	1	2	1	1.5	1	1.5	1	1.5	1	1.5
Medication @5 mg/mL (mL)	1	2	2	4	3	6	4	8	1	1.5	2	3	3	4.5	4	6
Saline (mL)	11	22	10	20	9	18	8	16	15	22	14	21	13	20	12	18

Notes:

- In the event of undesirable flow from oxygen source, simply remove the device and place on supplemental oxygen.
- Always verify delivered CPAP pressure on a manometer.
- Activation or deactivation of nebulizer may affect the delivered CPAP pressure. Always verify delivered CPAP pressure with a monometer.
- Flow meters capable of delivering up to 25 LPM may be required to operate both CPAP and Nebulizer simultaneously.
- Use of nebulizer other than the one provided may affect performance.
- Do not remove CPAP until hospital therapy is ready to be placed on the patient.
- Watch the patient for gastric distention that can result in vomiting
- Procedure may be performed on patients with a Do Not Resuscitate order
- Due to the changes in preload and afterload of the heart during CPAP therapy, a complete set of vital signs must be obtained every 5 minutes.

PROCEDURE

Delayed Off Loading of Stable Non-Emergent Patients in the ED

EMS is currently facing an increasing frequency of patient turnover being delayed in the Emergency Department due to delays in acknowledgement, assessment, and placement in the ED. These delays negatively impact the ability of EMS to maintain response capability and provide emergency response in a timely manner. This protocol provides a method to off-load non-emergent patients and return to service in a timely manner.

PARAMEDIC

Eligible patients (patients must meet **ALL** of the following criteria:

- Greater than 16 years old or less than 65 years old
- Stable vital signs
- Non-Emergent complaint
- Patient can walk and talk
- Patient has had neither medications nor significant interventions by EMS (minor bandaging, splinting, without Nausea/Vomiting)

Procedure

1. Ambulance arrives in ED and notifies ED nursing staff of patient.
2. If the ED Nursing Staff has not accepted report and made efforts to offload the patient from the EMS stretcher within 30 minutes of arrival, contact EMS Lieutenant or Supervisor.
3. EMS Lieutenant or Supervisor again requests ED Nursing Staff to offload the EMS stretcher. If no progress is made within 15 minutes of the Lieutenant or Supervisor's engagement, and the patient meets all the criteria above, perform the following:
    a. Ensure the patient's condition is unchanged
    b. If an INT was started on the patient, ensure that it is discontinued prior to off-loading unless directed by the Triage or Charge Nurse.
    c. Document all contacts with ED personnel, and record names of Charge and Triage nurses
    d. Denote method of patient care transfer on PCR/EPCR
    e. Complete an abbreviated, hand written EMS run report to include patient demographics, complaint, vital signs and pertinent history and ensure hospital is aware of patient's presence in the waiting room
    f. Complete standard EPCR run report
    g. Return to service

In the event that a patient does not agree to be placed in the waiting room the patient has the right to refuse offload.

PROCEDURE

Endotracheal Tube Introducer (Bougie)

PARAMEDIC

Indications:

- Patients meet clinical indications for oral intubation (appropriate to use with any attempt)

Contraindications:

- Introducer larger than ETT internal diameter

Procedure:

1. Prepare, position and oxygenate the patient with 100% Oxygen
2. Select proper ET tube without stylet, test cuff and prepare suction
3. Lubricate the distal end and cuff of the endotracheal tube and the distal ½ of the Endotracheal Tube Introducer (Bougie) (Note: failure to lubricate the Bougie and the ETT may result in being unable to pass the ETT)
4. Using laryngoscopic techniques, visualize the vocal cords if possible using Sellick's/BURP as needed
5. Introduce the Bougie with curved tip anteriorly and visualize the tip passing the vocal cords or above the arytenoids if the cords cannot be visualized
6. Once inserted, gently advance the Bougie until you meet resistance or "hold-up" (if you do not meet resistance you have a probable esophageal intubation and insertion and insertion should be reattempted or the failed airway protocol implemented as indicated)
7. Withdraw the Bougie only to a depth sufficient to allow loading of the ETT while maintaining proximal control of the Bougie
8. Gently advance the Bougie and loaded ET Tube until you have hold-up again, thereby assuring tracheal assuring tracheal placement and minimizing the risk of accidental displacement of the Bougie
9. While maintaining a firm grasp on the proximal Bougie, introduce the ET Tube over the Bougie passing the tube to its appropriate length
10. If you are unable to advance the ETT into the trachea and the Bougie and ETT are adequately lubricated, withdraw the ETT slightly and rotate the ETT 90° COUNTER CLOCKWISE to turn the bevel of the ETT posteriorly. If this technique fails to facilitate passing of the ETT you may attempt direct laryngoscopy while advancing the ETT (this will require and assistant to maintain the position of the Bougie and if so desired advance the ETT)
11. Once the ETT is correctly placed, hold the ET Tube securely and remove the Bougie
12. Confirm tracheal placement, inflate the cuff with 3-10 mL of air, auscultate for equal breath sounds and reposition accordingly
13. When final position is determined, secure the ET Tube, reassess breath sounds, apply end tidal CO_2 monitor, and record the monitor readings to assure continued tracheal intubation

PROCEDURE

External Transcutaneous Cardiac Pacing

PARAMEDIC

Noninvasive cardiac pacing, also referred to as external or transcutaneous pacing, involves the temporary application of externally applied electrodes to deliver an adjustable electrical impulse directly across an intact chest wall for the purpose of rhythmically stimulating the myocardium to increase the mechanical heart rate.

Indications:

- It is indicated for the treatment of hemodynamically compromised patients in settings where cardiac output is compromised due either to the complete failure of cardiac rhythm or to an insufficient rate of the patient's intrinsic pacemaker.
- Bradycardia with a systolic BP of less than 80 mmHg with shock-like signs or symptoms.
- Patients who experience provider-witnessed cardiopulmonary arrest and who present with asystole, or patients whose EKG converts to asystole while the EKG is being monitored.
- Prompt application of the transcutaneous cardiac pacemaker is appropriate prior to the administration of EPINEPHrine and atropine when a patient converts to asystole as a primary rhythm during EKG monitoring by an EMT-P.
- Pediatric patients (40 kg or less) with profound symptomatic bradycardia unresponsive to optimal airway management, oxygenation, EPINEPHrine, and Atropine.

NOTE: Medical consultation is required for pacing pediatric patients.

Contraindications:

- Non-witnessed cardiopulmonary arrest with asystole
- Patients not meeting blood pressure criteria

Technique:

Start at a pacemaker heart rate of 70 beats per minute and the milliamperes (m.a.) as low as possible. Gradually increase m.a. until palpable pulse confirmed capture or 200 m.a.

Potential Adverse Effects/Complications:

Patients may experience mild to moderate discomfort. If patient is conscious and has adequate blood pressure, consider:

- Pain medication per chart below **and/or**
- Diazepam 2.5-10 mg slow IV/IO or
- Midazolam (Versed) 2-4 mg IV/IO

Musculoskeletal twitching in the upper torso may occur during cardiac pacing.

Precautions:

When properly applied, chest compressions can be performed directly over the insulated electrodes while the pacer is operating.

DO NOT USE EXTERNAL CARDIAC PACING ON A HYPOTHERMIC PATIENT.

Doses are approximate	5-9 kg	10 kg	12 kg	15 kg	20 kg	30 kg	40 kg	50-74 kg	≥ 75 kg	Geriatric	
Fentanyl IV/IN/IO		10	12	15	20	30	40	50-75 mcg	75	25	1-2 mcg/kg
Morphine IV/IO		1 mg	1 mg	1.5 mg	2 mg	3 mg	4 mg	4 mg	4 mg	2 mg	0.05-0.1 mg/kg
Ondansetron IV/IO					3 mg	3 mg	4 mg	4 mg	4 mg	4 mg	0.15 mg/kg

If pain not controlled, Morphine and fentanyl dosing may be repeated once after ten minutes. Contraindicated in hemodynamically unstable patients.

PROCEDURE

Fever / Infection Control

Indications:

- Age
- Duration of Fever
- Severity of Fever
- Past Medical History
- Medications
- Immunocompromised (Transplant, HIV, Diabetes, Cancer)
- Environmental Exposure
- Last Acetaminophen or Ibuprofen
- Warm
- Flushed
- Sweaty
- Chills/Rigors
- Myalgias: Cough, Chest Pain, Headache, Dysuria, Abdominal Pain, Mental Status Changes, Rash

EMR EMT AEMT PARAMEDIC

Procedure:

1. Use Contact, Droplet, and Airborne PPG precautions
2. Using your IV Protocol, start a Normal Saline Bolus
3. For a temperature greater than 100.4°F (38°C) if available administer Ibuprofen 600 mg PO ***(peds >6 months 10 mg/kg PO, max dose 600 mg)*** or Acetaminophen 1000 mg PO ***(peds >3 months 15 mg/kg PO, max dose 650 mg)*** May assist with patient medications.
4. Notify destination or contact Medical Control

PROCEDURE

Hemorrhage Control Clamp

PARAMEDIC

Indications:
Provides temporary control of severe bleeding in the scalp, extremities, axilla, and inguinal areas

Contraindications:
Not for use where skin approximation cannot be obtained (i.e. Large skin defects under high tension)

Warnings and Precautions:
- This device is intended for temporary use only; not to exceed three hours.
- Patients must be seen by medical personnel for device removal and surgical wound repair
- Use device as directed to avoid needle stick injury.
- Do not use where delicate structures are within 10 mm of the skin surface (ex. Orbits of the eye).
- This device will not control hemorrhage in non-compressible sites, such as the abdominal and/or chest cavities.
- Ensure proper PPE is utilized to protect against possible splashing of blood during application.
- The device is designed for single use. Do not use if sterility seal on package has been broken or otherwise damaged.
- Dispose of the device as you would sharps.
- For extreme extremity injuries not amenable to clamp application consider tourniquet application per protocol.

Procedure: *(if patient is conscious, explain procedure)*
- Apply appropriate PPE
- Open sterile package by pulling forward on outer tabs
- Remove device from package by lifting up. Take care not to close device until it has been applied to the wound.
    - If the device has been accidentally closed, push the side buttons inward with one hand and pull the device open using the device arms.
- Locate wound edges
- Align the device parallel to the length of the wound edge. Position the needles approx. 1-2 cm from the wound edge on either side. (For very large wounds the device can be applied to one side, then pulled to the other side, or the tissue can be approximated by hand and the device applied.)
- Press the arms of the device together to close the device. The device's safety seal will break with pressure.
- Ensure the entire wound is sealed and bleeding stops, using a gauze pad to wipe the area to verify no leaking of blood from the wound. More than one device may be required for large wounds.
- If bleeding continues:
    - Ensure the device is in the correct position, close the device more firmly by applying further pressure to the arms of the device
    - If wound is too large apply additional devices to the open section

- If device is applied incorrectly or not positioned properly remove the device according to the instructions and reapply.

Removal:

Unless you need to reposition the device, all removal should be done in a medical facility prepared to manage the wound.

- Hold the device by the gripping bars, press the device further closed to release the lock.
- While maintaining pressure on the arms, press both release buttons with your other hand.
- While pressing the release buttons, pull one of the gripping bars open and rotate the needles from the wound, one side at a time.
- Pick up the device ONLY by the buttons to prevent accidental contact with the needles
- Dispose of the device in accordance with local guidelines for sharps.

Notes:

If desired wound packing and/or the use of a hemostatic agent may be applied. The hemostatic agent does not need to be removed prior to application of the clamp.

PROCEDURE

Induced Hypothermia Following ROSC

The goal is to begin cooling the patient who meets criteria as soon as possible. You may initiate resuscitation with cold saline as your IVF of choice if the patient appears to be a candidate for IH. Therefore, if you have cold saline available when the first IV is started, begin cold fluids immediately. If IV access is already established, change to cold saline when ROSC is achieved. If ROSC is not achieved, proceed as you would with any nonresponsive cardiac arrest, and document that cold saline was initiated. This will assist the medical examiner in determining time of death. Complete the remainder of the protocol.

PARAMEDIC

Criteria for Induced Hypothermia:

- Age greater than 18
- Any cardiac arrest with resuscitation efforts
- **R**eturn **O**f **S**pontaneous **C**irculation (regardless of blood pressure) following cardiac arrest (all non-traumatic causes)
- Patient remains comatose (GCS <8 and/or no purposeful responses to pain)
- Intubated or needs airway management (King Airway is acceptable) $ETCO_2$ >20 mmHg
- Systolic Blood Pressure can be maintained at 90 mmHg spontaneously or with fluids and pressors

Patient Exclusion Criteria:

- Pregnant female with obvious gravid uterus
- Systolic Blood Pressure cannot be maintained at 90 mmHg or greater spontaneously or with fluids and pressors
- Coagulopathy or thrombocytopenia

Procedure:

1. Does patient meet criteria for Induced Hypothermia?
    a. If no proceed to Post-Resuscitation protocol
        i. If yes, is the ET Tube placed?
        ii. If no, proceed with intubation, King Airway acceptable
        iii. Once airway is controlled, follow remaining steps
2. Perform Neuro Exam to confirm meets criteria
3. Expose patient and apply ice packs to Axilla, Neck, and Groin
4. Administer Cold Saline bolus 30 mL/kg to max of 2 liters
5. Administer Midazolam (Versed) 0.15 mg/kg to max 10 mg, if needed to control agitation or shivering
6. If necessary, administer EPINEPHrine 2-10 mcg/min for MAP 90-100
    a. OPTIONAL: administer DOPamine 10-20 mcg/kg/min for MAP 90-100

Special Notes:

- If patient meets other criteria for induced hypothermia and is not intubated, then intubate according to protocol before inducing cooling. If unable to intubate, use of King Airway is acceptable
- When exposing patient for purpose of cooling, undergarments may remain in place. Be mindful of your environment and take steps to preserve the patient's modesty.
- Do not delay transport for the purpose of cooling
- Reassess airway frequently and with every patient move
- Patients develop metabolic alkalosis with cooling. Do not hyperventilate
- Transport patient to Hypothermia capable center if appropriate

PROCEDURE

Indwelling IV Port Access

PARAMEDIC

Indications:

- Intravenous fluid or medications **emergently** needed AND
- Peripheral IV cannot be established AND
- Patient exhibits one or more of the following:
  - Presence of Indwelling Port
  - Altered mental status (GCS of 8 or less)
  - Respiratory compromise (SaO2 of 80% or less following appropriate oxygen therapy and/or respiratory rate <10 or >40/min)
  - Hemodynamically unstable

Contraindications:

- Infection at insertion site
- Significant edema
- Excessive tissue at insertion site
- Inability to locate landmarks

Considerations:

- Port-A-Cath access in the field should only be utilized in **EMERGENCY** situations.
- Access should only be attempted under sterile conditions by those who have documented competency.
- You may utilize the patient's supplies if necessary and appropriate.
- **DO NOT FORCE FLUSH INDWELLING CATHETERS.**

Procedure for accessing the Implanted Port:

1. Assemble Supplies:
   a. 10 mL NS Syringe
   b. Chloraprep
   c. Masks
   d. Sterile Gloves
   e. Huber needle with attached extension tubing
   f. Transpore tape
   g. IV/NS set-up
2. Cleanse hands
3. Peel open one corner of the Huber needle package only; Extend end of extension tubing only out the opening
4. Attach 10 mL NS syringe to extension tube
5. Prime tubing and needle with NSS
6. Place Huber needle package on a secure flat surface and peel back package open. **Do NOT touch Huber needle until sterile gloves are on.**
7. Caregiver applies mask; the patient has the option of putting on mask or turning their head away from the port area
8. Put on sterile gloves

9. Use repeated back and forth strokes of the applicator for approximately 30 seconds. Allow the area to air dry for 30 seconds. Do not blot or wipe away.
10. Pick up Huber needle with NS syringe attached; touch only the Huber needle as this is sterile and the syringe is not.
11. Grip Huber needle securely; remove clear protective sheath from the needle
12. Locate and stabilize the port site with your thumb and index finger, creating a "V" shape.
13. Access the port by inserting the Huber needle at a 90° angle into the reservoir
14. Once accessed, the needle must not be twisted; excessive twisting will cut the septum and create a drug leakage path
15. Insert gently, flush the port with 2-5 mL NS and then attempt to aspirate a blood return. This confirms proper placement; if the port is difficult to flush **DO NOT FORCE FLUSH.**
16. Slowly inject the remaining 10 mL NS; observe for resistance, swelling or discomfort. If present, assess needle placement. If still present remove the Huber and re-access.
17. Remove empty NS syringe and attach IV Solution tubing and initiate flow.
18. Hold slight pressure with a 2x2 until bleeding, if any, stops. There should never be excessive bleeding.

Dressing the Port Site:

1. Assemble supplies
    a. CVC dressing kit
    b. Flat clean work surface
2. Open the package of 2x2s if extra padding is needed
3. Place one 2x2 under the needle to provide padding on the skin if Huber is not flush with chest
4. Tear a piece of tape approximately 3" long; split tape lengthwise; tape over Huber needle in a "X" format
5. Cover site with Transpore tape
6. Secure the extra tubing with tape to prevent catching on clothes

PROCEDURE

Intranasal Medication

AEMT PARAMEDIC

Medication administration in a certain subgroup of patients can be a very difficult endeavor. For example, an actively seizing or medically restrained patient may make attempting to establish an IV almost impossible which can delay effective drug administration. Moreover, the paramedic or other member of the medical team may be more likely to suffer a needle-stick injury while caring for these patients.

In order to improve prehospital care and to reduce the risks of accidental needle-stick, the use of Mucosal Atomizer Device (MAD) is authorized in certain patients. The MAD allows certain IV medications to be administered into the nose. The device creates a medication mist which lands on the mucosal surfaces and is absorbed directly into the bloodstream.

Indications:
Emergent need for medication administration and IV access unobtainable or presents a high risk of needle-stick injury due to patient condition

- Seizures/Behavioral control: Midazolam (Versed) may be given intranasally until IV access is available
- Altered Mental Status from Suspected Narcotic Overdose: Naloxone (Narcan) may be given intranasally until IV access is available
- Symptomatic Hypoglycemia (Blood sugar less than 80 mg/dl): Glucagon may be given intranasally until IV access is available.
- Pediatric Pain Control: FentaNYL for orthopedic injuries (2 micrograms per kilogram; max single dose of 50 micrograms)

Medications administered via the IN route require a higher concentration of drug in a smaller volume of fluid than typically used in the IV route. In general, no more than 1 milliliter of volume can be administered during a single administration event.

Contraindications:

- Bleeding from the nose or excessive nasal discharge
- Mucosal destruction

Technique:

1. Draw proper dosage (see below)
2. Expel air from syringe
3. Attach the MAD device via LuerLock Device
4. *Briskly* compress the syringe plunger

Complications:

- *Gently* pushing the plunger will not result in atomization
- Fluid may escape from the nares
- Intranasal Dosing is less effective than IV dosing (slower onset, incomplete absorption).
- Current patient use of nasal vasoconstrictors (Neosynephrine/Cocaine) will significantly reduce the effectiveness of IN medications. Absorption is delayed, peak drug level is reduced, and time of drug onset is delayed.

Midazolam
Precautions:

1. Midazolam may cause hypoventilation and potential respiratory depression/arrest. Have equipment and help readily available to manage the airway when administering this medication.
2. If hypotension develops after the administration of Midazolam, administer a 20 mL/kg bolus of normal saline.

Patient Age (years)	Weight (kg)	IN Midazolam volume in mL (assuming 5 mg/mL concentration) Midazolam volume dose (mg)
Neonate	3	0.18 mL - 0.9 mg
<1	6	0.36 mL - 1.8 mg
1	10	0.6 mL - 3.0 mg
2	14	0.84 mL - 4.2 mg
3	16	0.96 mL - 4.8 mg
4	18	1.12 mL - 5.4 mg
5	20	1.2 mL - 6 mg
6	22	1.3 mL - 6.6 mg
7	24	1.4 mL - 7.2 mg
8	26	1.6 mL - 7.8 mg
9	28	1.7 mL - 8.4 mg
10	30	1.8 mL - 9 mg
11	32	1.9 mL - 9.6 mg
12	34	2 mL – 10 mg
Small Teenager	40	2 mL – 10 mg
Adult or Full-grown teenager	50 or more	2 mL – 10 mg

Naloxone

Adult:

1. Naloxone 0.4 mg every 5 minutes until the respiratory rate improves and the patient can maintain a pulse oximetry reading of 96%
2. Split dose equally between each nostril

Pediatric:

1. ***Naloxone 0.1 mg/kg (max single dose 0.4 mg) until the respiratory rate improves and the patient can maintain a pulse oximetry reading of 96% OR until 2 mg has been given***
2. ***Split dose evenly between each nostril***

Glucagon

1. Intranasal lyophilized Glucagon may be given to hypoglycemic adults in the same dose as IM or IV routes.
2. The dose should be split evenly between each nostril.

FentaNYL

Dosing is 2 mcg/kg split evenly between nostrils

PROCEDURE

IntraOsseous Access

PARAMEDIC

Indications:

1. Intravenous fluid or medications needed AND
2. Peripheral IV cannot be established AND the patient exhibits one or more of the following:
    a. Altered mental status (GCS of 8 or less)
    b. Respiratory compromise (SaO_2 of 80% or less following appropriate oxygen therapy, and/or respiratory rate <10 or >40/min)
    c. Hemodynamically unstable (Systolic BP <90)
3. IV Access is preferred; however, IO may be considered prior to peripheral IV attempts in the following situations:
    a. Cardiac Arrest (Medical or Trauma)
    b. Profound hypovolemia with altered mental status

Contraindications:

1. Fracture of the tibia or femur (for tibia insertion) – Consider alternate tibia
2. Fracture of the humerus (for humeral head insertion) – Consider alternate humerus
3. Previous orthopedic procedures (ex.: IO within previous 24 hrs, knee replacement, shoulder replacement)
4. Infection at the insertion site
5. Significant edema
6. Excessive tissue at insertion site
7. Inability to locate landmarks

Considerations:

1. Flow rates: Due to the anatomy of the IO space you will note flow rates to be slower than those achieved with IV access
    a. Ensure the administration of 10 mL rapid bolus with syringe
    b. Use a pressure bag or pump for fluid challenge
2. Pain: Insertion of the IO device in conscious patients causes mild to moderate discomfort and is usually no more painful than a large bore IV. However, fluid infusion into the IO space is very painful and the following measures should be taken for conscious patients:
    a. Prior to IO bolus or flush on a conscious adult patient, SLOWLY administer 20-50 mg of 2% lidocaine.
    b. Prior to IO bolus or flush on a conscious pediatric patient, SLOWLY administer 0.5 mg/kg 2% lidocaine.

Adult patient:

- Defined as a patient weighing 40 kg or greater
- The adult needle set shall be used for adult patients

Primary Insertion Site: Tibial Plateau

If IO access is warranted, the tibia shall be the insertion site of choice if possible

Note: In the cardiac arrest patient, the humeral head should be the primary insertion site

Alternate Insertion Site: Humeral Head (adult patient only)
If IO access is not available via the tibial insertion site due to contraindications or inability to access the site due to patient entrapment and vascular access is imperative, the IO may be placed in the humeral head.

Notes:
- In the cardiac arrest patient, the humeral head should be the primary insertion site
- Do not attempt insertion medial to the Intertubercular Groove or the Lesser Tubercle

Pediatric Patient:
- Defined as a patient weighing 3-39 kg
- The pediatric needle set) shall be used for pediatric patients
- Use the length-based assessment tape to determine pediatric weight
- The only approved site for pediatric IO insertion is the tibial plateau

Standing Order:
The IO may be used if the indications are met and no contraindications exist.

Precautions:
- The IO is not intended for prophylactic use
- The IO infusion system requires specific training prior to use
- Proper identification of the insertion site is crucial.

Landmarks: Tibial Plateau
There are three important anatomical landmarks – the Patella, the Tibial Tuberosity (if present) and the Flat Aspect of the Medial Malleolus.
- **Important: The tibial tuberosity is often difficult or impossible to palpate on very young patients!**
- The traditional approach for IO insertions in small patients where the tibial tuberosity cannot be palpated is to identify the insertion site **"TWO FINGER WIDTHS BELOW THE PATELLA and then medial along the flat aspect of the TIBIA".**
- The traditional IO insertion in slightly larger patients where the tuberosity can be appreciated generally suggests **"One finger width distal to the tibial tuberosity along the flat aspect of the medial tibia."**
- The IO should be inserted two finger widths below the patella (kneecap) and one finger medial (toward the inside) to the tibial tuberosity.
- **For the morbidly obese patient:**
    - Consider rotating the foot to the mid-line position (foot straight up and down).
    - With the knee slightly flexed, lift the foot off the surface allowing the lower leg to "hang" dependent.
    - This maneuver may improve your ability to visualize and access the tibial insertion site.

Landmarks: Humeral Head
- Place the patient in a supine position
- Expose the shoulder and place the patient's arm against the patient's body.
- Rest the elbow on the stretcher with the forearm on the abdomen. Palpate and identify the mid shaft humerus and continue palpating toward the humeral head. As you near the shoulder you will note a small protrusion. This is the base of the greater tubercle insertion site. With the

opposite hand "pinch" the anterior and inferior aspects or the humeral head confirming the identification of the greater tubercle. This will ensure that you have identified the midline of the humerus itself. The insertion site is approximately two finger widths inferior to the coracoid process and the acromion.

Landmarks: Medial Malleolus

- The insertion site is two finger widths proximal to the Medial Malleolus and positioned midline on the medial shaft

Procedure:

Inserting the IO:

1. Determine that the IO is indicated
2. Ensure that no contraindications are present
3. Locate the proper insertion site
4. Clean the insertion site with alcohol
5. Prepare the IO driver and needle set
6. Stabilize the leg (or arm)
7. Position the driver at the insertion site with the needle at a 90° angle to the surface of the bone
8. Power the needle set through the skin until you feel the tip of the needle set encounter the bone. Apply firm steady pressure on the driver and power through the cortex of the bone. Stop when the needle flange touches the skin or a sudden resistance to felt**.** This indicates entry into the bone marrow cavity
9. Grasp the hub firmly with one hand and remove the driver from the needle set
10. While continuing to hold the hub firmly, rotate the stylet counter clockwise and remove it from the needle set. Dispose of the stylet properly in a sharps container
11. Confirm proper placement of the IO catheter tip:
    a. The catheter stands straight up at a 90° angle and is firmly seated in the tibia
    b. Blood is sometimes visible at the tip of the stylet
    c. Aspiration of a small amount of marrow with a syringe
12. Attach a primed extension set to the hub and flush the IO space with 10 mL of Normal Saline. **NO FLUSH – NO FLOW**
13. If the patient is conscious, administer Lidocaine 2% 20-50 mg slowly **PRIOR** to the initial bolus
14. Initiate the infusion per standing orders. Use of a pressure infuser or blood pressure cuff is recommended to maintain adequate flow rates
15. Apply the wrist band and a dressing

NOTE: With properly documented training and equipment AEMTs are authorized to place pediatric IOs. Pediatric IOs should be utilized in accordance with these protocols.

PROCEDURE

Mechanical CPR Device

Inclusion Criteria:	**Exclusion Criteria:**
• The device must be present on scene within 8 minutes of the initiation of CPR • The patient must not meet any of the exclusion criteria	• Body habitus too large for the device • Children <42 kg/90 lbs. or any individual which when fitted with the device the suction cup does not make firm contact with the chest wall • Down time suspected to be ≥ 15 minutes without CPR • Confirmed down time without CPR >10 minutes

EMR EMT AEMT PARAMEDIC

If the above inclusion criteria are met, none of the exclusion criteria are present, and a mechanical device is available, the following steps will be taken to implement its use:

1. CPR will be performed manually for at least 2 minutes and the patient will be ventilated with a BVM/oral airway during this time
2. After 2 minutes, the defibrillation/monitor pads will be applied to the patient. At this time the Mechanical CPR device will also be applied to the patient
3. Defibrillation performed if indicated
4. CPR resumed using the Mechanical CPR Device
5. Obtain airway (adequate ventilation with OPA/NPA/BVM, King Airway or ETT)
6. IV/IO Access
7. Initiation of ACLS medications
8. Allow at least 90 seconds of CPR after any medications given before pausing to check rhythm
9. If pulse confirmed prepare for immediate transport. The Mechanical CPR device may be turned off but must be left on the patient during the transport to the hospital
10. If the patient goes back into cardiac arrest immediate resumption of Mechanical CPR will be performed and ACLS will continue
11. Detailed documentation with times of all initiation and termination of use of the Mechanical CPR device must be kept for statistical and feedback purposes

Note: Placement and initiation of the device cannot exceed 20 seconds. Longer pauses result in a significant decrease in a likelihood of a successful resuscitation.

PROCEDURE

Rapid Sequence Paralysis and Intubation

PARAMEDIC

Assessment and Indications

- Acutely head injured patients that are combative, unable to effectively control airway, need hyperventilation to control intracranial pressure or that are having difficulty breathing.
- Severely combative patients that cannot be controlled without injury to the patient or caregivers
- Prophylaxis for airway burns, inhalation injuries
- Patients who need ventilatory assistance or airway protection

AND

- **All** standard attempts to establish an airway have failed

Contraindications

- Malignant hyperthermia
- Known allergy to agents
- Hyperkalemia
- Severe burns greater than 12 hours

Precautions

- Pregnancy
- Dehydration
- Respiratory disease
- Penetrating eye injury
- Fractures and crush injury
- Cardiac disease
- Neuromuscular disease
- Severe burns
- Glaucoma
- **Multiple facial fractures or facial instability

Equipment – All equipment should be age appropriate

- Endotracheal tube and stylet
- Laryngoscope handle and appropriate blade
- 10 mL syringe
- Lubricant such as xylocaine jelly
- Magill forceps
- Tape or securing device
- **RSI** medications
- Suction equipment
- #11 bladed scalpel
- Betadine
- Curved sharp hemostat
- Large bore IV needle
- Adapter

- Manual resuscitator device, O_2 delivery system
- Oral airways

Prepare the patient

1. Provide inline stabilization of the head and neck in the trauma patient
2. Consider removing the anterior portion of the cervical collar
3. Position the patient for optimal visualization
4. Provide high flow O_2, utilize method appropriate to patient condition
5. Establish IV access and assure patency
6. Attach cardiac and oxygen saturation monitors
7. Preoxygenate the patient with 100% Oxygen for two minutes. This will result in a washout of normal nitrogen reserve and establish an oxygen reserve which will allow for several minutes of after apnea.
8. Avoid positive pressure ventilation if possible in order to prevent gastric insufflation and increase the likelihood of emesis and aspiration
9. Assist the patient with a manual resuscitator only if spontaneous ventilation is inadequate or absent

Protocol

1. Administer Atropine IVP
   <peds 0.02 mg/kg IVP with discretion in the child with existing tachycardia.> Not routinely recommended. Pretreatment may be appropriate in select patients.
   Adult patient: 1 mg if necessary, use discretion and may be necessary with heart rate <60/minute
2. Administer Midazolam (Versed) IVP
   Pediatric patient: 0.1 mg/kg titrate over 2-5 minutes until slurring of speech, eyelids close, eyelid reflex disappears; maximum dose of 5 mg
   Adult patient: 1 mg per minute, titrate to desired effects of slurring speech, eyelids close, eyelid reflex disappears; with a maximum dose of 7.5 mg
3. Maintain systolic pressure of 90 or greater
4. Evaluate the patient for Midazolam (Versed) assisted intubation at this time
5. If consciousness is lost, apply cricoid pressure (Sellick Maneuver)
6. Administer Succinylcholine (Anectine) IVP
   Pediatric patient: <12 years 1.5-2.0 mg/kg over 30 seconds
   Adult patient: 1-1.5 mg/kg IVP over 30 seconds
7. Intubate when patient is apneic and fasciculations have stopped.
8. Additional Medications
   a. Ketamine – Administer:
      Adult and pediatric patient: ***2 mc/kg IVP, may repeat 1 mg/kg IVP every 10-15 minutes for a total of three doses as necessary. May be preferred in patients with*** **bronchospasms, reactive airway disease, or septic shock.**
   b. Rocuronium – Administer:
      Adult and pediatric patient: ***1 mg/kg IVP. Maintenance does may be given every 20 to 30 minutes.***
   c. Vecuronium – Administer:
      Adult and pediatric patient: ***0.1 mg/kg IVP. Reconstitute 10 mg with 10 mL of sterile water. Onset of action is 1-3 minutes, duration is 30-40 minutes. Repeat PRN.***

- If unable to intubate within 20 seconds, halt attempts, provide ventilatory assistance for 30-60 seconds and reattempt intubation.
- If intubation is unsuccessful and ventilatory assistance with a manual resuscitator is ineffective consider performing a surgical cricothyroidotomy on patients >12 years of age utilizing a #6-7 ETT; or a needle cricothyroidotomy on adults; and patients 12 years and younger.
- Should intubation induced bradycardia occur, temporarily halt the intubation procedure. Hyperventilate with manual resuscitator and high flow oxygen. If bradycardia continues administer atropine

Verify correct ETT placement

1. Visualize vocal cords during **ETT** placement
2. Auscultate thorax and abdomen to determine if air entry is adequate and symmetrical to all lung fields and absent over the epigastrium
3. Observe for symmetric chest wall expansion with ventilation
4. **Apply an adjunct for airway placement
5. Secure **ETT** at appropriate **CM** mark at lips in accordance with **ETT** size

Documentation

- Indication for intubation
- Tube size
- Pre-oxygenation prior to intubation and oxygen saturation
- Classification and condition of airway: clear, emesis, blood, etc.
- Difficulty with the procedure, including number of attempts
- Depth of insertion and how the tube is secured
- Who performed the procedure
- Cricoid pressure
- Manual in-line immobilization of C-Spine for trauma patients
- Means by which patient was ventilated **after** intubation and oxygen delivered
- Cardiac rhythm
- Status of ETT after each movement of patient
- Status of tube at receiving facility; breath sounds, oxygen saturation, End tidal CO_2, clinical improvement/stability
- Document physician who confirms tube placement and initial **ABGs** on patient record
- Head and neck immobilized on all pediatric patients (medical and trauma) for tube security
- Complete required QA sheet

NOTE: RSI/Drug assisted intubation may ONLY be performed by paramedics who have documented competency in this skill via written confirmation with the medical director.

PROCEDURE

RESQPOD CIRCULATORY ENHANCER

EMT AEMT PARAMEDIC

ResQPOD impedance threshold device prevents unnecessary air from entering the chest during the decompression phase of CPR. When air is slowed while flowing into the lungs as the chest wall recoils, the vacuum (negative pressure) in the thorax pulls more blood back to the heart, resulting in:

- Doubling of blood flow to the heart.
- 50% increase in blood flow to the brain.
- Doubling of systolic blood pressure.

The device should be used for all patients receiving CPR whenever ET, BIAD, or BVM is used.

Indications:
Cardiopulmonary arrest ages 8 and up

Contraindications:
Patients with spontaneous respirations
Cardiopulmonary arrest associated with trauma

Procedure
Confirm the absence of pulse and begin CPR immediately. Assure that the chest wall recoils completely after each compression. Endotracheal intubation is the preferred method of managing the airway when using ResQPOD.

1. Using ResQPOD on a facemask
    a. Connect ResQPOD to the facemask
    b. Connect ventilation source (BVM) to the top of the ResQPOD. If utilizing a mask without a bag, connect to mouthpiece.
    c. Establish and maintain a tight face seal with mask throughout chest compressions.
    d. Do not use the ResQPOD's timing lights utilizing a facemask for ventilation.
    e. Perform ACLS interventions as appropriate
    f. Prepare for endotracheal intubation

2. Using ResQPOD on an Endotracheal Tube or King Airway Device
    a. Place Endotracheal Tube or Blind Airway Insertion Device and confirm placement. Secure the tube.
    b. Move the ResQPOD from the facemask to the advanced airway and turn on the timing lights by removing the clear tab. Ventilate asynchronously over 1 second when the light flashes. (10/min)
    c. Continue CPR with minimal interruptions
    d. Perform ACLS interventions as appropriate
    e. If a pulse is obtained remove the ResQPOD and assist ventilations as needed.

Notes:

- Always place waveform Capnography between ResQPOD and ventilation source.
- Do not interrupt CPR unless absolutely necessary
- If pulse returns discontinue CPR and ResQPOD. If patient rearrests, resume CPR with ResQPOD.

Do not delay compressions if ResQPOD is not readily available.

PROCEDURE

Tourniquet

PARAMEDIC

Indications:

- Life threatening arterial hemorrhage
- **Serious or life-threatening** extremity hemorrhage and tactical consideration prevent the use of standard hemorrhage control techniques

Contraindications:

- Non – Extremity hemorrhage
- Proximal extremity location where tourniquet application is not practical

Procedure:

1. Place tourniquet proximal to wound
2. Tighten per manufacturer instructions until hemorrhage stops and/or distal pulses in affected extremity disappear
3. Secure tourniquet per manufacturer instructions
4. Note time of tourniquet application and communicate this to receiving care providers
5. Dress wounds per standard wound care protocol
6. If delayed or prolonged transport and tourniquet application time greater than 2 hours, contact medical control
7. Include Tourniquet in use in your report to the Trauma Center as soon as practical and in your documentation for the PCR
8. If bleeding persists, consider applying second tourniquet or using a hemorrhage control clamp

PROCEDURE

Vascular Access

AEMT

1. The preferred site for an IV is the hand followed by the forearm and antecubital and is dependent on the patient's condition and treatment modality
2. **AEMT STOP**

PARAMEDIC

3. In the event that an IV cannot be established, and the IV is considered critical for the care of the patient, other peripheral sites may be used, i.e.: external jugular, feet, legs
4. External Jugular Veins should never be the first line attempted unless the patient has no limbs for the initial attempts. INTs **SHOULD NOT** be used in External Jugular access
5. The intraosseous site may be used in patients whom IV access cannot be established within 2 attempts or 90 seconds **when IV access is critical** (REFER TO THE IO PROCEDURE)

PROCEDURE

Intravenous Fluid Administration

AEMT **PARAMEDIC**

Any patient having a condition that requires an IV or INT may receive it if the Paramedic deems it necessary. Weigh the transport time against the time it would take to start an IV and make a good decision.

Trauma: Minimize on scene time. IVs are to be started while en route to the hospital unless the patient is pinned in vehicle or a prolonged scene time is unavoidable. IV Lactated Ringers are for trauma patients. The rate is based on patient condition and shall be to maintain the patient's systolic blood pressure 80-100 mmHg

Medical: INT or IV Normal Saline for chest pain, cardiac arrest or other medical conditions requiring possible IV access. If IV access is all that is needed, the INT is preferred.

REFERENCE

Consent Issues

EMR EMT AEMT PARAMEDIC

Tennessee law, under legal doctrine known as "implied consent", allows EMS personnel to treat and transport minors when a parent or legal guardian is not available to provide consent IF a medical emergency exists. Simply stated, a court will imply that reasonable parents would want someone to help their child in their absence if the child develops an emergent medical condition. However, implied consent only becomes legally effective after a reasonable effort is made under the circumstances to contact a parent or legal guardian to obtain their consent to treat the minor.

In non-emergent situations, "mature" minors are generally presumed to be legally competent to give consent. Whether or not a minor is "mature" depends upon multiple factors articulated by the Tennessee Supreme Court. Since it would be difficult, if not impossible, for the EMS professional to adequately assess the factors in the field, it is highly recommended that you obtain the consent of a parent or legal guardian before treating or transporting a non-emergent minor.

Obtaining the consent of a parent or legal guardian before treating or transporting a minor with either an emergent or non-emergent condition is usually not necessary when the minor is married or legally emancipated as married or emancipated minors are generally deemed to be legally competent.

Life Vest

EMR EMT AEMT PARAMEDIC

The LifeVest wearable defibrillator is a treatment option for sudden cardiac arrest that offers patients advanced protection and monitoring as well as improved quality of life.

The LifeVest is the first wearable defibrillator. Unlike an implantable cardioverter defibrillator (ICD), the LifeVest is worn outside the body rather than implanted in the chest. This device continuously monitors the patient's heart with dry, non-adhesive sensing electrodes to detect life-threatening abnormal heart rhythms. If a life-threatening rhythm is detected, the device alerts the patient prior to delivering a treatment shock, and thus allows a conscious patient to delay the treatment shock. If the patient becomes unconscious, the device releases a Blue™ gel over the therapy electrodes and delivers an electrical shock to restore normal rhythm.

The LifeVest gives off alert sounds and voice prompts. Please see the information list at the end of this reference to familiarize yourself with the LifeVest and its alert sounds and voice prompts.

If you encounter a patient with the LifeVest, contact Medical Control at the receiving hospital as soon as possible.

LIFEVEST® WEARABLE DEFIBRILLATOR EMERGENCY PATIENT MANAGEMENT

What **alert** sounds and **voice** prompts are being broadcast?

ALERT:
- **Device Silent OR Gong Alert (SINGLE TONE)**

VOICE:
- None — device silent
- "Treatment has been given. Call your doctor."

STATUS:
- Device is monitoring the patient
- Device may be alerting the patient to follow instructions on the screen

Proceed to First Responder Instructions Below

ALERT:
- **Siren Alert (TWO TONE)**

VOICE:
- "If patient is not responsive, call for help. Perform CPR."

STATUS:
- Device cannot detect ECG or the device has delivered the maximum number of treatments

Proceed to First Responder Instructions Below

ALERT:
- **Siren Alert (TWO TONE)**

VOICE:
- "Press response buttons to delay treatment."
- "Bystanders, do not interfere."

STATUS:
- Device has detected a ventricular arrhythmia
- Device is preparing to treat the patient
- Shock likely
- Stop CPR
- Only the patient should press the response buttons (patient consciousness test)
- Do not touch patient
- Allow device to treat the patient

When siren alert stops or *"If patient is not responsive, call for help. Perform CPR."* is broadcast:

Proceed to First Responder Instructions Below

First Responder Instructions

- Proceed with standard evaluation and treatment measures.
- CPR can be performed as long as the device is not broadcasting **"Press response buttons to delay treatment,"** or **"Bystanders, do not interfere."**
- If external defibrillation is available, a decision can be made to remove the LifeVest and monitor/treat the patient with the external equipment.
- To remove the LifeVest, first pull out the battery, then remove the garment from the patient.

REFERENCE

LVAD

EMR EMT AEMT PARAMEDIC

An LVAD is a surgically implanted mechanical pump that is attached to the heart. An LVAD is different from an artificial heart in that it replaces the failing heart completely. Whereas an LVAD works with the heart to help it pump more blood with less work. It does this by continuously taking blood from the left ventricle and moving it to the aorta, which then delivers oxygen-rich blood throughout the body.

The LVAD has both internal and external components. The actual pump sits on or next to your heart's left ventricle with a tube attached that routes the blood to your aorta. A driveline cable extends from the pump, out through the skin, and connects the pump to a controller and power sources worn outside the body.

The driveline must be connected to the controller, and the controller must be connected to power at all times to keep the pump working properly. The pump is powered by batteries or electricity. Each device has a specific carrying case.

You should be contacted by the Alarm Office prior to making the scene and/or the information will appear on the MDT. But, since an LVAD patient can be mobile, they may not be at their place or residence. So, you may not always get prior information. Should you make an LVAD patient, please contact the Cardiopulmonary Transplant Unit at Baptist Memorial Hospital Memphis 901-226-2950 if you have any questions. Please know that the patient and their family are typically very familiar with the device and will have extensive training on it.

All LVAD patients should be transported to the appropriate receiving facility.

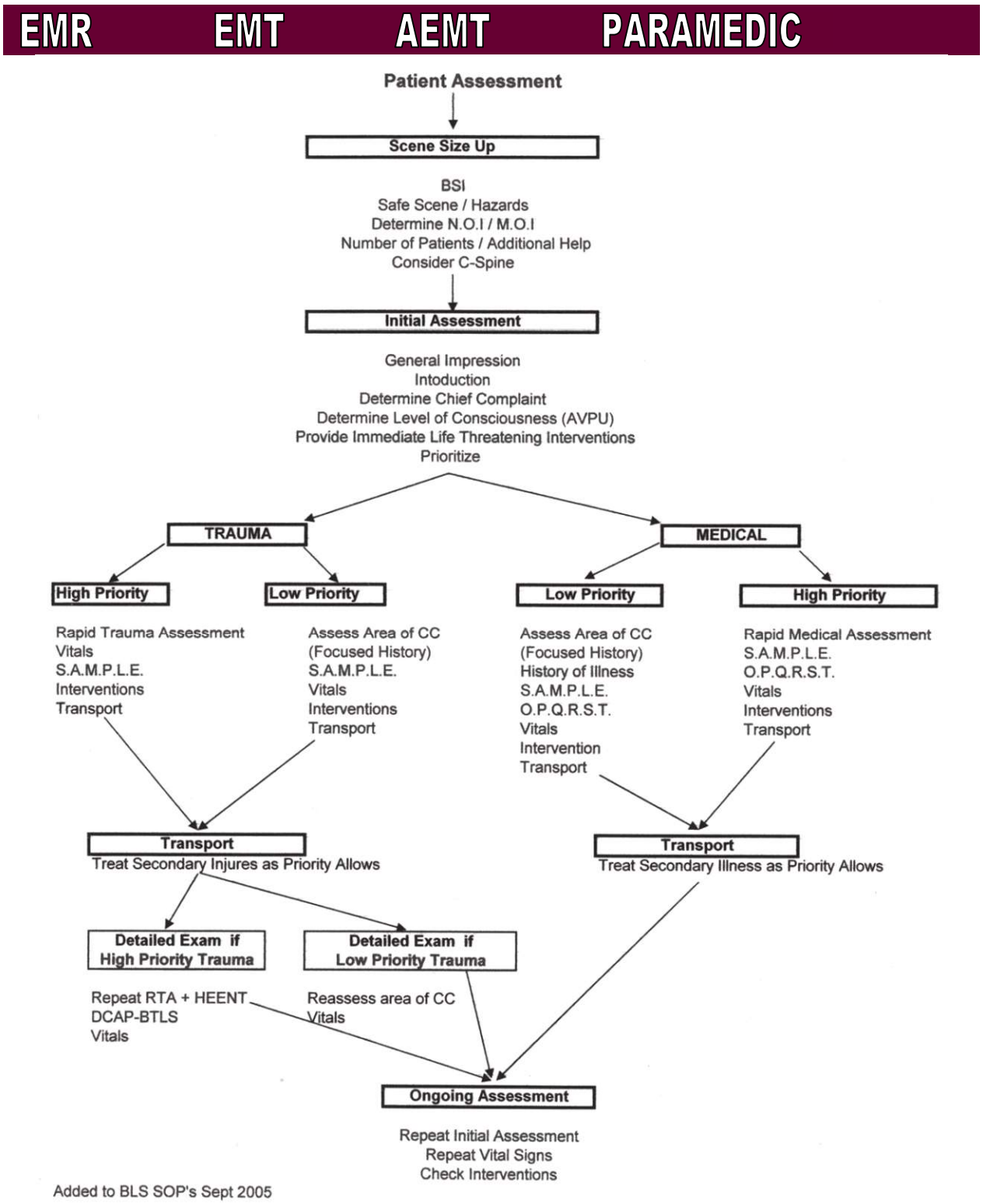
Priority	System Controller Screen	Active Symbols	Alarm Means	To Resolve Alarm
HAZARD	Call Hospital Contact :07 + Low Flow :03	+	**Pump is off. The Pump Running symbol is black.**	1. Immediately connect to a working power source (Mobile Power Unit™ or two HeartMate® 14 Volt Lithium-Ion batteries). 2. If connecting to power does not resolve the problem, press any button on the System Controller to attempt pump start and call your hospital contact immediately.
	Call Hospital Contact :07 + Low Flow :03	+	**Low flow, flow is less than 2.5 lpm**	Call your hospital contact immediately for diagnosis and instructions.
	Connect Driveline :02	+ +	**Driveline is disconnected. The Pump Running symbol is black.**	1. Immediately reconnect the Driveline to the System Controller and move the Driveline safety lock on the System Controller to the locked position. Also, check that the Modular In-Line connector is secure. 2. If alarm persists after reconnecting the Driveline, press any button on the System Controller to potentially resolve. 3. If the Driveline is connected and alarm persists, replace the System Controller with a configured backup System Controller. 4. If alarm persists, call your hospital contact immediately.
	Connect Power Immediately :05 + Backup Battery :01	+ +	**Both power cables are disconnected.**	1. Immediately connect to a working power source (Mobile Power Unit or two fully-charged HeartMate 14 Volt Lithium-Ion batteries). 2. If alarm persists, call your hospital contact immediately.
	Call Hospital Contact Controller Fault	+	**System Controller Hardware Fault (Microcontroller Failure)**	1. No active symbols (constant audio tone). 2. Call your hospital contact as soon as possible for diagnosis and instructions.
	Low Battery :06 + Replace Power Immediately :02		**Low Battery, Power input is extremely low with less than 5 min. remaining.**	1. Immediately connect to a working power source (Mobile Power Unit or two fully-charged HeartMate 14 Volt Lithium-Ion batteries). 2. If alarm persists, call your hospital contact immediately.

Priority	System Controller Screen	Active Symbols	Alarm Means	To Resolve Alarm
ADVISORY	Connect Power ⊙ :04	OR	**One of the two power cables is disconnected.**	1. Promptly connect the disconnected power cable to power source (functioning Mobile Power Unit or two fully-charged HeartMate® 14 Volt Lithium-Ion batteries). 2. If alarm persists, call your hospital contact immediately.
	Replace Power ⊙ :02 + Low Battery ⊙ :06		**Low battery-power input is low, with less than 15 min remaining.**	1. Promptly connect to a working or different power source (Mobile Power Unit or two fully-charged 14 Volt HeartMate Lithium-Ion batteries). 2. If alarm persists, call your hospital contact immediately.
	Call Hospital Contact Controller Fault		**System Controller Hardware Fault**	Call your hospital contact as soon as possible for diagnosis and instructions.
	Call Hospital Contact Comm Fault		**Communication Fault (Comm Fault)**	Call your hospital contact as soon as possible for diagnosis and instructions.
	Call Hospital Contact Backup Battery Fault		**System Controller Backup Battery Fault**	Call your hospital contact as soon as possible for diagnosis and instructions.
	Call Hospital Contact Backup Battery Fault +		**System Controller Backup Battery Not Installed**	Call your hospital contact as soon as possible for diagnosis and instructions.
	Call Hospital Contact Driveline Power Fault		**Driveline Power Fault**	Call your hospital contact as soon as possible for diagnosis and instructions.
	Call Hospital Contact Driveline Comm Fault		**Driveline Communication Fault (Driveline Comm Fault)**	Call your hospital contact as soon as possible for diagnosis and instructions.

Important! The Pump Running ( ) symbol is lit green when the pump is running.

REFERENCE

Patient Assessment Flow Chart



REFERENCE

Physician Orders for Scope of Treatment (POST)

EMR EMT AEMT PARAMEDIC

Directions for Health Care Professionals

Completing POST

Must be completed by a health care professional based on patient preferences, patient best interest, and medical indications.

To be valid. POST must be signed by a physician or, at discharge or transfer from a hospital or long term care facility, by a nurse practitioner (NP), clinical nurse specialist (CNS), or physician assistant (PA). Verbal orders are acceptable with follow-up signature by physician in accordance with facility/community policy.

Photocopies/faxes of signed POST forms are legal and valid.

Using POST

Any incomplete section of POST implies full treatment for that section.

No defibrillator (including AEDs) should be used on a person who has chosen "Do Not Attempt Resuscitation".

Oral fluids and nutrition must always be offered if medically feasible.

When comfort cannot be achieved in the current setting, the person, including someone with "Comfort Measures Only", should be transferred to a setting able to provide comfort (e.g., treatment of a hip fracture).

IV medication to enhance comfort may be appropriate for a person who has chosen "Comfort Measures Only".

Treatment of dehydration is a measure which prolongs life. A person who desires IV fluids should indicate "Limited Interventions" or "Full Treatment".

A person with capacity, or the Health Care Agent or Surrogate of a person without capacity, can request alternative treatment.

Reviewing POST

This POST should be reviewed if:

(1) The patient is transferred from one care setting or care level to another, or
(2) There is a substantial change in the patient's health status, or
(3) The patient's treatment preferences change.

Draw line through sections A through D and write "VOID" in large letters if POST is replaced or becomes invalid.

COPY OF FORM SHALL ACCOMPANY PATIENT WHEN TRANSFERRED OR DISCHARGED.

TDH, Division of Health Licensure and Regulation, Office of Health Care Facilities, 665 Mainstream Drive, Second Floor, Nashville, TN 37243

PH-4193 (Rev 7-15) RDA-n/a

A COPY OF THIS FORM SHALL ACCOMPANY PATIENT WHEN TRANSFERRED OR DISCHARGED

Tennessee Physician Orders for Scope of Treatment (POST, sometime called "POLST)

This is a Physician Order Sheet based on the medical conditions and wishes of the person identified at right ("patient"). Any section not completed indicates full treatment for that section. When need occurs, first follow these orders, then contact physician.

Patient's Last Name

First Name/Middle Initial

Date of Birth

Section A *Check One Box Only*

CARDIOPULMONARY RESUSCITATION (CPR): Patient has no pulse and is not breathing.

☐ **Resuscitate (CPR)** ☐ **Do Not Attempt Resuscitation (DNR / no CPR) (Allow Natural Death)**

When not in cardiopulmonary arrest, follow orders in **B, C,** and **D.**

Section B *Check One Box Only*

MEDICAL INTERVENTIONS. Patient has pulse and/or is breathing.

☐ **Comfort Measures.** Relieve pain and suffering through the use of medication by any route, positioning, wound care and other measures. Use oxygen, suction and manual treatment of airway obstruction as needed for comfort. **Do not transfer to hospital for life-sustaining treatment. Transfer only if comfort needs cannot be met in current location. Treatment Plan: Maximize comfort through symptom management.**

☐ **Limited Additional Interventions.** In addition to care described in Comfort Measures Only above, use medical treatment, antibiotics, IV fluids and cardiac monitoring as indicated. No intubation, advanced airway interventions, or mechanical ventilation. May consider less invasive airway support (e.g. CPAP, BiPAP). **Transfer** to hospital if indicated. Generally avoid the intensive care unit. **Treatment Plan: basic medical treatment.**

☐ **Full Treatment.** In addition to care described in Comfort Measures Only and Limited Additional Interventions above, use intubation, advanced airway interventions mechanical ventilation as indicated. **Transfer** to hospital and/or intensive care unit if indicated. **Treatment Plan: Full treatment including in the intensive care unit.**

*Other Instructions:*_____

Section C *Check One*

ARTIFICIALLY ADMINISTERED NUTRITION. Oral fluids & nutrition must be offered if feasible.

☐ No artificial nutrition by tube.
☐ Defined trial period of artificial nutrition by tube.
☐ Long-term artificial nutrition by tube.

*Other Instructions:*_____

Section D *Must be Completed*

Discussed with:
☐ Patient/Resident
☐ Health care agent
☐ Court-appointed guardian
☐ Health care surrogate
☐ Parent of minor
☐ Other: _____(Specify)

The Basis for These Orders Is: (Must be completed)
☐ Patient's preferences
☐ Patient's best interest (patient lacks capacity or preferences unknown)
☐ Medical indications
☐ (Other) _____

Physician/NP/CNS/PA Name (Print)	Physician/NP/CNS/PA Signature NP/CNS/PA (Signature at Discharge)	Date	MD/NP/CNS/PA Phone Number: ( )

Signature of Patient, Parent of Minor, or Guardian/Health Care Representative

Preferences have been expressed to a physician and /or health care professional. It can be reviewed and updated at any time if your preferences change. If you are unable to make your own health care decisions, the orders should reflect your preferences as best understood by your surrogate.

Name (Print)	Signature	Relationship (write "self" if patient)	
Agent/Surrogate	Relationship	Phone Number ( )	
Health Care Professional Preparing Form	Preparer Title	Phone Number ( )	Date Prepared

TDH, Division of Health Licensure and Regulation, Office of Health Care Facilities, 665 Mainstream Drive, Second Floor, Nashville, TN 37243

PH-4193 (Rev 7-15) RDA-n/a

REFERENCE

Pulse Oximetry

EMT AEMT PARAMEDIC

Assessment

Pulse Oximetry is not without limits and must not be used to supersede other assessments.

The EMT or higher shall treat the patient and **NOT** the pulse oximeter's display**.** The patient's other key signs and symptoms must be assessed and evaluated so that the oximeter's readings are interpreted within the context of the patient's overall condition.

The percentage of oxygen saturation measured by an oximeter only reflects the supplied pulmonary oxygenation and is not an indicator or measure of cellular oxygenation. Furthermore, it is useful both in the assessment of the patient and as an adjunct for evaluating the effectiveness of the airway management, ventilation, and oxygen enrichment provided.

Oxygen saturation pressure (SpO_2) is a different measurement than the partial pressure of oxygen (PaO_2) which is commonly measured by laboratory blood gas analysis.

Pulse Oximetry should be deferred until more urgent assessment and care priorities have first been resolved. Pulse oximetry is a diagnostic tool that, along with patient's vital signs, chief complaint, mental status, and other considerations, may assist us in the determining the patient's respiratory status.

The pulse rate determined by the pulse oximeter is not an accurate indicator of the patient's pulse rate.

Falsely low readings may occur in the following:

- Patients with cold extremities or hypothermic patients
- Patients with hemoglobin abnormalities
- Patients without a pulse
- Hypovolemic patients
- Hypotensive patients

Falsely normal or high readings may occur in the following patients:

- Anemic patients, carbon monoxide poisoning
- Cyanide toxicity which is being treated with the antidote
- Very bright lighting (direct sunlight or nearby strong lamp)

Other factors affecting accurate readings:

- Patient movement
- Action of vasopressor drug
- Peripheral vascular disease
- Elevated bilirubin levels
- Abnormal hemoglobin values
- IV diagnostic dye has been administered in the last 24 hours

Pulse Oximetry Values

Normal

- 96-100%
- Treatment: Non-rebreather mask (12-15 LPM) or nasal cannula (4-6 LPM) if patient cannot tolerate a mask and based on patient's chief complaint

Mild Hypoxia

- 91-95%
- Immediate need to increase the FiO2
- Treatment: Non-rebreather mask, 12-15 LPM
- Consider use of CPAP if available

Moderate Hypoxia

- 86-90%
- Immediate need to increase the FiO2
- Consider possible loss of airway patency
- Treatment: Non-rebreather mask, 12-15 LPM, consider airway adjunct and bag-valve-mask @ 15 LPM, on assist
- Consider use of CPAP if available

Severe Hypoxia

- ≤ 85%
- Treatment: Assist ventilations with adjunct and bag-valve-mask @ 15 LPM, call Medical Control for order to intubate
- Consider use of CPAP if available

REFERENCE

Quality Improvement Document Criteria

Documentation on all patients must include the following and any other information pertinent to patient care:

OPQRST and **SAMPLE** are the acronyms for the United States DOT EMS and Paramedic patient assessment curriculum

O – Circumstance surroundings on the **onset** of complaint
P – What **provoked** (or provokes) the complaint? Environment
Q – Describe the **quality** (sharp, burning, stabbing counter etc.) of the complaint?
R – Where does the pain **radiate?**
S – Describe the **severity** of the pain on a 1-10 scale 1 (minimal) – 10 (maximum)
T – **Time** of onset?

S – Signs, symptoms, physical exam findings
A – Allergies to medications or the environment
M – Medications, prescription or over the counter
P – Past medical history
L – Last oral intake
E – Event, what happened to the patient

All patients transported by EMS should have at least two sets of vital signs assessed and documented. Initial set of vitals will include blood pressure (systolic/diastolic), pulse rate, respiratory rate, pulse oximetry and blood glucose if indicated, and the time they were assessed must be recorded.

- All medications taken by the patient should be listed on the report. If medications are taken to ER document in narrative who the medications were left with.
- When documenting the presumed presence of alcohol that is based solely upon breath odor, do so in the following manner: "Patient's breath has the odor that is commonly associated with the consumption of alcohol."

ABDOMINAL PAIN/PROBLEMS

1. Location of pain
2. Distension
3. Tenderness/radiation
4. Nausea/Vomiting/Diarrhea
5. Urinary complaints
6. LMP if applicable
7. Vaginal bleeding/discharge if applicable
8. Treatment/reassessments
9. Report given and signature of RN

ALTERED MENTAL STATUS

1. OPQRST, SAMPLE as appropriate
2. ETOH/Substance use
3. Any obvious injuries noted
4. Blood glucose level
5. Normal mental status
6. EKG and strip attached
7. Treatment/reassessments
8. Report given and signature of RN

ALCOHOL INTOXICATION

1. Patient's breath has odor of ETOH
2. Patient admits to drinking (type, amount, time frame)
3. Speech (normal, slurred)
4. Gait (normal, unsteady)
5. Any obvious injuries noted
6. Blood glucose level
7. Level of consciousness
8. Treatment/reassessments
9. Report given and signature of RN

ASSAULT/FIGHT

1. OPQRST, SAMPLE as appropriate
2. Method of assault
3. Any obvious injuries or pain
4. Loss of consciousness, how long
5. Treatment/reassessments
6. Report given and signature of RN

TENNESSEE EMERGENCY MEDICAL SERVICES PROTOCOL GUIDELINES - (159)

AIRWAY OBSTRUCTION

1. Can patient speak/forcibly cough
2. Is patient moving air
3. Inspiratory stridor
4. What caused obstruction
5. Duration of obstruction
6. Treatment/reassessments
7. Report given and signature of RN

ANIMAL BITE/STING

1. Type of animal or insect
2. Location of bite(s)/Sting
3. Edema at site
4. Rabies/immunization status of animal if appropriate
5. Treatment/reassessments
6. Report given and signature of RN

BURN

1. Burn source (flame, chemical, electricity)
2. Environment (enclosed, outside)
3. Entrance/exit wounds if appropriate
4. Burn surface area and thickness
5. Facial, oral, nasal areas singed
6. Chest pain/dyspnea
7. Treatment/reassessments
8. Consider Cyanide Antidote
9. Report given and signature of RN

CHEST PAIN

1. OPQRST and SAMPLE as appropriate
2. Factors relieving or increasing pain
3. Dyspnea, cough
4. Nausea, vomiting
5. Diaphoresis
6. Aspirin within past 12 hours
7. Treatments/reassessments
8. Report given and signature of RN

DEATH

1. Last time patients seen or talked to
2. Position/Location of body
3. Any movement of body made by EMS
4. Any injuries noted
5. Dependent lividity/ rigor mortis
6. EKG strip in two leads attached
7. Released to

ALLERGIC REACTION

1. Cause of reaction
2. Dyspnea
3. Facial/airway edema
4. Chest pain
5. Rash/Itching
6. Urticaria/Hives
7. Treatment/reassessments
8. Report given and signature of RN

ATRAUMATIC GI BLEED

1. Nausea, vomiting, diarrhea, constipation
2. Active bleeding
3. Bloody emesis/stool, how long?
4. Abdominal pain, location and quality
5. Treatment/reassessments
6. Report given and signature of RN

CARDIAC ARREST

1. Events prior to onset
2. Description/location of patient on arrival
3. Estimated down time
4. Treatment/reassessments
5. Report given and signature of RN

CHF/PULMONARY EDEMA/SOB

1. Chest pain
2. Dyspnea
3. Nausea, vomiting
4. Diaphoresis
5. JVD/lower extremity edema
6. Treatments/reassessments
7. Report given and signature of RN

DIABETIC

1. OPQRST and SAMPLE as appropriate
2. Nausea/vomiting/recent illness
3. Pre/Post treatment of blood glucose level
4. Treatment/reassessments
5. Report given and signature of RN

HYPERTENSION

1. Chest pain/dyspnea
2. Nausea/vomiting
3. Headache/mental status
4. Neuro Assessment
5. Treatments/Reassessments
6. Report given and signature of RN

INHALATION INJURY (TOXIC GAS/SMOKE)

1. Type of gas
2. Duration of exposure
3. Area of exposure (enclosed room)
4. Heated environment
5. Burns/singing (oral, nasal, facial area)
6. Treatments/reassessments
7. Report given and signature of RN

PREGNANCY/OB DELIVERY

Separate report required for mother and each delivery

Non-Delivery

1. Abdominal Pain
2. Gravida/Para/Abortion
3. Length of gestation/estimated due date
4. Edema (pedal)/BP/Headache/Visual Disturbance
5. Vaginal bleeding/discharge – if yes, describe
6. Treatments/reassessments
7. Report given and signature of RN
8. Last time fetal movement

Delivery

1. Multiple fetuses
2. Mucous plug resented
3. Membranes ruptured – if yes, is amniotic fluid clear?
4. Crowning as appropriate

HYPER/HYPOTHERMIA

1. Approximate ambient air temperature
2. Estimate exposure time
3. Type of environment (inside, outside, wet)
4. Loss of consciousness
5. Fluid intake
6. Skin turgor/condition
7. ETOH/Substance abuse
8. Treatments/reassessments
9. Report given and signature of RN

POISONING/DRUG INGESTION

1. Name of substance
2. Amount
3. Route of intake
4. How long ago
5. Vomiting since ingestion as appropriate
6. Intentional vs. Unintentional
7. ETOH/substance use
8. Oral mucosa burns if appropriate
9. Treatments/reassessments
10. Report given and signature of RN

REFUSALS

Documentation of:

1. Competency
2. MMSE
3. Lack of Trauma
4. Situation
5. Ability to make good decisions
6. Safety of patient is assured by caretakers, family, etc.

SEIZURES

1. OPQRST and SAMPLE as appropriate
2. Obvious injures (mouth, head, tongue)
3. Duration and number of events
4. Incontinence
5. Level of consciousness (postictal)
6. Treatments/reassessments
7. Report given and signature of RN

TENNESSEE EMERGENCY MEDICAL SERVICES PROTOCOL GUIDELINES - (161)

NEONATE

1. Time of birth
2. Thoroughly dried and warmed
3. Oral and nasal suctioning
4. Meconium present
5. APGAR at 1 and 5 minutes
6. General appearance
7. Treatments/Reassessments
8. Report given and signature of RN

SYNCOPE/FAINTING/WEAKNESS

1. OPQRST and SAMPLE as appropriate
2. Injuries, chest pain, dyspnea, nausea
3. Vertigo/postural/TILT changes
4. New or changed medications
5. Last meal
6. Blood glucose level
7. EKG
8. ETOH/Substance use
9. Treatments/Reassessments
10. Report given and signature of RN

STROKE/CVA/TIA

1. OPQRST and SAMPLE as appropriate
2. Onset and duration of symptoms
3. Headache/Vision disturbances
4. Thrombolytic screening and stroke screen
5. Treatments/Reassessments
6. Report given and signature of RN

TRAUMA

1. OPQRST and SAMPLE as appropriate
2. Description of event
3. Weapon (size, caliber, depth of penetration) if applicable
4. Description of damage, estimated speed, airbag deployment as applicable
5. Patient protection as applicable
6. Tourniquet use
7. Level of or Loss of consciousness
8. Obvious injuries and area of pain
9. Palpation/assessment of injured areas
10. Disability (PMS/SMC intact)
11. Treatments/reassessments
12. Report given and signature of RN

REFERENCE

Sepsis Identification Tool

AEMT PARAMEDIC

Sepsis: Pre-Hospital Screening

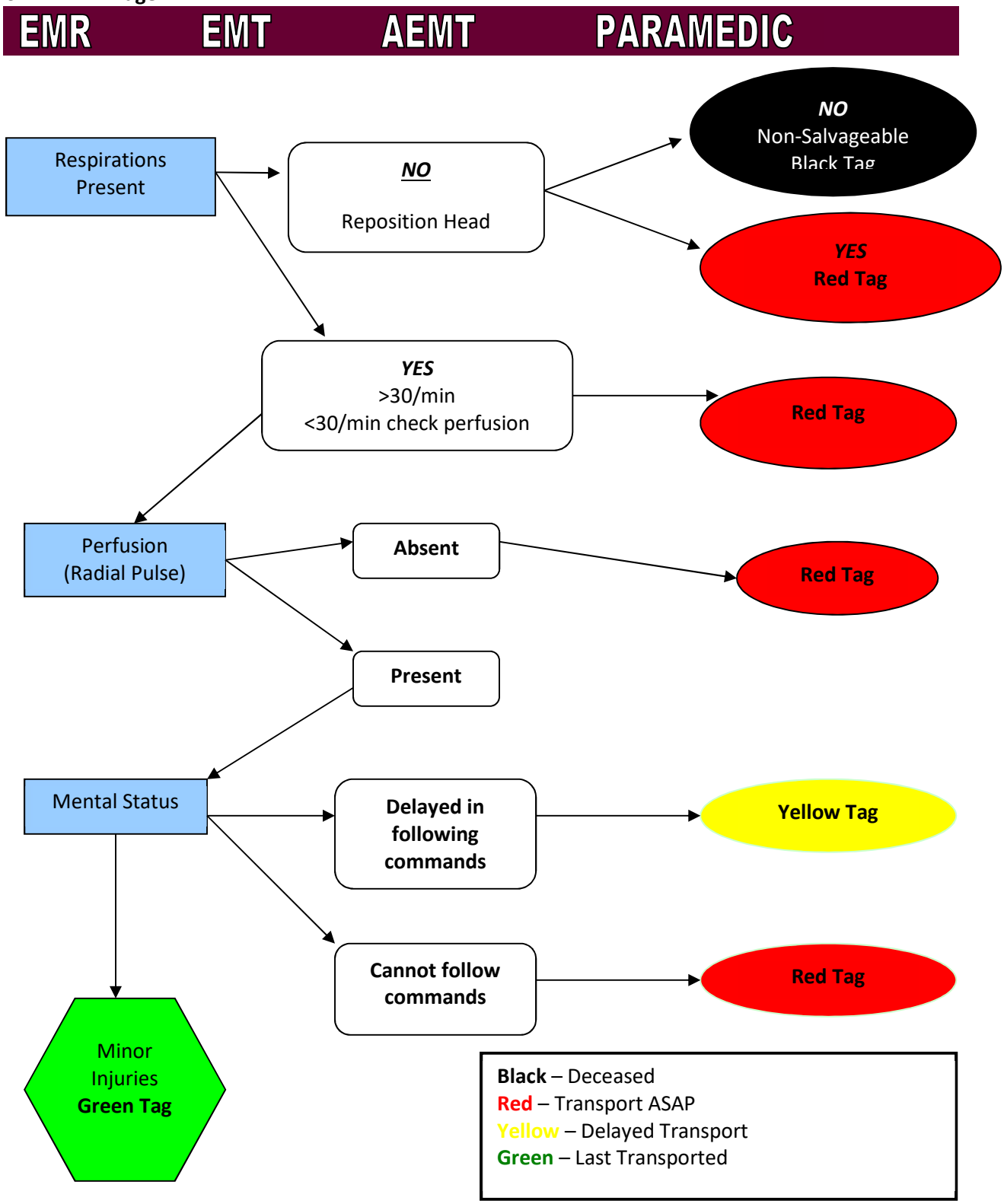
S.I.R.S (Systemic Inflammatory Response Syndrome) (2 or more)	**Infection** (Source of Infection) (1 or more)	**Severe Sepsis** (Organ Dysfunction) (1 or more)
Resp: ≥ 20 Heart Rate: ≥ 90 Glucose: ≥ 150 Temp: ≥ 38 (100.5) ≤ 36 (96.5) WBC: ≥ 12,000 ≤ 4,000 (If available from nursing home or other transferring facility)	Cough Painful urination Diagnosis of UTI Abscess Sign of skin infection Flu symptoms Recent chemotherapy Presence of vas cath Presence of urinary catheter Sick contacts (recent exposure)	Altered Mental Status Systolic BP O2 sat 92% Signs of poor skin perfusion (i.e. poor cap refill, mottled skin, etc.) Lactate Level > 2 (if available from nursing home or other transferring facility.)
2 or more SIRS criteria + 1 or more sources of infection + and $ETCO_2$ ≤ 25 **2.1 = CODE SEPSIS**		
2 or more SIRS criteria + 1 or more possible sources of infection + 1 or more organ dysfunction criteria= **2.1.1 = CODE SEVERE SEPSIS**		
In the event of a **CODE SEPSIS** OR **CODE SEVERE SEPSIS**, initiate the following Cardiac Monitor O_2 to maintain ≥ 92% sat 2 large bore IVs draw labs Notify receiving hospital and identify patient as "**CODE SEPSIS OR CODE SEVERE SEPSIS**"		

REMEMBER…SEPSIS KILLS MORE THAN STROKE AND STEMI COMBINED!!!

The 6-hour window is closing!!!

REFERENCE

S.T.A.R.T. Triage



REFERENCE

Trauma Assessment/Destination Guidelines

EMR EMT AEMT PARAMEDIC

Perform primary and secondary survey
Treat any life-threatening injuries/illness
Obtain vital signs
Determine mechanism of injury
Obtain past medical history

Is transport to Trauma Center >30 minutes?

YES	NO
Initiate transport to closest appropriate facility. Notify Medical Control of decision	TRANSPORT TO LEVEL I TRAUMA CENTER IF: • GCS is <13 and/or • Systolic BP is <90 mmHg • Respiratory rate <10 or >30
Transport to trauma center may exceed 30 minutes if dictated by local Medical Control or Trauma Control	TRANSPORT TO LEVEL I TRAUMA CENTER IF: • Penetrating injury proximal to elbow or knee • Flail chest, penetrating chest, or abdominal injury • Combination trauma with burns of >15% BSA, or to face and/or airway • Limb paralysis • Amputation proximal to the wrist or ankle • Patient ejection from vehicle • Extrication time >20 min with above trauma
Medical Control will have final jurisdiction over destination, excluding: Any patient of legal majority (age 18 or over), the parent or legal guardian of a minor patient, or an emancipated minor shall have the right to request transportation to specific facility within the county of origin	CONTACT TRAUMA CONTROL TO CONSIDER TRANSPORT TO LEVEL I, II, III TRAUMA CENTER IF: • High speed auto accident with suspected injury • Velocity change of >20 mph • Passenger compartment intrusion of >12” • Auto vs. pedestrian with >5 mph impact • Motorcycle accident >20 mph or with separation of rider and motorcycle • Bicycle accident with significant impact
Transport of the patient to the requested destination shall not constitute neglect of duty imposed by law on all EMS personnel if the person making the decision has been informed that Tennessee has a trauma system, which would in their circumstance transport them to another facility.	CONTACT TRAUMA CONTROL TO CONSIDER TRANSPORT TO LEVEL I, II, III TRAUMA CENTER IF: • Patient >55 years • Known cardiac, respiratory disease or psychosis on medication • Insulin dependent diabetic, cirrhosis, malignancy, obesity or coagulopathy
If the patient’s condition deteriorates during transport, such that their life/health are considered in serious jeopardy if the requested/ planned destination is pursued, **AND** if Medical Control deems transport to a higher-level trauma center is necessary, the patient may be transported to the appropriate facility	

REFERENCE

Trauma Treatment Priorities

EMR EMT AEMT PARAMEDIC

1. If multiple patients, initiate the S.T.A.R.T. and Multiple Casualty Incident System
2. Oxygen and airway maintenance appropriate for the patient's condition
3. Consider if available PASG. Treat for shock appropriate to the patient's condition
4. Certain situations require rapid transport. Non-lifesaving procedures such as splinting and bandaging must not delay transport. Contact the responding emergency unit when any of the following exist:
    a. Airway obstructions that cannot be quickly relieved by mechanical methods such as suction, or jaw-thrust maneuver
    b. Traumatic cardiopulmonary arrest
    c. Large open chest wound (suction chest wound)
    d. Large flail chest
    e. Tension pneumothorax
    f. Major blunt chest trauma
    g. Shock
    h. Head injury with unconsciousness, unequal pupils, or decreasing level of consciousness
    i. Tender abdomen
    j. Unstable pelvis
    k. Bilateral femur fractures

REFERENCE

Trauma Score

EMR EMT AEMT PARAMEDIC		
RESPIRATORY RATE	10-24/min	4
	24-35/min	3
	>36/min	2
	1-9/min	1
	None	0
RESPIRATORY EXPANSION	Normal	1
	Retractive	0
SYSTOLIC BLOOD PRESSURE	>90 mmHg	4
	70-89 mmHg	3
	50-69 mmHg	2
	0-49 mmHg	1
	No Pulse	0
CAPILLARY REFILL	Normal	2
	Delayed	1
Points to add to the RTS based on the GCS		
14-15		5
11-13		4
8-12		3
5-7		2
3-4		1

REFERENCE

Glasgow Coma Scale

Eye Opening	
Spontaneous	4
Opening to voice	3
Response to pain	2
None	1
Verbal	
Oriented	5
Verbal confused	4
Inappropriate words	3
Incomprehensible sounds	2
None	1
Motor	
Obeys commands	6
Localizes pain	5
Withdraws (pain)	4
Flexion	3
Extension	2
None	1

REFERENCE

Common Medical Abbreviations

a = before
AED = Automated External Defibrillator
AOX3 = alert and oriented to person place and time
Abd = Abdomen
Ab. = Abortion
ac = antecubital
AF = atrial fibrillation
ARDS = Adult Respiratory Distress Syndrome
AT = atrial tachycardia
AV = atrioventricular
b.i.d. = twice a day
BSA = Body Surface Area
BS = Blood sugar and/or Breath Sounds
c = with
CC or C/C = Chief Complaint
CHF = Congestive Heart Failure
CNS = Central Nervous System
c/o = complains of
CO = Carbon Monoxide
CO_2 = Carbon Dioxide
D/C = discontinue
DM = diabetes mellitus
DTs = delirium tremens
DVT = deep venous thrombosis
Dx = Diagnosis
ECG/EKG = electrocardiogram
EDC = estimated date of confinement
EJ = external jugular
ENT = ear, nose, and throat
ETOH = the abbreviation of Ethanol (grain alcohol)
fl = fluid
fx = fracture
GB = gall bladder
Gm/g = gram
gr. = grain
GSW = Gunshot Wound
gtt. = drop
GU = genitourinary
GYN = gynecologic
h/hr = hour
H/A = headache
Hg = mercury
H&P = History and Physical
Hx = history
ICP = intracranial pressure
JVD = jugular venous distension
KVO = keep vein open
LAC = laceration
LBBB = left bundle branch block
MAEW = moves all extremities well
NaCl = sodium chloride
NAD = No apparent distress/no acute distress
NPO = Nothing by mouth
NKA = No known allergies
OD = overdose
O.D. = right eye
O.S. = left eye
PERL = pupils equal and reactive to light
PID = pelvic inflammatory disease
p.o. = by mouth
1° = primary, first degree
PTA = prior to arrival
pt. = patient
q = every
q.h. = every hour
q.i.d. = four times a day
RBBB = right bundle branch block
R/O = rule out
ROM = range of motion
Rx = take, treatment
s = without
S/S = signs and symptoms
TIA = transient ischemic attack
t.i.d. = three times a day
V.S. = vital signs
y.o. = years old

REFERENCE

Medication Dosage

EMR EMT AEMT PARAMEDIC

Generic Name	Trade Name	Adult Dosage	***Pediatric Dosage***
Acetaminophen	Tylenol	1000 mg PO	***>3 months 15 mg/kg PO***
Adenocard	Adenosine	12 mg rapid IVP with flush	***1st dose 0.1 mg/kg max dose 6 mg 2nd dose .02 mg/kg max dose 12 mg***
Albuterol Sulfate	Proventil, Ventolin, Albuterol Sulfate	Aerosol Nebulization: 2.5 mg in 3 mL NS q 5 min if heart rate <150	***Aerosol Nebulization: 2.5 mg in 3 mL NS q 5 min if heart rate <200***
Amiodarone	Cordarone	300 mg then 150 mg	***5 mg/kg***
Aspirin	Aspirin	162-324 mg chewed and then swallowed	***No pediatric dosing***
Atropine Sulfate	Atropine	1 mg IVP q 3-5 min. Max dose 0.04 mg/kg	***0.02 mg/kg q 3-5 min. Max dose 0.04 mg/kg***
Calcium Chloride		500 mg IVP	***20 mg/kg***
Dextrose 50%	D_{50}, $D_{50}W$	12.5-25 gram IVP	***No pediatric dosing***
Dextrose 25%	D_{25}, $D_{25}W$		***2 mL/kg (D50 mixed 50/50 with Normal saline)***
Dextrose 10%	D10, D10W	250 cc bag of D10	**Up to 250 cc of D10**
Diazepam	Valium	2-10 mg slow IVP, titrated to effect	***00.1 mg/kg slow IVP, titrated to effect***
DOPamine		2-20 mcg/kg/min	***2-20 mcg/kg/min***
DiphenhydrAMINE	Benadryl	25-50 mg IM or slow IVP	***1 mg/kg***
EPINEPHrine	Adrenaline	Cardiac Arrest: 0.5-1 mg of 1: 10,000 (now 0.1 mg/mL) solution IVP q 3-5 min Anaphylaxis: 0.3-0.5 mg of EPINEPHrine 1: 1,000 (now 1 mg/mL) solution IM	***Cardiac Arrest: 1:10,000 (now 0.1 mg/mL) 0.01 mg/kg IV/IO q 5 min Anaphylaxis: EPINEPHrine 1:1,000 (now 1 mg/mL) 0.01 mg/kg IM, max dose 0.3 mg Croup: Nebulized EPINEPHrine 1:1,000 (now 1 mg/mL) diluted to 2.5-3 mL saline flush. May repeat up to 3 doses***
FentaNYL	Sublimaze	1-2 mcg/kg 50-100 mcg	***0.5-2 mcg/kg***
Glucagon	Glucagen	1-2 mg IM	***0.5 mg/dose IM/IV if <20 kg, or 1 mg/dose IM/IV if 20 kg or greater***

Ibuprofen	Motrin	600 mg PO	***peds >6 months 10 mg/kg PO***
Lidocaine	Xylocaine	IO Pain Control: 20-50 mg 1-1.5 mg/kg max dose 3 mg/kg	**IO Pain Control: 0.5 mg/kg** ***1.0 mg/kg***
Lidocaine Drip	Xylocaine	2-4 mg/min	***20 to 50 mcg/kg***
Magnesium Sulfate		Torsades only: 1-2 gm IVP over two min Pre-eclampsia or Eclampsia: 2-4 g slow IVP over 2 min/g Drip: 4 g in 250 mL D_5W (16 mg/mL) run at 30-60 gtts/min	**VF/VT:** ***50 mg/kg IV/IO, max dose 2 g, over 1-2 minutes*** **Torsades only:** ***50 mg/kg IV, max 2 g***
Methylprednisolone	Solu-Medrol	62.5 or 125 mg	***Contact Medical Control***
Midazolam	Versed	2-5 mg IV or IM	***0.1 mg/kg***
Morphine	Morphine Sulfate, MS Contin, MSIR	2-4 mg IVP – see standing orders for repeat doses	***Sedation/Pain Management 0.5 to 1.0 mg/kg***
Naloxone	Narcan	2 mg slow IVP	**0.1 mg/kg slow IVP**
Nitroglycerine		Oral: 0.4 mg SL or spray q 5 min for pain Transdermal: 1" on chest wall MFD NTG Therapy: 1 spray SL and apply 1" paste. Repeat SL spray once after 5 min. Continue therapy until pain is relieved or systolic BP <100 mmHg	
Nitrous Oxide	NitroNox	Patient self-administered gas	
Ondansetron	Zofran	2-4 mg IV	***0.15 mg/kg IV***
Procainamide	Procan	50-100 mg slow IVP	
Sodium Bicarbonate 4.2%			<1 mo, 1 mEq/kg IV/IO
Sodium Bicarbonate 8.4%		1 mEq/kg IV/IO followed by 0.5 mEq/kg q 10 min	>1 mo, 1 mEq/kg IV/IO followed by 0.5 mEq/kg q 10 min
Defibrillation		150 j Biphasic	***Begin at 2 j/kg***
Cardioversion		Refer to specific SOP	***0.5 j/kg to 2 j/kg***

REFERENCE

Drug Infusion Admix Dosage Guidelines

PARAMEDIC

Lidocaine:
2 grams medication/500 mL D_5W = 4 mg/mL (always use 60 gtt. Set)

2 mg/min = 30 gtt/min
3 mg/min = 45 gtt/min
4 mg/min = 60 gtt/min

Procainamide: For maintenance infusion only. **Refer to Specific Standing Order for Initial Dose**
2 grams medication/500 mL D_5W = 4 mg/mL or 1 gm/250 mL D_5W (always use 60 gtt. Set)

1 mg/min = 15 gtt/min
2 mg/min = 30 gtt/min
3 mg/min = 45 gtt/min
4 mg/min = 60 gtt/min

Magnesium Sulfate:
4 grams in 250 mL D5W (16 mg/mL) run at 30-60 gtt/min

DOPamine:
400 mg /250 mL D5W or 800 mg/500 mL D5W = 1600 mcg/mL (always use 60 gtt. Set)

50 kg patient – 110 lbs.	*70 kg patient – 154 lbs.*	*100 kg patient – 220 lbs.*
2.5 mcg/kg/min = 5 gtt/min	2.5 mcg/kg/min = 7 gtt/min	2.5 mcg/kg/min = 10 gtt/min
5 mcg/kg/min = 12 gtt/min	5 mcg/kg/min = 13 gtt/min	5 mcg/kg/min = 19 gtt/min
10 mcg/kg/min = 19 gtt/min	10 mcg/kg/min = 27 gtt/min	10 mcg/kg/min = 38 gtt/min
20 mcg/kg/min = 38 gtt/min	20 mcg/kg/min = 53 gtt/min	20 mcg/kg/min = 75 gtt/min

Ped dose 2-20 mcg/kg/min

EPINEPHrine
2 mL (EPINEPHrine 1 mg/kg)/in 250 mL NS or D5W = 8 mcg/mL (always use 60 gtt. Set)

Ped dose – 3.6 mL (EPINEPHrine 1 mg/kg)/in 100 mL NS or D5W =32 mcg/ml (always use 60 gtt. Set)

REFERENCE – PEDIATRIC SHOCK/TRAUMA

Pediatric Points to Remember

EMR EMT AEMT PARAMEDIC

1. An infant is less than one year of age
2. A child is from one to eight years of age
3. Remember that few pediatric arrests are primary cardiac events. Most stem from respiratory (airway) problems, dehydration/metabolic, or hypothermia. Ensure that a child that arrests or that is pending arrest is well oxygenated, well hydrated and warm.
4. Prognosis is extremely poor for a child that arrests
5. Treat children aggressively before they arrest. Hypotension is a late sign.
6. When in doubt contact Medical Control
7. The use of a length-based assessment tape is **required** for all pediatric patients as a guide for medication and equipment sizes
8. Remember that with children the Intraosseous drug route is quick to establish and may be easier than gaining IV access
9. Children may be effectively ventilated using a BVM. This is the preferred method of ventilation in respiratory or cardiac arrest

If in doubt always contact Medical Control

REFERENCE – PEDIATRIC

Pediatric Trauma Score

EMR EMT AEMT PARAMEDIC

(14 years of age and under)

Component	+2 points	+1 point	-1 point
Size	Greater than 20 kg	10-20 kg	Less than 10 kg
Airway	Normal	Oral/Nasal Airway	Unmaintainable/Intubated
Systolic BP	Greater than 90 mmHg	50-90 mmHg	Less than 50 mmHg
CNS	Awake	Obtunded/LOC	Coma
Open Wound	None	Minor	Major/Penetrating
Skeletal	None	Closed Fractures	Open/ Multiple Fractures

Total Point Values from Physical Presentation of Injury
Trauma Score _____ Sum of Points

REFERENCE – PEDIATRIC

Triage Decision Scheme

EMR EMT AEMT PARAMEDIC

(14 years of age and under)

Pediatric Trauma Score of 8 or less: Refer to Destination Determinates see Pediatric Shock/Trauma Protocol

YES	NO
Transport to Level I Pediatric Trauma Center Advise Medical Control	Assess anatomy of injury
Penetrating injury proximal to elbow, and knee, including head and neck	
Flail chest	
Traumatic Respiratory Arrest	
Pelvic fracture with shock	
Amputation proximal to wrist & ankle	
Combination trauma with burns of 15% BSA, or to the face or airway	
2 or more proximal long bone fractures	
Limb paralysis	

YES	NO
Contact Medical Control for consideration of transfer to Level I or II Pediatric Trauma Center. If Medical Control is unavailable, then transport to highest level Trauma Center	Assess anatomy of injury
Evidence of High Impact	
Ejection from Automobile	Re-evaluate with Medical Control
Death of vehicle occupant (particular if unrestrained)	
Fall greater than 20 feet	
Velocity change greater than 20 MPH	
Passenger intrusion greater than 12 inches	
Pedestrian impact (significant) 5-20+MPH	
Motorcycle accident >20 MPH or with separation of rider and bike	
Bicycle accident with significant impact	

YES	NO
Contact Medical Control for consideration of transfer to Level I or II Pediatric Trauma Center. If Medical Control is unavailable, then transport to the highest-level Trauma Center	

REFERENCE – PEDIATRIC

Age, Weight, and Vitals Chart

EMR EMT AEMT PARAMEDIC

Age	Weight (kg)	Normal Diastolic BP	Normal Systolic BP	Heart Rate Per Minute	Respiratory Rate Per Minute
Birth	3.5	56 – 70	66 – 90	110 – 160	30 – 60
6 mons	7.0	56 – 70	70 – 104	100 – 140	30 – 50
1 year	10.0	56 – 76	80 – 104	100 – 140	24 – 34
2 years	13.0	56 – 76	80 – 104	90 – 110	20 – 30
3 years	15.0	56 – 76	80 – 104	90 – 110	20 – 30
4 years	17.0	56 – 76	90 – 110	80 – 110	20 – 30
5 years	19.0	56 – 76	90 – 110	80 – 110	20 – 30
6 years	23.0	56 – 76	90 – 110	70 – 100	16 – 30
7 years	25.0	56 – 76	90 – 110	70 – 100	16 – 30
8 years	28.0	60 – 76	90 – 110	70 – 100	16 – 30
9-10 years	30.0	64 – 76	90 – 114	70 – 90	10 – 20
11-12 years	37.0	64 – 80	90 – 120	70 – 90	10 – 20
13-15 years	50.0	64 – 80	110 – 124	60 – 80	10 – 20
16-18 years	65.0	64 – 90	110 – 134	60 – 80	10 – 20

Size ETT = $\frac{16 + (\text{age in years})}{4}$

REFERENCE – PEDIATRIC

Age and Weight Related Pediatric Equipment Guidelines

EMR EMT AEMT PARAMEDIC

	Premature 3 kg	**Newborn 3.5 kg**	**6 Months 7 kg**	**1 – 2 years 10 – 12 kg**	**5 years 16 – 18 kg**	**8 – 10 years 25 – 36 kg**
C – Collars			Small	Small	Small	Medium
O_2 Masks	Premature or Newborn	Newborn	Pediatric	Pediatric	Pediatric	Adult
BVM	Infant	Infant	Pediatric	Pediatric	Pediatric	Pediatric or Adult
Laryngoscopes	0	1	1	1	2	2 – 3
ET Tubes	2.5 – 3.0	3.0 – 3.5	3.5 – 4.5	4.0 – 4.5	5.0 – 5.5	5.5 – 6.5
Suction Catheters	6 – 8 Fr	8 Fr	8 – 10 Fr	10 Fr	14 Fr	14 Fr
Oral Airways	Infant	Infant or Small	Small	Small	Medium	Medium or Large
IV Equipment	22 – 24 angio	22 – 24 angio	22 – 24 angio	20 – 22 angio	20 – 22 angio	20 – 22 angio
BP Cuffs	Newborn	Newborn	Infant or Child	Child	Child	Child or Adult

AUTHORIZATION FOR STANDING ORDERS

Emergency Medical Services (EMS) Standing Orders and Protocols (revision project completed March 2018) are hereby adopted. They are to be initiated by EMS personnel within their scope of licensure whenever a patient presents with injury or illness covered by the protocols. Where indicated to contact Medical Control, the EMS Provider should receive voice orders from Medical Control before proceeding. Other orders may be obtained from Medical Control when the situation is not covered by the protocols or as becomes necessary as deemed by the EMT or Paramedic.

Effective Date of these SOPs: July, 2017

_____ _____

EMS Service Medical Director Date