**Adult Cardiogenic Shock**

**Designation of Condition:** The patient will present with signs and symptoms of hypoperfusion usually accompanied by hypotension (BP <90 mmHg), shortness of breath often secondary to pulmonary edema (wet noisy respirations/crackles and, if severe, possibly pink frothy sputum), and other indicators of hypoperfusion such as confusion, decreasing LOC and diaphoresis. These signs and symptoms are usually observed in the setting of AMI and require expeditious transport.

| B | Oxygen at a flow rate sufficient to maintain SpO2 >90%
Allow the patient to seek a position of comfort (Fowler’s recommended if possible)
Obtain a complete set of vital signs
Manage airway and provide BVM ventilatory assistance as necessary
Consider CPAP if noted pulmonary edema
If patient complains of chest pain, consider Cardiac and STEMI guidelines |
|---|---|
| I | IV/IO NS TKO or saline lock
If lung sounds are clear, administer a 5-10 ml/kg NS bolus repeat to effect, SBP >90 mmHg, max 2L |
| P | Monitor cardiac rhythm
Obtain 12 lead ECG, STEMI ALERT if indicated
Caution with excess fluids in cardiogenic shock; consider the presence of pulmonary edema; utilize pressors early
If no improvement with fluid bolus, or if fluids are contraindicated because of pulmonary edema:
  - **Epinephrine Drip** of 2 mcg/min IV/IO, increase 2mcg/min to max of 10mcg/min or
  - **Norepinephrine drip** of 4 mcg/min IV/IO, increase 2 mcg/min to a max of 10 mcg/min or
  - **Epinephrine mini-bolus** of 0.5 to 1 cc of 1:100,000 IV/IO q 1 min PRN
  To a goal SBP > 90 mmHg |

***KEY POINTS***
Remember this is a primary pump failure with decreased cardiac output
ETCO₂ reading of <25mmHg may be sign of poor perfusion
**Continuous Central Line Infusion Pump**

**Designation of Condition:** A patient being treated with a continuous central line infusion

<table>
<thead>
<tr>
<th>If patient is conscious:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Perform primary and secondary surveys and provide care as appropriate</td>
</tr>
<tr>
<td>• If a problem exists with the patient's central IV line that compromises the continuous infusion, initiate a peripheral IV/IO and connect the tubing directly to the peripheral IV catheter after ensuring patency of the peripheral line</td>
</tr>
<tr>
<td>• Utilize patient's expertise to ensure patient's ambulatory pump is working properly and is infusing at the correct rate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>If the patient is unconscious:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Perform primary and secondary surveys and provide care as appropriate</td>
</tr>
<tr>
<td>• Evaluate whether the medication is infusing properly via the patient's central IV line by inspecting the patient's ambulatory pump for signs of proper operation</td>
</tr>
<tr>
<td>• If it is infusing properly, leave infusion as is and allow patient's ambulatory pump to control the infusion en route to the hospital</td>
</tr>
<tr>
<td>• If the medication is not infusing properly via the patient's central IV line and you determine it is due to occlusion of the central IV line, initiate a peripheral IV/IO and connect the medication tubing directly to the peripheral IV/IO catheter after ensuring patency of the peripheral line</td>
</tr>
<tr>
<td>• If patient's ambulatory pump is alarming another type of failure, troubleshoot as possible, gather all materials necessary and transport patient emergently to the hospital</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>If the patient is in cardiac arrest:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Perform a primary survey and treat the cardiac arrest per guideline</td>
</tr>
<tr>
<td>• Ensure the continuous infusion is either through the patient's central IV line or through a designated peripheral IV/IO line. Remember, ACLS drugs must be administered through a SEPARATE IV/IO.</td>
</tr>
</tbody>
</table>

In all cases, upon arrival at the hospital, ensure the staff is informed of the patient's condition and of the need for the continuous infusion.
Adult Narrow Complex Tachycardia 
Irregular Rhythm

**Designation of Condition:** The patient will have a rapid heart rate (often greater than 150 bpm) with Atrial Flutter or Atrial Fibrillation on the ECG or **12 Lead** ECG (if available) with a QRS < 0.11 sec

**ABC's, Vital signs**
- Apply cardiac monitor
- Acquire **12 lead** in first 5 minutes
- O2 to maintain an SpO2 of ≥90%

**Capnography**
- If patient is hemodynamically stable but has severe chest pain administer:
  - Administer ASA 324 PO refer to ACS guideline
- If patient is significantly SOB with rales on auscultation refer to **Pulmonary Edema / Congestive Heart Failure**

**IV/IO**
- Consider fluid bolus of 500ml to rule out hypovolemia/dehydration as cause of tachycardia
- Repeat as patient condition requires
- OR
- If patient is significantly SOB with rales on auscultation do not give fluid bolus

**Narrow Irregular Stable**
- (A-fib, WPW, MAT)
  - Obtain **12 lead** ECG
  - Supportive care
  - Treatment of symptoms
  - Close observation
  - Consider placing the pads on the patient and prep medications for decompensation

**Narrow Irregular Unstable**
- Hypotension/weak or no radial pulse, acute AMS, ischemic chest pain, acute CHF, syncope, s/sx of cardiogenic shock
  - Consider sedation with Midazolam 1-5mg
  - IV/IO/IM/IN
  - **Synchronized Cardioversion**
    - LP15: 100J, 200J, 300J, 360J
    - Zoll: 75J, 120J, 150J, 200J
  - If time permits:
    - sedate prior to cardioversion
  - If unable to sedate, treat post cardioversion pain per pain control guideline
  - DO NOT GIVE BOTH NARCOTICS AND BENZODIAZEPINES

***KEY POINTS***
- Be aware that cardioversion of the patient who has not been adequately anti-coagulated carries a significant risk of embolic stroke and pulmonary embolism. Patients with symptoms >48 hours are at greatest risk. Consider rapid transport and MCEP consultation prior to cardioversion if time permits. If cardioversion cannot be delayed, assess post cardioversion for possible stroke/PE symptoms
**Designation of Condition:** The patient will have a regular heart rate greater than 150 bpm with a supraventricular focus. P-waves will not be present. QRS complexes are most often narrow (<0.11 sec), but may be wide if patient has pre-existing ventricular conduction defect or reentrant conduction via accessory pathway

**Narrow Regular Stable** (SVT, A-Flutter, PAT)
- Attempt vagal maneuvers (NO carotid massage) or modified Valsalva
- Consider placing the pads on the patient and prep medications for decompensation
- Adenosine 6mg RIVP preferably in a proximal IV followed by a 20ml flush
  - A 2nd dose of 12mg may be given after 1-2 min if no change
  - Contraindicated in WPW
  
- Obtain 12 lead prior to vagal maneuvers
  - Consider placing patient in Trendelenburg prior to attempt

**Narrow Regular Rhythm Unstable**
- Hypotension/weak or no radial pulse, acute AMS, ischemic chest pain, acute CHF, syncope, sx of cardiogenic shock

- Consider sedation with Midazolam 1-5mg
- Synchronized Cardioversion
  - LP15: 100J, 200J, 300J, 360J
  - Zoll: 75J, 120J, 150J, 200J
  - If time permits: sedate prior to cardioversion
  - If unable to sedate, treat post cardioversion pain per pain control guideline
  - DO NOT GIVE BOTH NARCOTICS AND BENZODIAZEPINES

---

**ABC’s, Vital signs**
- Apply cardiac monitor
- Acquire 12 lead in first 5 minutes
- O2 to maintain an SpO2 of >90%
- Capnography
- Administer ASA 324 PO

**Consider fluid bolus of 500ml to rule out hypovolemia/dehydration as cause of tachycardia**
- Repeat as patient condition requires

---

****KEY POINTS**

Be aware that cardioversion of the patient who has not been adequately anti-coagulated carries a significant risk of embolic stroke and pulmonary embolism. Patients with symptoms >48 hours are at greatest risk. Consider rapid transport and MCEP consultation prior to cardioversion if time permits. If cardioversion cannot be delayed, assess post cardioversion for possible stroke/PE symptoms.
**Designation of Condition:** The patient will present with a heart rate typically <50bpm with associated signs and symptoms of hypoperfusion (decreased or altered LOC, chest pain, lightheadedness/dizziness, shortness of breath, acute heart failure or other SxS of shock)

**ABC’s**
Vital signs to include BGL
Apply cardiac monitor
Acquire 12 lead in first 5 minutes
O2 to maintain an SpO2 of >90%
Capnography
Administer ASA 324 PO if C/O chest pain

**Stable**
(SBP >90mmHg / NO Altered Mental Status)
- Consider placing the pads on the patient and prep medications for decompensation
- Monitor and reevaluate the patient’s condition
- Transport to the appropriate facility

**Unstable**
(SBP <90mmHg / Altered Mental Status)
- Transcutaneous Pacing
  Pace at a rate of 60-80bpm. Slowly increase current until electrical capture is achieved, assess for capture, increase as needed for BP
- Administer narcotics per the Pain Management guideline
  If narcotic administration is contraindicated (e.g., patient allergy, hypotension, etc.), sedation may be utilized instead of analgesia: Administer Benzodiazepine

**OR**

**Atropine**
0.5mg IV/IO q 3-5 min to a max of 3mg
The goal is a heart rate of at least 60 bpm and a blood pressure of 90 mmHg systolic (^LOC, ^hemodynamics).

In the setting of acute MI, cardiac transplant patients, third degree heart block or Mobitz type II second-degree heart block, Atropine is not effective, and should be used only after attempts at transcutaneous pacing have failed

**Epinephrine Drip** of 2 mcg/min IV/IO, increase 2mcg/min to max of 10mcg/min
or
**Norepinephrine drip** of 4 mcg/min IV/IO, increase 2 mcg/min to a max of 10 mcg/min
or
**Epinephrine mini-bolus** of 0.5 to 1 cc of 1:100,000 IV/IO q 1 min PRN
To a goal SBP ≥ 90 mmHg

Maintain BP of ≥90mmHg
**Adult Wide Complex Tachycardia**

**Irregular Rhythm**

**Designation of Condition:** Sustained ventricular tachycardia (broad QRS > 0.11ms) will be present on the monitor with an irregular pattern. The patient will have a pulse and may present with hypotension (SP <90mmHg), chest pain, shortness of breath, or diaphoresis.

**B**
- ABC's, Vital signs
- Apply cardiac monitor
- Obtain 12 lead ECG
- O2 to maintain an SpO2 of >90%
- Capnography

**I**
- IV/IO
- Fluid bolus of 500ml, repeated as needed to a max of 20ml/kg, to rule out hypovolemia or dehydration

**Is the patient stable?**
- Unstable signs: Hypotension/weak or no radial pulse, acute AMS, ischemic chest pain, acute CHF, syncpe, s/sx of cardiogenic shock

**YES**

**Wide Polymorphic Stable**
- DO NOT GIVE ADENOSINE
- If it is believed to be Torsades de Pointes:
  - Magnesium Sulfate 2 grams IV/IO push. Can give 2nd dose q 10 minutes x 1

**NO**

**Wide Polymorphic Unstable**
- Consider sedation with Midazolam 1-5mg IV/IO/IM/IN to max of 10mg
- Attempt to sync:
  - Medtronic: 100J
  - Zoll: 75J
- if unable to Sync—defib:
  - Medtronic: 200J
  - Zoll: 120J
  - Repeat defibrillation if necessary
  - Medtronic: 300J, 360J
  - Zoll: 150J, 200J
- If VT still persists:
  - Alternate Lidocaine 1-1.5mg/kg first dose and 0.5-0.75mg/kg subsequent doses to a max of 3mg/kg
  - and cardioversion/defibrillation at maximum joule setting until VT resolves
  - (Lidocaine contraindicated in TCA OD)
  - If it is believed to be Torsades de Pointes AND UNSTABLE:
  - Defib as outlines above for polymorphic VT; escalate joule setting PRN
  - Magnesium Sulfate 2gm IV/IO push. Can give 2nd dose q 10 minutes x 1
  - If no change in rhythm, repeat defibrillation

***KEY POINTS***

Torsades may be caused by prolonged QT syndrome or medications such as tricyclic antidepressants, phenothiazines, non-sedating antihistamines and certain anti-arrhythmic drugs. Although it can be suppressed by Magnesium Sulfate, it will often recur unless the precipitating mechanisms are removed.
Adult Wide Complex Tachycardia
Regular Rhythm

**Designation of Condition:** Sustained ventricular tachycardia (broad QRS > 0.11ms) will be present on the monitor. The patient will have a pulse and may present with hypotension (SP <90mmHg), chest pain, shortness of breath, or diaphoresis.

**ABC’s, Vital signs**
- Apply cardiac monitor
- Obtain 12 lead ECG
- O2 to maintain an SpO2 of >90%
- Capnography
- Administer ASA 324mg PO if C/O chest pain

**IV/IO**
- Fluid bolus of 500ml, repeated as needed to a max of 20ml/kg, to rule out hypovolemia or dehydration

Is the patient stable?
- Unstable signs: Hypotension/weak or no radial pulse, acute AMS, ischemic chest pain, acute CHF, syncope, s/sx of cardiogenic shock

---

**Regular Monomorphic Stable**

**First Consider:**
- If hyperkalemia suspected (high suspicion for dialysis patient with “sine wave” pattern or sino-ventricular rhythm):
  - Treat with Calcium per Hyperkalemia guideline
- If suspected TCA Overdose:
  - Treat with Sodium Bicarbonate per drug overdose guideline
  - Consultation with EMS Consortium if: patient is stable prior to anti-arrhythmic administration
  - Lidocaine (Considered as 2nd line therapy, if above therapies have failed or not suspected)
    - 1-1.5mg/kg IV/IO
    - May repeat once in 5 minutes to a max of 3 mg/kg
    - If successful, consider a maintenance infusion of 1-4 mg/minute

---

**Regular Monomorphic Unstable**

**Consider sedation with Midazolam**
- 1-5mg IV/IO/IM/IN
  - to max of 10mg

**Synchronized Cardioversion**
- Medtronic: 100J
- Zoll: 75J

**Repeat synchronized cardioversion** if necessary
- Medtronic: 200J, 300J, 360J
- Zoll: 120J, 150J, 200J

**If VT still persists:**
- Alternate Lidocaine 1-1.5mg/kg first dose and 0.5-0.75mg/kg subsequent doses to a max of 3mg/kg and cardioversion at maximum joule setting until VT resolves
  - (Lidocaine contraindicated in TCA OD)

---

**KEY POINTS**

For ASYMPTOMATIC PATIENTS (or those with only minimal symptoms, such as palpitations) and any tachycardia with rate approximately 100-120 and a normal blood pressure, consider CLOSE OBSERVATION and/or fluid bolus rather than immediate treatment with an anti-arrhythmic medication.
### Acute Coronary Syndrome (ACS)

**Designation of Condition:** A chief complaint, which has signs and symptoms suggestive of AMI. Patient may present with one or more of the following: chest or epigastric pain/discomfort (radiating or non-radiating, discomfort or altered sensations to neck, jaw, either shoulder/arm or into the back. There may be complaints of SOB, weakness, diaphoresis, syncope, nausea and/or vomiting.

### ABC's, Vital signs
- Apply cardiac monitor
- Acquire 12 lead in first 5 minutes
- O2 to maintain an SpO2 of ≥90%
- Capnography
- Administer ASA 324 PO

### Consider IV/IO access after ASA, Give 500 ml fluid boluses as necessary to maintain systolic BP >100 mmHg, to a max of 20ml/kg

**IF ECG reads: “Acute MI suspected,” initiate STEMI ALERT, transmit ECG and transport within 10 minutes**

**Pain management with MCEP contact:**
- **Morphine** 2-5mg IV/IO/IM q 5 minutes to a max of 20 mg (0.1 mg/kg q 5 minutes to a max of 0.2 mg/kg peds)
- OR
- **Fentanyl** 0.5-1 mcg/kg IV/IO/IM/IN q 5 minutes to max total dose of 3mcg/kg

### Early notification PRIOR TO INITIATING TRANSPORT
- If no transport unit available, the fire agency should transport immediately
- Provide the following information to the receiving hospital:
  - Declare “STEMI Alert”
  - Pt age/gender
  - Patient Cardiologist / Cardiology Group (If known)
  - ETA

### YES

#### ACUTE MI/ STEMI
- STEMI = 1mm ST segment elevation >/ 2 contiguous leads or monitor reads “Meets ST Elevation Criteria” and medic agrees with interpretation
- **Look for ST DEPRESSION in reciprocal leads (opposite wall) to confirm diagnosis.**
- **Isolated ST elevation in aVR, with ST depression EVERYWHERE ELSE is concerning for a possible proximal LAD or Left Main lesion.**
- **In setting of RV infarct, pt may be hypotensive after fluid bolus, follow cardiogenic shock guideline with preferential use of fentanyl for pain control**
  - **Morphine** 2-5mg IV/IO/IM q 5 minutes to a max of 20 mg (0.1 mg/kg q 5 minutes to a max of 0.2 mg/kg peds)
  - OR
  - **Fentanyl** 0.5-1 mcg/kg IV/IO/IM/IN q 5 minutes to max total dose of 3mcg/kg

#### P
- If Sympathomimetic *Overdose* (cocaine/meth) induced STEMI consider benzodiazepine 2.5-5 mg IV/IM/IN/IO for pain control—or not administer in conjuction with narcotics
Adult Cardiac Arrest

**Designation of Condition:** The patient becomes unconscious, unresponsive, has apneic/agonal respirations, is pulseless, and the monitor displays **asystole, PEA, ventricular fibrillation**, or **ventricular tachycardia** in the EMS crew’s presence.

***KEY POINT***

As soon as possible, designate the following positions:

- **Team leader**
- **Monitor**
- **Airway**
- **Mechanical device operator**
  - **Mechanical Compression Device (AutoPulse/ LUCAS)**
  - application if available

AT ANY TIME ROSC, go to **post-ROSC guideline**

---

Evaluate criteria for obvious death

- **YES**
  - Decomposition
  - Rigor mortis
  - Dependent lividity
  - Decapitation

- **NO**
  - Check for responsiveness and pulse (<10sec)
    - Initiate **CPR** (100-120 compressions / min) to capnography of >10mmHg
    - Start monitor’s metronome
    - **Capnography procedure**
      (Capnography can be used to monitor effectiveness of compressions)

First on scene BLS/ILS

- **YES**
  - **B** Implement AED

- **NO**
  - **P** Cardiac monitor

**Shockable rhythm**

- **YES**
  - **B** AED Procedure

  - Continue **CPR** 2 minutes
  - Repeat and reassess

  - Manage airway with **BVM / Extraglottic / King**

- **NO**

**Aystole/PEA Protocol**

- Manage airway with **BVM / Extraglottic / King or ETT** (SGA Preferred)
  - Connect to Capnography

**VF/VT Protocol**

---

Resuscitation efforts may be terminated in the field after preferential EMS Consortium call and/or hospital **MCEP** secondary for approval if the following conditions are met:

- No return of spontaneous circulation (ROSC) occurred, and
- The terminal rhythm is **asystole**
- The arrest is not the result of hypothermia
- Any patient who presents in the following rhythm at any point during the resuscitation will be resuscitated on scene for a minimum of 40 minutes:
  - **Ventricular Fibrillation**
  - **Ventricular Tachycardia**
  - **PEA >40 bpm**
Adult Cardiac Section

Introduction: The cardiac patient must be reassessed frequently and prior to/post each therapeutic intervention. Consider the possibility that an underlying medical condition or medications may be contributing to the problem.

- All cardiac patients will be given oxygen at a flow rate sufficient to treat any component of shortness of breath or hypoxia. If the patient IS NOT short of breath or hypoxic, supplemental oxygen is not recommended. Cardiac patients should be allowed to seek a position of comfort, usually Fowler’s, unless they are in shock, in which case the supine position is preferred.
- An IV/IO of NS or saline lock should be initiated.
- Patients in cardiac arrest should be managed in the field; all other cardiac patients require minimal scene times and expeditious transport.
- If the patient has a return of spontaneous circulation (ROSC) (sustained palpable pulses and measurable blood pressure), s/he should be transported to a core facility (Pres DT, UNMH, or Heart Hospital of New Mexico; see current hospital capabilities report for VAMC). All other patients in cardiac arrest should be transported to the nearest appropriate medical facility. The transporting crew may opt to transport to nearest facility depending on circumstances.
- All patients in cardiac arrest require immediate CPR, basic airway management and ventilations with oxygen. CPR and initial defibrillation (if indicated) take precedence over advanced airway management unless the airway cannot be managed with BLS maneuvers.
- Defibrillation of the VF/pVT patient should occur ASAP on all arrests.
- In all cardiac arrest situations, consider treatable causes, H’s and T’s:
  - Hypoxia
  - Hypovolemia
  - Hypothermia
  - Hyper/Hypokalemia
  - Hydrogen ions (metabolic acidosis)
  - Tension pneumothorax
  - Tamponade
  - Thrombosis (AMI or PE)
  - Toxins / Tablets
  - Trauma

Resuscitation efforts may be terminated in the field with MCEP approval if the following conditions apply:

- ALS interventions have been implemented for at least 30 minutes, and
- No return of spontaneous circulation (ROSC) occurred, and
- The terminal rhythm is Asystole/PEA <40/IVR
- The arrest is not the result of hypothermia
- Any patient who presents in the following rhythm at any point during the resuscitation will be resuscitated on scene for a minimum of 40 minutes:
  - Ventricular Fibrillation
  - Ventricular Tachycardia
  - PEA >40 bpm
- All VAD patients in cardiac arrest must be transported

Continuous Quantitative Waveform EtCO2 Monitoring in Cardiac Arrest (if available)

- All patients in cardiac or respiratory arrest shall be placed on Continuous Quantitative Waveform Capnography.
- An abrupt sustained increase in EtCO2 during CPR should be considered an indicator of ROSC in all patients with an advanced airway (ETT or Extraglottic Airway Device) and continuous quantitative capnographic monitoring in place. If providers see an organized rhythm with an abrupt, sustained increase in Et CO2, complete cycle of CPR, check pulse and try to auscultate heart tones in an attempt to confirm cardiogenic shock.
- If no pulse is palpable but the increase in ETCO2 is sustained, resume CPR and treat as cardiogenic shock rather than PEA. Conversely, an abrupt, sustained decrease in ETCO2 after ROSC may indicate re-arrest. If this occurs, assess patient status.
Adult Asystole / PEA

AT ANY TIME
Return of Spontaneous Circulation, go to post-resuscitation guideline

IV/IO
Check for responsiveness and pulse (<10sec)
Initiate CPR (100-120 compressions / min) to capnography of >10mmHg
NPA/OPA
NRB @ 15lpm
Fluid bolus of 500ml, repeated as necessary to a max of 20ml/kg to rule out hypovolemia or dehydration
Administer 1mg Epinephrine 1:10000 q 10 minutes

I
Cardiac monitor
Analyze rhythm and defibrillate if indicated, check pulse
Consider specific treatments early, search for reversible causes of PEA/Asystolic Cardiac Arrest

P
Supraglottic Airway procedure (Best Practice)
Consider direct laryngoscopy to verify clear airway
Remove any obstructions and suction as necessary and obtain definitive airway
Connect to Capnography
Operator may consider 1 intubation attempt with continuous chest compressions or during pulse check without additional interruptions/delays in CPR

P
Cardiac monitor
Analyze rhythm and defibrillate if indicated, check pulse
Consider specific treatments early, search for reversible causes of PEA/Asystolic Cardiac Arrest
Consider termination of resuscitation if appropriate based on cardiac arrest guideline

H's and T's
Reversible Causes
Evaluate H's:
• Hypoxia
• Hypovolemia
• Hypothermia
• Hyper/hypokalemia
• Hydrogen Ions
Evaluate T's:
• Tension pneumothorax
• Tamponade
• Thrombosis (AMI or PE)
• Toxins/Tablets
• Trauma

***NOTE***
If cardiac arrest suspected to be due to respiratory arrest, proceed along appropriate protocol, begin asynchronous ventilations at a rate of 8-10 per minute, and progress immediately to an advanced airway
**Adult Congestive Heart Failure / Pulmonary Edema**

**Designation of Condition:** The patient will present with shortness of breath and rales (wet noisy respirations/crackles). Pink frothy sputum is a classic sign but usually absent. The patient will often appear anxious, pale, clammy and acutely dyspneic/tachypneic. Individuals will avoid recumbency and attempt to sit upright. Signs of right heart failure may also be present (jugular venous distention and dependent edema). Most patients will have a history of CHF, but if not, consider an acute, concomitant precipitating cause (e.g., cardiac ischemia or valvular failure).

If the patient decompensates and shows signs and symptoms of hypoperfusion, possibly accompanied by hypotension (BP <90 mmHg), shortness of breath, and other indicators of hypoperfusion such as confusion, decreasing LOC, and diaphoresis, consider **Cardiogenic Shock**

---

**CPAP**

is the primary intervention in patient with severe respiratory distress before any other intervention

---

**ABC’s**

Vital signs to include lung sounds
Apply cardiac monitor
O2 to maintain an SpO2 of >94%
Capnography
Allow patient to seek position of comfort
Administer ASA 324mg PO
if C/O chest pain
Manage airway with BVM or CPAP assistance as necessary

---

**IV/IO access**

---

**MILD**

Normal Heart Rate
Elevated BP

- Administer Nitroglycerin 0.4mg SL q 5 minutes to a max of 1.2mg OR until the shortness of breath is relieved
- Monitor BP closely after each dose to maintain SBP >100 mmHg

**Improving**

---

**MODERATE/ SEVERE**

Elevated Heart Rate
Elevated BP

- CPAP for increasing SOB/dyspnea, work of breathing
- IV/IO access

- With EMS Consortium contact:
  - Administer Nitroglycerin 0.4mg SL q 5 minutes to a max of 1.2 mg OR until the shortness of breath is relieved
- Titrated to BP >90 mmHg

**Cardiogenic Shock**

Hypotension with variable HR

- Epinephrine Drip of 2 mcg/min IV/IO, increase 2 mcg/min to max of 10 mcg/min or
- Norepinephrine drip of 4 mcg/min IV/IO, increase 2 mcg/min to a max of 10 mcg/min or
- Epinephrine mini-bolus of 0.5 to 1 cc of 1:100,000 IV/IO q 1 min PRN

---

**P**

Administer Nitroglycerin 0.4mg SL q 5 minutes to a max of 1.2 mg OR until the shortness of breath is relieved

- Monitor BP closely after each dose to maintain SBP >100 mmHg
### Evaluation and Treatment of H’s and T’s in Cardiac Arrest

#### ***KEY POINT***

It is not necessary to check BGL or treat hypoglycemia during cardiac arrest. Evaluate BGL after ROSC is achieved and treat accordingly.

It is not necessary to give *naloxone* during cardiac arrest. Consider *naloxone* in post-resuscitative efforts.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hypoxia</strong> <em>(Patient with a history of Asthma or COPD)</em></td>
<td>If wheezing/decreased lung sounds, give nebulizer with <em>Albuterol/Ipratropium</em> and consider <em>magnesium</em> if patient has a history of COPD or asthma.</td>
</tr>
<tr>
<td><strong>Hypovolemia/Tamponade Suspected</strong></td>
<td>Fluid bolus of 500ml, repeated as necessary to a max of 20ml/kg</td>
</tr>
<tr>
<td><strong>Hypothermia</strong> <em>(Patient tympanic temperature &lt;90°F)</em></td>
<td>Allow 30-45 seconds to ascertain if carotid pulse present. If ANY pulse is detected, <strong>DO NOT PERFORM CPR</strong> Defibrillation should only be performed once at 200J <em>Epinephrine</em> should only be given once during cardiac arrest See <a href="#">Hypothermia Guideline</a></td>
</tr>
<tr>
<td><strong>Hyperkalemia</strong> <em>(Patient with a history of renal insufficiency)</em></td>
<td>Calcium Chloride 1gm or Calcium Gluconate 3 gm IV/IO AND Sodium Bicarbonate 1 mEq/kg IV/IO (give Sodium Bicarb in a dedicated line) AND Albuterol 10 mg nebulized</td>
</tr>
<tr>
<td><strong>Tension Pneumothorax</strong></td>
<td>Needle Chest Decompression</td>
</tr>
<tr>
<td><strong>Tricyclic Antidepressant Overdose</strong></td>
<td>Sodium Bicarbonate 1mEq/kg IV/IO (give Sodium Bicarb in a dedicated line)</td>
</tr>
<tr>
<td><strong>Calcium Channel Blockers</strong></td>
<td>Calcium Chloride 1gm or Calcium Gluconate 3gm IV/IO</td>
</tr>
<tr>
<td><strong>Beta Blockers</strong></td>
<td>Calcium Chloride 1gm or Calcium Gluconate 3gm IV/IO</td>
</tr>
<tr>
<td><strong>Torsades de Pointes</strong></td>
<td><em>Magnesium Sulfate</em> 2g IV/IO slow push</td>
</tr>
</tbody>
</table>

---

*Albuterol* *Epinephrine* *magnesium* *naloxone* *Sodium Bicarbonate* *Torsades de Pointes*
**Designation of Condition:** Adult patient with return of pulses (ROSC) after cardiac arrest

- Manage airway with basic adjuncts and suction PRN
- Avoid hyperoxygenation. Administer oxygen to maintain SpO2 >90%
- Frequent VS to include BGL and temperature
- ETCO2 from 35-45 mmHg with respiratory rate of 10-12/minute
- 12 Lead ECG with transmission to destination hospital
- Place head of bed at a 30 degree angle
- If unconscious, allow permissive hypothermia. Keep pt uncovered. Consider active hypothermia: apply cold packs to axilla, groin and side of neck
  - With target temp 36 degrees C
- Transport with Mechanical Compression Device in place

**Principles: Ensure IV/IO patency**

- If BGL <60mg/dl, proceed to hypoglycemia guideline

- **Bradycardia**
  - Treat per the bradycardia protocol

- **Hypotension**
  - Maintain SBP >90 mmHg
  - IV/IO NS bolus, 250-500 ml to a max of 20cc/kg as appropriate
  - If no improvement with fluid bolus, or if fluids are contraindicated:
    - **Epinephrine Drip** of 2 mcg/min IV/IO, increase 2 mcg/min to max of 10mcg/min
    - **Norepinephrine drip** of 4 mcg/min IV/IO, increase 2 mcg/min to a max of 10 mcg/min
    - **Epinephrine mini-bolus** of 0.5 to 1 cc of 1:100,000 IV/IO q 1 min PRN
  - Maintain BP of 90-100mmHg
  - Or MAP of 65-80 mmHg

- **Chest Pain/STEMI**
  - Obtain post-conversion 12 Lead ASAP and transmit.
  - **Activate STEMI alert prior to initiating transport**

- **Post-ROSC dysrhythmias**
  - Treat per the appropriate protocol

- **If pt seizes treat per protocol**
  - Convulsive Seizures, Status Epilepticus

- Monitor and reevaluate the patient’s condition
- Transport to a core facility with CATH LAB capabilities
**Adult Ventricular Assist Device (VAD, BiVAD, RVAD)**

**Designation of Condition:** The patient will have an indwelling Ventricular Assist Device, a mechanical pump implanted in the ventricle(s) to augment the pumping function of the heart. Patients and family members are trained on the device and troubleshooting techniques. Patients and family members are instructed to notify the VAD Coordinators at the implanting facility in case of emergency. EMS is often only activated by the patient or family if troubleshooting techniques fail or the patient experiences acute decompensation.

***KEY POINTS***

**General considerations for VAD patients**

- VAD patients are likely to have multiple medical problems in addition to cardiac problems.
- In general, treat the patient’s condition per the appropriate guideline unless directed otherwise by the patient’s VAD Coordinator, by MCEP consultation, or by the points below.
- Blood flow from a VAD is continuous, not pulsatile. Pulses may not be palpable and BP may not be obtainable.
- If unable to obtain pulse or blood pressure, use LOC, respiratory rate/ work of breathing, and skin color/ temperature/capillary refill to determine adequacy of circulation.
- Use care at all times not to pull on the power cord exiting the patient’s abdomen and ensure the power cord is never cut.

**General CONTRAINDICATIONS for VAD patients**

- DO NOT PERFORM CHEST COMPRESSIONS IF DEVICE IS RUNNING
  - Since the VAD is directly inserted into the left ventricle and the aorta, chest compressions can dislodge the device and cause massive bleeding into chest.
  - If patient is UNRESPONSIVE, and the device is NOT RUNNING, initiate CPR and contact VAD coordinator and MCEP.
  - CPAP is contraindicated because it may increase intrathoracic pressure and impede VAD/heart function.
  - Nitrates and diuretics are contraindicated because they may worsen perfusion by affecting blood pressure and preload.

---

**Reversible Causes**

**Evaluate H’s:**
- Hypoxia
- Hypovolemia
- Hypothermia
- Hyper/hypokalemia
- Hydrogen Ions

**Evaluate T’s:**
- Tension pneumothorax
- Tamponade
- Thrombosis (AMI or PE)
- Toxins/Tablets
- Trauma

---

**Call the VAD Coordinator AS SOON AS** a provider can be assigned to do so.

Contact MCEP if VAD Coordinator recommends treatment outside of the provider’s scope of practice or comfort level.

ABC’s and vital signs to include BGL.

Oxygen titrated to >90%.

**To check device status:**

Listen to chest to hear device—it should make a whirring sound.

Interpret any alarms with help from family and VAD coordinator.

Initiate urgent transport.

**If clinical signs and symptoms of poor perfusion: administer 500 ml NS bolus, even if peripheral edema is present.**

**Monitor ECG**

If patient is unresponsive and crystalloid therapy fails to restore adequate perfusion,

- **Epinephrine Drip** of 2 mcg/min IV/IO to max of 10 mcg/min
- or
- **Norepinephrine drip** of 4 mcg/min IV/IO, increase 2 mcg/min to 10 mcg/min
- or
- **Epinephrine mini-bolus** of 0.5 to 1 cc of 1:100,000 IV/IO q 1 min PRN
- To a goal SBP ≥ 90 mmHg.
**Adult Ventricular Fibrillation/ Pulseless Ventricular Tachycardia**

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Defibrillate ASAP</td>
</tr>
<tr>
<td>B</td>
<td>Immediate resumption of CPR for 200 compressions At 175 compressions or 1m 45sec, pre-charge monitor to 360J (LP15) or 200J (Zoll)</td>
</tr>
<tr>
<td>B</td>
<td>Fluid bolus of 500ml, repeated as necessary to a max of 20ml/kg to rule out hypovolemia or dehydration Administer 1mg Epinephrine 1:10000 q 10 minutes</td>
</tr>
<tr>
<td>P</td>
<td>Supraglottic Airway procedure (Best Practice) Consider direct laryngoscopy to verify clear airway Remove any obstructions and suction as necessary and obtain definitive airway Connect to Capnography Operator may consider intubation attempt with continuous chest compressions or during pulse check without additional interruptions/delays in CPR Capnography procedure—Continuous Waveform capnography is mandatory with all methods of airway management. Document results/waveform Consider specific treatments early, search for reversible causes of V-Fib/Pulseless V-Tach</td>
</tr>
<tr>
<td>P</td>
<td>Administer Lidocaine 1-1.5mg/kg IV/IO Subsequent doses of 0.5-0.75mg/kg q 3-5 minutes to a total of 3mg/kg</td>
</tr>
<tr>
<td>P</td>
<td>Lidocaine is contraindicated in suspected TCA overdoses</td>
</tr>
<tr>
<td>P</td>
<td>If persistent VF/Pulseless VT or Torsades de Pointes Administer Magnesium Sulfate 2gm IV/IO</td>
</tr>
<tr>
<td>P</td>
<td>Consider termination of resuscitation if appropriate based on cardiac arrest guideline</td>
</tr>
</tbody>
</table>

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**KEY POINT**

As soon as possible, designate the following positions:

- Team Leader
- Monitor
- Airway

**NOTE**

If cardiac arrest suspected to be due to respiratory arrest, proceed along appropriate protocol, begin asynchronous ventilations at a rate of 8-10 per minute, and progress immediately to an advanced airway.

**H's and T's Reversible Causes**

Evaluate H's:
- Hypoxia
- Hypovolemia
- Hypothermia
- Hyper/hypokalemia
- Hydrogen Ions

Evaluate T's:
- Tension pneumothorax
- Tamponade
- Thrombosis (AMI or PE)
- Toxins/Tablets
- Trauma

---

If resources available, early placement of advanced airway is acceptable. At 175 compressions or 1m 45sec, pre-charge monitor to 360J (LP15) or 200J (Zoll) BVM / Supraglottic / King.
**Adult Airway**

Assess Respiratory rate, effort, oxygenation. Is Airway/Breathing Adequate?

- **YES**
  - Supplemental Oxygen with goal saturation ≥ 90%

- **NO**
  - Basic Maneuvers First:
    - Open airway with chin lift/jaw thrust (if concern for traumatic MOI)
    - Nasal or Oral Adjuncts (NPA and/or OPA)
      - While placing adjuncts, add supplemental oxygen via nasal cannula or non–rebreather
      - Consider CPAP
    - **Bag Valve Mask** with supplemental Oxygen ≥ 90%
  - Apply Capnography procedure guideline Spinal Motion Restriction Guidelines if indicated

Respiratory Distress with a **Tracheostomy Tube Guideline** if indicated

- **YES**
  - Follow Adult Foreign Body or Peds Foreign Body obstruction guideline
  - **Direct Laryngoscopy** attempt to visualize FB and remove with McGills
  - Consider Cricothyrotomy procedure
- **NO**
  - Consider CPAP
  - **Bag Valve Mask** with supplemental oxygen ≥ 90%
    - Supraglottic Airway procedure (SGA)
  - Oral/ Nasotracheal intubation procedure
  - Needle Decompression procedure if indicated

---

**KEY POINT***

If ventilation / oxygenation is adequate, transport may be the best option. The most important airway device and the most difficult to use correctly and effectively is the Bag Valve Mask (not the laryngoscope).

*** If an effective airway is being maintained by BVM and/or basic airway adjuncts (e.g. NPA and/or OPA) with continuous pulse oximetry values of ≥ 90% or values expected based on pathophysiologic condition with otherwise reassuring vital signs, it is acceptable to continue with basic airway measures instead of using a supraglottic airway or intubation. Consider CPAP as indicated by protocol and patient condition. ***
**Adult Airway Drowning / Near Drowning**

**Designation of Condition:** Arrest or survival after suffocation by submersion or immersion.

**SUBMERSION:** When a patient goes under the water immediately, has a hypoxic cardiac arrest and then cools down.

**IMMERSION:** Patients are in the water with head above water and they continue to breathe while they cool down before they eventually arrest.

---

- **Clear airway of debris and/or fluid**
  - Manage airway
  - **CPAP**
  - Oxygen to saturation of $\geq 90\%$
  - **Capnography**
  - Apply cardiac monitor
  - Begin warming patient - if hypothermic, follow appropriate guideline

- **If unknown MOI or suspected dive injury,**
  - initiate spinal motion restriction
  - *(Place backboard in the water *as extrication device only* if patient has not been removed)*

---

- **Conscious with inadequate respiratory effort, wheezing, or hypoxia**
  - **I**
    - IV/IO
  - **P**
    - Monitor cardiac rhythm

- **Unconscious with adequate or inadequate respiratory effort**
  - **B**
    - If adequate respirations, place in recovery position
  - **B**
    - Use **BVM** (with PEEP valve if available) for inadequate respiratory effort
  - **B**
    - Consider use of advanced airway
  - **B**
    - Initiate **CPR** if no pulse
  - **Follow Cardiac Arrest due to Respiratory Arrest Algorithm**
  - **I**
    - IV/IO
  - **P**
    - Monitor cardiac rhythm
**Adult Foreign Body Airway Obstruction**

**Designation of Condition:** Patient may present unable to speak, breathe, or cough, and may clutch his/her neck between the thumb and fingers. Movement of air will be absent in complete airway obstruction—a life-threatening emergency.

**ABC’s**
- Manage airway as necessary
- Oxygen titrated to a saturation of ≥90%
- Establish level of consciousness
- Determine history of witnessed or suspected aspiration
- Establish if the airway is completely or partially obstructed

**Partial Obstruction**
- Alert and actively coughing
- Encourage coughing
- Oxygen
- Monitor and reevaluate patient’s condition
  - Transport to the appropriate facility

**Complete Obstruction**
- Alert with no air movement
- Abdominal thrusts
  - Perform sub-diaphragmatic thrusts until obstruction is relieved or patient becomes unconscious
- Initiate CPR
  - Head tilt and chin lift
  - Remove any obvious obstructions
  - Attempt to ventilate with BVM
  - If unable to ventilate, reposition head and re-ventilate
  - Direct laryngoscopy to remove any visualized obstruction with McGill’s
  - Consider ETT and attempt to push occluding bolus into the right mainstem
  - If unable to remove the obstruction, perform surgical cricothyrotomy

**Transport to the appropriate facility**

**KEY POINT**

If pt remains unconscious, no breathing, WITHOUT a pulse then:
- Continue per the appropriate cardiac arrest protocol and transport to the appropriate facility if ROSC is achieved

If pt remains unconscious, no breathing, WITH a pulse:
- Rescue breaths at one breath q 3-4 seconds
**Adult Reactive Airway Disease**

**Designation of Condition:** Most commonly associated with asthma, COPD, bronchitis, and bronchiolitis (RSV). For all anaphylactic/allergic reactive airway issues, refer to appropriate guideline. This condition is caused by small, lower airway obstruction usually secondary to hyperactive bronchial smooth muscle constriction (bronchospasm) and/or peribronchial inflammation. Common clinical findings include wheezing, tachypnea, and a prolonged expiratory phase. If airflow is severely compromised, wheezing may be absent and/or the patient may be hypoxic (O2 sat <90%).

**ABC’s**
- Manage airway as necessary
- Oxygen titrated to a saturation of ≥90%
- **CPAP** as needed
- **Capnography**
- Allow patient to assume a position of comfort
- Administer DuoNeb
  - (Albuterol 5mg with Ipratropium Bromide 0.5mg)

**IV/IO**
- Fluids titrated to patient’s condition, max of 20ml/kg

**I** (If cyanosis, inability to speak, or respiratory extremis present:)
- Administer Epinephrine 0.3mg 1:1000 IM and repeat every 5 minutes until clinical improvement

**P**
- Administer Dexamethasone 10mg IV/IO/PO
- SIVP over 2 minutes
- If RAD refractory to Albuterol, administer Magnesium Sulfate 2gm IV/IO over 10 minutes

**Epi drip:** 2 mcg/min IV/IO infusion, increase 2 mcg/min q 5 min to a max of 10 mcg/min
**MINI BOLUS:** 0.5 to 1 cc of 1:100,000 IV/IO every minute as needed

***KEY POINT***

**IN CASES OF STATUS ASTHMATICUS GIVE EPI EARLY AND AS OFTEN AS NEEDED FOR CLINICAL IMPROVEMENT**

Reactive airway disease is best managed with **BVM** and **CPAP**. Intubation should not be considered as a first line airway management and should only be considered in pending respiratory arrest.
**Pediatric Airway**

**Designation of Condition:** In terms of advanced airway, pediatric is defined as 12 years old and younger.

- Assess Respiratory rate, effort, oxygenation. Is Airway/Breathing Adequate?

  - **NO**
    - Basic Maneuvers First:
      - Open airway with chin lift/jaw thrust (if concern for traumatic MOI)
      - Nasal or Oral Adjuncts (NPA and/ or OPA)
      - While placing adjuncts, add supplemental oxygen via nasal cannula or non–rebreather
      - Consider CPAP
      - **Bag Valve Mask** with supplemental Oxygen ≥ 90%

  - **YES**
    - Follow [Pediatric foreign body/obstruction guideline](#)
    - **Direct Laryngoscopy** attempt to visualize FB and remove with McGills

- **Airway Obstructed**

  - **NO**
    - **Breathing/ Oxygentation Support Needed?**
      - **NO**
        - Monitor/ Reassess Supplemental Oxygen if indicated
      - **YES**
        - Consider CPAP with age appropriate mask
        - Bag Valve Mask with supplemental oxygen ≥ 90%
        - [Supraglottic Airway procedure (SGA)](#)

- **Supplemental Oxygen with goal saturation ≥ 90%**

**NOTE: ENDOTRACHEAL INTUBATION IN PATIENTS 12 AND YOUNGER IS NOT ALLOWED**

If an effective airway is being maintained by **BVM** with continuous pulse oximetry values of ≥ 90% or stable improving values consistent with clinical condition, it is acceptable to continue with basic airway measures instead of using a supraglottic airway.
Designation of Condition: Arrest or survival after suffocation by submersion or immersion.

SUBMERSION: When a patient goes under the water immediately, has a hypoxic cardiac arrest, and then cools down.

IMMERSION: Patients are in the water with head above water and they continue to breathe while they cool down, before they eventually arrest.

Pediatric Airway Drowning / Near Drowning

Conscious with adequate respiratory effort

I
IV/IO

P
Monitor cardiac rhythm

Unconscious with adequate / inadequate respiratory effort

B
Use BVM (with PEEP valve if available) for inadequate respiratory effort
Consider advanced airway

B
Initiate CPR if no pulse
Follow Cardiac Arrest due to Respiratory Arrest Algorithm

I
IV/IO

P
Monitor cardiac rhythm
**Pediatric Foreign Body Airway Obstruction**

**Designation of Condition:** The infant/child may present with respiratory distress associated with coughing, wheezing, gagging, or stridor. Movement of air will be absent in complete airway obstruction—a life-threatening emergency.

**Partial Obstruction**
- *Alert and actively coughing*
  - Encourage coughing
  - Oxygen
  - Monitor and reevaluate patient's condition
  - Transport to the appropriate facility

**Complete Obstruction**
- *Alert with no air movement*
  - Child (1-8yrs)
    - Abdominal thrusts
      - Perform sub-diaphragmatic thrusts until obstruction is relieved or patient becomes unconscious
  - Infant (<1yr)
    - Back blows and chest thrusts
      - Perform cycles of 5 back blows followed by 5 chest thrusts until obstruction relieved or patient becomes unconscious

**Complete Obstruction**
- *Unconscious*
  - Initiate CPR at 15:2 (30:2 if only one provider available for chest compressions)
  - Head tilt and chin lift
  - Remove any obvious obstructions
  - Attempt to ventilate with BVM
  - If unable to ventilate, reposition head and re-ventilate
  - Direct laryngoscopy to remove any visualized obstruction with McGill's

**KEY POINT***
If pt remains unconscious, no breathing, WITHOUT a pulse then:
Continue per the appropriate cardiac arrest protocol and transport to the appropriate facility if ROSC is achieved

If pt remains unconscious, no breathing, WITH a pulse:
Rescue breaths at one breath q 3-4 seconds
Pediatric Reactive Airway Disease (Lower Airway)

**Designation of Condition:** Most commonly associated with asthma, bronchitis, and bronchiolitis (RSV). If airflow is severely compromised, wheezing may be absent and/or the patient may be hypoxic (O2 sat <90%). Consider asthma in a pt >2 yrs of age with wheezing or a hx of asthma.

**If Stridor is present:** GO TO GROUP GU ant ELINE

**Reactive a/w disease/Asthma**  
**Wheezing > 2 years old**

- Calm patient  
  - Position patient sitting upright in position of comfort  
  - Oxygen to maintain saturation of ≥90%  
  - ABC’s  
  - Cardiac monitor  
  - Capnography  
  - Administer Duo-Neb  
    - **Albuterol 5 mg** with **Ipratropium Bromide 0.5 mg**  
  - Consider CPAP if appropriately sized mask available

- **IV/IO**  
  - **Epinephrine 0.01mg/kg of 1:1000**  
  - IM to a max initial dose of 0.3mg and repeat every 5 minutes as needed until clinical improvement

- **Dexamethasone 0.6mg/kg**  
  - to max of 10mg SIVP IV/IO/PO  
  - If in moderate to severe distress, consider **Magnesium Sulfate**  
    - <50kg: 25mg/kg IV/IO  
    - >50kg: 2gm IV/IO over 10 minutes  
  - In the event of respiratory failure, manage airway with BVM or Extraglottic Airway and provide ventilations at 10-12bpm

**When pushed too fast, dexamethasone can cause an uncomfortable burning sensation in the patient’s genital area**

**< 2 y/o with wheezing consider bronchoilitis**

- Supplemental O2 if saturations 90% or less, or other symptoms of hypoxia present

- For patients who present with increased work of breathing and rhinorrhea, provide nasal suctioning with saline drops and bulb syringe if available

- If necessary, provide nasal suctioning with appropriately sized French catheter

*****KEY POINT***  
**BLS AIRWAY PREFERRED IN PEDIATRICS**

Bronchoilitis is the most common diagnosis in children < 2 years old and wheezing:  
Viral illness characterized by fever, copious secretions and respiratory distress

Most important interventions are to provide supplemental oxygen and suction secretions adequately as bronchodilators and steroids do not work
**Designation of Condition:** When severe, patient will be stridorous and in respiratory distress. Remember to consider foreign body aspiration in your differential diagnosis. Watch for drooling (common in epiglottitis), and listen for a barking cough (common in croup).

---

**ABC’s**
- Keep patient comfortable and quiet with parent.
- Allow patient to assume position of comfort
- Administer cool humidified oxygen or nebulized saline
- Monitor HR and respirations continuously

---

**In the event of respiratory arrest or extremis:**

**B**
- Provide positive pressure ventilation with BVM using high flow oxygen

---

**If patient is in significant respiratory distress, and has audible stridor AT REST (i.e., when not crying), administer one dose only of nebulized Epinephrine (1:1000)**

- Dexamethasone 0.6mg/kg to max of 10mg
- SIVP IV/IO/PO/IM is indicated for Croup
- DO NOT attempt PO dose for suspected epiglottitis

---

**If unable to adequately ventilate with BVM, consider Extraglottic Airway Device and/or consider additional resources**

---

**KEY POINT**
Causes include croup, foreign body aspiration, allergic reactions, trauma, infection, mass

**Croup:** Most common cause of stridor in children

- Child will have stridor, barky cough, and URI symptoms of sudden, often nocturnal onset. Stridor is a harsh, usually inspiratory sound caused by narrowing or obstruction of the upper airway.

- Most often seen in children < 9 years old

- Agitation worsens the stridor and respiratory distress

Consider possible foreign body aspiration

**Epiglottitis** is exceedingly rare. May consider in the unimmunized child.

- Treatment is minimization of agitation. Airway manipulation is best done in the hospital.
**Tracheostomy Tube Emergencies**

**Designation of Condition:** Tracheostomy tubes are placed as a long term permanent airway device. These are often placed due to chronic airway and breathing conditions like birth defects—tracheal atresia, tracheomalasia; surgical complications—damage to phrenic nerve; trauma—post TBI. Look for possible complications including: nasal flaring, diaphoresis, chest wall retractions (possible abnormal breath sounds), attempts to cough, copious secretions from the the tube, AMS, cyanosis.

- **Tracheostomy tube in place?**
  - **NO**
  - **YES**
    - **Remove Obturator if in place**
    - **Inner cannula in place (double lumen)**
      - **Speaking valve/decannulation plug in place**
        - **YES**
          - **Advanced Suctioning procedure:**
            - If the obturator is unavailable, insert the suction catheter approximately 2 – 3 inches into the tracheostomy tube. Do not use force!
            - 2 – 3ml saline flush may be used to help loosen secretions.
            - **Remove inner cannula OR Remove speaking valve Remove decannulation plug**
        - **NO**
          - **Remove inner cannula OR Remove speaking valve Remove decannulation plug**
  - **Tracheostomy tube available?**
    - **NO**
    - **YES**
      - **Allow caregiver or attending medical staff to insert tracheostomy tube OR**
        - **Insert Bougie and place appropriately sized ETT into established stoma (>2 weeks old)**
          - **Remove Obturator if in place**
          - **Inner cannula in place (double lumen)**
            - **Speaking valve/decannulation plug in place**
              - **YES**
                - **Advanced Suctioning procedure:**
                  - If the obturator is unavailable, insert the suction catheter approximately 2 – 3 inches into the tracheostomy tube. Do not use force!
                  - 2 – 3ml saline flush may be used to help loosen secretions.
                  - **Remove inner cannula OR Remove speaking valve Remove decannulation plug**
              - **NO**
                - **Remove inner cannula OR Remove speaking valve Remove decannulation plug**

*****KEY POINT***

More difficulty with airway management can be anticipated for tracheostomy sites that are immature (less than two weeks old). All priority should be on basic suctioning and supportive BVM. Only if the patient is in cardiac arrest or pending respiratory arrest- i.e. hypoxia/AMS/respiratory extremis should any new cannulation attempt (including bougie and/or ETT) be performed.

- **If the patient remains in severe distress, continue ventilation attempts using bag valve mask with high-flow oxygen via the tracheostomy.**
  - **Consider underlying reasons for respiratory distress and refer to the appropriate protocol for intervention.**
Appendix A: Patient Distribution Guidelines

In the event that 4 patients or more need to be transported to the hospital, the following steps will be completed:

• First arriving unit will banner the event
• Distribute patients according to the following algorithm

**Immediates/RED (Critical)**

**First Wave**

**TIER I HOSPITAL: UNMH**
4 of the most critical RED patients are transported to the UNMH in the first distribution of patients

*This can be done by transporting 2 RED triaged patients per transport unit*

**TIER II HOSPITALS: PRES DT, LOVELACE**
After UNMH has been designated 4 critical RED patients, 2 critical RED patients can be transported to a TIER II hospital

**TIER III HOSPITALS: RUST, WESTSIDE, WOMEN’S, SRMC, HEART, KASEMAN**
In the event that multiple critical patients need transport and the previous hospitals have received critical patients, these hospitals will take 1 RED triaged patient

**Subsequent Waves**

Once the first wave of critical RED triaged patients have been delivered to all capable hospitals, the distribution will go as follows:

• 2 critical RED patients per hospital starting with TIER I, then TIER II hospitals
• Next, 1 critical RED patient to any TIER III hospital
• This cycle can be repeated until all RED triaged patients are transported

**Delayed/YELLOW (Stable, injured, Non-ambulatory)**

• Patients that are stable shall not delay the transportation of RED triaged patients
• Ideally, transport of Delayed/Minor patients should be evenly distributed to ED’s that have not received RED triaged patients and distribution is at the discretion of the IC or Transport Officer.
• If deemed safe for the patient and minimal chance that the patient’s condition could deteriorate, a Delayed or Minor patient can be transported in a transport capable unit’s front seat
• If in doubt, keep this patient on scene until more transport units become available.
• Delayed and minor patients can be transported to any hospital ED in an MCI scenario

**Minor/GREEN (Walking Wounded)**

• It can be anticipated that minor patients in an MCI event will leave the scene via POV or other means
• If the MCI presents with multiple Minor patients, it is an option to transport these victims via BUS or high capacity transportation vehicle.
• These patients are a low transport priority and treatment can be completed on scene until transport is available

***KEY POINT***

• If a patient is in dire need of treatment and travel time to a TIER I or II hospital is a factor, TIER III hospitals can be utilized in the MCI scenario
• TIER II & III hospitals are only to receive critical trauma patients in Multi-Casualty Incidents
• TIER II & III hospitals goals for patient care will be stabilization (medical or surgical) and transfer to the UNMH or appropriate hospital; this could be located in NM or outside of the state
• Patients can be distributed to hospitals outside of the Bernalillo County metro area from the scene
• The objective of an MCI is to transport all critical patients off the scene without delay
• The Veteran Administration ED will accept “Yellow” and “Green” triaged patients only in the event of an MCI
• The VA will also accept non-veterans patients in the event of an MCI
• If possible, patients with specific health care needs (i.e. Pediatrics or OB) should be transported to hospitals with those specialties
• Refer to most recent hospital capabilities chart or default to UNMH

Benchmarks for an MCI will be:

“TRIAGE REPORT”

“All IMMEDIATE TRANSPORTED”
### Appendix A: START Triage Categorization Criteria

<table>
<thead>
<tr>
<th>Triage Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Red Tape (Immediate/Critical)</strong></td>
<td>These are patients of the highest priority which, in most circumstances, are removed and treated first. This categorization EXCLUDES patients who are in cardiopulmonary arrest or are near death and have, in the judgement of the Triage Officer, fatal injuries.</td>
</tr>
<tr>
<td><strong>Yellow Tape (Delayed/Serious)</strong></td>
<td>Patients whose condition is serious and needs attention. However, treatment and removal may be delayed until viable Red Tag patients have been treated and transported.</td>
</tr>
<tr>
<td><strong>Green Tape (Minor/Stable)</strong></td>
<td>Patients who may have treatment and/or transport delayed, but MAY require treatment and transport. They may be the last to be transported.</td>
</tr>
<tr>
<td><strong>Black Tape (Deceased)</strong></td>
<td>Patients who are already dead, or so severely injured, that death is certain within a short time, regardless of treatment given.</td>
</tr>
</tbody>
</table>

### START Triage Algorithm

<table>
<thead>
<tr>
<th>Condition</th>
<th>Triage Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Move Walking Wounded</td>
<td>MINOR</td>
</tr>
<tr>
<td>No Resp After Head Tilt/OPA</td>
<td>DEAD/DYING</td>
</tr>
<tr>
<td>Respirations &gt;30</td>
<td>IMMEDIATE</td>
</tr>
<tr>
<td>Pulse–No Radial Pulse</td>
<td>IMMEDIATE</td>
</tr>
<tr>
<td>Mental Status–Unable to follow commands</td>
<td>IMMEDIATE</td>
</tr>
<tr>
<td>Otherwise...</td>
<td>DELAYED</td>
</tr>
</tbody>
</table>

*Remember Respirations-Pulse-Mentation (RPM) while determining IMMEDIATE patients*

**Treatment:**
All treatment will follow local standard of care. On scene treatment will be minimal and patients will be transported as expeditiously as possible.
Appendix D:
Cyanide Poisoning

Designation of Condition: **This protocol is for use only by specially trained HAZMAT treatment teams** Inhalation of cyanide gas or ingestion of cyanide crystals prevents the cells of the body from utilizing oxygen. A bitter almond smell may be present. Symptoms are non-specific and rapid in onset. They include: Headache, weakness, nausea, vomiting and confusion. Signs of significant toxicity include: Tachypnea, tachycardia, hypotension, cyanosis, agitation, seizure, and coma. These may progress to cardio-pulmonary arrest if not treated.

**NOTE:** Multiple patients with similar signs and symptoms should increase your index of suspicion for a chemical event.

**NOTE:** If suspected exposure has occurred in an enclosed space, do not enter until HAZMAT team determines the scene is safe.

**HISTORY:** Cyanides are present in the products of combustion of many natural and synthetic materials. Cyanide toxicity should be suspected in victims of smoke inhalation exhibiting concerning signs and symptoms. There are also many industrial uses of cyanide from which exposure may occur, including removal of gold from ore, photography development, electroplating, and cleaning of various industrial metals. In addition, cyanide is a potential agent of chemical terrorism.

In interior firefighting operations, any sudden collapse should prompt suspicion (and strong consideration of treatment) for cyanide toxicity

| B | • Decontaminate patient.  
• ABC’s. Ensure airway patency.  
• Provide suction as needed.  
• Provide supplemental oxygen.  
• Perform a thorough assessment.  
• Rapid transport to Core Facility. |
|---|---|
| I | • IV/IO NS or saline lock. Treat hypotension with saline boluses. Frequently re-assess blood pressure and lung sounds.  
• **Hydroxocobalamin (Cyanokit)** The decision to administer hydroxocobalamin is empirical and must be based on clinical characteristics. These include hypotension and altered mental status in the context of a known or suspected cyanide exposure. In cases where exposure is suspected, but no significant signs or symptoms are present, contact **MCEP** prior to treatment  
• Each 2.5 gm vial must be reconstituted with 100 mL of normal saline using the supplied sterile transfer spike. The line on each vial represents 100 mL volume. Following reconstitution the vial should be repeatedly inverted or rocked for at least 30 seconds prior to infusion. **DO NOT SHAKE.** If reconstituted solution is not dark red or if particulate matter is seen after the solution has been appropriately mixed, the solution should be discarded.  
• If **seizures** occur, treat appropriately  
• If there are associated **thermal burns**, treat appropriately  
• If multiple patients refer to **MCI guidelines** |

**KEY POINT***

The extent of cyanide toxicity is dependent on the amount of exposure, route of exposure and length of time exposed. Inhalation of cyanide gas is most rapidly harmful, but ingestion can be severely toxic. Cyanide gas disperses quickly in open spaces and is most dangerous in enclosed areas. It is less dense than air, so it will rise.

**This protocol is for use only by specially trained HAZMAT treatment teams**
**Appendix D:**

**Hydrofluoric Acid Exposure/Burns**

**Designation of Condition:** Patient will have a known exposure to hydrofluoric acid (HF). Exposure may be by direct skin contact, inhalation, or eye exposure. HF is commonly used for polishing, frosting, and etching glass; it is also found in rust-removing agents and heavy-duty cleansers, a potential source of human exposures. HF is highly corrosive and causes damage by two mechanisms. It produces a corrosive burn from the high concentration of hydrogen ions, and the fluoride ion is able to diffuse rapidly through tissue, complexing with a wide variety of cations and causing a severe liquefaction necrosis not usually seen with other acid exposures. Also, the fluoride ion has the ability to form insoluble complexes with calcium, which, in turn, is leached out of the bloodstream rapidly, which may cause life-threatening electrolyte disturbances.

<table>
<thead>
<tr>
<th><strong>Provider Safety:</strong></th>
<th>All responders should wear personal protective gear, including appropriate gown, gloves (rubber or neoprene), and goggles.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thoroughly decontaminate the patient.</td>
<td>Ensure no possibility of secondary contamination.</td>
</tr>
<tr>
<td>Remove patient from contaminated environment.</td>
<td>Immediately flush exposed areas with large amounts of water.</td>
</tr>
<tr>
<td>After thorough initial irrigation apply <strong>2.5% calcium gluconate gel</strong> (if available) to burned area of skin every 15 minutes and massage gently until pain resolves</td>
<td>Rubber or neoprene gloves must be worn while touching victim. <em>(Latex gloves are not an effective barrier against HF)</em></td>
</tr>
<tr>
<td>Eye Injuries: Immediately flush affected eye with water for at least 30 minutes while holding eyelid open. Keep effluent from entering unaffected eye. If available apply topical ophthalmic anesthetic solution.</td>
<td>If inhalational exposure: Give 100% oxygen by mask</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Monitor ECG</strong></th>
<th>If inhalation injury presents:</th>
</tr>
</thead>
<tbody>
<tr>
<td>As soon as possible give <strong>calcium gluconate neb</strong>, mix 1mL of CG with 3mLs of NS. (If available)</td>
<td>Place solution in nebulizer and connect to oxygen to provide effective fog.</td>
</tr>
<tr>
<td>Carefully watch the patient for edema of the upper airway with respiratory obstruction. Consider <strong>endotracheal intubation</strong> or <strong>cricothyrotomy</strong> if necessary.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>P</strong></th>
<th>Suspect systemic toxicity if there is a large surface area exposure or inhalational exposure. Signs of systemic toxicity include tetany, ECG changes (Prolonged QTc. (&gt; 500 msec), or ventricular arrhythmias. If present treat with <strong>IV Calcium gluconate</strong>. (If available)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult:</td>
<td>Administrative <strong>10% calcium gluconate IV/IO 0.1ml/kg up to a max of 10ml.</strong></td>
</tr>
<tr>
<td>Pediatric:</td>
<td>Administrative <strong>10 % calcium gluconate IV/IO 0.1ml/kg up to a max of 10ml.</strong></td>
</tr>
<tr>
<td>Transport patient to Regional Burn Center.</td>
<td>If multiple patients see <strong>MCI Appendix A</strong></td>
</tr>
</tbody>
</table>
Appendix C: UNM EMS Consortium Field Response Program

Purpose: To provide an understanding to all personnel within the Albuquerque Metro Area EMS System of the UNM EMS Consortium Field Response Program and how the physicians that comprise this group function within the established system.

ALL PROVIDERS
The UNM EMS Medical Direction Consortium (The Consortium) brings together all the EMS resources within the University Of New Mexico Department Of Emergency Medicine. The Consortium consists of multiple EMS Medical Directors, each who also serves as a faculty member within the Department, EMS Fellows obtaining additional training in EMS Medical Direction, and Management.

Partner agencies are those agencies to whom the Consortium provides medical direction or with whom the Consortium has a contract.

The Consortium has field response capabilities and will be providing on-scene medical oversight, consultation and patient care throughout the Metro area. The EMS Fellows will be the primary EMS Physicians in the field. The goals of the Field Response Program are to: increase interaction between medical directors and field providers, provide real-time education and feedback to EMS providers, improve overall system design and functioning, enhance patient care, and educate the fellows about the complicated realities of EMS fieldwork.

All members of the Consortium are approved and recognized Medical Control Emergency Physicians (MCEPs) within the Albuquerque Metro Area EMS System. Furthermore each Consortium Physician is considered an Assistant Medical Director for all Consortium Partner Agencies. As such these Physicians do not fall under the TT-18 “MD at Scene” Protocol. Orders from the Physicians are no different from those obtained by radio MCEP consultation or from direct contact with a Service Medical Director.

On-scene orders received by field providers from a Consortium Physician should be signed for BY THAT PHYSICIAN prior to transport to patient’s receiving hospital, unless the Physician is going along to the hospital or meeting the crew at the hospital.

Involvement of Consortium Physicians in on-scene patient care in no way mandates transport of a patient to UNM facilities. Consortium Physicians will respond to scenes based on automatic dispatch criteria with Partner Agencies, requests from field providers or from monitoring radio traffic. Providers from any Partner Agency may request a field response for complicated situations. Once on-scene, the Consortium Physician will interact equally with all providers from any agency. EMS Consortium physicians can be reached through Albuquerque Ambulance Dispatch 505-449-5710.
Appendix B: Medical Control Emergency Physician Handbook

**Purpose:** This handbook is designed to familiarize emergency physicians with pre-hospital protocols and capabilities of pre-hospital providers. MCEPs (Medical Control Emergency Physicians) are authorized by the City/County EMS Authority to give on line orders to EMS providers within Bernalillo County.

**EMS System**—The City of Albuquerque and Bernalillo County have designed and implemented an emergency medical services system that provides pre-hospital emergency medical care to the citizens of Bernalillo County. Access and activation of EMS is accomplished by enhanced 911 telephone dispatch centers. The Emergency Medical Services Authority (EMSA), the Medical Control Board and the Providers Advisory Committee oversee, direct and provide information and feedback to the agencies providing emergency medical services to citizens of Albuquerque and Bernalillo County. Currently, the Albuquerque Fire Department, Albuquerque Ambulance Service, Bernalillo County Fire Department, Village of Los Ranchos de Albuquerque Fire Department, and the Village of Tijeras Fire Department provide ground emergency medical services for the EMS System within Bernalillo County. PHI is the primary rotor-wing service providing scene responses within the county.

**Albuquerque Fire Rescue**—The Albuquerque Fire Rescue provides the first-tier of the emergency response at the Basic and Paramedic level for the City of Albuquerque and to certain areas of Bernalillo County. This tiered response includes but is not limited to the receipt of 911 calls, dispatch of emergency units, scene control, patient assessment, treatment and stabilization in anticipation of transport. Albuquerque Fire Rescue EMT's and Paramedics may ride in with Albuquerque Ambulance Service to help provide patient care during transport of critical patients. The Albuquerque Fire Rescue may also transport patients when it is deemed medically necessary. The Albuquerque Fire Rescue / 911 Communications Dispatch Center utilizes Emergency Medical Dispatchers trained in Clawson Medical Priority Dispatch to prioritize calls, determine response configurations, and to provide pre-arrival instructions to callers.

**Albuquerque Ambulance Service**—Albuquerque Ambulance Service is a private, nonprofit, 501, C3 Corporation, and is a division of Presbyterian Hospital. The Albuquerque Ambulance Service Board of Directors is made up of representatives from all the area hospitals. Albuquerque Ambulance Service is CAAS accredited and provides emergency 911 system paramedic transport services for the City of Albuquerque and Bernalillo County. Albuquerque Ambulance Service also provides emergent and non-emergent inter-facility advanced life support and intermediate life support transport services, within Bernalillo County and throughout the state.

**Bernalillo County Fire Department**—The Bernalillo County Fire Department operates advanced life support rescues and engines that provide first response emergency medical services within the unincorporated areas of Bernalillo County. This response includes but is not limited to the receipt of 911 calls at Bernalillo County’s own Public Safety Answering Point, dispatch of emergency units, scene control, patient assessment, treatment and stabilization in anticipation of transportation In general; Bernalillo County Fire Department Rescues do not provide transport service, as Albuquerque Ambulance Servic is the primary transport agency. Bernalillo County Fire Department paramedics & EMT’s may ride in with Albuquerque Ambulance to help provide care for critical patients. The Bernalillo County Fire Department may transport patients when it is deemed medically necessary. Bernalillo County has also teamed up with Bernalillo County Sheriff’s Department to provide helicopter hoist rescue in circumstances which require this service.
Appendix B: Medical Control Emergency Physician Handbook P. 2

**Rotor Wing Air Medical Service**—Rotor wing services are available in Bernalillo County and the surrounding areas. The local service flies with two medical personnel, an RN and a paramedic or two RNs. The helicopter can land at UNMH, Presbyterian, HHHM, Presbyterian Rust MC, Lovelace Westside and the VA Hospital. Transports to other facilities require a secondary ambulance ride or clearing the hospital parking lot. Rotor wing protocols differ from Bernalillo County EMS protocols. Whenever possible the rotor wing service utilizes the Bernalillo County EMS protocols.

**Sandia National Laboratories**—Sandia National Laboratories (SNL) Clinical Services and Emergency Management collectively provide 911 services for SNL Members of the Workforce. These services includes the receipt of 911 calls, dispatch of SNL ALS and BLS emergency units, scene control, patient assessment, treatment, stabilization, and transport. The Sandia National Laboratories Emergency Management Communications Center utilizes certified National Academy Emergency Medical Dispatchers to prioritize calls, determine response configurations, and to provide pre-arrival instructions to callers.

**Superior Ambulance**—Superior Ambulance is a private, for profit, corporation operating at the EMT Basic, Intermediate and ALS level providing non-emergency and emergency inter-facility advanced life support transport services statewide, including the City of Albuquerque and Bernalillo County. Superior Ambulance is not a 911-transport provider in the City of Albuquerque and Bernalillo County, but is in other counties in the Albuquerque Hospital catchment area, such as Torrance County.

**Village of Tijeras Fire Department**—The Village of Tijeras Fire Department provides first response emergency medical services primarily to the Village of Tijeras with a basic, intermediate or advanced life support rescue and/or engine company. The Village of Tijeras receives 911 calls from the Bernalillo County Public Safety Answering Point. In general, the Village of Tijeras Fire Department Rescue does not provide transport service, as Albuquerque Ambulance Service is the primary transport agency. The Village of Tijeras Fire Department paramedics & EMT’s may ride in with Albuquerque Ambulance to help provide care for critical patients. The Village of Tijeras Fire Department may transport patients when it is deemed medically necessary.

**State Organizations**—Licensing of EMT’s is under the authority of the EMS Bureau in Santa Fe. The state legislature also funds the EMS Academy, at the University of New Mexico, to provide training for EMT’s at all levels. At the national level, the

**Department of Transportation (DOT)**—The DOT is charged with developing EMT curricula. The National Registry of EMT’s is a private corporation dedicated to testing EMT’s nationwide. Passing the National Registry EMT examination is one way of becoming a licensed EMT in New Mexico, i.e., New Mexico is a National Registry State.

**Trauma System**—Bernalillo County has a recognized trauma system authorized by the state and agreed to by all the area hospitals. This, in general, matches the American College of Surgeons Trauma designations although there have been a few modifications. University Hospital is a level one-trauma center, and is the only designated trauma center in Bernalillo County.
Bernalillo County EMS Approved Skills

- Basic Airway management (including airway adjuncts and obstructed airway interventions)
  - BVM
  - Extraglottic Airways
  - LMA Supreme/Aura Gain
  - King LT
  - CPAP
- Direct Laryngoscopy
- Endotracheal Intubation: Oral and Nasal
- End-tidal CO2 monitoring
- Surgical Cricothyrotomy
- Needle Thoracostomy
- Bleeding Control Including Temporary Tourniquet application
- Wound management and Wound dressings
- Splinting Extremities
- Spinal Immobilization
- Patient Restraint
- Peripheral IV
- Glucometry
- IO placement
- Emergency Childbirth
- Defibrillation
  - Synchronized Cardioversion
  - External Cardiac Pacing
  - Cardiac Monitoring
  - 12 Lead ECG

Protocols: In Bernalillo County most EMT and paramedic medical functions are determined by protocols approved by the Medical Control Board and individual service Medical Directors. The general philosophy of these protocols is that the emergency lifesaving interventions must be made by Emergency Medical Technicians, utilizing standing orders, without direct on-line medical control. On-line medical control should be contacted “as soon as possible” for guidance in situations not specifically covered by written protocol, or in certain circumstances that are mandated by protocol, (e.g., requesting D/C orders for a cardiac arrest). Medical Control Emergency Physicians (MCEP) are authorized to give orders outside of the Bernalillo County protocols provided that such orders do not violate the scope of practice of the provider, or involve the use of medications that have not been approved for use in Bernalillo County. (See above list for allowable medications and approved skills.) Once an MCEP has been contacted the Paramedic & EMTs provide care under the direction of the on-line MCEP. EMTs are also encouraged to directly contact medical control if they have difficulties at the scene that a physician may help to resolve (e.g., if a patient refuses transport or desires to go in by private vehicle against the medical advice of the EMT).
**Adult Continuous Compressions Primary Cardiac Arrest**

**Inclusion criteria: ≥ 8 years old**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1. **Initiate Compressions** | Check pulse (<10 sec)  
Attach pads, analyze rhythm (in paddles mode or AED if Basic or Intermediate)  
Shock if indicated (No pulse check after shock) |
| 2. **200 Compressions at a rate of 100–120 per minute** |
| 3. **Simultaneous with compressions:** | IV/IO  
NPA/OPA  
NRB@151pm  
EtCO2 (if available) |
| 4. **Drugs:** | Refer to the specific protocol for the presenting rhythm |
| 5. **At 175 compressions, or if ECD in place at 1m 45sec, pre-charge the monitor to 360J (LP15) or 200J (Zoll)** |
| 6. **Analyze rhythm, check pulse (<10 sec)** | Shock if indicated  
*No pulse check after shock* |
| 7. **200 Compressions** |
| 8. **Repeat previous sequence** |
| 9. **200 Compressions** | Continue with 200 compressions, pre-charging and shocking if necessary for the duration of the code or achievement of ROSC |
| 10. **Airway management:** | Ventilate with a BVM  
Give asynchronous ventilations at a rate of 8–10 bpm and progress to an advanced airway |

---

**Age >12**

As soon as possible:

- Place Mechanical Compression Device (AutoPulse or LUCAS Device) with designated operator

---

**KEY POINT**

- All Codes should be run in paddles view to gather information for CodeStat (LP 15)
- If patient is pregnant, manually shift fetus to the left lateral side to restore IVC blood flow back to the heart
- If emesis is present, suction immediately
- Contraindications for Auto Pulse/ LUCAS: Patients who are too large and cannot press the pressure pad down 2 inches, or too small and cannot pull the pressure pad down to touch the sternum.
## Adult Continuous Compressions Cardiac Arrest Due to Respiratory Arrest

### Inclusion criteria: ≥ 8 years old

<table>
<thead>
<tr>
<th>Initiate Compressions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check pulse (&lt;10 sec)</td>
</tr>
<tr>
<td>Attach pads, analyze rhythm <strong>(in paddles mode or AED if Basic or Intermediate)</strong></td>
</tr>
<tr>
<td>Shock if indicated (No pulse check after shock)</td>
</tr>
</tbody>
</table>

200 Compressions at a rate of 100–120 per minute

Simultaneous with compressions:
- IV/IO
- Ventilate with a BVM
  - Give asynchronous ventilations at a rate of 8–10 bpm
  - and progress to an advanced airway

Visualization with a laryngoscope blade and the use of a Magill’s knife may be necessary if **Foreign Body Airway Obstruction** suspected

Drugs: Refer to the specific protocol for the presenting rhythm

At 175 compressions, or if ECD in place at 1min 45sec, pre-charge the monitor to 360J (LP15) or 200J (Zoll)

Analyze rhythm, check pulse (<10 sec)
- Shock if indicated (No pulse check after shock)

200 Compressions

Repeat previous sequence

200 Compressions

Continue with 200 compressions, pre-charging and shocking if necessary for the duration of the code or achievement of ROSC

### Key Point

- All Codes should be run in paddles view to gather information for CodeStat (LP 15)
- If patient is pregnant, manually shift fetus to the left lateral side to restore IVC blood flow back to the heart
- If emesis is present, suction immediately
- Contraindications for AutoPulse/ LUCAS: Patients who are too large and cannot press the pressure pad down 2 inches, or too small and cannot pull the pressure pad down to touch the sternum. 3rd trimester pregnant patients with AutoPulse

---

**Age >12**

**As soon as possible:**

**Place Mechanical Compression Device (AutoPulse or LUCAS Device) with designated operator**
Infants and Children in Cardiac Arrest

**Inclusion criteria: 1 month to 7 years old**

***KEY POINT***
• This age of patient has a high likelihood of airway obstruction — Cardiac Arrest in pediatrics should be considered to be Respiratory in nature until proven otherwise
• Pediatric pads should be used with pediatric patients if available
• If emesis is present, suction immediately

**Primary Cardiac Arrest**
- Initiate Compressions in a 15:2 compression / ventilation ratio

  - Check pulse (<10 sec)
  - Attach pads, analyze rhythm (**in paddles mode or AED if Basic or Intermediate**)
  - Shock if indicated (No pulse check after shock)

  - Compressions in a 15:2 compression / ventilation ratio (2 minutes)

  - Simultaneous with compressions:
    - IV/IO
    - Consider an **Extraglottic Airway Device**

  - Drugs: Refer to the specific protocol for the presenting rhythm

  - At 1:30 into compressions, pre-charge the monitor to 2 J/kg second at 4J/kg to max 10J/kg (LP15 or Zoll)

  - Analyze rhythm, check pulse (<10 sec)
  - Shock if indicated (No pulse check after shock)

  - 15:2 Compressions / Ventilations

  - Repeat previous sequence

  - Continue with 15:2 Compressions / Ventilations pre-charging and shocking if necessary for the duration of the code or achievement of ROSC

**Cardiac Arrest due to Respiratory Arrest**
- Initiate Compressions in a 15:2 compression / ventilation ratio

  - Check pulse (<10 sec)
  - Attach pads, analyze rhythm (**in paddles mode or AED if Basic or Intermediate**)
  - Shock if indicated (No pulse check after shock)

  - Visualization with a laryngoscope blade and the use of a Magill’s recommended

  - Compressions in a 15:2 compression / ventilation ratio (2 minutes)

  - Simultaneous with compressions:
    - IV/IO
    - Consider an **Extraglottic Airway Device**

  - Drugs: Refer to the specific protocol for the presenting rhythm

  - At 1:30 into compressions, pre-charge the monitor to 2 J/kg second at 4J/kg to max 10J/kg (LP15 or Zoll).

  - Analyze rhythm, check pulse (<10 sec)
  - Shock if indicated (No pulse check after shock)

  - 15:2 Compressions / Ventilations

  - Repeat previous sequence

  - Continue with 15:2 Compressions / Ventilations pre-charging and shocking if necessary for the duration of the code or achievement of ROSC
Neonates in Cardiac Arrest

Inclusion criteria: Newborn to 1 month old

***KEY POINT***
- Pediatric pads should be used with pediatric patients if available
- If emesis is present, suction immediately

### Primary Cardiac Arrest

<table>
<thead>
<tr>
<th>Action</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiate Compressions</td>
<td>in a 15:2 compression / ventilation ratio (2 minutes) at a rate of at least 100 bpm</td>
</tr>
<tr>
<td>Check pulse</td>
<td>(&lt;10 sec)</td>
</tr>
<tr>
<td>Attach pads, analyze rhythm</td>
<td>(in paddles mode or AED if Basic or Intermediate)</td>
</tr>
<tr>
<td>Shock if indicated</td>
<td>(No pulse check after shock)</td>
</tr>
<tr>
<td>Compressions</td>
<td>in a 15:2 compression / ventilation ratio (2 minutes)</td>
</tr>
<tr>
<td>Simultaneous with compressions:</td>
<td>IV/IO</td>
</tr>
<tr>
<td>Establish airway, consider an</td>
<td>Extraglottic Airway Device</td>
</tr>
<tr>
<td>Drugs:</td>
<td>Refer to the specific protocol for the presenting rhythm</td>
</tr>
<tr>
<td>At 1:30 sec into compressions</td>
<td>pre-charge the monitor to 4J/kg (LP15 or Zoll)</td>
</tr>
<tr>
<td>Analyze rhythm, check pulse</td>
<td>(&lt;10 sec)</td>
</tr>
<tr>
<td>Shock if indicated</td>
<td></td>
</tr>
<tr>
<td>15:2 Compressions / Ventilations</td>
<td></td>
</tr>
<tr>
<td>Continue with Compressions / Ventilations pre-charging and shocking if necessary for the duration of the code or achievement of ROSC</td>
<td></td>
</tr>
</tbody>
</table>

### Cardiac Arrest due to Respiratory Arrest

<table>
<thead>
<tr>
<th>Action</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiate Compressions</td>
<td>in a 3:1 compression / ventilation ratio (2 minutes) at a rate of at least 100 bpm</td>
</tr>
<tr>
<td>Check pulse</td>
<td>(&lt;10 sec)</td>
</tr>
<tr>
<td>Attach pads, analyze rhythm</td>
<td>(in paddles mode or AED if Basic or Intermediate)</td>
</tr>
<tr>
<td>Shock if indicated</td>
<td>(No pulse check after shock)</td>
</tr>
<tr>
<td>Compressions</td>
<td>in a 3:1 compression / ventilation ratio (2 minutes)</td>
</tr>
<tr>
<td>Simultaneous with compressions:</td>
<td>IV/IO</td>
</tr>
<tr>
<td>Establish airway, consider an</td>
<td>Extraglottic Airway Device</td>
</tr>
<tr>
<td>Drugs:</td>
<td>Refer to the specific protocol for the presenting rhythm</td>
</tr>
<tr>
<td>At 1:30 sec into compressions</td>
<td>pre-charge the monitor to 4J/kg (LP15 or Zoll)</td>
</tr>
<tr>
<td>Analyze rhythm, check pulse</td>
<td>(&lt;10 sec)</td>
</tr>
<tr>
<td>Shock if indicated</td>
<td></td>
</tr>
<tr>
<td>3:1 Compressions / Ventilations</td>
<td></td>
</tr>
<tr>
<td>Continue with Compressions / Ventilations pre-charging and shocking if necessary for the duration of the code or achievement of ROSC</td>
<td></td>
</tr>
</tbody>
</table>

Visualization with a laryngoscope blade and the use of a Magill's recommended to remove airway obstruction
Acetaminophen (Tylenol)

Class:
• Analgesic
• Antipyretic

Description of Use:
• May block pain impulses peripherally that occur in response to inhibition of prostaglandin synthesis; does not possess anti-inflammatory properties; antipyretic action results in inhibition of prostaglandins in the CNS (hypothalamic heat-regulating center)

Pharmacokinetics:
• Onset: 10-30 minutes, peak onset of ½ - 2 hours. Half-life: 1-4 hours.
• 85-90% metabolized by the liver, excreted by the kidneys

Special Populations:
• Pregnancy Category: B
• Children: No age-related precautions noted. Elderly: No age-related precautions noted

Contraindications:
• Hypersensitivity
• Intolerance to tartrazine (yellow dye #5), alcohol, table sugar, saccharin depending on product

Cautions:
• Breast feeding, geriatric patients, anemia, renal/hepatic disease, chronic alcoholism

Adverse reactions:
• Hepatotoxicity, GI Bleeding, Renal Failure (high, prolonged doses), Leukopenia, Neutropenia, Hemolytic anemia (long-term use), Thrombocytopenia, Jaundice, Pancytopenia, Cyanosis, Anemia, CNS Stimulant, delirium followed by vascular collapse, seizures, coma and death

Treatment of Overdose:
• Supportive care
Adenosine (Adenocard)

**Class:**
- Antiarrhythmic

**Description of Use:**
- Endogenous nucleoside; slows conduction time through AV node, can interrupt reentry pathways through the AV node, and can restore normal sinus rhythm in patients with PSVT

**Pharmacokinetics:**
- Onset: Almost immediate
- Half-life: <10 seconds

**Special Populations:**
- Pregnancy Category: C
- Children: No age-related precautions noted
- Elderly: No age-related precautions noted

**Contraindications:**
- 2nd- or 3rd-degree atrioventricular (AV) block, and sinus node disease (eg, sinus syndrome or symptomatic bradycardia), except w/ functioning artificial pacemaker
- As noted above

**Cautions:**
May produce short-lasting 1st–, 2nd–, or 3rd-degree heart block; institute appropriate therapy PRN. Do not give additional doses if high-level block develops on 1st dose. Transient or prolonged asystole, respiratory alkalosis, ventricular fibrillation (rare) reported. New arrhythmias may appear on ECG at time of conversion. Caution w/ obstructive lung disease not associated w/ bronchoconstriction (eg, emphysema, bronchitis). Avoid w/bronchoconstriction/bronchospasm (eg, asthma). D/C if severe respiratory difficulties develop. Caution in elderly. Does not convert A-Fib/Flutter, or ventricular tachycardia to normal sinus rhythm. A transient modest slowing of ventricular response may occur immediately following administration in the presence of A-fib/flutter

**Adverse reactions:**
Arrhythmias, facial flushing, dyspnea/SOB, chest pressure, nausea

---

**Adenosine (Adenocard)**

<table>
<thead>
<tr>
<th>Adult Cardiac Narrow Complex Tachycardia</th>
<th>Pediatric Cardiac - Narrow Complex Tachycardia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adult</strong></td>
<td>6 mg RIVP followed by a 20 cc NS flush and a second dose 12 mg RIVP and 20 cc flush after 1-2 minutes if not consistent change in ECG</td>
</tr>
<tr>
<td><strong>Pediatric</strong></td>
<td>0.1 mg/kg (max 6 mg) RIVP with flush, administer a second dose of 0.2 mg/kg RIVP not to exceed 12 mg with flush in no consistent change in ECG</td>
</tr>
</tbody>
</table>

**Weight Based Pediatric Dosing Chart Link**

***KEY POINT***
- If no response to Adenosine, contact MCEP to discuss possible synchronized cardioversion and orders for sedation
- Adenosine will not be administered in our prehospital system to patients with known Wolff Parkinson White disorder, wide complex tachycardia (QRS >0.10 sec), A-Flutter, A-Fib, or any narrow or wide complex dysrhythmia with irregular rate
- Adenosine should be used with caution in patients with a history of reactive airway disease, especially in patients who are actively wheezing, because it may cause bronchospasm. In this situation, contact MCEP prior to use

Consider the following drug interactions and conditions:
- Tegretol (Carbamazepine), Aggrenox and Dipyridamole (Persantine) enhance the effects of Adenosine and may increase the duration of AV blocks and periods of asystole
- The effects of Adenosine are also prolonged in heart transplant patients
- In the above circumstances, maintain initial dose of 6 mg but decrease second dose (if needed) to 6 mg
Albuterol (Pro-Air, Proventil, Ventolin)

Class:
- Beta2-agonist

Description of Use:
- Stimulates Beta2-adrenergic receptors in lungs, resulting in relaxation of bronchial smooth muscle
- Relieves bronchospasm and reduces airway resistance
- In hyperkalemia, helps drive K+ intracellular
- Only a temporary fix, dialysis is needed

Pharmacokinetics:
- Onset: 5-15 min
- Half-life: 2-5 hrs

Special Populations:
- Pregnancy Class: C
- Pediatrics: Safety and efficacy not established in those younger than 2 years
- Elderly: May be more sensitive to tremor or tachycardia due to age-related increased sympathetic sensitivity

Contraindications:
- History of hypersensitivity to sympathomimetics.
- Caution: Caution w/ CV disorders (eg, coronary insufficiency, cardiac arrhythmias, HTN), convulsive disorders, hyperthyroidism, diabetes mellitus (DM), and in patients unusually responsive to sympathomimetic amines

Adverse reactions:
- Tremors, nervousness, headache, tachycardia, dizziness, palpitations, bronchospasm, Nausea Cough, Bronchitis
Aspirin (ASA)

**Class:**
- Non-steroidal salicylate, Anti-inflammatory, Antipyretic, Anticoagulant

**Description of Use:**
- Inhibits platelet aggregation

**Pharmacokinetics:**
- Onset: 1 hr
- Peak: 2-4 hrs
- Duration: 4-6 hrs
- Half-life: 15-20 mins

**Special Populations:**
- Pregnancy Category: C (D if full dose is used in third trimester)
- Children: Caution in those with acute febrile illness
- Elderly: May be more susceptible to toxicity; lower dosages recommended

**Contraindications:**
- NSAID allergy, viral infections in children or teenagers, syndrome of asthma, rhinitis, and nasal polyps
- Cautions: Vitamin K deficiency, chronic renal insufficiency, hemophilia, chronic alcohol abuse

**Adverse reactions:**
- Fever, hypothermia, dysrhythmias, hypotension, agitation, cerebral edema, dehydration, hyperkalemia, dyspepsia, GI bleed, hearing loss, tinnitus, problems in pregnancy

---

<table>
<thead>
<tr>
<th>Acute Coronary Syndrome (ACS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Cardiac - Symptomatic Bradycardia</td>
</tr>
<tr>
<td>Adult Cardiac - Wide Complex Tachycardia Irregular</td>
</tr>
<tr>
<td>Adult Cardiac Congestive Heart Failure / Pulmonary Edema</td>
</tr>
</tbody>
</table>

**B**
- Adult: 324mg PO (If ASA given since the onset of current symptoms, give up to 324mg chewable ASA)
- Pediatric: Not Indicated

****KEY POINT**
- Patients should only receive chewable ASA and not enteric coated ASA
- If patient receives enteric coated ASA, administer chewable ASA to the 324 mg dose
### Atropine

<table>
<thead>
<tr>
<th>Adult Cardiac - Symptomatic Bradycardia</th>
<th>Pediatric Cardiac - Symptomatic Bradycardia</th>
<th>Adult Medical - Drug Overdose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>0.5 mg IV/IO q 3-5 min to a max of 3 mg</td>
<td></td>
</tr>
<tr>
<td>Pediatric</td>
<td>0.02 mg/kg IV/IO (0.1 mg minimum dose, 0.5 mg maximum single dose) q 5 minutes. May be repeated once</td>
<td></td>
</tr>
</tbody>
</table>

**Class:**
- Acetylcholine antagonist, Antiarrhythmic, Antidote

**Description of Use:**
- Competes with acetylcholine for common binding sites on muscarinic receptors to decrease GI motility, secretory activity, and GU muscle tone
- Also reverses various types of reflex vagal cardiac slowing or asystole

**Pharmacokinetics: (Route: IV)**
- Onset: Rapid
- Half-life: 2-5 hrs

**Special Populations:**
- Pregnancy Class: C
- Children/Elderly: Increased susceptibility to atropine effects

**Contraindications:**
- Extreme cautions: In the setting of acute MI, cardiac transplant patients, third degree heart block or Mobitz type II second-degree heart block, Atropine should be used only after attempts at transcutaneous pacing have failed
- Children < 6 months of age

**Adverse reactions:**
- Overdose may produce tachycardia, palpitations, hot/dry/flushed skin, absence of bowel sounds, increased respiratory rate, nausea, vomiting, confusion, drowsiness, slurred speech, dizziness, CNS stimulation. Overdose may also produce psychosis as evidenced by agitation, restlessness, rambling speech, visual hallucinations, paranoid behavior, delusions, followed by depression

**KEY POINT**
- Pediatric administration should be given to children greater than 6 months
- In the setting of third degree heart block, Mobitz type II second-degree heart block, or for cardiac transplant patients, Atropine should be used with caution, and only after attempts at transcutaneous pacing have failed
Calcium Chloride

Class:
• Electrolyte Replacement

Description of Use:
• Essential for the function and integrity of the nervous, muscular, and skeletal systems. Plays an important role in normal cardiac and renal functions, respiration, blood coagulation, cell membrane and capillary permeability. Assists in regulating the release and storage of neurotransmitters and hormones.

Pharmacokinetics: (Route: IV)
• Onset: Unknown
• Duration: Unknown
• Half-life: Unknown

Special Populations:
• Pregnancy Category: C
• Pediatrics: Restrict IV use due to small vasculature
• Elderly: Oral absorption may be decreased

Contraindications:
• Digoxin toxicity, hypercalcemia, ventricular fibrillation
• Cautions: History of renal calculi, chronic renal impairment

Adverse reactions:
• Peripheral vasodilation, local “burning” sensation, decreased BP
• Extreme irritation, possible tissue necrosis or sloughing with IV
Calcium Gluconate

Class:
- Electrolyte replacement, Antidote

Description of Use:
- Essential for the function and integrity of the nervous, muscular, and skeletal systems. Plays an important role in normal cardiac and renal functions, respiration, blood coagulation, cell membrane and capillary permeability. Assists in regulating the release and storage of neurotransmitters and hormones.

Pharmacokinetics: (Route: IV)
- Onset: Unknown
- Duration: Unknown
- Half-life: Unknown

Special Populations:
- Pregnancy Category: C
- Children: Extreme irritation, possible tissue necrosis or sloughing with IV. Restrict IV use due to small vasculature.
- Elderly: Oral absorption may be decreased.

Contraindications:
- Hypercalcemia, ventricular fibrillation.
- Cautions: Digoxin toxicity, dehydration, history of renal calculi, chronic renal impairment, decreased cardiac function.

Adverse reactions:
- Peripheral Vasodilation, local “burning” sensation, decreased BP

### Hydrofluoric Acid Exposures and Burns

<table>
<thead>
<tr>
<th></th>
<th>2.5% Calcium Gluconate Gel</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Adult</td>
</tr>
<tr>
<td></td>
<td>After thorough irrigation, apply to burned area q 15 minutes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Calcium Gluconate Nebulized (mix 1mL of CG with 3mL's of NS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Adult</td>
</tr>
<tr>
<td></td>
<td>2.5% as mixed above nebulized</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Calcium Gluconate IV/IO</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Adult</td>
</tr>
<tr>
<td></td>
<td>0.1 ml/kg up to 10 ml IV</td>
</tr>
<tr>
<td>P</td>
<td>Pediatric</td>
</tr>
<tr>
<td></td>
<td>Same (monitor closely)</td>
</tr>
<tr>
<td></td>
<td>Weight Based Pediatric Dosing Chart Link</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Adult Medical - Hyperkalemia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Adult Cardiac Arrest</td>
</tr>
<tr>
<td></td>
<td>Adult Medical - Drug Overdose</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Adult Medical - Drug Overdose</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Pediatric</td>
</tr>
<tr>
<td></td>
<td>Not indicated</td>
</tr>
</tbody>
</table>

Weight Based Pediatric Dosing Chart Link
Definitions

Neonate—Less than 1 month of age
Infant—1 month to 12 months of age
Child—1 year to onset of puberty

Pregnancy Categories:

Category A:
Adequate and well-controlled studies have failed to demonstrate a risk to the fetus in the first trimester of pregnancy (and there is no evidence of risk in later trimesters).

Category B:
Animal reproduction studies have failed to demonstrate a risk to the fetus and there are no adequate and well-controlled studies in pregnant women.

Category C:
Animal reproduction studies have shown an adverse effect on the fetus and there are no adequate and well-controlled studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.

Category D:
There is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience or studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.

Category X:
Studies in animals or humans have demonstrated fetal abnormalities and/or there is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience, and the risks involved in use of the drug in pregnant women clearly outweigh potential benefits.

Category N:
FDA has not classified the drug
Dexamethasone (Decadron)

**Class:**
- Glucocorticoid, Corticosteroid

**Description of Use:**
- Inhibits the accumulation of inflammatory cells at inflammation sites and/or the release of mediators of inflammation to prevent and/or suppress tissue inflammatory processes

**Pharmacokinetics: (Route: IV)**
- Onset: Rapid
- Half-life: 3-4.5 hrs

**Special Populations:**
- Pregnancy Category: C (D if used in the first trimester)
- Children: Prolonged treatment with high-dose therapy may decrease short-term growth rate and cortisol secretion
- Elderly: Higher risk for developing hypertension or osteoporosis

**Contraindications:**
- Active, untreated fungal infections
- Cautions: Respiratory tuberculosis, untreated systemic infections, hyperthyroidism, cirrhosis, ulcerative colitis, hypertension, CHF, seizure disorders, peptic ulcer, and/or diabetes

**Adverse reactions:**
- Na+/fluid retention, muscle weakness, osteoporosis, peptic ulcer with possible subsequent perforation and hemorrhage, pancreatitis, ulcerative esophagitis, impaired wound healing, headache, psychic disturbances, convulsions, glaucoma, weight gain, nausea, malaise

| P | Adult   | 10 mg IV/IO/IM/PO over 2 minutes (repeat once) |
| P | Pediatric | 0.6 mg/kg IV/IO/IM/PO over 2 minutes to a max of 10 mg (IV medication can be given PO. PO does not need to be given over 2 minutes) |

**Weight Based Pediatric Dosing Chart Link**

***KEY POINT***
- Dexamethasone should **NOT** be administered in the wheezing patient secondary to inhalation burns
Dextrose (D10W)

Class:
- Carbohydrate

Description of Use:
- Restores blood glucose levels in hypoglycemia and provides a source of carbohydrate calories

Pharmacokinetics: (Route: IV)
- Onset: Unknown
- Duration: Unknown
- Half-life: Unknown

Special Populations:
- Pregnancy Category: A
- Elderly: No age-related precautions noted
- Children: No age-related precautions noted

Contraindications:
- Hyperglycemia, Delirium tremens, Intracranial or Intraspinal hemorrhage

Adverse reactions:
- Hyperosmolar syndrome

***KEY POINT***

Pre-Mix (If Available):
- Use the pre-mixed D10W (250ml bag with 25 Grams)
  - Adults: WO bolus of 250 mL's when the IV/IO is obtained
  - Pediatrics: Administer per the weight based chart WO via drip
- Use of a Buretrol is ideal but not required
- Secondary option: If a Buretrol is not available is to give the desired volume SIVP

Mixing D10W:
- Remove 50mL’s from a 250mL underfill and inject 25 Grams (50mL's) of D50W in to the mixing underfill
## Diazepam (Valium)

### Class:
- Benzodiazepine

### Description of Use:
- Depresses all levels of the CNS by enhancing the action of GABA, producing anxiolytic effects, elevating seizure threshold, and producing skeletal muscle relaxation

### Pharmacokinetics: (Route: IV)
- Onset: Unknown
- Duration: Unknown
- Half-life: 20-70 hrs

### Special Populations:
- Pregnancy Category: D
- Children: Use small initial doses with gradual increases to avoid ataxia or excessive sedation
- Elderly: Use small initial doses with gradual increases to avoid ataxia or excessive sedation

### Contraindications:
- Angle-closure glaucoma, untreated open angle glaucoma
- Cautions: Chronic lung disease or unstable cardiovascular status, patients receiving other CNS depressants, renal/hepatic impairment, hypoalbuminemia

### Adverse reactions:
- Drowsiness, fatigue, ataxia, injection site venous thrombosis and phlebitis, paradoxical reactions
- Abrupt or too-rapid withdrawal may result in pronounced restlessness, irritability, insomnia, hand tremor, abdominal/muscle cramps, diaphoresis, vomiting, seizures. Abrupt withdrawal in patients with epilepsy may produce an increase in the frequency/severity of seizures
- Overdose results in drowsiness, confusion, diminished reflexes, CNS depression, coma
- Antidote: Flumazenil

### Airway Management & Intubation Guidelines and Procedure

<table>
<thead>
<tr>
<th>Class</th>
<th>Adult Dose</th>
<th>Pediatric Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>1-5 mg IV/IO/IM q 3-5 to a maximum of 10 mg</td>
<td>0.05-0.1 mg/kg IV/IO/IM to a max of 5 mg</td>
</tr>
<tr>
<td>Pediatric</td>
<td>1-5 mg IV/IO/IM q 3-5 to a maximum of 10 mg</td>
<td>0.05-0.1 mg/kg IV/IO/IM to a max of 5 mg</td>
</tr>
</tbody>
</table>

### Analgesia or Sedation for Transcutaneous Pacing

### Adult Cardiac Narrow Complex Tachycardia

### Adult Cardiac - Wide Complex Tachycardia

### Irregular Obstetrics - Pre-Eclampsia and Eclampsia

### Pediatric Cardiac - Narrow Complex Tachycardia

### Pediatric Cardiac Wide Complex Tachycardia

### Adult Medical - Drug Overdose

### Adult Medical - Convulsive Seizures, Status Epilepticus

### ***KEY POINT***
- Benzodiazepines are not routinely used for prehospital anxiety or skeletal muscle contractions. If a provider is presented with a situation where this is a consideration, MCEP contact is required
Diphenhydramine (Benadryl)

**Class:**
- Antihistamine

**Description of Use:**
- Acts on blood vessels, GI, Respiratory system by competing with histamine for H1-receptor site; decreases allergy response by blocking histamine

**Pharmacokinetics:**
- IM: Onset $\frac{1}{2}$ hour, peak 1-4 hrs, duration 4-7 hrs
- IV: Onset immediate, duration 4-7 hrs
- Half-life: 2-7 hrs
- Metabolized in liver, excreted by the kidneys; crosses placenta, excreted in breast milk

**Special Populations:**
- Pregnancy Category: B

**Contraindications:**
- Hypersensitivity to H1-receptor antagonists
- Acute asthma attacks
- Lower respiratory tract disease
- Neonates

**Adverse reactions:**
- SeIZures, thrombocytopenia, agranulocytosis, hemolytic anemia, anaphylaxis

**KEY POINT***
- This drug is contraindicated in patients that are having an acute asthma attack
- Drying secretions in an acute asthma attack can make it difficult for patient clear ventilatory passages

<table>
<thead>
<tr>
<th>Adult Medical - Anaphylaxis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult &gt;2yo</td>
</tr>
<tr>
<td>0.5-1 mg/kg IV/IO/IM to a maximum of 50 mg</td>
</tr>
<tr>
<td>Pediatric &lt;2yo</td>
</tr>
<tr>
<td>Consult MCEP</td>
</tr>
</tbody>
</table>

Adult Medical - Anaphylaxis
- Adult >2yo: 0.5-1 mg/kg IV/IO/IM to a maximum of 50 mg
- Pediatric <2yo: Consult MCEP

---

*This drug is contraindicated in patients that are having an acute asthma attack*

*Drying secretions in an acute asthma attack can make it difficult for patient clear ventilatory passages*
# Epinephrine

<table>
<thead>
<tr>
<th><strong>Adult Cardiac Arrest</strong></th>
<th><strong>Pediatric Cardiac - Symptomatic Bradycardia</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adult</strong></td>
<td>Epi 1:10,000—1 mg IV/IO q 10 minutes</td>
</tr>
<tr>
<td><strong>Pediatric</strong></td>
<td>Epi 1:10,000—0.01 mg/kg IV/IO (0.1 mL/kg) q 10 minutes</td>
</tr>
<tr>
<td></td>
<td>Weight Based Pediatric Dosing Chart Link</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Adult Airway - Reactive Airway Disease</strong></th>
<th><strong>Adult Medical - Anaphylaxis</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adult</strong></td>
<td>Epi 1:1000—0.3 mg IM, may repeat in 5 minutes and repeat to effect</td>
</tr>
<tr>
<td><strong>Pediatric</strong></td>
<td>Epi 1:1000—0.01 mg/kg IM (max of 0.3 mg)</td>
</tr>
<tr>
<td></td>
<td>Weight Based Pediatric Dosing Chart Link</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Adult Medical - Anaphylaxis</strong></th>
<th><strong>Pediatric Croup/Epiglottitis</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adult</strong></td>
<td>Nebulized Epi 1:1,000—0.05 mg/kg in a total of 3mL of NS to a max of 3 mg x 3 total doses</td>
</tr>
<tr>
<td><strong>Pediatric</strong></td>
<td>As above</td>
</tr>
<tr>
<td></td>
<td>Weight Based Pediatric Dosing Chart Link</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Adult Medical - Sepsis/Septic Shock</strong></th>
<th><strong>Adult Cardiac - Symptomatic Bradycardia</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adult</strong></td>
<td>Epi Drip—2 mcg/min IV/IO infusion, increase 2 mcg/min to a max of 10 mcg/min Mini Bolus: 0.5 to 1 cc of 1 :100,000 IV/IO every minute as needed</td>
</tr>
<tr>
<td><strong>Pediatric</strong></td>
<td>Epi Drip—0.1-1 mcg/kg/min (Epi is the recommended vasopressor for pediatrics) Weight Based Pediatric Dosing Chart Link</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Snakebite</strong></th>
<th><strong>Other</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adult</strong></td>
<td>Epi Drip—2 mcg/min IV/IO infusion, increase 2 mcg/min to a max of 10 mcg/min Mini Bolus—0.5 to 1 cc of 1 :100,000 IV/IO every minute as needed</td>
</tr>
</tbody>
</table>

**Weight Based Pediatric Dosing Chart Link**
***KEY POINT***

All patients receiving Epinephrine shall be placed on cardiac monitor as well as quantitative Capnography if available.

M-1 Anaphylactic/Angioedema/Uticaria Protocol:
- EMT-Basics can assist with the self-administration of patient’s own (prescribed) pre-measured Epinephrine (Epi-Pen) after MCEP contact.

ALL DRIPS SHOULD BE RUN THROUGH A PUMP IF POSSIBLE

Drip Mixing Instructions:
- Mix 1 mg Epinephrine 1:1,000 in 250 cc NS
- Epinephrine is the RECOMMENDED vasopressor for pediatric septic shock

Mini-Bolus Mixing Instructions:
- Empty 9 cc from 10cc of 1 :10,000 Epinephrine and replace with saline (leaves 0.1mg)

Nebulized Epi Mixing Instructions:
- Mix the calculated dose with NS to make a total of 3mL of solution
- Maintain 500cc/hr infusion for all drips and mini-boluses

• Hypothermic patient should only get one dose of Epi 1mg IV/IO
Epinephrine

Class:
• Sympathomimetic catecholamine

Description of Use:
• Stimulates alpha-adrenergic receptors, beta1 and beta2 adrenergic receptors to produce vasoconstriction, pressor effects, cardiac stimulation, and bronchodilation

Pharmacokinetics: (Route: IV)
• Onset: 3-5 mins
• Peak: 20 mins
• Duration: 1-3 hrs
• Half-life: Short

Special Populations:
• Pregnancy Category: C
• Children: No age related precautions noted
• Elderly: May be more sensitive to sympathomimetic effects

Contraindications:
• Narrow-angle glaucoma
• Caution in patients with hyperthyroidism, Parkinson’s disease, diabetes mellitus (DM), pheochromocytoma, pregnant women, and in elderly. Caution with heart disease; may precipitate/aggravate angina pectoris or produce ventricular arrhythmias. Caution during labor and delivery; may result in uterine vasoconstriction, decreased uterine blood flow, and fetal anoxia

Adverse reactions:
• Anxiety, apprehensiveness, restlessness, tremor, weakness, dizziness, sweating, palpitations, pallor, N/V, headache, respiratory difficulties
# Fentanyl (Sublimaze)

**Class:**
- Opioid Analgesic

**Description of Use:**
- Binds to opioid receptors in the CNS, reducing stimuli from sensory nerve endings, and inhibiting ascending pain pathways to alter pain reception and increase pain threshold

**Pharmacokinetics:**
- **Onset:** 1-2 min
- **Half-life:** 2-4 hrs

**Special Populations:**
- **Pregnancy Class:** C (D if used for prolonged periods or at high dosages at term)
- **Children:** Neonates more susceptible to respiratory depressant effects
- **Elderly:** May be more susceptible to respiratory depressant effects. Age-related renal impairment may require dosage adjustment. Use lower incremental dosing

**Contraindications:**
- Hypersensitivity, Increased ICP, severe respiratory depression
- Cautions: Caution w/ COPD, decreased respiratory reserve, potentially compromised respiration, liver/kidney dysfunction, and cardiac bradyarrhythmias

**Adverse reactions:**
- Overdose or too-rapid IV administration may produce severe respiratory depression, skeletal/thoracic muscle rigidity leading to apnea.
- Tolerance to analgesic effect may occur with repeated use
- Antidote: Naloxone

---

### Acute Coronary Syndrome (ACS)

<table>
<thead>
<tr>
<th>Adult</th>
<th>1-3 mcg/kg IV/IO/IM/IN to a max of 3 mcg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pediatric</td>
<td>Same as above</td>
</tr>
<tr>
<td></td>
<td><a href="#">Weight Based Pediatric Dosing Chart Link</a></td>
</tr>
</tbody>
</table>

### Thermal Burns

### Pain Management

### Hydrofluoric Acid Exposure/Burns

<table>
<thead>
<tr>
<th>Adult</th>
<th>1-3 mcg/kg IV/IO/IM/IN to a max of 3 mcg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pediatric</td>
<td>Same as above</td>
</tr>
<tr>
<td></td>
<td><a href="#">Weight Based Pediatric Dosing Chart Link</a></td>
</tr>
</tbody>
</table>

### Analgesia or Sedation for Transcutaneous Pacing

#### Pediatric Cardiac - Symptomatic Bradycardia

<table>
<thead>
<tr>
<th>Adult</th>
<th>1-3 mcg/kg IV/IO/IM/IN to a max of 3 mcg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pediatric</td>
<td>Same as above</td>
</tr>
<tr>
<td></td>
<td><a href="#">Weight Based Pediatric Dosing Chart Link</a></td>
</tr>
</tbody>
</table>

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### **KEY POINT**

- 0.5-1 mcg/kg IN/IV/IO/IM increments, may repeat every 5 minutes up to maximum dose
- Carefully observe level of consciousness, perfusion status and respiratory status prior to re-dosing
- Any patient <2 y/o, **MCEP** will need to be contacted for pain secondary to TCP
- Monitor waveform [capnography](#) when giving narcotics
- EMT-Intermediates may administer [Fentanyl](#) under the supervision and approval of the Paramedic

---

### Class:
- If no EMT-paramedic available, contact [MCEP](#) prior to administering narcotic

### Antidotes:

### Description of Use:
- Binds to opioid receptors in the CNS, reducing stimuli from sensory nerve endings, and inhibiting ascending pain pathways to alter pain reception and increase pain threshold

### Pharmacokinetics: (Route: IV)
- **Onset:** 1-2 min
- **Half-life:** 2-4 hrs

---

**Special Populations:**

**Contraindications:**

**Adverse reactions:**
Hydroxocobalamin (CyanoKit)

**Class:**
- Antidote

**Description of Use:**
- Cyanide antidote; binds to cyanide ions to form cyanocobalamin, which gets excreted in the urine. Each hydroxocobalamin molecule can bind 1 cyanide ion by substituting it for the hydroxo ligand linked to the trivalent cobalt ion

**Pharmacokinetics: (Route: IV)**
- Onset: 1-2 min
- Half-life: 2-4 hrs

**Special Populations:**
- Pregnancy Class: C

**Contraindications:**
- No contraindications are known

**Adverse reactions:**
- Allergic reaction
- Increase in BP
- Skin redness

---

### Cyanide Poisoning

<table>
<thead>
<tr>
<th>I</th>
<th>Adult</th>
<th>5 grams IV/IO over 15 minutes (If available). Re-assess blood pressure during and after infusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Pediatric</td>
<td>70 mg/kg IV/IO over 15 minutes (If available). Re-assess blood pressure during and after infusion</td>
</tr>
</tbody>
</table>

**Weight Based Pediatric Dosing Chart Link**

---

**KEY POINT***

A SEPARATE IV is necessary to give this medication due to the multiple drug interaction potentials
# Ibuprofen (Advil, Motrin)

<table>
<thead>
<tr>
<th>Class:</th>
<th>Non-Steroidal Anti-Inflammatory Drug (NSAID)</th>
</tr>
</thead>
</table>

## Description of Use:
- Non-Steroidal Anti-Inflammatory Drug (NSAID) is used to treat minor to moderate pain including sore throat, isolated muscular skeletal pain (sprains, strains, kidney stones, biliary colic [gallbladder pain], dental pain, acute low back pain following lifting twisting or exercising) gout, and a fracture not requiring surgery.

## Pharmacokinetics: (Route: PO)
- Absorption: 1-2 hours
- Half-life: 1.8-2.44 hours
- Renal Excretion 45%-75% as metabolites

## Special Populations:
- Pregnancy Category: B
- Elderly: Age related renal impairment may require dosage adjustment

## Contraindications:
- Aspirin or NSAID allergy, preioperative pain in the setting of coronary artery bypass graft (CABG), bleeding with active intracranial hemorrhage or GI bleed, thrombocytopenia, coagulation defects, renal impairment

## Adverse reactions:
- Hepatotoxicity, GI Bleeding, Renal Failure (high, prolonged doses), Leukopenia, Neutropenia, Hemolytic anemia (long-term use), Thrombocytopenia, Jaundice, Pancreatitis, CNS Stimulant, delirium followed by vascular collapse, seizures, coma and death

## Treatment of Overdose:
- Supportive care, activated charcoal, benzodiazepines for seizures. No antidote

### Pain Management
<table>
<thead>
<tr>
<th>Fever</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
</tr>
<tr>
<td>Pediatric</td>
</tr>
</tbody>
</table>

### ***KEY POINT***
- If the provider is administering pill form of IBP to pediatrics:
  - Make sure the patient is able to swallow a pill
  - It is also difficult to get exact dosing for IBP pill form. The nearest dose per whole pill is acceptable. Use provider judgement
    - Do not cut pills in half
    - If the pediatric is not willing or able to take IBP pill form, consider an alternative NSAID, i.e. Tylenol, or liquid IBP if available
- If the provider is administering liquid form of IBP to pediatrics:
  - The bottle’s instructions are an acceptable dose measuring tool
  - Liquid IBP should only be given to patients >6 months old
Ipratropium Bromide (Atrovent)

**Class:**
- Anticholinergic Bronchodilator

**Description of Use:**
- Ipratropium is an acetylcholine antagonist, blocking muscarinic cholinergic receptors. This decreases formation of cGMP, resulting in decreased contractility of smooth muscle tissues in the airway.

**Pharmacokinetics: (Route: Inhalation)**
- Onset: 1-3 mins
- Peak: 1.5-2 hrs
- Duration: Up to 4 hrs
- Half-life: 1.5-4 hrs

**Special Populations:**
- Pregnancy Class: B
- Children: No age related precautions noted
- Elderly: No age related precautions noted

**Contraindications:**
- Atropine hypersensitivity, bromide hypersensitivity
- Cautions: narrow-angle glaucoma, prostatic hypertrophy, bladder neck obstruction, and hepatic/renal insufficiency

**Adverse reactions:**
- Bronchitis, URTI, dyspnea, headache, coughing, pain, nausea, influenza-like symptoms, pharyngitis, back/chest pain, mouth dryness, dizziness, bronchospasm, sinusitis

### Adult Airway - Reactive Airway Disease

<table>
<thead>
<tr>
<th></th>
<th>Adult</th>
<th>Pediatric</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>0.5mg nebulized (Given in conjunction with Albuterol as a Duo Neb in first administration)</td>
<td>Pediatrics receive the above dosage if over 8kg</td>
</tr>
</tbody>
</table>

[Weight Based Pediatric Dosing Chart Link]
# Ketamine (Ketalar)

## Class:
- PCP derivatives, sedative hypnotic, analgesic, dissociative anesthetic

## Description of Use:
- Non-competitive NMDA receptor antagonist causing a dissociative state
- Analgesia in patients with pain
- Sedation in patients with excited delirium syndrome
- Ketamine is associated with increased cardiac output, blood pressure, HR, and is a beta2-agonist

## Pharmacokinetics: (Route: IV)
- Onset: 30-90 seconds
- Peak: 1-2 minutes
- Duration: 5-20 minutes
- Half-life: 2-3 hours

## Special Populations:
- Pregnancy Category: C
- Children: Do not give to patients < 3 months old
- Elderly: No age related precautions noted

## Contraindications:
- Relative: Ischemic chest pain, thyrotoxicosis, known history of schizophrenia
- Cautions: Thyroid disorder, glaucoma, acute globe injury

## Adverse reactions:
- HTN, tachycardia, hallucinations (emergence reaction), increased oral secretions
- Too-rapid IV administrations may produce apnea or respiratory depression, transient laryngospasm, severe hypotension, hypersalivation, emesis, or irregular muscular movements
- Emesis occurs more frequently with IM
- Occurs during recovery period
- Consider Midazolam for emergence reaction
- Consider Atropine 0.5 mg for hypersalivation/increased oral secretions

## Treatment of Overdose:
- Supportive care, activated charcoal, benzodiazepines for seizures. No antidote
Ketorolac (Toradol)

<table>
<thead>
<tr>
<th>Pain Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adult</strong></td>
</tr>
</tbody>
</table>
| **Pediatric >2 years** | 1 mg/kg IM max of 15 mg  
                     0.5 mg/kg IV/IO max of 15 mg |

<table>
<thead>
<tr>
<th>Fever Pain Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adult</strong></td>
</tr>
</tbody>
</table>

***KEY POINT***

- NSAID’s should NOT be administered to any patient who is pregnant or has known renal impairment (dysfunction, inefficiency, disease)

**Class:**
- Non-Steroidal Anti-Inflammatory Drug (NSAID)

**Description of Use:**
- Non-selective COX-1 and COX-2 inhibitor
- Non-steroidal anti-inflammatory drugs (NSAIDS) used to treat minor to moderate pain including sore throat, isolated muscular skeletal pain such as sprains and strains, kidney stones, biliary colic (gallbladder pain), dental pain, acute low back pain following lifting, twisting, gout, or fracture not likely to require surgery

**Pharmacokinetics:**
- Onset: 30 minutes with peak response 2-3 hours
- Duration: 4-6 hours
- Renal Excretion: 92%

**Special Populations:**
- Pregnancy Category: “D” **DO NOT ADMINISTER TO PREGNANT PATIENTS**
- Children: Do not give to patients < 2 years old
- Elderly: Age related renal impairment may require dosage adjustment

**Contraindications:**
- Aspirin or NSAIDS allergy, perioperative pain in the setting of coronary artery bypass graft (CABG), bleeding with active intracranial hemorrhage or GI bleed, thrombocytopenia, coagulation defects, renal impairment, concomitant ASA, NSAID or Lithium use, breast feeding

**Adverse reactions:**
- Nausea/epigastric discomfort, dyspepsia, hepatotoxicity, GI bleeding, renal failure (high, prolonged doses, leukopenia, neutropenia, hemolytic anemia (long term use), thrombocytopenia, jaundice, pancytopenia, CNS stimulant, delirium followed by vascular collapse, seizures, coma, death
Lidocaine 2%

**Class:**
- Antiarrhythmic, Anesthetic

**Description of Use:**
- Decreases the depolarization, automaticity, and excitability of the ventricles during diastole by direct action to inhibit ventricular arrhythmias
- Inhibits the conduction of nerve impulses

**Pharmacokinetics:** (Route: IV)
- Onset: 30-90 sec
- Half-life: 10-20 min

**Special Populations:**
- Pregnancy Category: B
- Children: No age-related precautions noted
- Elderly: More sensitive to adverse effects. Dose and rate of infusion should be reduced. Age-related renal impairment may require dosage adjustment

**Contraindications:**
- Hypersensitivity
- Adams-Stokes syndrome, supraventricular arrhythmias, severe heart blocks, WPW syndrome
- Cautions: hepatic disease, CHF, respiratory depression, malignant hyperthermia, myasthenia gravis

**Adverse reactions:**
- Lightheadedness, nervousness, confusion, dizziness, drowsiness, tinnitus, blurred/double vision, vomiting, tremors, respiratory depression/arrest, bradycardia, hypotension, cardiovascular collapse

**Intraosseous Access and Infusion Procedure**

<table>
<thead>
<tr>
<th>Route</th>
<th>Adult</th>
<th>Pediatric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Cardiac Arrest</td>
<td>Initial dose 1-1.5 mg/kg IV/IO. Additional doses of 0.5-0.75 mg/kg may be given q 5 minutes up to a max dose of 3 mg/kg. (Hypothermia gets one dose only of 1.0 to 1.5 mg/kg)</td>
<td>1 mg/kg IV/IO. Repeat PRN 0.5 mg/kg q 3-5 minutes up to total of 3 mg/kg [Weight Based Pediatric Dosing Chart Link]</td>
</tr>
<tr>
<td>Adult Cardiac - Wide Complex Tachycardia Irregular</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatric Cardiac Arrest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult Medical - Hypothermia</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Weight Based Pediatric Dosing Chart Link**

**Intraosseous Access and Infusion Procedure**

- Adult: 40 mg very slowly over 1-2 minutes followed by a 10 cc saline flush. This is done prior to the 10cc bolus of fluid and connecting the IV tubing. An additional 20 mg can be given per MISC-2
- Pediatric: 0.5 mgs/kg, max of 40mg, administer slowly over 1-2 minutes as indicated above [Weight Based Pediatric Dosing Chart Link]

***KEY POINT***
The benefit of Lidocaine is probably limited to VT caused by cardiac ischemia.

DO NOT ADMINISTER LIDOCAINE if you suspect hyperkalemia (e.g., renal failure patients on dialysis) or if the underlying rhythm is believed secondary to an overdose by an agent that blocks sodium channels (e.g., tricyclic antidepressants, phenothiazines, B-blockers, antihistamines and cocaine). These rare cases should have Sodium Bicarbonate administered as an alternative to Lidocaine
**Lorazepam (Ativan)**

### Class:
- Benzodiazepine, Sedative

### Description of Use:
- Enhances the action of GABA to produce anxiolytic, hypnotic, anticonvulsant, muscle relaxant, and amnesic effects

### Pharmacokinetics: (Route: IV, IM)
- **Onset:**
  - **IV:** 5-15 mins
  - **IM:** 15-30 mins
- **Peak:**
  - **IV:** Unknown
  - **IM:** 60-90 mins
- **Duration:**
  - **IV:** 6-8 mins
  - **IM:** 6-8 hrs
- **Half-life:** 14 hrs

### Special Populations:
- **Pregnancy Category:** D
- **Children:** Neonates are more likely to have respiratory depression
- **Elderly:** Age related renal impairment may require dosage adjustment

### Contraindications:
- Known sensitivity to benzodiazepines or its vehicle (polyethylene glycol, propylene glycol, and benzyl alcohol), acute narrow-angle glaucoma, sleep apnea syndrome, severe respiratory insufficiency
- Cautions: Avoid in patients with hepatic and/or renal failure; caution in patients with hepatic and/or renal impairment. Extreme caution when administering injection to elderly, very ill, or to patients with limited pulmonary reserve; hypoventilation and/or hypoxic cardiac arrest may occur

### Adverse reactions:
- Respiratory depression/failure, hypotension, somnolence, headache, hypoventilation, injection site reactions, paradoxical excitement

---

### Adult
- 1-2 mg IV, IO, IM and may repeat to a max 4 mg

### Pediatric
- 0.05-0.1 mg/kg IV, IO max 2 mg

**Weight Based Pediatric Dosing Chart Link**

---

**KEY POINT**

Benzodiazepines are not routinely used for prehospital anxiety or skeletal muscle contractions. If a provider is presented with a situation where this is a consideration, MCEP contact is required.
# Magnesium Sulfate

## Adult Cardiac Arrest

<table>
<thead>
<tr>
<th>Adult Cardiac Wide Complex Tachycardia (Unstable)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P Adult</strong></td>
<td>2 gm IV/IO Push; can repeat x 1 to a total of 4 grams</td>
</tr>
</tbody>
</table>

## Adult Cardiac Wide Complex Tachycardia (Stable)

<table>
<thead>
<tr>
<th>Adult Cardiac Wide Complex Tachycardia (Stable)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P Adult</strong></td>
<td>2 gm IV/IO over 10 minutes; can repeat x 1 to a total of 4 grams</td>
</tr>
</tbody>
</table>

## Pediatric Cardiac Arrest

<table>
<thead>
<tr>
<th>Pediatric Cardiac Arrest</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P Pediatric</strong></td>
<td>25 mg/kg for patients under 50kg IVP; can repeat same dose with [MCEP consult](Weight Based Pediatric Dosing Chart Link)</td>
</tr>
</tbody>
</table>

## Pediatric Cardiac Wide Complex Tachycardia

<table>
<thead>
<tr>
<th>Pediatric Cardiac Wide Complex Tachycardia</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P Pediatric</strong></td>
<td><strong>Stable</strong>: 25 mg/kg IV/IO over 10 minutes IVP; can repeat same dose with [MCEP consult](Weight Based Pediatric Dosing Chart Link) <strong>Unstable</strong>: 25 mg/kg for patients under 50kg IVP; can repeat with [MCEP consult](Weight Based Pediatric Dosing Chart Link)</td>
</tr>
</tbody>
</table>

## Adult Airway - Reactive Airway Disease

<table>
<thead>
<tr>
<th>Adult Airway - Reactive Airway Disease</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P Adult</strong></td>
<td>2 gm IV/IO over 10 minutes; repeat with [MCEP consult](Weight Based Pediatric Dosing Chart Link)</td>
</tr>
<tr>
<td><strong>P Pediatric</strong></td>
<td>25 mg/kg for patients under 50kg over 10 minutes IV/IO; can repeat with [MCEP consult](Weight Based Pediatric Dosing Chart Link) &gt;50kg, give 2gm over 10 minutes IV/IO</td>
</tr>
</tbody>
</table>

## Obstetrics - Pre-Eclampsia and Eclampsia

<table>
<thead>
<tr>
<th>Obstetrics - Pre-Eclampsia and Eclampsia</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P Adult</strong></td>
<td><strong>Pre-Eclampsia</strong>: 2 gm IV/IO over 10 minutes; can repeat x 1 to a total of 4 grams <strong>Eclampsia</strong>: 4 gm IV/IO Push</td>
</tr>
</tbody>
</table>
# Magnesium Sulfate

**KEY POINT**
- If magnesium is administered too rapidly (i.e., faster than parameters listed above) severe hypotension, arrhythmia, and/or cardiac arrest may occur
- All patients receiving Magnesium Sulfate shall be placed on cardiac monitor as well as quantitative Capnography if available
- Renal Failure patient cannot receive Magnesium Sulfate

**ALL DRIPS SHOULD BE RUN THROUGH A PUMP IF POSSIBLE**

How to mix the 2 or 4 gms Magnesium Sulfate Drip:
- **2 Grams (option 1)**
  - Draw 4 gms of Magnesium Sulfate from vial
  - Mix this volume into 250cc underfill with a 10 gtts/ml tubing
  - Run with a PUMP
  - If a pump is not available, use this formula to run the drip:
    \[
    \frac{125cc \times 10gtt/ml}{\text{Time}}
    \]
- **2 Grams (option 2)**
  - Draw up 2 Grams of Magnesium Sulfate from vial
  - Mix in a 100cc underfill
  - Run with a PUMP
  - If a pump is not available, use this formula to run the drip:
    \[
    \frac{100cc \times 10gtt/ml}{\text{Time}}
    \]
- **2 Grams (option 3)**
  - Draw up 2 Grams of Magnesium Sulfate from vial
  - Commit a Paramedic to push the volume consistent with 2 grams of Magnesium Sulfate over 10 minutes

**Class:**
- Anticonvulsant, Electrolyte, Smooth Muscle Relaxant

**Description of Use:**
- Blocks neuromuscular transmission and the amount of acetylcholine released at the motor end plate to control seizure activity

**Pharmacokinetics: (Route: IV)**
- Onset: Unknown
- Duration: Unknown
- Half-life: Unknown

**Special Populations:**
- Pregnancy Category: B
- Children: Continuous IV infusion increases risk of magnesium toxicity in neonate
- Safety in children younger than 6 years not known
- Elderly: At increased risk of developing magnesium deficiency

**Contraindications:**
- Hypersensitivity, Heart block, myocardial damage, renal failure
- Cautions: Severe renal impairment

**Adverse reactions:**
- Reduced respiratory rate, decreased reflexes, flushing, hypotension, decreased heart rate. Systemic use may produce prolonged PR interval, widening of the QRS
- Toxicity may cause loss of deep tendon reflexes, heart block, respiratory paralysis, cardiac arrest
- If administered too rapidly, severe hypotension, arrhythmia, and/or cardiac arrest may occur
- Antidote: 10-20 cc of 10% Calcium Gluconate (equal to 5-10 mEq of Calcium)
Medication Cross Check

The provider drawing up the meds will be the provider giving the medication
EMT-B and EMT-I can verify Paramedic scope medications but CAN NOT administer Paramedic scope medications

• “Contraindications” include: 1) verification of appropriate VS, 2) known patient allergies, and 3) expiration date
• If a discrepancy, disagreement, or need for clarification is encountered at any step in the process, it must be resolved prior to continuing the cross-check
• Essentially only Provider 2 can authorize the administration of the medication
• The MACC must be completed prior to the administration of any medication
• If there is an interruption or change in patient condition of any kind, the process must be re-initiated by Provider 1
• Avoid ambiguous statements or confirmations like “okay”

A Duty to Avoid Causing UNJUSTIFIABLE Harm
NEVER give the contents of a syringe that is not labeled or without visualizing the vial or ampule from which it was immediately drawn.
Midazolam (Versed)

Class:
- Benzodiazepine, Sedative

Description of Use:
- Enhances the action of GABA to produce anxiolytic, hypnotic, anticonvulsant, muscle relaxant, and amnesic effects

Pharmacokinetics: (Route: IV, IM)
- Onset: IV: 1-5 mins IM: 5-15 mins
- Peak: IV: 5-7 mins IM: 30-60 mins
- Duration: IV: 20-30 mins IM: 2-6 hrs
- Half-life: 1-5 hrs

Special Populations:
- Pregnancy Category: D
- Children: Neonates are more likely to have respiratory depression
- Elderly: Age related renal impairment may require dosage adjustment

Contraindications:
- Acute alcohol intoxication, acute narrow-angle glaucoma, allergies to cherries, coma, shock
- Cautions: Acute illness, severe fluid electrolyte imbalance, renal/hepatic/pulmonary impairment, CHF, treated open-angle glaucoma

Adverse reactions:
- Inadequate or excessive dosage or improper administration may result in cerebral hypoxia, agitation, involuntary movements, hyperactivity, or combativeness
- Too-rapid IV rate, excessive doses, or single large dose increases risk of respiratory depression/arrest, which may produce hypoxia or cardiac arrest

***KEY POINT***

Benzodiazepines are not routinely used for prehospital anxiety or skeletal muscle contractions. If a provider is presented with a situation where this is a consideration, MCEP contact is required
Morphine Sulfate

Class:
• Narcotic agonist, Opiate analgesic

Description of Use:
• Binds with opioid receptors within the CNS to alter pain perception and the emotional response to pain

Pharmacokinetics:
(Route: IV)
• Onset: Rapid
• Half-life: 2-4 hrs

Special Populations:
• Pregnancy Class: C (D if used for prolonged periods or at high dosages at term)
• Children: Paradoxical excitement may occur. Those younger than 2 years are more susceptible to respiratory depressant effects
• Elderly: Paradoxical excitement may occur. Age-related renal impairment may increase the risk of urinary retention

Contraindications:
• Acute or severe asthma, GI obstruction, paralytic ileus, severe hepatic/renal impairment, severe respiratory depression
• Extreme cautions: COPD, cor pulmonale, hypoxia, hypercapnia, preexisting respiratory depression, head injury, ICP, severe hypotension
• Cautions: biliary tract disease, pancreatitis, Addison's disease, hypothyroidism, urethral stricture, prostatic hyperplasia, toxic psychosis, seizure disorders, and alcoholism.

Adverse reactions:
• Overdose results in respiratory depression, hypotension, skeletal muscle flaccidity, cold/clammy skin, cyanosis, extreme drowsiness progressing to seizures, and coma.
• Tolerance to analgesic effect or physical dependence may occur with repeated use.
• Prolonged duration of action and cumulative effect may occur in those with hepatic/renal impairment.
• Antidote: Naloxone

### Acute Coronary Syndrome (ACS) Thermal Burns Pain Management Hydroflouric Acid Exposure/Burns Abdominal Trauma

<table>
<thead>
<tr>
<th></th>
<th>Adult</th>
<th>Pediatric</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>(16 y/o or &gt;) 2-20 mg IV/IO/IM 2-5 mg increments q 5 minutes to max</td>
<td>(15 y/o or &lt;) 0.1 - 0.2 mg/kg IV/IO/IM q 5 minutes to maximum of 0.2 mg/kg</td>
</tr>
</tbody>
</table>

**Weight Based Pediatric Dosing Chart Link**

### Analgesia or Sedation for Transcutaneous Pacing Pediatric Cardiac - Symptomatic Bradycardia

<table>
<thead>
<tr>
<th></th>
<th>Adult</th>
<th>Pediatric</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>(16 y/o or &gt;) 2-20 mg IV/IO/IM 2-5 mg increments q 5 minutes to max</td>
<td>(15 y/o or &lt;) 0.1-0.2 mg/kg IV/IO/IM q 5 minutes to maximum of 0.2 mg/kg</td>
</tr>
</tbody>
</table>

**Weight Based Pediatric Dosing Chart Link**

### **KEY POINT***
• EMT-Intermediates may administer Morphine under the supervision and approval of the EMT Paramedic
• Refer to the Pain Management guideline for specific parameters for giving this medication
**Naloxone (Narcan)**

**Class:**
- Opiate Antagonist, Antidote

**Description of Use:**
- Competitively displaces opioids at opioid-occupied receptor sites in the CNS
- Reverses opioid-induced sedation, increases respiratory rate

**Pharmacokinetics: (Route: IM, IV)**
- Onset: IV: 1-2 min IM: 2-5 min
- Half-life: 60-100 min

**Special Populations:**
- Pregnancy Class: B
- Children: No age-related precautions noted
- Elderly: No age-related precautions noted

**Contraindications:**
- Respiratory depression due to non-opioid drugs
- Cautions: Chronic cardiac/pulmonary disease, coronary artery disease. Use with caution in those suspected of being opioid dependent or post-op patients to avoid cardiovascular changes

**Adverse reactions:**
- Too-rapid reversal of narcotic-induced respiratory depression may result in nausea, vomiting, tremors, increased BP, and tachycardia
- Hypotension or hypertension, [ventricular tachycardia/fibrillation](#), or pulmonary edema may occur in those with cardiovascular disease

---

**Adult Medical - Drug Overdose**

<table>
<thead>
<tr>
<th>Class</th>
<th>Adult</th>
<th>Pediatric</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>0.4 mg IM increments q 2-4 min to a maximum of 10 mg or 2 mg IN (Repeat IN once if necessary as noted below)</td>
<td>0.1 mg/kg IM/IN to a maximum of 2.0 mg</td>
</tr>
<tr>
<td>I</td>
<td>0.4 mg IV/IO/IM q 2-4 min to a maximum of 10 mg or 2 mg IN (Repeat IN once if necessary as noted below)</td>
<td>0.1 mg/kg IV/IO/IM/IN to a maximum of 2.0 mg</td>
</tr>
</tbody>
</table>

---

***KEY POINT***

Intranasal administration:
- Load syringe with 2 mg (2 ml) of Naloxone and attach MAD™ nasal atomizer.
- Place atomizer 1.5 cm within the nostril.
- Briskly compress syringe to administer 1 ml of atomized spray.
- Remove and repeat in other nostril, so all 2 ml (2 mg) of medication are administered
- A second dose of 1 mg Naloxone (0.5 ml per nare) may be re-administered via intranasal route as needed, for a maximum IN dose of 3 mg.

**DO NOT GIVE IN CARDIAC ARREST**
# Neo-Synephrine

## Airway Management & Intubation Procedure Guideline

| P | Adult | 1 or 2 sprays of Neo-Synephrine if time permitting |

---

### Class:
- Sympathomimetic, alpha-receptor stimulant, vasopressor

### Description of Use:
- Acts on alpha-adrenergic receptors of vascular smooth muscle

### Pharmacokinetics: (Route: IN)
- **Onset:** Immediate
- **Duration:** 15-20 mins
- **Half-life:** 2.5 hrs

### Special Populations:
- **Pregnancy Class:** C
- **Children:** No age related precautions with systemic use. May exhibit increased absorption and toxicity with nasal preparation
- **Elderly:** More likely to experience adverse effects

### Contraindications:
- Acute pancreatitis, heart disease, hepatitis, narrow-angle glaucoma, pheochromocytoma, severe hypertension, thrombosis, [*ventricular tachycardia*](#)
- **Cautions:** Hyperthyroidism, bradycardia, heart block, severe arteriosclerosis

### Adverse reactions:
- Large doses may produce tachycardia, palpitations (particularly in those with cardiac disease), light-headedness, nausea, vomiting
- Excessive dosing in those older than 60 yrs may result in hallucinations, CNS depression, seizures
Nitroglycerin

Adult Cardiac Congestive Heart Failure / Pulmonary Edema

| Adult | 0.4 mg SL q 5 minutes to a maximum of 1.2 mg |

***KEY POINT***

NTG is CONTRAINDICATED in the following circumstances:
• Patient has taken prescription or OTC Sexual Performance Enhancing Drug (SPED) within 72 hours
• Suspected acute inferior MI
• Hypotension (SBP <100 mmHg)

INTERMEDIATES:
• EMT-Intermediates must have an MCEP consult prior to delivering medication in the absence of an on-scene Paramedic

Class:
• Nitrate, Antianginal, Antihypertensive, Coronary Vasodilator

Description of Use:
• Produces peripheral vasodilation and dilates coronary arteries to improve collateral blood flow to ischemic areas within the myocardium
• Decreases myocardial oxygen demand, reduces Ventricular preload, and decreases afterload

Pharmacokinetics: (Route: SL, IV)
• Onset: 1-3 min
• Half-life: 1-4 min

Special Populations:
• Pregnancy Class: B
• Children: Safety and efficacy not established
• Elderly: More susceptible to hypotensive effects. Age-related renal impairment may require dosage adjustment

Contraindications:
• Suspected acute right ventricular MI, hypotension with SBP <100 mmHg, SPEDS within last 72 hours

Adverse reactions:
• Severe orthostatic hypotension may occur, manifested by syncope, pulselessness, cold/clammy skin, diaphoresis
• High doses tend to produce severe headache
Norepinephrine (Levophed, Nor-Epi)

**Adminstration Considerations:**
- Contact MCEP prior to initiation of Levophed for **Septic Shock patients only**
- Give 1 – 2 Liters of fluid prior to initiating Levophed
- Maintain 500ml/hr unless contraindicated

**ALL DRIPS SHOULD BE RUN THROUGH A PUMP IF POSSIBLE**

**Mixing Instructions:**
- Mix 4 mg Norepinephrine in 250 cc NS

**4 mcg/min IV/IO infusion, increase 2 mcg/min q 5 min to a max of 10 mcg/min**
Norepinephrine (Levophed, Nor-Epi)

Class:
• Sympathomimetic, Vasopressor

Description of Use:
• Primarily acts on alpha-adrenergic receptors to produce constriction of resistance and capacitance vessels causing an increase in systemic blood pressure and coronary artery blood flow

Pharmacokinetics: (Route: IV)
• Onset: Rapid
• Peak: 1-2 mins
• Duration: N/A

Special Populations:
• Pregnancy Class: C
• Children: No age related precautions noted
• Elderly: No age related precautions noted

Contraindications:
• Hypovolemia, mesenteric/peripheral vascular thrombosis, profound hypoxia
• Cautions: Severe cardiac disease, hypertension, hypothyroidism, MAOI prescription

Adverse reactions:
• Extravasation produces dangerous tissue necrosis
• Toxic effects include severe hypertension, violent headache, arrhythmias, photophobia, retrosternal or pharyngeal pain, pallor, diaphoresis, vomiting
• Plasma volume depletion. Rebound hypotension if intravascular volume is not maintained
Ondansetron (Zofran)

Class:
• Anti-emetic

Description of Use:
• Selectively blocks serotonin receptors, both peripherally on vagal nerve terminals and centrally in chemoreceptor trigger zone to prevent nausea and vomiting

Pharmacokinetics: (Route: ODT)
• Onset: Unknown
• Duration: Unknown
• Half-life: 3-6 hrs

Special Populations:
• Pregnancy Category: B
• Children: Safety and efficacy not established
• Elderly: No age-related precautions noted

Contraindications:
• Use of apomorphine, known allergy or hypersensitivity to Zofran or other selective serotonin receptor antagonists (SSRA's)
• Should not be used in cases of overdose or ingestion where vomiting works as one of the body’s protective mechanisms
• Cautions: may cause sedation

Adverse reactions:
• Headache, diarrhea, constipation, fever, pruritus, dizziness, bradycardia, drowsiness/sedation. (Injection) Injection site reaction. (PO) Malaise/fatigue, anxiety/agitation, urinary retention

<table>
<thead>
<tr>
<th>Adult</th>
<th>Pediatric</th>
</tr>
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<tbody>
<tr>
<td>4 mg IM/IV/IO/ODT (oral disintegrating tablet) may repeat 4mg dosage x1 if needed</td>
<td>0.15 mg/kg IM/IV/IO/PO to max of 8 mg, contact MCEP for additional (may give liquid form orally)</td>
</tr>
</tbody>
</table>

Weight Based Pediatric Dosing Chart Link
Oral Glucose

**Administration Considerations:**
- Patient must be conscious and able to swallow without difficulty

**Class:**
- Carbohydrate

**Description of Use:**
- Restores blood glucose levels in hypoglycemia and provides a source of carbohydrate calories

**Pharmacokinetics: (Route: PO)**
- Onset: Rapid
- Half-life: Short

**Special Populations:**
- Pregnancy Category: A
- Children: No age-related precautions noted
- Elderly: No age-related precautions noted

**Contraindications:**
- Inability of the patient to protect their airway

**Adverse reactions:**
- None known

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<tr>
<th>B</th>
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<th>15 grams Oral</th>
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<td>15 grams Oral</td>
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# Pediatric Dosing Chart

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<th>3kg</th>
<th>4kg</th>
<th>5kg</th>
<th>6-7kg</th>
<th>8-9kg</th>
<th>10-11kg</th>
<th>12-14kg</th>
<th>15-18kg</th>
<th>19-23kg</th>
<th>24-29kg</th>
<th>30-36kg</th>
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<td>45mg</td>
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<td>75mg</td>
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<td>115mg</td>
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<tr>
<td>160mg/5ml</td>
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<td>1.9ml</td>
<td>2.3ml</td>
<td>2.8ml</td>
<td>3.6ml</td>
<td>4.2ml</td>
<td>5.6ml</td>
<td>7ml</td>
<td>8.6ml</td>
<td>10ml</td>
<td>10ml</td>
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<td>0.3mg</td>
<td>0.4mg</td>
<td>0.5mg</td>
<td>0.6mg</td>
<td>0.85mg</td>
<td>1mg</td>
<td>1.3mg</td>
<td>1.65mg</td>
<td>2.1mg</td>
<td>2.65mg</td>
<td>3.3mg</td>
<td>6mg</td>
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<tr>
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<td>0.11ml</td>
<td>0.14ml</td>
<td>0.18ml</td>
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<td>0.44ml</td>
<td>0.55ml</td>
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</tr>
<tr>
<td>6mg/2ml</td>
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<td>0.13ml</td>
<td>0.16ml</td>
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<td>0.42ml</td>
<td>0.53mg</td>
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<td>0.04mg</td>
<td>0.05mg</td>
<td>0.065mg</td>
<td>0.085mg</td>
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<td>0.21mg</td>
<td>0.27mg</td>
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<td>1mg</td>
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<td>1mg/10ml</td>
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<td>0.85mg</td>
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<td>15-18kg</td>
<td>19-23kg</td>
<td>24-29kg</td>
<td>30-36kg</td>
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<td>Pediatric Dosing Chart</td>
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<th>12-14kg</th>
<th>15-18kg</th>
<th>19-23kg</th>
<th>24-29kg</th>
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<td>2.80mg</td>
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<td>1.47mg</td>
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<td>5g/200ml</td>
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<td>11.2ml</td>
<td>14ml</td>
<td>18.2ml</td>
<td>23.8ml</td>
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<td>36.4ml</td>
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<td>74ml</td>
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<tr>
<td>Lidocaine (Cardiac)</td>
<td>3mg</td>
<td>4mg</td>
<td>5mg</td>
<td>6.5mg</td>
<td>8.5mg</td>
<td>10.5mg</td>
<td>13mg</td>
<td>16.5mg</td>
<td>21mg</td>
<td>27.5mg</td>
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<td>100mg</td>
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<td>0.25ml</td>
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<td>0.43ml</td>
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<td>0.83ml</td>
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<td>1.14ml</td>
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<td>5ml</td>
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<td>2.5mg</td>
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<td>4.3mg</td>
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<td>10.5mg</td>
<td>13.25mg</td>
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<td>0.075ml</td>
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<td>0.125ml</td>
<td>0.16ml</td>
<td>0.22ml</td>
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<td>0.42ml</td>
<td>0.53ml</td>
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<tr>
<td>Lorazepam</td>
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<td>0.38mg</td>
<td>0.49mg</td>
<td>0.64mg</td>
<td>0.79mg</td>
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<td>1.24mg</td>
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<tr>
<td>2mg/1ml</td>
<td>0.12ml</td>
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<td>0.19ml</td>
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<td>0.32ml</td>
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<td>162.5mg</td>
<td>212.5mg</td>
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<td>0.43ml</td>
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<td>1325mg</td>
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<td>4g/100ml</td>
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<tr>
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<td>0.4mg</td>
<td>0.5mg</td>
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<td>0.85mg</td>
<td>1mg</td>
<td>1.3mg</td>
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<td>5mg/1ml/10mg/2ml</td>
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<td>0.43mg</td>
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<tr>
<td>2mg/2ml</td>
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<tr>
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<td>3kg</td>
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<td>5kg</td>
<td>6-7kg</td>
<td>8-9kg</td>
<td>10-11kg</td>
<td>12-14kg</td>
<td>15-18kg</td>
<td>19-23kg</td>
<td>24-29kg</td>
<td>30-36kg</td>
<td>30kg</td>
<td></td>
</tr>
</tbody>
</table>
## Sodium Bicarbonate

### Class:
- Alkalinizing Agent

### Description of Use:
- Dissociates to provide bicarbonate ions, which neutralize the hydrogen ion concentration to raise blood and urinary pH

### Pharmacokinetics: (Route: IV)
- Onset: Immediate
- Half-life: 8-10 min

### Special Populations:
- Pregnancy Class: C
- Children: Not to be used as an antacid in those younger than 6 years
- Elderly: Age-related renal impairment may require dosage adjustment

### Contraindications:
- Excessive chloride loss due to diarrhea, diuretics, GI suctioning, vomiting
- Hypocalcemia
- Metabolic/respiratory alkalosis
- Cautions: CHF, edematous states, renal insufficiency, or in patients on corticosteroid therapy

### Adverse reactions:
- Excessive, chronic use may produce metabolic alkalosis, characterized by irritability, twitching, paresthesias, cyanosis, bradypnea, headache, thirst, and/or nausea
- Extravasation may occur at the IV site, resulting in tissue necrosis

#### **KEY POINT***
If no ECG changes from initial ECG, consider repeat dose of Sodium Bicarb in 10-15 minutes

<table>
<thead>
<tr>
<th>P</th>
<th>Adult</th>
<th>1 mEq/kg IV/IO, (contact MCEP prior to additional administration)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Pediatric</td>
<td>1 mEq/kg IV/IO, (contact MCEP prior to additional administration) <strong>Weight Based Pediatric Dosing Chart Link</strong></td>
</tr>
</tbody>
</table>
**Designation of Condition:** Allergic reactions and anaphylaxis can be true life-threatening emergencies. It is considered highly likely when the patient presents with acute onset of symptoms (minutes to a few hours), often after exposure to a likely antigen. A localized allergic reaction (e.g. urticaria or angioedema that does not compromise the airway) may be treated with antihistamine therapy. When anaphylaxis is suspected, EMS personnel should always consider epinephrine as first-line treatment. Cardiovascular collapse may occur abruptly, without the prior development of skin or respiratory symptoms. Constant monitoring of the patient’s airway and breathing is essential.

**Adult Medical Allergic Reaction/ Anaphylaxis**

**Oxygen**
- Apply cardiac monitor and assess vital signs

**IV/IO**

**Assess Symptom Severity / Suspected Exposure to Allergen**

**Mild**
- Rash/Hives, itching, no difficulty breathing or throat tightening/ lip or tongue swelling

**Consider**
- Epinephrine 1:1000 IM or Epi-Pen if Hx of severe reactions
- Diphenhydramine 0.5–1mg/kg IV/IO/IM to a max of 50mg

**Moderate**
- Rash, itching, wheezing, throat tightening, swelling to lips and face, abdominal pain, vomiting, diarrhea, B/P in normal limits

**Consider**
- Epinephrine 1:1000 IM or Epi-Pen if Hx of severe reactions
- DuoNeb Albuterol 5mg and Ipratropium 0.5mg
- Consider CPAP if no immediate airway swelling
- Diphenhydramine 0.5–1mg/kg IV/IO/IM to a max of 50mg

**Severe**
- 2+ body systems, +Airway compromise, swelling, wheezing, nausea/vomiting, abd pain, diarrhea, or isolated hypotension

**Consider**
- Epinephrine 1:1000 IM
- Albuterol 5mg and Ipratropium 0.5mg
- Consider CPAP if no immediate airway swelling
- Diphenhydramine 0.5–1mg/kg IV/IO/IM to a max of 50mg
- Fluid bolus 20cc/kg to maintain a SBP ≥90mmHg

**P**
- Dexamethasone 10mg IV/IO/IM SIVP over 2 minutes

**Consider advanced airway management, including cric If stridor present, consider nebulized epinephrine Dexamethasone 10mg IV/IO/IM SIVP over 2 minutes**

- Epinephrine mini-bolus of 0.5–1cc of 1:100,000 IV/IO q 1 min PRN
- Epinephrine Drip of 2 mcg/min IV/IO, increase 2mcg/min to max of 10mcg/min
- Norepinephrine drip of 4 mcg/min IV/IO, increase 2 mcg/min to a max of 10 mcg/min
- Goal of SBP >90mmHg
Adult Altered Mental Status

**Designation of Condition:** The patient is not acting normally. This is a spectrum and can range from erratic behavior to unconsciousness.

### ABC’s
- Vital signs, to include BGL
- Manage airway as necessary
- Oxygen titrated to a saturation of ≥90%
  - Capnography

### Rapid assessment
- GCS, LOC, and motor and sensory
- Obtain history from pt or bystander, if able attempt to obtain baseline mental status and duration of symptoms or time of onset
- Consider possible overdose or ingestion
- Evaluate for traumatic injuries
- Consider environmental exposures

### IV/IO with fluids titrated to patient condition up to 20 ml/kg

### Monitor ECG and 12 Lead procedure if indicated
**Designation of Condition:** Carbon monoxide poisoning may occur in two different circumstances: by slow exposure (e.g., a defective furnace) or by rapid exposure (e.g., from by-products of combustion during a fire or a suicide attempt by auto exhaust). Signs and symptoms include headache, nausea, vomiting, weakness, dizziness, chest pain, and changes in level of consciousness. Carbon Monoxide poisoning should be suspected after smoke inhalation in a confined space fire, and if several patients in the same dwelling present with similar complaints (usually headache, nausea, and vomiting) during cold weather months.

**ABC’s**
- Vital signs to include a BGL
- Establish and secure an airway by appropriate means
- High-flow oxygen with NRB
- Capnography
- Ventilate as necessary
- Remember that pulse oximeters may show incorrectly high O2 readings
- If available, place LP 15 CO monitor

**IV/IO** with fluids titrated to patient condition up to 20ml/kg

**P**
- Monitor ECG for ischemic changes

**Transport considerations:**
- Any hospital is capable of caring for the CO exposure patient (no hyperbaric capacity in ABC area)
- Any patient with burns/trauma meeting Trauma Triage criteria should be transported to UNMH
- Any pregnant patient must be transported to a hospital with OB/GYN capabilities for monitoring

**KEY POINT**

Provider safety is priority. If CO exposure is suspected, only properly equipped rescuers (equipped with SCBA and monitoring device) should enter the hazardous environment to remove patients to the safe zone.

The fetus of a pregnant woman is at higher risk due to the greater affinity of fetal hemoglobin to CO. With CO exposure, the pregnant woman may be asymptomatic while the fetus may be in distress. In general, pregnant patients exposed to CO should be transported.
**Designation of Condition:** Excessive, chaotic discharge of cerebral neurons that typically manifests with immediate loss of consciousness and convulsive tonic-clonic muscular activity followed by a post-ictal period of generalized muscle relaxation and confusion. Bite wounds to tongue and/or buccal mucosa, as well as bladder incontinence, are often observed.

**ABC’s**
- Vital signs including BGL
- Establish and maintain airway
- Suction as needed
- High flow oxygen

**Capnography**
- If pt is post-ictal:
- Maintain patient’s airway
- Protect patient from injury
- Place patient on left side
- If patient is febrile given Tylenol per fever guidelines

**IV/IO**
- If BGL <60 mg/dl administer Dextrose 10%
- 250ml bolus

**Status Epilepticus**
- Patient continues to actively seize and generalized seizure is prolonged (>5 minutes) OR More than 2 generalized seizures recur without an intervening lucid period

**Midazolam**
- 1–5mg IV/IO/IM/IN
- q 3–5 minutes to a max of 10mg

Consider 12 lead ECG in suspected TCA OD or any other possible underlying disorder

***KEY POINT***
Consider IN and IM routes for first dose administration

Patient may be combative while in postictical state. Protect patient from injury and attempt to keep oxygen on patient.

Consider spinal precautions based on possible trauma

If pt is pregnant, refer to Eclampsia guideline BEFORE benzodiazepine administration

**Consider the Cause of Seizure**
- Epilepsy
- EtOH withdrawal or intoxication
- Hypoglycemia
- Stimulant use
- Trauma
- Intracranial hemorrhage
- Overdose (TCA)
- Eclampsia
- Infection: Meningitis, sepsis
- Febrile (age <6 years old)
**Designation of Condition:** Patient will present with a blood glucose level of less than 60mg/dl (<45 mg/dl in neonates) or greater than 250 mg/dl. Patient may present with an altered mental status (e.g., confusion, agitation, slurred speech, unconsciousness, or seizure). Polyuria, polyphagia, polydipsia, and diaphoresis may be present.

**ABC’s**
- Vital signs including BGL
- Oxygen titrated to an oxygen saturation of >90%

**Glucose <60 or symptomatic**
- Patient **ABLE** to swallow
  - Provider discretion on IV/IO or oral medications
  - Oral glucose, glucose tab, oral D10, and/or food
- Patient **UNABLE** to swallow
  - IV/IO
  - Dextrose 10% 250ml bolus
  - If BGL remains <60 mg/dl, give 2nd Dextrose 10% 250ml bolus
  - If pt signs or symptoms or complaint indicated, consider 12 Lead ECG

**Glucose >250**
- If dehydration suspected and no contraindications...
  - IV/IO
  - Fluid bolus of 500ml, repeated as needed to a max of 20ml/kg
  - If pt signs/symptoms or complaint indicated, consider 12 Lead ECG
  - If BGL remains <60 mg/dl, give 2nd Dextrose 10% 250ml bolus
  - If available, may administer pt's own prescribed glucagon

**KEY POINTS**

**Patient refusal:**
If the patient refuses transport after being treated for a documented hypoglycemic episode, follow these guidelines:
- The patient meets all refusal criteria as delineated in the Patient Refusal guideline AND
- The patient is able to be monitored for 2–3 hrs and/or witnessed to eat prior to EMS departure
- With normalizing blood sugar levels and mentation

**Insulin Pumps:**
- If the patient is awake, discuss use with the patient. If the patient is hyperglycemic, do not turn the pump off; treat based on signs and symptoms.
**Adult Medical Hyperkalemia**

**Designation of Condition:** Any patient with a pulse for whom a diagnosis of hyperkalemia (serum K+ > 5.2) has been confirmed by sending facility (e.g., urgent care, clinic, SNF, etc.), or for whom hyperkalemia is highly suspected based upon history of known renal failure and, most commonly, missed dialysis. Consider hyperkalemia in traumatic events including crush injury/compartment syndrome/rhabdomyolysis.

- **ABC’s**
  - Vital signs including BGL
  - Oxygen titrated to a saturation of >90% [Capnography](#)
  - Apply cardiac monitor

- **I**
  - Obtain IV/IO access

- **P**
  - Apply cardiac monitor and obtain 12 Lead ECG

**ECG evidence of hyperkalemia**

- **Mild:** Peaked T waves, increases in PR interval and decrease in P wave amplitude
  - Give:
    - Albuterol 10 mg nebulized
    - and CONSIDER Sodium Bicarbonate 1mEq/kg IV/IO
    - (give Sodium Bicarb in a dedicated line)

- **Moderate-Severe:** Peaked T waves with widening of QRS > 120ms, loss of p wave or possible “sine wave” pattern and/or bradycardia:
  - In addition to above interventions: administer Calcium Chloride 1gm or Calcium Gluconate 3gm IV/IO

- **P**
  - Continue cardiac monitoring and repeat serial ECGs q 5–10 mins

- **Repeat ECG**
  - If no change, repeat albuterol, give additional dose of calcium, place pads in anticipation of cardiac arrest
**Designation of Condition:** Patient will have a prolonged exposure to a warm environment or have excessive body heat produced by physical activity. S&S of hypovolemia may be present.

**Adult Medical Hyperthermia**

**ABC’s**
- Remove patient from the hot environment
- Vital signs including tympanic temperature
- Oxygen titrated to an oxygen saturation of >90%
- If trauma suspected, C spine precautions
- Apply cardiac monitor

**AMS indicates Heat Stroke**

**Mild**
- Heat cramps, sweating, no AMS, warm/moist skin temp <104°
- Passive cooling
  - PO fluids as tolerated
  - Loosen clothing, fan, turn on AC, PO fluids

**Moderate**
- Headache, nausea, vomiting, orthostatic hypotension, tachycardia
- Passive cooling
  - Loosen clothing, misting fan, turn on AC
- IV/IO
  - Fluid bolus as needed to a max of 20ml/kg

**Severe**
- AMS, temperature >104° with or without sweating
- Active cooling
  - Remove clothing, turn on AC in ambulance, place ice pack in groin, axillary, and neck
  - **DO NOT** induce shivering
- IV/IO
  - Fluid bolus as needed to a max of 20ml/kg
  - Monitor ECG/12 Lead

***KEY POINTS***
- Exertional hyperthermic patients may be significantly dehydrated, and may require repeat fluid boluses.
- Immersion cooling is the most effective method to lower core body temperature if proper resources are available.
- Elevated temperature may be due to environmental exposure, pharmacologic agents, or excited (agitated) delirium, see Behavioral Emergencies/Excited Delirium Guidelines. Mortality and morbidity are directly
**Adult Medical Hypothermia**

**Designation of Condition:** Patient will have experienced a prolonged unprotected exposure to the environment. The patient will be cool or cold to the touch with marked depression of critical body functions. Severe signs/symptoms may include AMS, unstable dysrhythmia and/or temp < 90° F

<table>
<thead>
<tr>
<th>B</th>
<th>ABC’s</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Remove patient from the cold environment—handle gently. Rough handling may precipitate V- Fib</td>
</tr>
<tr>
<td></td>
<td>Vital signs including tympanic temperature</td>
</tr>
<tr>
<td></td>
<td>Oxygen titrated to a saturation of ≥90%</td>
</tr>
<tr>
<td></td>
<td>Remove wet clothing</td>
</tr>
<tr>
<td></td>
<td>Passive external rewarming—warm/dry blankets, radiant heat, warm packs</td>
</tr>
<tr>
<td></td>
<td>Apply cardiac monitor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I</th>
<th>IV/IO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Warm crystalloid fluids of 20 ml/kg, if available, in 500 ml increments up to a total of 2L</td>
</tr>
<tr>
<td></td>
<td>The IV tubing can be wrapped around a hot pack to help warm fluids</td>
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</table>

<table>
<thead>
<tr>
<th>P</th>
<th>Monitor ECG/ Obtain 12 Lead</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If the patient goes into cardiac arrest, follow CPR protocol with the following exceptions:</td>
</tr>
<tr>
<td></td>
<td>• Allow up to 1 minute to ascertain if carotid pulse present. If ANY pulse is detected, <strong>DO NOT PERFORM CPR</strong></td>
</tr>
<tr>
<td></td>
<td>• Defibrillation should only be performed once at 360J</td>
</tr>
<tr>
<td></td>
<td>• After first dose of <strong>Epinephrine</strong>, a second dose can be given once after 10 minutes or if the patient temp increases by 5–10°F from baseline, 1 additional dose of <strong>epinephrine</strong> if in persistent VT/VF</td>
</tr>
<tr>
<td></td>
<td>• Atropine should not be given to a bradycardic rhythm.</td>
</tr>
<tr>
<td></td>
<td>• Consider <strong>TCP procedure</strong> if bradycardia is severe (&lt;35 bpm) <strong>and temp &gt;90 °F</strong></td>
</tr>
</tbody>
</table>

***KEY POINTS***

Resuscitation should be withheld in hypothermic patients only if the cause of cardiac arrest is clearly attributable to a lethal injury, fatal illness, prolonged asphyxia, or if the chest is incompressible. In all other hypothermic patients, the traditional guiding principle that ‘no one is dead until warm and dead’ should be considered.

Arrhythmias other than VF tend to revert spontaneously as core temperature increases, and usually do not require immediate treatment. Bradycardia is physiological in severe hypothermia. Cardiac pacing is not indicated unless bradycardia associated with haemodynamic compromise persists after rewarming.
**Adult Sepsis / Septic Shock**

**Designation of Condition:** The patient may be hypotensive (with widened pulse pressure), tachycardic, and tachypneic. Mental status changes may be present, ranging from mild disorientation to coma. Fever is typical, but hypothermia is possible. Refer to the Infection Control guideline when treating patients with suspected or confirmed sepsis.

---

**ABCs**
- Vital signs including BGL and lung sounds
- Manage airway as necessary
- Oxygen titrated to a saturation of ≥90%
- Capnography
- Treat fever per fever guideline

**IV/IO — large bore**
- Titrated fluid bolus to SBP>90mmhg, up to 30ml/kg

**Titrated fluids to obtain stabilization of patient's mentation, blood pressure, respirations, heart rate, and skin perfusion**

**After 2 L bolus, consider vasopressors based on blood pressure and AMS**

**First Line:**
- Norepinephrine drip of 4 mcg/min IV/IO, increase 2 mcg/min to a max of 10 mcg/min

**Second Line:**
- Epinephrine Drip of 2 mcg/min IV/IO, increase 2mcg/min to max of 10mcg/min
- Epinephrine mini-bolus of 0.5 to 1cc of 1:100,000 IV/IO q 1 min PRN — *Use for immediate stabilization while preparing drips*

**Maintain BP of ≥90mmHg or MAP of ≥65mmHg**

---

*****KEY POINT***

**Modified SIRS Criteria**
- Susception of infection plus 2 of the following:
  - Temperature >38°C or <36°C (>100.4°F or <96.8°F)
  - Heart rate: Tachycardia >90
  - Respiratory Rate: Tachypneic >20
  - ETCO2 <25mmhg can indicate increased mortality

**Septic Shock**
- 2 of the above + hypotension (SBP<90mmhg)

---

**EARLY SEPSIS ALERT**
- FIRST MEDICAL CONTACT TO TRANSPORT <10 MINUTES
**Adult Medical Snakebite**

*Designation of Condition:* Patient has sustained a bite from a rattlesnake (bites from other snakes including exotics require different treatment methods; contact MCEP), usually recognized by two small puncture wounds. Expect swelling and discoloration of the area. Even though the snake may be venomous, venom may not have been injected.

**DO NOT:**
- Make any incision
- Apply a tourniquet
- Apply ice
- Elevate above the heart

**DO NOT use circumferential taping**

| B | Calm patient verbally  
Keep patient as still as possible, and movement at a minimum  
Oxygen to maintain saturations >90%  
Capnography  
Vital signs  
Identify and cover puncture site  
Immobilize limb in a neutral position below level of the heart  
Remove all jewelry on affected limb |
|---|---|
| I | IV/IO on unaffected limb  
Consider fluid bolus of 500 ml, repeat as necessary to a max of 20 ml/kg if hypotension present |
| I | **Pain management** with **Morphine 2–5 mg** to a max of 20mg  
or  
**Fentanyl 0.5–1mcg/kg** to a max of 3mcg/kg |
| P | After 2 L bolus, consider vasopressors based on blood pressure and AMS  
**Epinephrine Drip** of 2 mcg/min IV/IO, increase 2mcg/min to max of 10mcg/min  
or  
**Norepinephrine drip** of 4 mcg/min IV/IO, increase 2 mcg/min to a max of 10 mcg/min  
or  
**Epinephrine mini-bolus** of 0.5 to 1cc of 1:100,000 IV/IO q 1 min PRN |

**Maintain BP of >90mmHg**

***KEY POINT***
Consider calling Poison Control (1-800-...
**Designation of Condition:** Stroke is defined as an interruption of perfusion to the brain by either an ischemic or hemorrhagic event. The patient may present with one or more disturbances involving vision, sensory, motor, or cognitive functions.

*Stroke Alert is defined as any single component failure of the Cincinnati Prehospital Stroke Screen with onset of symptomology less than 6 hours.*

**EARLY STROKE ALERT**

**KEEP SCENE TIME <15 MIN**

**ABCD’s**
- Vital signs to include a BGL
- Establish and secure an airway by appropriate means
- Oxygen to maintain saturation of $\geq 90\%$
- Do not attempt to alter blood pressure
- Rapid assessment of GCS, LOC, and motor and sensory functions using Cincinnati Prehospital Stroke Scale
- Obtain detailed medication list
- Treat seizure per guideline
- Transport to primary stroke center: All facilities in ABC area except the VA

**Cincinnati Stroke Scale**

- **Facial droop** — Have patient show teeth or smile
  - Normal — both sides of face move equally
  - Abnormal — One side of face does not move as well as the other
- **Arm drift** — Patient closes eyes and holds both arms straight out for 10 seconds
  - Normal — Both arms move the same or both arms do not move at all
  - Abnormal — One arm does not move or one arm drifts down compared with other
- **Speech** — Have the patient say “you can’t teach an old dog new tricks”
  - Normal — patient uses correct words with no slurring
  - Abnormal — patient slurs words, uses the wrong words, or is unable to speak

**IV/IO with fluids titrated to patient condition**

**Monitor ECG, obtain 12 Lead**

***KEY POINT***

If possible, take a family member with you, or at least have a good contact number to give to physician **AND OBTAIN A TIME LAST KNOWN NORMAL**

**Stroke alert includes:**
- Failing point of Cincinnati stroke scale,
- Onset of symptoms or last seen asymptomatic
- Patient age and gender

If patient’s symptoms resolve **DO NOT CANCEL STROKE ALERT**
**BRUE (Pediatric Brief Resolved Unexplained Events)**

**Designation of Condition: Previously known as ALTE (Apparent Life Threatening Event)** A brief episode lasting less than one minute that is now resolved that is frightening to the parent or caregiver and that is characterized any combination of the following observations:
1. The infant must have become cyanotic or pallid.
2. There must have been absent, decreased or irregular breathing.
3. There must have been a marked change in tone; either hypertonia or hypotonia and/or
4. There must have been an altered level of responsiveness.

Ensure airway is clear and patent
Evaluate lung sounds. Record the respiratory rate. Evaluate work of breathing (use of accessory muscles, nasal flaring, grunting).
* Obtain O2 sat and apply oxygen as indicated
* Note skin color and cap refill
* Record pulse quality and rate
* Is the infant alert and appropriately interactive?
* Check BGL and pupils
* Note abnormal muscle tone or movement
Expose infant to look carefully for signs of trauma or rash
Carefully record S/S observed by caregivers

Consider IV/IO with fluids titrated to patient condition up to 10ml/kg

Monitor **ECG** as indicated

***KEY POINT***
Any child suspected of experiencing an BRUE/ALTE should be transported to a hospital with pediatric admission capabilities
Designation of Condition: The patient will have ingested, inhaled, or injected an unknown quantity of one or more medications or substances.

ABC’s
Vital signs to include a BGL
Establish and secure an airway by appropriate means
Ventilate if appropriate
Identify substance, amount, concentration, and time pt ingested, inhaled, or injected the drug(s)
Obtain 12 Lead ECG
Capnography

IV/IO with fluids for hypotension, 20ml/kg bolus

Monitor ECG/ Obtain 12 Lead ECG

Known or suspected narcotic

If pt exhibits respiratory depression:
Establish patent airway and BVM with high flow O2
Administer Naloxone 0.4mg IM/IN/IV q 2–4 minutes to a maximum of 10 mg OR
2mg IN (1mg per nare) with a repeat dose of 1mg IN if necessary Consider lower dose of 0.2 mg in opioid dependent patients
Peds: 0.1 mg/kg IN/IM/IV/IO max 2 mg
Naloxone should be titrated to reverse respiratory depression ONLY

Intubate depending on the patient’s ability to maintain an airway after receiving Naloxone

Stimulant to include sympathomimetics

If pt exhibits an agitated mental status, physical agitation and/or aggression, or marked tachycardia
Administer Midazolam 1–5mg IV/IO/IM to a max of 10mg

Organophosphates
Signs & Symptoms:
S(alivation), D(larrrhea),
L(acrimation), U(rination),
R(respiration), M(yosis),
D(efecation), B(ronchrorrhea/Bradycardia),
Gastrointestinal distress, E(mesis),
E(mesis), L(acrimation),
S(alivation/sweating)

Administer Atropine 2mg IV/IO q 3 minutes until noted drying of secretions

Tricyclic Antidepressants (TCAs)
(Amitriptyline, Nortriptyline, Doxepin, etc.)

If any of the following are noted:
QRS > 100 ms
Ventricular Arrhythmia
Tachycardia, wide or narrow complex
Administer Sodium Bicarbonate 1mEq/kg
Repeat q 5–10 mins as needed until QRS normalizes
Seizure:
administer Midazolam 1–5mg IV/IO/IM/IN q 3–5 minutes to a max of 10mg

***KEY POINTS***
Contact Poison Control (1-800-222-1222) with any overdose
Gather all medication bottles. Note time of ingestion and potential number and dosage of pills if able.
Drug Overdose Pg 2

ABC’s
- Vital signs to include a BGL
- Establish and secure an airway by appropriate means
- Ventilate if appropriate
- Identify substance, amount and concentration, and time pt ingested, inhaled, or injected the drug(s)

IV/IO with fluids titrated to patient condition

Monitor ECG, obtain 12 Lead

Calcium Channel Blockers
(Amlodipine (Norvasc®), Diltiazem (Cardizem®, Tiazac®), Verapamil (Calan®, Verelan®), etc.)
- If patient bradycardic, consider Atropine 0.5mg IV/IO to a max of 3mg
- Administer Calcium Chloride 1gm IV/IO slow IV push or Calcium Gluconate 3gm IV/IO over 10 minutes if QRS > 100 ms
- Give Sodium Bicarbonate 1 meq/kg

Beta Blockers
(Atenolol (Tenormin®), Metoprolol (Lopressor®, Toprol XL®), Propranolol (Inderal®, InnoPran®), etc.)
- Anticipate hypoglycemia and treat accordingly with D10
- If QRS >100 ms, administer Sodium Bicarbonate 1mEq/kg

Consider pressors with hypotension after adequate fluid resuscitation:
- Epinephrine Drip of 2 mcg/min IV/IO, increase 2mcg/min to max of 10mcg/min or Epinephrine mini-bolus of 0.5 to 1 cc of 1:100,000 IV/IO q 1 min PRN

Consider transcutaneous pacing for bradycardic patient if refractory to pharmacological interventions

***KEY POINTS***
- Contact Poison Control (1-800-222-1222) with any overdose
- Gather all medication bottles. Note time of ingestion and potential number and dosage of pills if able.
**Fever**

**Designation of Condition:** Fever is a natural body response primarily to infection, but should last a relatively short period of time. It is important to distinguish fever from an infection vs. hyperthermia from environmental exposure, or even malignant hyperthermia from certain medications or illicit drugs. In environmental or malignant hyperthermia, or in extreme fever associated with infection (>105°F), proceed with aggressive cooling measures.

### Temp > 100.4°F

- Universal, Contact, Droplet, and/or Airborne Precautions, as indicated
- Take a thorough and complete history of any recent travel or sick contacts; follow any/all current EMS system guidance based on this history

#### ABC’s

- Vital signs including tympanic temperature
- Encourage drinking fluid if able to swallow

#### Passive cooling

- Remove clothing/blankets. Turn heat down in ambulance. **DO NOT** induce shivering

For pediatric patients with fever due to suspected infectious cause, **Acetaminophen** (Tylenol and other commercial preparations) in liquid form may be administered per the label’s instructions. Patient must be alert, have a gag reflex and not be allergic to Acetaminophen.

Administer **Acetaminophen** 15 mg/kg PO

**Note:** **ALL** pediatric Tylenol formulations come in 160mg/5ml

- Adults: Administer **Ibuprofen** 400–600 mg PO

#### IV/IO If signs of dehydration or shock present

- Adult: Fluid bolus of 500ml, repeated as needed to a max of 20ml/kg
- Administer **Ibuprofen** 400–600 mg PO or **Ketorolac** (Toradol) IV/IM/IO with MCEP contact
- Pediatric: Fluid bolus 20 ml/kg until improvement in mentation or end organ perfusion

#### For adults, administer **Acetaminophen** 1 gm PO

- Can also consider **Ibuprofen** 400–600 mg PO or, if pt complaint of nausea or dyspepsia with PO NSAIDS, **Ketorolac** 15mg IV/IO/IM
- Treat febrile seizures with **Midazolam 1–5 mg** IV/IO/IM/IN to a max of 10 mg

### ***KEY POINTS***

- NSAIDs (Ketorolac (Toradol) and Ibuprofen) should not be used in the setting of environmental heat emergencies. NSAIDs should not be used in patients with known renal disease or renal transplant, in patients who have known drug allergies to NSAID’s (non-steroidal anti-inflammatory medications), with active bleeding, severe headaches in which intracranial bleeding is suspected, abdominal pain when GI bleeding is suspected, stomach ulcers or in patients who may need acute surgical intervention such as open fractures or fracture deformities. Ketorolac (Toradol) as per the pain control protocol can be used for patients with fever/body aches instead of Ibuprofen in the fever protocol. Do not use Ketorolac and Ibuprofen together.
### Infection Control

Universal Infection control precautions will be utilized on all patients, as appropriate, per OSHA directives.
Routine infection control precautions for potential contact with blood or infectious material include:
- **Gloves** (wear gloves prior to ANY contact with patient)
- **Hand hygiene**
  - Hand washing before and after patient contact is imperative. If hands come in contact with blood or other biohazardous material, immediately wash with Cal Stat solution or equivalent.
  - Wash hands with alcohol-based solution upon entering and exiting EMS units.
- **Eye protection** (sealed eye protection or safety glasses if available)
- **Gown** (as indicated)
- For **endotracheal intubation**, suctioning, and **bag valve mask assisted ventilation**, full-face shield is required (or N95 and sealed eye protection).
- Providers should wear PPE until post-transport cleaning of all surfaces (including front and rear of vehicle) with an appropriate disinfectant is complete. Exception: Remove PPE used on scene before getting into front of emergency unit to drive to hospital.
- Be sure to use correct technique to don and doff PPE
- Contaminated sharps will not be recapped, bent, or broken. They will be discarded intact immediately after use into a needle disposal box.
- Safer medical devices, when available, will be used according to manufacturer guidelines and per departmental policy
- All blood spills and other biohazard spills will be cleaned up with Virex or equivalent
- After patient encounter, re-use of provider N95 mask is permitted per CDC guidelines. Mask must remain dry, clean, with no evidence of contamination. Mask should be stored in paper bag to keep clean.

If a service is notified of a potential infectious disease exposure, it is incumbent on that service to notify other responding agencies’ supervisory staff (AAS Operations Supervisor and/or Fire Department Battalion Commander) of the exposure as soon as possible so that appropriate in-house occupational medicine exposure guidelines may be implemented.

All patients with a cough will be fitted with a surgical mask and screened for possible influenza or TB infection.
- An influenza-screening test will help identify patients at increased risk of active influenza infection. Besides fever >100° F, most infected patients will typically complain of:
  - Cough, myalgia, and headache
  - Sore throat and congestion may also be present
  - Nausea and vomiting are commonly reported among children
  - If influenza is suspected, obtain a full set of vital signs, including O2 sat and temperature. (Fever may be absent in the elderly, young children, and patients with underlying chronic illnesses.) Perform lung exam. Make note of any rales/rhonchi. Look for signs of increased work of breathing.
- Providers will wear a protective mask, either surgical or N95, while caring for patients with positive influenza screening exam. All secretions in these patients will be considered infectious. Notify receiving hospital ASAP to allow for early consideration of respiratory isolation.
- Optimize internal vehicle ventilation.

In the event of an influenza pandemic:
- Assume all patients with cough are infected with the influenza virus. In order to mitigate exposure, patient care responsibility should be delegated to one paramedic and another EMT of lesser training (if available). Only aforementioned personnel shall initiate patient contact and perform patient care. Other personnel should await instructions at their vehicle. Should additional resources be needed, attending personnel may call for them.
- In order to minimize the spread of infection, providers should not shake hands without wearing gloves.
- If known or suspected exposure to the pandemic flu strain takes place, advise supervisor per departmental policy.
- Annual influenza vaccine is strongly recommended for all EMS providers.
Tuberculosis:
TB Screening test will help identify patients at increased risk of active TB infection
Categorizing TB:
• Assessing patient has cough AND:
  • Has a known history of active TB or has spent time with a person diagnosed with TB
  • Is homeless
  • Has a diagnosis of AIDS
  • Has recently been in prison
  • Has lived in high endemic area (most countries in Latin America and the Caribbean, Africa, Asia, Russia, and Eastern Europe)
• Consider TB in all patient with hemoptysis and in coughing patients with night sweats and recent weight loss.
• Precautions:
  • If the above listed high-risk population answers yes to any of the following: weight loss, night sweats, fever, bloody sputum, cough more than 2 months, provider is strongly advised to wear N95 respirator mask while caring for these patients.
  • All secretions in these patients will be considered infectious. Notify receiving hospital ASAP to allow for early consideration of respiratory isolation.
  • Optimize internal vehicle ventilation
Designation of Condition: Upon evaluation, adult person (at least 18 years of age) is determined to be intoxicated with ethanol. Definitions:

MATS—The name of the entire facility
PIIP—The non-medical sobering unit within MATS
MOTU—Medical Monitoring Unit within MATS

Person presents with Altered Mental Status

Primary Impression:
Ethanol Intoxication with no concern for other intoxicants

- Individual must be able to walk/use assistive device or stand/pivot to chair or sofa with minimal assistance.
- Person is able to use the toilet, eat, and drink independently.
- Person is non-combative and non-belligerent
- Person has no active wounds, signs of head trauma or other acute trauma beyond simple skin abrasions.
- Person accepts offer to be transported to PIIP and may leave at any time.
- Person must be easy to arouse.
- Person must be able to make focused eye contact and state name.
- Person is not actively seizing.

Individual must meet the following VS requirements for entry into MATS:

- SBP 90–160 mmHg
- HR 60–110
- BGL >70 and <200mg/dl
- O2 Sat > 90%

Individual must have a patent airway and not need the following medical interventions:

- NPA/OPA
- Suction
- Oxygen
- BVM

Individual must not have the following observation during Hx gathering:

- No statements of suicidal or homicidal ideations or attempts

Transport to MATS

No

Yes

Transport to Emergency Room
**Medical Nausea/Vomiting**

**Designation of Condition:** Complaint of moderate to severe nausea, fully immobilized patients with any complaint of nausea.

- **B**
  - ABC’s, Vital signs
  - Ensure airway patency, position to avoid aspiration
  - Suction as necessary
  - O2 to maintain an SpO2 of >90%
  - **Capnography** if applicable
  - Monitor ECG

- **I**
  - IV/IO
  - **Zofran 4mg** IV with one repeat dose in 10 minutes if needed
  - or
  - **Zofran 4mg** ODT for nausea only — no active vomiting.
  - May repeat x1 in 10 minutes
  - Pediatric: **Zofran** 0.15mg/kg PO/IM/IV/IO to max of 8mg
  - Adult: Fluid bolus of 500ml, repeated as needed to a max of 20ml/kg
  - Pediatric: Bolus in 10–20ml/kg increments, reassessing between boluses

- **P**
  - Monitor ECG for ST segment changes, arrhythmia/ electrolyte abnormalities, and possible QT prolongation
Pediatric Sepsis / Septic Shock

**Designation of Condition:** The patient may be hypotensive (with widened pulse pressure), tachycardic, and tachypneic. Mental status changes may be present, ranging from mild disorientation to coma. Fever is typical, but hypothermia is possible. Refer to the Infection Control guideline when treating patients with suspected or confirmed sepsis.

***KEY POINT***

**Modified SIRS Criteria**
Suspicion of infection plus 2 of the following:

- Temperature >38°C or <36°C (>100.4°F or <96.8°F)
- Heart rate elevated based on age adjusted chart
- Respiratory Rate: Tachypneic based on age adjusted chart

**EARLY SEPSIS ALERT**
FIRST MEDICAL CONTACT TO TRANSPORT <10 MINUTES

**ABC’s**
Vital signs including BGL and lung sounds
Manage airway as necessary
Oxygen titrated to a saturation of ≥94%
Capnography
Treat fever per fever guideline

**IV/IO - large bore based on patient size**
20 ml/kg NS Fluid bolus, up to max of 60 ml/kg

**Titrate fluids to obtain stabilization of patient's mentation, blood pressure, respirations, heart rate, and skin perfusion**

After fluid bolus, consider vasopressors based on age-dependent blood pressure parameters and AMS

First Line (Epi is the recommended vasopressor for peds):
Epinephrine Drip 0.1–2 mcg/kg/min IV/IO

Second Line:
Norepinephrine drip of 0.1–2 mcg/kg/min IV/IO, titrate to mentation, heart rate, perfusion, and BP

Ideal BP = SBP(70)+(Age in years x 2)

---

<table>
<thead>
<tr>
<th></th>
<th>Heart rate</th>
<th>Respiratory Rate</th>
<th>Systolic blood pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>100–160</td>
<td>30–60</td>
<td>50–70</td>
</tr>
<tr>
<td>1 to 6 weeks</td>
<td>100–160</td>
<td>30–60</td>
<td>70–95</td>
</tr>
<tr>
<td>6 months</td>
<td>90–120</td>
<td>25–40</td>
<td>80–100</td>
</tr>
<tr>
<td>1 years</td>
<td>90–120</td>
<td>20–30</td>
<td>80–100</td>
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<tr>
<td>3 years</td>
<td>80–120</td>
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<td>80–100</td>
</tr>
<tr>
<td>6 years</td>
<td>70–100</td>
<td>18–25</td>
<td>80–110</td>
</tr>
<tr>
<td>10 years</td>
<td>60–90</td>
<td>16–22</td>
<td>90–120</td>
</tr>
</tbody>
</table>
**Syncope**

**Designation of Condition:** Syncope is defined as a loss of consciousness accompanied by a loss of postural tone with spontaneous recovery. Have high suspicion for cardiac origin, or possible neurologic cause.

**DDX:** pulmonary embolism, sepsis, arrhythmia, seizure, stroke, vasovagal, orthostatic hypotension, hypoglycemia, shock, toxocologic, AAA or aortic stenosis. Consider pregnancy status, specifically possible ectopic pregnancy.

---

**ABC’s**

Vital signs, to include BGL
Manage airway as necessary
Oxygen titrated to a saturation of ≥90%

**Capnography**

Rapid assessment of GCS, LOC, and motor and sensory—If abnormal, follow stroke guideline
Obtain history from pt or bystander, if able
Assess for recent trauma, and if indicated c-spine precautions and SMR Consider possible overdose or ingestion
Consider environmental exposures

---

**I**

IV/IO with fluids titrated to patient condition up to 20ml/kg

---

**P**

Monitor ECG, obtain 12 Lead

---

***KEY POINT***

- This is a high-risk complaint. Obtain detailed history, physical, and neurological exam.
- Syncope with no preceding symptoms or event may be associated with arrhythmia.
  - Consider cardiac etiology in patients > 50, diabetics and / or women especially with upper abdominal complaints.
- Abdominal / back pain in women of childbearing age should be treated as pregnancy related until proven otherwise.
- High-risk patients:
  - Age >60
  - History of CHF
  - Abnormal ECG
  - Syncope with exertion
  - Syncope with chest pain
  - Syncope with dyspnea

---

**Pediatric Considerations:**

- Life-threatening causes of pediatric syncope are usually cardiac in etiology (arrhythmia, cardiomyopathy, myocarditis, or previously unrecognized structural lesions)
- In addition to the causes listed above, consider the following in the pediatric patient:
  - Seizure
  - Heat intolerance
  - Breath holding spells
  - BRUE (Brief Resolved Unexplained Events, formerly ALTE)
  - Toxins (marijuana, opioids, cocaine, CO, etc.)
- Important historical features of pediatric syncope include: color change, seizure activity, incontinence, postictal state, and events immediately prior to syncope event
**Obstetrics Abnormal Birth Emergencies**

**Designation of Condition:** The fetus presents in an abnormal (breech) position, the cord slips down into the vagina or presents externally after the amniotic membranes have ruptured, the cord presents around the fetus’ neck, or the shoulder has become jammed against the symphysis pubis and will not deliver independently.

**ABC’s**
- Vital sign monitoring
- Oxygen titrated to a saturation of >90%

**IV/IO with fluids titrated to patient condition**

**Cord Around Neck**
- Loosen cord or clamp and cut if too tight
- Continue delivery

**Prolapsed Cord**
- Transport mother in Trendelenberg position
- Discourage pushing by mother
- Insert two fingers to elevate presenting part (and prevent further descent) and preserve blood flow through the cord. Assess for cord pulsation
- Cover cord with sterile saline dressing

**Shoulder Dystocia**
- Transport mother with hips elevated and knees to chest (McRobert’s Position)
- Place pressure above symphysis pubis
- Support head
- Suction oral and nasal passages if able.
- DO NOT pull on head

***KEY POINT***
Diabetic mothers or known macrosomia (estimated fetal weight >10 lbs) are at increased risk for shoulder dystocia.
**Obstetrics Breech Delivery**

**Designation of Condition:** The largest part of the fetus (head) is delivered last. In general, breech presentations include buttocks presentation and/or footling presentation. An infant in a breech presentation is best delivered in the hospital setting since an emergency cesarean section is often necessary. However, if it is necessary to perform a breech delivery in a pre-hospital setting, the following procedures should be performed.

- **ABC’s**
  - Vital signs including BGL
  - Oxygen titrated to a saturation of $>94\%$
  - Follow general treatment guidelines as indicated in *Imminent Vertex Delivery guideline*

- **Transport unless delivery is imminent**
  - *The appearance of feet through the vulva does not mandate delivery.*
  - *It is important to allow the feet, legs, and buttocks to advance through the introitus before intervention.*

- **Do not encourage mother to push**

- **Allow fetus to deliver spontaneously to the level of the umbilicus.**
  - Support presenting parts by gently elevating trunk and legs to aid delivery of head.
  - DO NOT pull.

  If the head does not deliver immediately:
  - Rotate mother’s legs up towards her shoulders
  - Place a gloved hand in the vagina with the palm towards the baby’s face
  - With the index and middle fingers, form a “V” on either side of the infant’s nose on the maxilla
  - Gently push the vaginal wall away from the infant’s face while applying gentle traction to the baby’s face to roll the occiput under the pubic symphysis
  - An assistant may apply gentle downward pressure above the pubic symphysis until the head is delivered.

- **If unable to deliver within 3 minutes, maintain “V” formation and transport mother with hips elevated and knees to chest**

- **IV/IO with fluids titrated to patient condition**
Obstetrics General Active Labor

**Designation of Condition:** The patient will be pregnant or have a suspected pregnancy and present with complaints of intermittent abdominal contractions with abdominal cramping and/or lower back pain.

<table>
<thead>
<tr>
<th>ABC’s</th>
<th>Vital sign monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oxygen titrated to a saturation of ≥90%</td>
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<tr>
<td>Estimated gestational age</td>
<td></td>
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<tr>
<td>Date of last menstrual period</td>
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<tr>
<td>Duration and time interval of contractions</td>
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<tr>
<td>Vaginal bleeding? Amount?</td>
<td></td>
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<tr>
<td>Amniotic fluid? Color? When noted?</td>
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<tr>
<td>Previous deliveries</td>
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<tr>
<td>Prenatal care</td>
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<tr>
<td>Known abnormal presentation or obstetrical complication</td>
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<tr>
<td>Single or multiple gestation</td>
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<tr>
<td>Drug or alcohol use</td>
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<tr>
<td>Examine perineum for:</td>
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<tr>
<td>Visible cord or presenting parts in vagina other than head</td>
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<tr>
<td>Head crowning</td>
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<tr>
<td>Active vaginal bleeding</td>
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<tr>
<td>Amniotic fluid and/or meconium staining</td>
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</tr>
</tbody>
</table>

**If 30 weeks gestation or greater:**
- Patients without complications should be transported to an OB capable facility. These include Pres DT, UNMH, Rust (≥36wks), Lovelace Westside, Women’s Hospital
- Patients with complications should be transported to a NICU capable facility.

**If 20–29 weeks gestation:**
- Patients should be transported to a NICU facility. These include Pres DT, UNMH, and Women’s

**If <20 weeks gestation:**
- Patients should be transported to the nearest appropriate Emergency Department, based on patient presentation rather than OB capabilities.

***KEY POINT***

Narcotic administration is contraindicated in active labor to avoid fetal respiratory compromise.
Obstetrics Imminent Vertex Delivery

**Designation of Condition:** Pregnant patient in active labor with delivery imminent as evidenced by crowning (or other presenting part), urgent desire to push, urge to move bowels, continuous intense contractions, membrane rupture, bloody show.

---

**ABC’s**
- Vital sign monitoring
- Oxygen titrated to a saturation of >90%

**Open an OB kit**
- Don sterile gloves, and create field for delivery

If membranes are ruptured, look for meconium, identify presenting part, and prepare to treat appropriately

**Proceed with delivery:**
If abnormal presentation at delivery, e.g., breech or shoulder dystocia go to Breech Delivery or Abnormal Birth Emergencies and contact MCEP

- Control delivery of head with one palm.
- Sterile towel in other hand at perineum will protect infant’s mouth/nose from anal contamination.
- Gently wipe baby’s face. Suction mouth then nose— if noted obstruction to nares/oropharynx
- Assist delivery of anterior shoulder by exerting very mild downward pressure.
- Then, a very gentle upward lift of the head to aid in delivery of posterior shoulder.
- The remainder of the body usually follows without difficulty.
- Do not exert traction or try to pull baby from birth canal, as this may result in injury.
- Follow Post-Delivery guidelines
- Place sterile clamps at approximately 6–8 inches from infant’s abdomen, and cut between them using sterile scissors or scalpel. (Never use non-sterile equipment to cut cord.) If possible cut cord approx 1–2 minutes after delivery— do not delay if infant is appears limp or in distress.

**Post-Delivery Mother Care:**
- The placenta should deliver spontaneously (often preceded by a sudden gush of blood) within 5–10 minutes of delivery.
- As the placenta passes through the introitus, gently lift away with both hands employing a slight twisting motion.
- Never exert traction on the cord to pull placenta from uterus.
- When expelled, place placenta in plastic bag or other container and give to personnel at receiving hospital.
- If placenta has delivered, and uterus does not feel firm, massage the uterine fundus by supporting the lower uterine segment with one hand just above the symphysis pubis, and massaging the uterus with the other hand.
- Reassess vital signs and monitor for postpartal hemorrhage.
- If noted continued hemorrhage despite fundal massage, place infant to breast, continued fundal massage
- **DO NOT DELAY TRANSPORT FOR DELIVERY OF PLACENTA**

---

**IV/IO if time permits prior to delivery**
- If severe bleeding noted, start second IV/IO
**Obstetrics Neonatal Care**

**Designation of Condition:** Care of a newborn infant following spontaneous vaginal delivery

<table>
<thead>
<tr>
<th></th>
<th><strong>Sign</strong></th>
<th><strong>2</strong></th>
<th><strong>1</strong></th>
<th><strong>0</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Activity (muscle tone)</td>
<td>Active</td>
<td>Arms and legs flex</td>
<td>Absent</td>
</tr>
<tr>
<td>P</td>
<td>Pulse</td>
<td>&gt;100bpm</td>
<td>&lt;100bpm</td>
<td>Absent</td>
</tr>
<tr>
<td>G</td>
<td>Grimace (reflex irritability)</td>
<td>Sneeze, coughs, pulls away</td>
<td>Grimaces</td>
<td>No response</td>
</tr>
<tr>
<td>A</td>
<td>Appearance (skin color)</td>
<td>Pink/normal over entire body</td>
<td>Cyanotic or pale extremities</td>
<td>Cyanotic/pale all over</td>
</tr>
<tr>
<td>R</td>
<td>Respirations</td>
<td>Good, crying</td>
<td>Slow, irregular</td>
<td>Absent</td>
</tr>
</tbody>
</table>

***KEY POINT***

Most newborns requiring resuscitation respond to ventilations / BVM, compressions. If infant not responding consider hypovolemia, pneumothorax, and/or hypoglycemia (< 40 mg/dL).

Term gestation, strong cry / breathing and with good muscle tone generally will need no resuscitation. Routine suctioning is no longer recommended.

Expected Pulse Oximetry readings immediately following birth:

- 1 minute 60 – 65%
- 2 minutes 65 – 70%
- 3 minutes 70 – 75%
- 4 minutes 75 – 80%
- 5 minutes 80 – 85%
- 10 minutes 85 – 95%

Maternal sedation or narcotics will sedate infant. Naloxone NO LONGER recommended-supportive care ONLY
Pediatric Cardiac Neonatal Resuscitation

**BIRTH**

Term? Tone good? Breathing or crying appropriately?

**YES**

Keep neonate with mother for routine care:
Warm and maintain normal temperature, position airway, clear secretions if needed, dry, ongoing evaluation

**NO**

Warm and maintain normal temperature, position airway, clear secretions if needed, dry, stimulate

Apnea, gasping, or HR below 100bpm?

**YES**

PPV with BVM on room air at 40 – 60 BPM
SpO2 monitor- on right hand

**NO**

Labored breathing or persistent cyanosis

**YES**

Position and clear airway
SpO2 monitor
Supplemental O2 as needed
Consider CPAP if appropriately sized mask available

**NO**

Clear secretion, reposition A/W, check for good chest rise, Continue BVM with O2–10 LPM
Place LMA/King

**NO**

HR <60bpm?

**YES**

Begin CPR at 90 compressions /minute with 30 BPM at a 3:1 compression-to-ventilation ratio using 2 thumbs-encircling hands technique

**NO**

HR <60bpm?

**YES**

IV Epinephrine 1:10,000 0.1– 0.3 ml/kg q 3– 5minutes
If HR persistently <60bpm:
Consider hypovolemia: IV/IO
Administer 10 ml/kg NS bolus, repeat x1
Consider pneumothorax
Check BGL If <45 mg/dl administer Dextrose 10% based on weight-based chart

**B**

One Minute

**B**

Position and clear airway
SpO2 monitor
Supplemental O2 as needed
Consider CPAP if appropriately sized mask available

**B**

Clear secretion, reposition A/W, check for good chest rise, Continue BVM with O2–10 LPM
Place LMA/King

**B**

HR <60bpm?

**YES**

Begin CPR at 90 compressions /minute with 30 BPM at a 3:1 compression-to-ventilation ratio using 2 thumbs-encircling hands technique

**NO**

HR <60bpm?

**YES**

IV Epinephrine 1:10,000 0.1– 0.3 ml/kg q 3– 5minutes
If HR persistently <60bpm:
Consider hypovolemia: IV/IO
Administer 10 ml/kg NS bolus, repeat x1
Consider pneumothorax
Check BGL If <45 mg/dl administer Dextrose 10% based on weight-based chart

**B**

Post-resuscitation care

***KEY POINT***

Meconium: Use only a bulb syringe to clear secretions from the mouth and nose

Avoid prolonged suctioning; if infant becomes bradycardic, provide PPV with BVM (room air initially) at 40–60bpm
**Obstetrics Pre-Eclampsia and Eclampsia**

**Designation of Condition:** Pre-eclampsia: A condition of pregnancy (after 20 weeks gestation) characterized by increasing hypertension, clonus, visual disturbances, right upper quadrant pain, and edema of the lower extremities. This condition may progress to Eclampsia, an active life-threatening seizure in the pregnant or post-partum patient.

**ABC’s**
- Vital signs including BGL
- Oxygen titrated to a saturation of >90%
- Place patient in left lateral recumbent position to prevent supine hypotension syndrome

**IV/IO**
- If patient’s BGL <60 mg/dl, administer Dextrose 10% 250ml (25G)

**Monitor ECG**

**Pre-Eclampsia**
- SBP >160 and/or DBP >110
- OR
- SBP >140 and/or DBP >90 with 2 of the following symptoms: severe headache, vision changes, altered mental status, or abdominal pain

**Eclampsia**
- Active seizing

**Magnesium Sulfate** 2gm IV/IO over 10 minutes.

**Midazolam** 10mg IM. Do not wait for IV/IO access.

**Magnesium Sulfate** 4gm IV/IO push over 10 minutes is priority for pregnant seizure

For persistent seizure after 3–5 minutes, give additional 2 gm Magnesium IV/IO over 10 minutes

**Be prepared to actively manage the patient’s airway if respiratory arrest occurs**

***KEY POINT***

Eclampsia can occur up to 6 weeks postpartum

A patient who is pregnant and seizing should be presumed to have eclampsia. Magnesium administration should be a priority in these patients. However, IM benzodiazepines may be given first due to rapidity of IM administration. If two ALS providers available, one provider administer IM benzodiazepine while the other provider establishes IV/IO access for Magnesium.

The preferred route of administration of Magnesium loading dose for eclampsia/pre-eclampsia is via IV/IO. However, if an IV cannot be obtained, with active seizures, Magnesium may be given IM if the appropriate concentration is available (e.g. 5g/10ml): 5g IM via multiple IM injections deep in the upper outer quadrant of the buttock, not to exceed 2.5–3cc per injection.
Designation of Condition: Vaginal bleeding during pregnancy is abnormal. First trimester bleeding may result from threatened miscarriage, miscarriage, or ectopic pregnancy. Bleeding after 20 weeks gestation may result from placenta previa (usually painless), placental abruption (usually associated with pain, often secondary to trauma), premature rupture of membranes, or post-partum hemorrhage. Third trimester bleeding should always be considered an emergency, as profound shock secondary to exsanguinating hemorrhage may occur within minutes.

ABC’s

- Vital sign monitoring
- Oxygen titrated to a saturation of ≥90%

If fundus is palpable at or above umbilicus, place patient in a left lateral recumbent position to avoid supine hypotension syndrome

IV/IO with fluids titrated to patient condition

If 30 weeks gestation or greater:
- Patients should be transported to an OB capable facility. These include Pres DT, UNMH, Rust (>36wks), Lovelace Westside, Women’s Hospital
- Patients with complications should be transported to a NICU capable facility.

If 20–29 weeks gestation:
- Patients should be transported to a NICU facility. These include Pres DT, UNMH, Rust, and Women’s

If <20 weeks gestation:
- Patients should be transported to the nearest appropriate Emergency Department, based on patient presentation rather than OB capabilities.

***KEY POINT***

The amount of visualized blood loss is NOT a reliable indicator as to the actual amount of blood loss occurring.

Digital vaginal examinations should never be performed. Visual inspection of the perineum is indicated if preterm labor is suspected. If crowning is noted, see Imminent Vertex Delivery guideline.
**Designation of Condition:** The patient becomes unconscious, unresponsive, has apneic/agonal respirations, is pulseless, and the monitor displays asystole, PEA, ventricular fibrillation, or ventricular tachycardia in the EMS crew’s presence.

**DDX:** Respiratory failure: foreign body, secretions, infection (croup, epiglottis), congenital heart disease, trauma, tension PTX, hypothermia, toxin/ingestion

---

**Reversible Causes**

**Evaluate H’s:**
- Hypoxia
- Hypovolemia
- Hypothermia
- Hyper/hypokalemia
- Hydrogen Ions

**Evaluate T’s:**
- Tension pneumothorax
- Tamponade
- Thrombosis (AMI or PE)
- Toxins/Tablets
- Trauma

---

**Pediatric Cardiac Arrest**

**Check for responsiveness and pulse (<10sec)**

Initiate CPR (100–120 compressions / min) at 15:2 for two providers
to a capnography of >10mmHg

Manage airway with
BVM / Extraglottic / King
If BLS/ILS place AED

**Fluid bolus of 20ml/kg to rule out hypovolemia or dehydration**

Administer Epinephrine 1:10000
0.01mg/kg (0.1 ml/kg) IV/IO every 10 minutes

As soon as possible, direct laryngoscopy to verify clear airway
Remove any obstructions and suction as necessary—DO NOT INTUBATE PATIENTS 12 or younger

**End Tidal CO2 (EtCO2)**

If EtCO2 is < 10 mmHg, improve chest compressions.
If EtCO2 spikes, typically > 40 mmHg, consider Return of Spontaneous Circulation (ROSC)

The majority of pediatric arrests stem from a respiratory insult or hypoxic event. Compressions should be coupled with ventilations and early attention to airway management and oxygenation. Continuous compressions with limited interruptions—Compress ≥ 1/3 anterior-posterior diameter of chest, in infants 1.5 inches and in children 2 inches.

DO NOT HYPERVENTILATE: Ventilate 8–10 breaths per minute with continuous, uninterrupted compressions.

---

**P**

At 1min:30sec into compressions, pre-charge monitor 2 J/kg (LP or Zoll)
Analyze rhythm, check pulse

---

**B**

Immediate resumption of CPR 15:2 compressions/ventilation ratio for 10 cycles
NPA/OPA
Asynchronous BVM ventilations once airway has been secured (OPA/Extraglottic)

Search for Reversible Causes

---

**P**

Defibrillate ASAP at 2J/kg (LP or Zoll) second defib 4 J/kg
Subsequent shock > 4 J/kg to max 10 J/kg or 360J
At 1min:30sec into compression, pre-charge monitor

---

**B**

Immediate resumption of CPR 15:2 compressions/ventilation ratio for 10 cycles
NPA/OPA
Asynchronous BVM ventilations once airway has been secured (OPA/Extraglottic)

---

**P**

Administer Lidocaine 1 mg/kg IV/IO
Subsequent doses of 0.5 mg/kg q 3–5 minutes to a total of 3mg/kg

**Persistent VF/VT or Torsades de Points**

Magnesium Sulfate
25–50 mg/kg IV/IO over 1–2 minutes q 3–5 min maximum of 2 grams

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**Designation of Condition:** The patient will have a rapid heart rate (infant heart rate usually ≥220 bpm; child heart rate usually ≥180 bpm). The monitor will show a narrow QRS complex rhythm (≤0.09 sec) without P waves. Signs and symptoms may include: Altered mentation, cyanosis, diaphoresis, mottled skin, tachypnea

**Pediatric Narrow Complex Tachycardia**

**ABC’s, Vital sign monitoring**
- Apply cardiac monitor
- O2 to maintain an SpO2 of >90%

**Capnography**

**IV/IO**
- Consider Fluid bolus of 10 ml/ kg and may repeat x1 to a max of 20ml/kg

**Obtain and evaluate ECG**

**Probable Sinus Tachycardia**
- Compatible hx consistent with known cause
  - P waves present/NL
  - Infants rate: < 220/min
  - Children rate< 180/min

**Consider fever, deydration, pain or agitation as source of tachycardia**
- Identify and treat underlying cause

**Probable SVT**
- Compatible hx- abrupt onset
- Pwaves absent or abnormal

**Symptomatic and Hemodynamically Unstable**
- Consider sedation with Midazolam 0.05–0.1 mg/kg IV/IO/IM or 0.1–0.2mg/kg IN to max of 5mg

**Hemodynamically Stable**
- Attempt vagal maneuvers
  - ex. ice to face, valsalva if old enough
  - (NO carotid massage)

**Obtain 12 lead prior to vagal maneuvers**
- Consider placing patient in Trendelenburg prior to attempt

**Adenosine 0.1mg/kg** RIVP with fush to a max of 6mg
- Administer a second dose of 0.2 mg/kg RIVP to a max of 12mg with flush if no consistent change in ECG

**Obtain 12 lead prior to conversion attempt**
- Record continuous ECG strip during conversion attempt(s)

**Synchronized Cardioversion**
- 0.5–1J/kg (LP15 or Zoll)
- If unsuccessful, repeat at 2J/kg x1
**Pediatric Cardiac Section**

**Introduction:** Pediatric cardiac arrest is often a result of progressive respiratory failure or shock. When CPR is indicated, start compressions while immediately preparing to address airway, ventilation, and oxygenation:

- Assure open airway
- Provide ventilations with **BVM** and supplemental oxygen

**AED Guidelines:**

Adult AED settings and pads should be used for children >8 years old. If a manual defibrillator is not available, pediatric AED settings and pads (if available) should be used for children age 1–8 and infants. If no pediatric AED is available, an adult AED may be used for children and infants.

In all cardiac arrest situations, consider treatable causes, **H's and T's:**

- Hypoxia
- Hypovolemia
- Hypothermia
- Hyper Hypothermia
- Hydrogen ions (metabolic acidosis)
- Tension pneumothorax
- Tamponade
- Thrombosis (AMI or PE)
- Toxins / Tablets
- Trauma

**Resuscitation efforts may be terminated in the field with MCEP approval if the following conditions apply:**

- ALS interventions have been implemented for at least 20 minutes, and
- No return of spontaneous circulation (ROSC) occurred, and
- The terminal rhythm is asystole or an agonal brady-asystolic rhythm (PEA) <40 bpm, and
- The arrest is not the result of hypothermia

Cardiac resuscitation attempts WILL NOT be terminated without MCEP approval.

<table>
<thead>
<tr>
<th>Heart rate</th>
<th>Respiratory Rate</th>
<th>Systolic blood pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Newborn</strong></td>
<td>100–160</td>
<td>30–60</td>
</tr>
<tr>
<td>1 to 6 weeks</td>
<td>100–160</td>
<td>30–60</td>
</tr>
<tr>
<td>6 months</td>
<td>90–120</td>
<td>25–40</td>
</tr>
<tr>
<td>1 years</td>
<td>90–120</td>
<td>20–30</td>
</tr>
<tr>
<td>3 years</td>
<td>80–120</td>
<td>20–30</td>
</tr>
<tr>
<td>6 years</td>
<td>70–100</td>
<td>18–25</td>
</tr>
<tr>
<td>10 years</td>
<td>60–90</td>
<td>16–22</td>
</tr>
<tr>
<td>12 years</td>
<td>60–90</td>
<td>15–20</td>
</tr>
</tbody>
</table>
Pediatric Cardiac Post-Resuscitation Care

**Designation of Condition:** Pediatric patient with return of pulses (ROSC) after cardiac arrest

- Manage airway with basic adjuncts and suction PRN
- Avoid hyperoxegenation. Administer oxygen to maintain SpO2 ≥90%
- Frequent VS to include BGL and temperature
- ETCO2 from 35–45 mm/hg with respiratory rate of 10–12/minute
- 12 Lead ECG with transmission to destination hospital
- Transport with Mechanical Compression Device in place if patient meets appropriate size parameters.

**B**

- Ensure IV/IO patency
- If BGL ≤60mg/dl, proceed to hypoglycemia guideline

**I**

- **Bradycardia**
  - Treat per the bradycardia protocol

- **Hypotension**
  - Maintain SBP > 90 mmhg
  - IV/IO NS bolus to a max of 20cc/kg as appropriate

- **Chest Pain/STEMI**
  - Obtain post-conversion 12 Lead ASAP and transmit
  - Activate STEMI alert prior to initiating transport

- **Post-ROSC dysrhythmias**
  - Treat per the appropriate protocol

- **Convulsive Seizures, Status Epilepticus**
  - First Line (Epi is the recommended vasopressor for peds):
    - Epinephrine Drip 0.1–2 mcg/kg/min IV/IO
  - Second Line:
    - Norepinephrine drip of 0.1–2 mcg/kg/min IV/IO, titrate to mentation, heart
  - Ideal BP = SBP(70)+(Age in years x 2)

- **If sedation is required to maintain airway, administer Midazolam 0.05–0.1 mg/kg IV/IO/IM or**

- **If pt seizes treat per protocol Convulsive Seizures, Status Epilepticus**

- Monitor and reevaluate the patient’s condition
  - Transport to a core facility with PICU (UNMH or Pres DT) capabilities
Pediatric Symptomatic Bradycardia

### Designation of Condition:
The patient will present with a bradycardic heart rate. Associated signs and symptoms may include decreased or altered LOC, delayed capillary refill, cyanosis, mottled cool skin, SOB, pulmonary edema, or shock. In pediatric patients, bradycardia most often results from respiratory failure.

#### ABC’s
- **Vital signs to include BGL**
- Ensure open airway and assess adequacy of ventilation
- **O2 to maintain an SpO2 of ≥90%**
- **Capnography**
- Apply cardiac monitor

#### If severe cardio-respiratory compromise and heart rate <60 bpm:
- Begin CPR and reassess after two minutes

#### IV/IO

#### Administer Epinephrine 1:10,000
- 0.01mg/kg (0.1ml/kg) q 3–5 minutes IV/IO

#### If Epinephrine is ineffective, consider:
- **Transcutaneous Pacing**
  - Pace at a rate appropriate to age. Slowly increase current until electrical capture is achieved, then assess for mechanical capture

#### OR
- **Atropine** if > 6 months old
  - 0.02mg/kg IV/IO q 5 min
  - 0.1mg minimum dose, 0.5mg maximum single dose
  - May be repeated ONCE

#### Pain mgt/sedation for pacing, administer narcotics per the **Pain Management guideline**
- If narcotic administration is contraindicated (e.g., patient allergy, hypotension, etc.), sedation may be utilized instead of analgesia:
  - Consider sedation with **Midazolam**
  - 0.05–0.1 mg/kg IV/IO/IM

### Newborns

<table>
<thead>
<tr>
<th>Age</th>
<th>Heart rate</th>
<th>Respiratory Rate</th>
<th>Systolic blood pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>100–160</td>
<td>30–60</td>
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<td>80–100</td>
</tr>
<tr>
<td>1 year</td>
<td>90–120</td>
<td>20–30</td>
<td>80–100</td>
</tr>
<tr>
<td>3 years</td>
<td>80–120</td>
<td>20–30</td>
<td>80–100</td>
</tr>
<tr>
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<td>70–100</td>
<td>18–25</td>
<td>80–110</td>
</tr>
<tr>
<td>10 years</td>
<td>60–90</td>
<td>16–22</td>
<td>90–120</td>
</tr>
<tr>
<td>12 years</td>
<td>60–90</td>
<td>15–20</td>
<td>105–135</td>
</tr>
</tbody>
</table>

### ***KEY POINT***

- Hypoxia is the most common cause of symptomatic bradycardia in children
- Initial interventions should focus on supportive airway measures including ventilation and oxygenation
- Pacing is most likely to be necessary for children with AV blocks following cardiovascular surgery or who have denervated hearts following transplant surgery, rendering them unable to respond to Atropine
- Epinephrine is first drug choice for persistent, symptomatic bradycardia
- Atropine is second choice, unless there is evidence of increased vagal tone or a primary AV conduction block, then give Atropine first
**Designation of Condition:** The patient will have a pulse and show sustained ventricular tachycardia (wide QRS >0.09 sec) on the monitor. Monomorphic VT will have QRS complexes of the same shape and amplitude.

**Pediatric Cardiac Wide Complex Tachycardia—Monomorphic**

**ABC’s and establish patent airway**
- Maintain O₂ sats of ≥90%
- Vital signs
- Apply cardiac Monitor
- Reassess vital signs and perfusion status frequently

**If stable:**
- Supportive care

**IV/IO**
- Fluid bolus of 10 ml/kg may repeat x 1 to a max of 20ml/kg to rule out hypovolemia or dehydration

**Unstable monomorphic**
- (pulses present with signs of shock/poor perfusion including altered mentation, mottled skin, cyanosis, hypotension)

**Obtain and interpret**
- 12- lead EKG

**Consider sedation with**
- **Midazolam**
  - 0.05–0.1 mg/kg IV/IO/IM or 0.1–0.2mg/kg IN to max of 5mg

**Synchronized Cardioversion**
- **LP15 or Zoll:** 0.5–1 J/kg
- Repeat synchronized cardioversion if necessary

**Do not delay cardioversion for sedation procedures**

---

**KEY POINT**

- **V-Tach is relatively uncommon in preterm patients, but may be seen in children who have had cardiac surgery or have cardiomyopathy or myocarditis.**
- **Other causes of VT include:** Long QT syndrome, electrolyte imbalances and drug toxicity.
- **Symptoms can range from asymptomatic to cardiovascular collapse.**
**Designation of Condition:** The patient will have a pulse and show sustained ventricular tachycardia (wide QRS >0.09 sec) on the monitor. Pymorphic VT has QRS complexes that are different in shape and amplitude. Torsades de Pointes is a common type of polymorphic VT and is associated with long QT intervals.

---

**ABC's and establish patent airway**
- Maintain O2 sats of >90%
- Vital signs
- Reassess vital signs and perfusion status frequently
  - **12 Lead ECG**

**Unstable Polymorphic** ( pulses present with signs of shock/poor perfusion)
- Fluid bolus of 10 ml/kg may repeat x 1 to a max 20ml/kg to rule out

**Consider sedation with**
- **Midazolam** 0.05–0.1 mg/kg IV/IO/IM or 0.1–0.2 mg/kg IN to max of 5mg

**Defibrillation**
- **LP15 or Zoll:** 2J/kg
- Repeat defibrillation if necessary

**If suspected Torsades de Pointes:** **Magnesium Sulfate** 25–50 mg/kg q 3–5 minutes to a max dose of 2 grams

---

**KEY POINT***

*V-Tach is relatively uncommon in pediatric patients, but may be seen in children who have had cardiac surgery or have cardiomyopathy or myocarditis.*

*Other causes of VT include: Long QT syndrome, electrolyte imbalances and drug toxicity.*

*Symptoms can range from asymptomatic to cardiovascular collapse.*
Clinical Indications for 12 Lead ECG:
- Any patient age 35 or over with chest pain
- Suspected cardiac patient or suspected stroke patient
- Suspected Tricyclic overdose
- Electrical injuries
- Syncope

Procedure:
1. Assess patient and monitor cardiac status
2. Administer oxygen as patient condition warrants
3. If patient is unstable, definitive treatment is the priority. If patient is stable or stabilized after treatment, perform a 12 Lead ECG
4. Prepare ECG monitor and connect patient cable with electrodes
5. Enter the required patient information (patient name, etc.) into the 12 lead ECG device
6. Expose chest and prep as necessary. Modesty of the patient should be respected
7. Apply chest leads and extremity leads using the following landmarks:
   - RA—Right arm
   - LA—Left arm
   - RL—Right leg
   - LL—Left leg
   - V1—4th intercostal space at right sternal border
   - V2—4th intercostal space at left sternal border
   - V3—Directly between V2 and V4
   - V4—5th intercostal space at midclavicular line
   - V5—Level with V4 at left anterior axillary line
   - V6-Level with V5 at left midaxillary line
8. Instruct patient to remain still
9. Press the appropriate button to acquire the 12 Lead ECG
10. If the monitor detects signal noise (such as patient motion or a disconnected electrode), the 12 Lead acquisition will be interrupted until the noise is removed
11. Once acquired, transmit the ECG data to the appropriate hospital
12. Contact the receiving hospital to notify them that a 12 Lead ECG has been sent
13. Monitor the patient while continuing with the treatment protocol
14. Download data as per guidelines and attach a copy of the 12 Lead to the PCR
15. Document the procedure, time, and results on/with the patient care report (PCR)
Airway Management & Intubation Guidelines

**Designation of Condition:** All patients who are apneic or severely hypoxic and/or bradypneic should be managed with basic airway maneuvers and BVM initially. Those patients 13 years and older who are unresponsive to oxygen and basic airway maneuvers (jaw thrust, foreign body removal, BVM) should be managed with more advanced maneuvers, including an Extraglottic Airway Device or endotracheal tube placement.

Patients 12 and younger are ONLY to be managed by basic airway maneuvers to include, if needed, Extraglottic Airway Device placement.

**BVM:** Pay close attention to technique. Remember to bring the jaw and mouth to mask rather than pushing the mask down upon the patients’ mouth and nose—which may occlude the lower airway. Avoid generating high intra-thoracic pressures; ventilate slowly. If possible have an assistant provide cricoid pressure (Sellick’s maneuver) during ventilations to prevent air from entering the stomach. When utilizing Sellick’s maneuver, avoid excessive pressure, so as not to obstruct the trachea.

**NOTE:** During CPR ventilation rates should not exceed 8-10 breaths per minute through advanced airway device (one breath q 6 seconds).

**Extraglottic Airway Device Placement:** In certain situations, an Extraglottic Airway Device (if available) may be the preferred initial method of airway control over endotracheal intubation in patients 13 years of age and older and/or greater than 40kgs, or used as a salvage device if intubation attempts are unsuccessful. If employed, follow procedures as outlined for Extraglottic Airway Device.

**Trauma Airway Management:**

- Immobilize the cervical spine (axial immobilization). An airway may be maintained by utilizing the trauma jaw thrust or trauma chin lift. An oral or nasal airway may be utilized. Suction as necessary.

- If patient is not breathing adequately or is in respiratory arrest and BVM ineffective, the neck should be stabilized with axial immobilization (in-line) and the airway secured with an Extraglottic Airway Device (see Laryngeal Mask Airway Procedure) without extension or flexion of the head.
Oral Intubation (Patients 13 and older ONLY): Before intubation, the patient should be pre-oxygenated with a BVM with high flow oxygen. Cricothyroid pressure (Sellick’s maneuver) is no longer routinely recommended but may be applied to minimize gastric distention during BVM. Release pressure if patient is actively vomiting. During intubation, the use of external laryngeal manipulation is encouraged. In most situations, providers should make no more than 2 intubation attempts before moving to an alternate advanced airway.

- Insert Adult Bougie (if available)
- Usual tube size: 7.0-8.0 mm for oral intubation of adults and 6.0-7.0 mm for nasal intubation of adults

Confirming tube placement:
- ALL ENDOTRACHEAL (NASAL OR ORAL) TUBES WILL BE CONFIRMED BY WAVEFORM CAPNOGRAPHY (If no capnography is available, DO NOT perform oral intubation)
- Always auscultate both sides of chest and stomach
- Frequent reassessment of ETT during transport and after any move/transfer to confirm placement is mandatory (Waveform capture with printed strip at time of intubation and before any patient transfer/movement)

Nasal Intubation: It should be employed only when absolutely necessary, in patients with spontaneous respirations. It is contraindicated in combative patients, in the context of severe facial trauma, and in the presence of a known coagulopathy. It is strongly discouraged in cases of increased intracranial pressure, unless airway control is otherwise unobtainable.

- Nasal intubation should be preceded by nasal phenylephrine 1-2 sprays and xylocaine® jelly 2% if time permits
- Guidable (Endotrol) tube is preferred. In most patients, 6.0-7.0 mm tube size should be chosen
- Choose most patent nostril. If no difference, choose right nare
- The tube should be turned so that the bevel is away from the septum. Once the tip of the tube is past the inferior turbinate, it should be directed caudal to follow the gentle down sloping floor of the nose. Once the nasopharynx is entered, restore tube to normal (sagittal) position
- Advance tube gently but firmly through cords during inspiration. Consider BAMM device to assist with placement.

Trauma Ariway Management:
- If patient is not breathing adequately or is in respiratory arrest and BVM ineffective, the neck should be stabilized with axial immobilization (in-line) and the trachea orally intubated without extension or flexion of the head.

- If the attempt at an axial immobilization oral intubation is not successful, consider: Extraglottic Airway Device or Surgical Cricothyrotomy.

- In the unresponsive breathing patient, consider nasotracheal intubation, unless contraindicated

Post-Intubation Sedation to maintain ETT patency and maximize ventilation compliance:
- Should this need arise, use the following sedation dosing guidelines:
  - Administer sedation with Diazepam 1-5mg IV/IO/IM or Midazolam 1-5 mg IV/IO/IM/IN both q 3-5 minutes to a max of 10mg
  - Closely monitor blood pressure SaO2, ETCO2
### Aura Gain™ Sizing Chart

<table>
<thead>
<tr>
<th></th>
<th>Pediatric</th>
<th>Adult</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mask size</strong></td>
<td>#1</td>
<td>#6</td>
</tr>
<tr>
<td><strong>Packaging color code</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Patient weight</strong></td>
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<td>&gt;100 kg</td>
</tr>
<tr>
<td><strong>Maximum cuff inflation volume</strong></td>
<td>4 ml</td>
<td>50 ml</td>
</tr>
<tr>
<td><strong>Maximum intra-cuff pressure</strong></td>
<td>60 cm H₂O</td>
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<tr>
<td><strong>Airway connector</strong></td>
<td>15 mm ISO 5356-1</td>
<td></td>
</tr>
<tr>
<td><strong>Min. I.D. Tube</strong></td>
<td>6.6 mm</td>
<td>12.9 mm</td>
</tr>
<tr>
<td><strong>Inflation valve</strong></td>
<td>Luer cone ISO 594-1</td>
<td></td>
</tr>
<tr>
<td><strong>Appropriate storage temperature</strong></td>
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</tr>
<tr>
<td><strong>Weight</strong></td>
<td>14 g</td>
<td>88 g</td>
</tr>
<tr>
<td><strong>Internal volume of ventilatory pathway</strong></td>
<td>3.3 ml</td>
<td>33 ml</td>
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<tr>
<td><strong>Pressure drop</strong></td>
<td>0.0 cm H₂O at 15 l/min</td>
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</tr>
<tr>
<td><strong>Min. interdental gap</strong></td>
<td>11.6 mm</td>
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</tr>
<tr>
<td><strong>Internal pathway</strong></td>
<td>9.4 cm</td>
<td>19.0 cm</td>
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<tr>
<td><strong>Intubation use</strong></td>
<td>3.5</td>
<td>8.0</td>
</tr>
<tr>
<td><strong>Gastric channel use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max gastric tube</strong></td>
<td>6 FR</td>
<td>16 FR</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>#1½</th>
<th>1½</th>
<th>#2</th>
<th>#2 ½</th>
<th>#3</th>
<th>#4</th>
<th>#5</th>
<th>#6</th>
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<tr>
<td>5-10 kg</td>
<td>10-20 kg</td>
<td>20-30 kg</td>
<td>30-50 kg</td>
<td>50-70 kg</td>
<td>70-100 kg</td>
<td>&gt;100 kg</td>
<td></td>
</tr>
</tbody>
</table>
**Designation of Condition:** Patients with apnea, severe hypoxia or bradypnea that are in need of ventilatory support.

**Single Person:**

1. Select the proper BVM that is appropriate for the patient (i.e adult, child or infant)

2. Connect the BVM tubing to the O2 regulator on the bottle and start the liter flow at 15 L/min

3. Place the mask on the patient’s face making sure that the narrow part of the mask is on the bridge of the nose

4. Create a good seal by using the “C” and “E” technique
   - Fingers forming the “E” will be lifting the jaw
   - Fingers forming the “C” will be holding the mask to the face
   - Remember to bring the jaw and mouth to mask rather than pushing the mask down upon the patients’ mouth and nose—which may occlude the lower airway

5. Insert an oral or nasopharyngeal airway or both
   - Nasopharyngeal airway measurement: Tip of the nose to the ear lobe
   - Oropharyngeal airway measurement: Corner of the mouth to the angle of the jaw

6. Documentation

**Two person:**

Same procedure as above with the exception of one person being dedicated to making a good seal with a two-handed “C” and “E” technique and the other focusing on giving the proper tidal volume at the correct weight

***KEY POINT***

- Pay close attention to technique.
- DO NOT insufflate the stomach.
- Avoid generating high intra-thoracic pressures; ventilate slowly.
- If possible, have an assistant provide cricoid pressure (Sellick’s maneuver) during ventilations to prevent air from entering the stomach. When utilizing Sellick’s maneuver, avoid excessive pressure, so as not to obstruct the trachea.
- Health care providers often deliver excessive ventilations with BVM and when advanced airways are in place, excessive ventilation is detrimental because it:
  - Impedes venous return and therefore decreases cardiac output and cerebral blood flow
  - Increases intrathoracic pressures and therefore decreases coronary artery perfusion pressure
  - Causes air trapping and barotrauma
  - Increases risk of regurgitation and aspiration
- During CPR ventilation rates should not exceed 8-10 breaths per minute through advanced airway device (one breath every 6 seconds).
PROCEDE: 
1. Apply limb leads
2. Consider sedation with Diazepam or Midazolam per the Benzodiazepine protocol
3. Attach defibrillation pads to the patient and monitor rhythm 
   • Placement of pads can be in either anterior/lateral placement or anterior/posterior placement
4. Push the SYNC button on the monitor 
   • LP monitors will have a flashing green light if SYNC is on
5. Confirm that the triangle sense marker appears near the middle of each QRS complex 
   • If the sense markers do not appear or they are displayed in the wrong location, adjust the ECG size or select another
   • The location of the sense marker may vary slightly with each QRS complex
6. Select the proper Joule setting per the protocol by using the circular dial or the ENERGY SELECT arrows to set the proper Joule setting
7. Push the CHARGE button
8. Make sure all persons are clear from touching the patient
9. After confirming that the monitor is still in SYNC mode, push and hold the SHOCK button until it discharges
10. Reassess the patient and the cardiac rhythm
11. Repeat steps 4-10 if indicated by the protocol

***KEY POINT***
• When attempting to cardiovert, double check to make sure that the SYNC button is ON and FLASHING
• Monitor the patient for ventricular fibrillation post energy delivery
• If the patient converts into ventricular fibrillation or pulseless electrical activity, reassess the patient. Immediately defibrillate the patient and refer to Cardiac Arrest protocol
• If the SHOCK button is not pushed, the energy will be internally removed
  • If another SHOCK in indicated, the monitor will need to be recharged
• During synchronized cardioversion, there may be a delay from when the button is depressed to when the shock is delivered
• Use EXTREME caution in patients with a rapid atrial fibrillation or atrial flutter
  • Cardioversion on these patients is associated with high risk of embolus
• Prehospital cardioversion of these patients is reserved for life-threatening situations, hemodynamically unstable with altered mentation
**Continuous Positive Airway Pressure (CPAP)**

**Definition:** CPAP is a non-invasive procedure designed to improve lung mechanics by improving pulmonary compliance and increasing pressure within the airway, and by a reduction of the work of breathing.

**Indications:**
- Hypoxemia with respiratory distress or severe dyspnea
- Common causes include: acute pulmonary edema, COPD, asthma, pneumonia, near drowning
- Consider as bridge to advanced airway placement (including SGA) in patients with altered mentation but still have intact airway reflexes

**Contraindications:**
- Inability to use mask (e.g., uncooperative patient, facial trauma, or facial anomalies)
- Immediate need for intubation (e.g., respiratory or cardiac arrest)
- Inability to maintain an open airway
- Active vomiting or GI bleed
- Excessive secretions
- Head trauma with SxS of increased intracranial pressure
- Penetrating chest trauma or pneumothorax
- Explosive barotrauma

**Relative contraindication: BP <90mmHg or life threatening arrhythmia**

**Procedure:**
1. Ensure adequate oxygen supply to ventilation device
2. Explain the procedure to the patient
3. Consider placement of a nasopharyngeal airway
4. Place the delivery mask over the mouth and nose. Oxygen should be flowing through the device at this point
5. Secure the mask with provided straps starting with the lower straps until minimal air leak occurs
6. If the Positive End Expiratory Pressure (PEEP) is adjustable on the CPAP device adjust the PEEP beginning at 0 cmH20 of pressure and slowly titrate to achieve a positive pressure as follows:
   - 5–10 cmH20 for pulmonary edema, near drowning, possible aspiration or pneumonia
   - 3–5 cmH20 for COPD
7. Evaluate the response of the patient assessing breath sounds, oxygen saturation, and general appearance
8. Titrate oxygen levels to the patient’s response. Many patients respond to low FIO2 (30-50%).
9. Encourage the patient to allow forced ventilation to occur. Observe closely for signs of complications. The patient must be breathing for optimal use of the CPAP device
10. Document time and response on patient care report (PCR)

**IN CIRCUMSTANCES WHEN THE PATIENT DOES NOT IMPROVE OR CONTINUES TO DETERIORATE DESPITE CPAP AND/OR MEDICATION THERAPY, TERMINATE CPAP ADMINISTRATION AND PERFORM BVM VENTILATION AND INVASIVE AIRWAY PROCEDURE IF REQUIRED**
Cricothyrotomy, Vertical Approach

**Designation of Condition:** Cricothyrotomy may be attempted in an unconscious patient >12 years old with immediate life-threatening airway compromise and when other modalities of airway management are ineffective or contraindicated.

**CONTRAINDICATIONS**

- Ability to oxygenate and ventilate an airway with less invasive means (i.e. BVM, LMA, KING, etc.)
- Children <12 years old
- Needle Cricothyrotomy is not in the NM Scope of Practice and should not be used
- Managing the airway with a less invasive means (i.e. BVM) will need to be attempted with rapid transport

- Identify the thyroid cartilage and palpate the inferior border. The cricoid cartilage is the hard cartilaginous ring inferior to the thyroid cartilage. The cricothyroid membrane is situated between the two structures
- Locate and identify cricothyroid membrane and prep with betadine
- Make a vertical incision through the skin over the cricothyroid membrane of 2-3cm with sufficient depth to expose the cricothyroid membrane. Horizontally puncture the membrane with the scalpel to facilitate access to the trachea
- To maintain access prior to tube placement, insert bougie or gloved finger into incision site
- Insert and maintain airway with a cuffed endotracheal tube (in most adults, a 6mm tube will suffice). Advance cuff 2cm past the opening and inflate the cuff
- Use all standard methods for confirming ETT placement. Visualize chest excursion and auscultate lung fields and epigastrium. Monitor pulse oximetry. Place a quantitative EtCO2 detector device between the ETT and BVM to further confirm proper placement and ventilation. **ALL ETT PLACEMENTS REQUIRE QUANTITATIVE ETCO2 CAPNOGRAPHY**
- Consider using a Toomey syringe or other esophageal detector device; if 30ml of air can be drawn freely into the syringe, the tube is almost certainly in the trachea
- Secure the tube and optimize ventilation with high flow oxygen
- Prior to releasing an intubated patient to receiving hospital physician or respiratory therapist, you MUST reconfirm tube placement and patency
- Contact MCEP if possible, for further orders
- The service medical director will review all cricothyrotomy attempts

**WAVEFORM CAPTURE WITH PRINTED STRIP AT TIME OF INTUBATION AND BEFORE ANY PATIENT MOVEMENT**
**External Jugular Access**

**Clinical Indications:** External jugular vein cannulation is indicated in a critically ill patient ≥ 8 years of age who require intravenous access for fluid or medication administration and in whom an extremity vein or intraosseous access is not obtainable. External jugular cannulation can be attempted initially in life threatening events where no obvious peripheral site is noted and intraosseous access is contraindicated or undesirable.

<table>
<thead>
<tr>
<th>Procedure:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Place the patient in a supine head down position where possible to distend the neck veins</td>
</tr>
<tr>
<td>2. Turn the patient's head toward the opposite side if no risk of cervical injury exists</td>
</tr>
<tr>
<td>3. Prep the site as per peripheral IV site</td>
</tr>
<tr>
<td>4. Align the catheter with the vein and aim toward the same side shoulder</td>
</tr>
<tr>
<td>5. “Tourniqueting” the vein lightly with one finger above the clavicle, puncture the vein midway between the angle of the jaw and the clavicle and cannulate the vein in the usual method</td>
</tr>
<tr>
<td>6. Attach the IV and secure the catheter avoiding circumferential dressing or taping</td>
</tr>
<tr>
<td>7. Avoid using cervical collars with external jugular venous access. If needed, other methods of cervical motion restriction should be used</td>
</tr>
<tr>
<td>8. Document the procedure, time, and result (success) on/with the Patient Care Report (PCR)</td>
</tr>
</tbody>
</table>
Confirmation of Endotracheal Tube Placement

**Designation of Condition:** Confirmation of correct ET tube placement is critical. Traditional methods of confirming correct tube placement include: visualizing the ETT passing through the vocal cords, auscultation of clear and equal bilateral breath sounds, absence of air sounds over the epigastrium, observation of symmetric chest rise and fall, visualizing condensation (misting) in the tube, and monitoring of SpO2. Unfortunately, all have been shown to have limitations and are subject to failure, resulting in undetected misplacement or displacement of ET tubes into the esophagus or hypopharynx. Reliable confirmation of ET tube placement is best achieved by combining all appropriate traditional methods with one or more of the methods discussed below. Application of an end-tidal CO2 capnography detector device is **MANDATORY** for all intubated patients.

### Quantitative Capnography: (ALL ENDOTRACHEAL TUBES WILL BE CONFIRMED BY THIS MEASUREMENT)

**Indications:** Initial confirmation and continuous assessment of correct ETT placement in patients with or without pulses
- **Tracheal placement:** Tracheal ETT placement creates a normal rectangular waveform or an expected variant of the normal waveform.
- **Esophageal placement:** Esophageal ETT placement results in a flat-line capnographic display. Esophageal placement cannot create a normal/normal variant capnographic waveform, even if CO2 is present in the stomach and reflected by a measured capnometric value.

### Colorimetric EtCO2 Detector Device:

**Indications:** Initial and continuous confirmation of ETT placement in patients with or without pulses
Colorimetric EtCO2 detectors are extremely accurate when used on patients with peripheral circulation sufficient to produce palpable pulses.
- **Yellow (patients with or without pulses):** Color change from purple to yellow indicates presence of exhaled CO2 and tracheal intubation
- **Purple (patients with pulses):** No change of color to yellow indicates esophageal intubation with a lack of exhaled CO2
- **Purple (patients without pulses):** ET tube placement indeterminate; in such cases, repeat laryngoscopy and/or use of an esophageal detector device
  - Consider transition to quantitative capnography for continued monitoring when available

### Limitations of quantitative capnography:

- **Cardiac arrest/severely low blood flow states:** The lowest level of CO2 that can create a reliable waveform and capnometric value is unknown. In the setting of cardiac arrest, use all available advanced airway assessment techniques and adjuncts as appropriate to confirm proper ETT placement.

### Toomey Syringe / Esophageal Detector Device

**Indication:** Initial or ongoing assessment of ET tube placement when EtCO2 detection results are indeterminate (patients without pulses)

Method: Attach Toomey syringe (or other EDD) to ET tube adapter and attempt to rapidly withdraw a large volume of air. If able to rapidly withdraw at least 30ml of air, the ETT is almost certainly placed in the trachea (unless the tip of the ETT is very shallow and in the hypopharynx). If unable to easily and rapidly withdraw 30ml of free air, the ETT should be considered in the esophagus.

***KEY POINT***

If a service does not have quantitative capnography, then direct laryngoscopy is **strictly prohibited**
Capnography vs. Capnometry:
Capnography compromises the continuous analysis and recording of carbon dioxide in respiratory gases with the generation of a quantitative number and graph depicting CO2 exhalation. Capnometry is solely the quantitative number that is generated by measuring CO2 exhalation.

**PROCEDURE**—Capnography for the non-intubated patient

1. Turn on recording instrumentation (typically the cardiac monitor)
2. Place the sampling cannula on the patient
3. Attach the sampling device to the recording instrument
4. If needed, the sampling device has the ability to deliver O2 though the nasal prongs

**PROCEDURE**—Capnography for the intubated patient

1. Turn on recording instrumentation (typically the cardiac monitor)
2. Place the sampling device in between ventilation device (BVM) and the ETT / Extraglottic device
3. Attach sampling device to recording instrumentation (cardiac monitor) and ventilate to an EtCO2 of 35-45
Intraosseous Infusion

**Clinical Indications:** To be used as an alternative route for drug and/or fluid administration in critically ill or injured patients when IV access cannot be obtained. All EMS drugs approved by protocol for IV administration may be safely administered at the same dosage via the Intraosseous (IO) route. Different manufacturers approve different sites and techniques. It is important to note which product you're using and follow the manufacture recommendations.

**Procedure: MANUAL IO DEVICE JAMSHIDI OR OTHER Manual DEVICE**
- Identify landmarks
  - In Adults: From tibial tuberosity go 2 cm directly medial to the tibial tuberosity.
  - In Children: From the tibial tuberosity go 1-2 cm medial and 1 cm distally (away from the knee joint toward the foot) in order to avoid growth plate injury
- Locate insertion site and sterilize with povidone-iodine or alcohol
- Support the leg on firm surface. Stabilize tibia by grasping thigh/knees with non-dominant hand
- Insert needle through skin over flat anteromedial surface of the tibia
- Advance needle through bony cortex using a gentle but firm twisting or drilling motion
- Stop advancement of needle when sudden decrease to resistance to forward motion is felt. If in marrow, needle should remain upright without support
- Unscrew cap and remove stylet
- Stabilize needle. Aspirate marrow. Slowly inject 10 ml NS, checking for resistance to flow, extravasation or increased firmness of surrounding tissue
- If placement successful, evacuate air from IV line and attach tubing to needle

**Procedure: BONE INJECTION GUN (BIG)**
- Support the patient’s leg to minimize movement
- Locate insertion site and sterilize with povidone-iodine or alcohol
- In Adults: From tibial tuberosity go 1 inch (2.54cm) directly medial to the tibial tuberosity and 0.5 inches (1.27cm) proximal
  - In Children: From the tibial tuberosity go 0.5 inches (1.27cm) medial and 0.5 inches (1.27cm) distally (away from the knee joint toward the foot) in order to avoid growth plate injury
- Hold base of BIG firmly at 90-degree angle. Remove safety latch
- Hold down base of BIG firmly and press down with palm of hand
- Pull BIG slowly away from needle
- Remove trocar needle from cannula
- Secure cannula with safety latch
- Aspirate bone marrow. Flush cannula with 10-20 ml NS
- Attach IV line and tape securely to patient

**Procedure: EZ-IO**
The EZ-IO has six (6) manufacture approved sites. Those include the proximal humerus head, proximal tibia and distal tibia sites on each extremity

***KEY POINT***

**Site of insertion:** In both adults and children, all of the devices use the proximal tibia as one of insertion sites however; there are slight differences in exact location.
Intraosseous Infusion

NOTE: Only the 45 mm needle should be used in the humeral head and this site is approved in adults only.
Identify landmarks and estimate weight and needle size

Appropriate size intraosseous Needle Set based on patient size and weight
EZ-IO® 45 mm Needle Set (yellow hub) should be considered for proximal humerus insertion in patients 40 kg and greater and patients with excessive tissue over any insertion site
EZ-IO® 25 mm Needle Set (blue hub) should be considered for patients 3 kg and greater
EZ-IO® 15 mm Needle Set (pink hub) should be considered for patients approximately 3-39 kg

Proximal Tibia—If NO tuberosity is present, the insertion is located approximately 4 cm below the patella and then medial along the flat aspect of the tibia. If the tuberosity IS present, the insertion site is located approximately 2 cm medial to the tibial tuberosity along the flat aspect of the tibia. Carefully feel for the “give” or “pop” indicating penetration into the medullary space.

Distal Tibia—Place one finger directly over the medial malleolus; move approximately 2 cm (depending on patient anatomy) proximal and palpate the anterior and posterior borders of the tibia to assure that your insertion site is on the flat center aspect of the bone.

EZ-IO 25 mm:
• Proximal Tibia—Insertion site is approximately 2 cm below the patella and approximately 2 cm (depending on patient anatomy) medial to the tibial tuberosity
• Distal Tibia—Insertion site is located approximately 3 cm proximal to the most prominent aspect of the medial malleolus. Place one finger directly over the medial malleolus; move approximately 2 cm (depending on patient anatomy) proximal and palpate the anterior and posterior borders of the tibia to assure that your insertion site is on the flat center aspect of the bone

EZ-IO 45 mm:
• Proximal Tibia—Insertion site is approximately 2 cm below the patella and approximately 2 cm (depending on patient anatomy) medial to the tibial tuberosity
• Distal Tibia—Insertion site is located approximately 3 cm proximal to the most prominent aspect of the medial malleolus. Place one finger directly over the medial malleolus; move approximately 2 cm (depending on patient anatomy) proximal and palpate the anterior and posterior borders of the tibia to assure that your insertion site is on the flat center aspect of the bone
• Proximal Humerus—Insertion site is located directly on the most prominent aspect of the greater tubercle. Slide thumb up the anterior shaft of the humerus until you feel the greater tubercle, this is the surgical neck. Approximately 1 cm (depending on patient anatomy) above the surgical neck is the insertion site. Ensure that the patient’s hand is resting on the abdomen and that the elbow is adducted (close to the body)
Intraosseous Infusion

PROCEDURE:

• Prep the surface with antiseptic
• Connect needle set to driver
• Position the driver at the insertion site with the needle set at a 90-degree angle to the bone surface. Gently pierce the skin with the Needle Set until the needle touches the bone
• Check to ensure that at least one black line is visible. If not, your needle may be too short and thus will not reach the medullary space. Consider alternate site or a longer needle
• Penetrate the bone cortex by squeezing drivers tripper and applying gentle, consistent, steady, downward pressure (no need to press hard, allow the driver to do the work)
• Release the driver’s trigger and stop the insertion process when:
  • On adult patients, when accessing the tibia or proximal humerus, you may stop by releasing the trigger when the hub is almost flush with the skin
  • On pediatric patients, when you feel a decrease in resistance, indicating the needle has entered into the medullary space, release the trigger.
• Remove the EZ-IO power driver from needle while stabilizing the catheter hub
• Remove stylet from catheter by turning counter-clockwise and then dispose of stylet
• Secure site with EZ Stabilizer or tape
• Connect primed EZ-Connect to exposed Luer-lock hub
• Syringe bolus: Rapid bolus with approx.: 10 cc normal saline
• Connect IV tubing to EZ-Connect
• Consider additional bolus of saline if flow rates are slower than expected
• Utilize an IV pump or BP cuff and pressure infuse the fluids (designed to flow under pressure)

COMPLICATIONS:

Necrosis and sloughing of the skin may occur if fluid or drugs extravasation from the puncture site into the surrounding tissues

Pain Control:

In patients who are awake or respond to pain:

• Adults:
  • Administer 2% Lidocaine 40 mg very slowly over 1-2 minutes followed by a 10 cc saline flush
  • If pain returns and or patient requires a prolonged crystalloid administration or medication drip, administer another bolus of 20 mgs
• Pediatrics:
  • Administer 2% Lidocaine 0.5 mgs/kg, max of 40mg, administer slowly over 1-2 minutes followed by a 10 cc saline flush
  • If pain returns, administer another bolus at ½ the initial dose

CONTRAINDICATIONS:

• Fracture at site
• Previous orthopedic surgery in limb
• Infection/burn in limb
• Absence of landmarks
• Excessive soft tissue
King LTS-D Oropharyngeal Airway

**Designation of Condition:** Patients with apnea, severe hypoxia or bradypnea should be primarily managed with basic airway maneuvers and good BVM technique. Those unresponsive to oxygen and basic airway maneuvers (jaw thrust, foreign body removal, BVM) should be managed with more advanced maneuvers and devices such as the King LTS-D.

**BLS**—The King LST-D is a BLS advanced airway option utilized when either basic ventilatory technique is inadequate or more definitive airway security is needed.

**ALS**—The King LST-D may be used as a primary adult airway device or as a secondary adult airway device when attempts at intubation have failed or when intubation is not practical. The King LST-D provides good aspiration protection, though not as definitive as endotracheal intubation.

**CONTRAINDICATIONS:**
- Patients under 4 feet tall
- Responsive patients with an intact gag reflex
- Patients with known esophageal disease
- Patients who have ingested caustic substances

**PROCEDURE**
1. Choose the proper size based on the following sizing chart
2. Test cuff and inflation system for leaks by injecting the maximum recommended volume of air into the cuffs (Size 3—60mLs; Size 4—80mLs; Size 5—90mLs)
3. Remove all air from both cuffs prior to insertion
4. Apply lubricant to the beveled distal tip and posterior aspect of the tube, taking care to avoid introductions of lubricant in or near the ventilatory openings
5. Pre-oxygenate with a BVM at 15 lpm
6. Position the head
7. The ideal head position for insertion of the King LTS-D™ is the “sniffing position,” however the angle and shortness of the tube also allows it to be inserted with the head in a neutral position
8. Hold the KING LTS-D™ at the connector with dominant hand; with the non-dominant hand, hold mouth open and apply chin lift
9. With the KING LTS-D™ rotated laterally 45–90° such that the blue orientation line is touching the corner of the mouth, introduce tip into mouth and advance behind base of the tongue
10. As the tube tip passes under tongue, rotate tube back to midline (blue orientation line faces chin)
11. Without exerting excessive force, advance tube until base of connector is aligned with teeth or gums
12. Using the syringe provided, inflate the cuffs of the KING LTS-D™ to the appropriate volume per the chart
13. Attach resuscitator bag to the 15 mm connector of the KING LTS-D until ventilation is easy and free flowing
14. Depth markings are provided at the proximal end of the KING LTS-D™ which refers to the distance from the distal ventilator opening
15. Confirm proper position by auscultation, chest movement, and verification of ETCO2 by waveform capnography if available
16. Adjust cuff inflation to ensure minimal volume is utilized to make a proper seal of the KING LTS-D™
17. Secure KING LTS-D™ to the patient using tape or other accepted means (i.e. bite block)
King LTS-D Oropharyngeal Airway

Latex Free and Single Patient Use

Orientation / X-ray Line

Single Valve / Pilot Balloon
Inflates both the proximal and distal cuffs.

CM Depth Markings

Proximal Cuff
Stabilizes KING LT-D and seals the oropharynx.

Bilateral Eyes
Additional eyelets to supplement ventilation.

Distal Cuff
Blocks entry of esophagus. Reduces the possibility of gastric insufflation.

Sizing Information

| Tube Size | Pediatric |成人 | | | |
| --- | --- | --- | --- | --- |
| | Size 0 | Size 1 | Size 2 | Size 2.5 | Size 3 | Size 4 | Size 5 |
| Connector Color | Transparent | White | Green | Orange | Yellow | Red | Purple |
| Patient Criteria | <5 kg | 5-12 kg | 12-25 kg | 25-35 kg | 4-5 feet | 5-6 feet | greater than 6 feet |
| Recommended Cuff Volume | 10 ml | 20 ml | 35 ml | 40-45 ml | 50-60 ml | 70-80 ml | 80-90 ml |
| Maximum Cuff Pressure | | | | | 60 cm H₂O | |
| External Diameter of the Tube | 9 mm | 9 mm | 14 mm | 14 mm | 17.6 mm | 17.6 mm | 17.6 mm |
| Bronchoscopy Via Ventilation Lumen | <3.0 mm | <3.0 mm | <4.0 mm | <4.0 mm | <6.0 mm | <6.0 mm | <6.0 mm |
| Suction Catheter | 10 Fr | 10 Fr | 16 Fr | 16 Fr | 18 Fr | 18 Fr | 18 Fr |
Laryngeal Mask Airway (LMA)

**Designation of Condition:** Patients with apnea, severe hypoxia or bradypnea should be primarily managed with basic airway maneuvers and good BVM technique. Those unresponsive to oxygen and basic airway maneuvers (jaw thrust, foreign body removal, BVM) should be managed with more advanced maneuvers and devices such as the LMA.

**BLS**—The LMA is a BLS advanced airway option utilized when either basic ventilatory technique is inadequate or more definitive airway security is needed. The LMA is the primary advanced airway in children.

**ALS**—The LMA may be used as primary adult airway device or as a secondary adult airway device when attempts at intubation have failed or when intubation is not practical. The LMA is the primary advanced airway device in children. The LMA provides good aspiration protection, though not as definitive as endotracheal intubation.

**Indication:**
- Patient is unconscious without protective airway reflexes
- Providers are unable to adequately ventilate and oxygenate patient using basic airway management

**Absolute contraindications:**
- Responsive patient with an intact gag reflex

**Relative contraindications:**
- Laryngeal edema
- Patients who have ingested caustic substances

**Preparation:**
- Optimize oxygenation and ventilation while preparing equipment
- Select the appropriate size LMA using the OPA method:
  - Find the OPA that fits correctly between the angle of the patient’s jaw and the corner of the mouth. Use the OPA and Table 1 as a baseline for sizing #3, #4, or #5 LMA
  - If faced with a choice between two sizes, choose the smaller size
  - Rule of thumb: average size adults—#4; small adult/large child—#3; large adults—#5
  - When the LMA required is smaller than a size #3; refer to Table 2 (weight based method)
- Inspect LMA for cuff tears, obstructions in tube, etc.
- Inflate cuff with one-half the maximum recommended volume of air to ensure that it does not leak
- Completely deflate cuff and lubricate palatal side prior to insertion

**Insertion:**
- If C-spine injuries are NOT suspected, place the head in the neutral or slight “sniffing” position
  - NOTE: If C-spine injuries are suspected, maintain the head in neutral position
- Do not apply cricoid pressure during insertion
- Insert LMA maintaining gentle pressure against the palate and following the natural curvature of the airway. Do not push tongue back into the hypopharynx during insertion
- Insert until resistance is felt as the distal end of the LMA meets the upper esophageal sphincter
- The integral bite block should lie between the teeth
  - If >2cm of the integral bite block extends outside of the mouth, use smaller size LMA
  - If the fixation tab presses on the upper lip, change the LMA to the next larger size

**Inflation:**
- Inflate the cuff initially with one-half the maximum recommended volume. Assess ventilation and assess for air leaks around the cuff. Inflate with just enough air to achieve a seal sufficient to permit ventilation without leaks
  - Note: Over-inflation can result in an inadequate seal and excessive cuff pressure
  - Never inflate cuff with more than the maximum recommended volume
# Laryngeal Mask Airway (LMA)

**Ventilation:**
- Attach BVM and ventilate the patient. Listen for lung and epigastric sounds, and observe for bilateral chest rise.
- These clinical assessment parameters for appropriate LMA placement are of paramount importance as qualitative EtCO2 (colorimetric) devices are not recommended.
- If quantitative EtCO2 waveform capnography is available, it may be utilized to monitor trends in ventilatory efforts.

**Fixation:**
- Tape across the fixation tab so the tape adheres to the patient’s cheeks and the LMA is gently pressed inward.

**Gastric suctioning:**
- The drain tube facilitates channeling of fluids and gases emerging from the stomach.
- Suction SHOULD NOT be applied directly to the end of the drain tube port, as this may cause the drain tube to collapse and might injure the upper esophageal sphincter.
- To facilitate gastric drainage, a 14 fr. orogastric tube may be passed through the drain tube port into the stomach at any time.
  - Refer to Tables 1 and 2 for maximum OG tube sizes.
  - The gastric tube should be well lubricated and passed gently.
  - Suction should not be performed until the gastric tube has reached the stomach.

**Reassessment:**
- Reassess frequently to ensure proper LMA placement, cuff inflation, and adequacy of ventilation and oxygenation.

**Special Considerations:**
- If LMA has been placed prior to your arrival:
  - Device may be left in place for transport if ventilation and oxygenation are adequate.
  - Ask about difficulties encountered with initial intubation attempt(s) and/or LMA insertion.
- Consider intubation if:
  - Long transport time.
  - Unable to adequately ventilate and/or oxygenate patient with LMA.
  - High risk of laryngeal edema.

**Documentation:**
- The run report should include patient’s mental status and respiratory status, all procedures done to manage ventilation and pre-oxygenation, LMA size used, ease of insertion, and how LMA placement was verified and maintained.
- All LMA insertions will be reviewed by agency QA and/or Medical Director. Document procedure on QA report per agency requirements.
Medication Injection

**INTRAMUSCULAR**

**PROCEDURE:**
1. Prepare equipment and medication expelling air from the syringe
2. Utilize the medication “Cross Check” to confirm:
   - Drug, Dose, Route, Rate, Reason, Contraindications and Volume
3. Confirm there is no allergies to the medication being given
4. The possible injection sites for intramuscular injection include the arm, buttock and thigh
   - Injection in the arm should not exceed 1mL
   - Injection in the buttock and thigh should not exceed 2mL
   - Pediatrics: The thigh should be used for IM injections should not exceed 1mL
5. Expose the selected area and cleanse the injection site with alcohol
6. Hold the intramuscular syringe at 90 degree angle with skin flattened
7. Insert the needle into the skin with a smooth, steady motion
8. Aspirate for blood
9. Inject the medication
10. Withdraw the needle quickly and dispose of properly without recapping
11. Apply pressure to the site
12. Monitor the patient for the desired therapeutic effects as well as any possible side effects
13. Document the medication, dose, route, and time on the patient care report (PCR)

**SUBCUTANEOUS**

**PROCEDURE:**
4. Prepare equipment and medication expelling air from the syringe
5. Utilize the medication “Cross Check” to confirm:
   - Drug, Dose, Route, Rate, Reason, Contraindications and Volume
6. Confirm there is no allergies to the medication being given
7. The most common site for subcutaneous injection is the arm
   - Injection volume should not exceed 1mL
   - Pediatrics: The thigh should be used for SQ and not exceed 1mL
8. Expose the selected area and cleanse the injection site with alcohol
9. Hold subcutaneous syringe at 45 degree angle
10. Insert needle into the skin with a smooth, steady motion
11. Aspirate for blood
12. Inject the medication
13. Withdraw the needle quickly and dispose of properly without recapping
14. Apply pressure to the site
15. Monitor the patient for the desired therapeutic effects as well as any possible side effects
16. Document the medication, dose, route, and time on the patient care report (PCR)
Nasal Drug Delivery Device

**Clinical Indications:** Patients requiring rapid medication administration in accordance with protocol and other route(s) of administration are not immediately available.

**PROCEDURE:**
1. Airborne PPE (N95 and eye protection) should be worn when administering medication via this route.
2. Dose appropriate medications should be drawn up into syringe.
3. Attach MAD 300 device to syringe.
4. Administer medications by aerosolizing medication in patient nostril (limit of 1.0 mL per nostril).
5. Due to fluid contamination dispose of in an approved sharps container.
**Needle Decompression**

**Designation of Condition:** To be used when signs and symptoms of tension pneumothorax are present. Unless the situation is immediately life-threatening, contact an MCEP before performing this procedure.

**Procedure:**
- Administer 100% O2 via BVM
- Confirm presence of a tension pneumothorax or identify strong clinical evidence in a rapidly deteriorating patient in the setting of major trauma. Consider in the setting of refractory PEA / traumatic arrest
- Locate the insertion site:
  - On the anterior chest; 3rd intercostal space at the mid-clavicular line
  - Alternatively, the 5th intercostal space at the mid-axillary line may be used
- Prep skin with antiseptic swab
- Insert a #14g 3.5” angiocath in an adult (1’ minimum, 18 gauge catheter in patients <8 years old) for at a 90-degree angle at the superior border of the third rib
  - Avoid intercostal nerves and vessels which are located on the inferior rib borders
  - The depth of the catheter should be 1-2 inches (3/4-1 inch in patients <8y/o)
- Resistance will be felt until the needle enters the pleural space
- A pop will be felt when the needle advances into the pleural space
  - Do not advance the needle any further when this pop is felt
- Withdraw the stylet and advance the catheter until it is flush with the skin
- Listen for a rush of air which confirms placement and diagnosis
  - This noise is frequently missed due to ambient noise
  - A syringe with fluid can be used at the end of the catheter to visualize air release
- Dispose of the needle properly
- Tape the catheter to the skin

***KEY POINT***
- Do not perform a needle decompression on a patient that is not having significant respiratory distress and is otherwise stable
- Needle decompression is a temporary lifesaving procedure only. Patient requiring decompression will require chest tube placement for a long term maintenance
- Multiple needle depression are possible if catheter becomes kinked or decompression is necessary for both sides of the chest
Nasal Tracheal Intubation

Clinical Indications: A spontaneously breathing patient in need of intubation (inadequate respiratory effort, evidence of hypoxia or carbon dioxide retention, or need for airway protection) and trismus is present prohibiting other airway procedures.

Patient must be 13 years of age or older.

**KEY POINT**

- Nasal intubation has limited applications, and several drawbacks. It should be employed only when absolutely necessary, in patients with spontaneous respirations. It is contraindicated in combative patients, in the context of severe facial trauma, and in the presence of a known coagulopathy. It is strongly discouraged in cases of increased intracranial pressure, unless airway control is otherwise unobtainable.
- Do not force tube. Epistaxis (posterior and anterior) is a common complication to this procedure.
- Guidable (Endotrol) tube is preferred. In most patients 6.0 - 7.0 tube size should be chosen.

Contraindications:
- Apneic patient
- Patient under the age of 12 years old
- Severe nasal or mid-face congenital or traumatic deformity

Relative Contraindications:
- Known or suspected basilar skull fracture (Raccoon eyes, Battle signs, or CSF coming from nose or ears)
- Suspected ICP
- Acute HTN
- Patients that are on anticoagulant therapy or have hemophilia

Procedure:
1. Pre-medicate the patient with nasal phenylephrine and xylocaine® jelly 2% if time permits.
2. Select the largest and least obstructed nostril and insert a lubricated nasal airway to help dilate the nasal passage.
3. Pre-oxygenate the patient. Lubricate the tube. The use of a BAAM device is recommended.
4. Gently insert the tube keeping the bevel of the tube toward the septum.
   - If patient becomes combative, cease attempt; as epistaxis and/or turbinate damage may ensue
5. Continue to pass the tube listening for air movement and looking for vapor condensation in the tube. As the tube approaches the larynx, the air movement gets louder.
6. Gently and evenly advance the tube through the glottic opening on the inspiration. This facilitates passage of the tube and reduces the incidence of trauma to the vocal cords.
7. Upon entering the trachea, the tube may cause the patient to cough, buck, strain, or gag. Do not remove the tube! This is normal, but be prepared to control the cervical spine and the patient, and be alert for vomiting.
8. Auscultate for bilaterally equal breath sounds and absence of sounds of the epigastrium. Observe for symmetrical chest expansion. The 15mm adapter usually rests close to the nostril with proper positioning.
9. Inflate the cuff with 5-10 cc of air.
10. Confirm tube placement using end-tidal CO2 monitoring; Apply waveform capnography monitor. After 3 ventilations, ETCO2 should be >10 or comparable to pre-intubation values. If <10, check for adequate circulation, equipment, and ventilatory rate. If ETCO2 still <10 without physiologic explanation, remove the ET Tube and ventilate by BVM. Secure the tube.
11. Reassess airway and breath sounds after transfer to the stretcher and during transport. These tubes are easily dislodged and require close monitoring and frequent reassessment.
12. Document the procedure, time, and result (successful/unsuccessful) on/with the patient care report (PCR).
13. It is required that the airway be monitored continuously via Waveform Capnography and Pulse Oximetry (DO NOT INTUBATE IF WAVEFORM CAPNOGRAPHY NOT AVAILABLE)
14. Documentation: The run report should include patient mental and respiratory status, all procedures done, pre-oxygenation, ease of intubation, all medication given, and cricothyroid pressure use, how tube placement was confirmed and maintained.

Post-Intubation Sedation to maintain ETT patency and maximize ventilation compliance:
Should this need arise, use the following sedation dosing guidelines:
- Administer sedation (Diazepam or Midazolam) and Fentanyl.
- Closely Monitor: Blood pressure, SaO2 and ETCO2

P
Oral Tracheal Intubation

**Designation of Condition:**
- Inability of the patient to protect his or her own airway because of the absence of protective reflexes (i.e. coma, respiratory/cardiac arrest).
- Inability to ventilate an unresponsive patient with less invasive methods.
- Present or impending airway obstruction/respiratory failure (i.e. inhalation injury, severe asthma, exacerbation of COPD, severe pulmonary edema, severe flail chest or pulmonary contusion).

**Contraindications:**
- **ENDOTRACHEAL INTUBATION IN PATIENTS 12 AND YOUNGER AND/OR LESS THAN 40 KGS IS NOT ALLOWED**
- **It is required that the airway be monitored continuously via Waveform Capnography and Pulse Oximetry (DO NOT INTUBATE IF WAVEFORM CAPNOGRAPHY NOT AVAILABLE)**

**Procedure:**
1. Prepare, position and oxygenate the patient with 100% Oxygen
2. Before intubation the patient should be pre-oxygenated with a BVM with high flow oxygen
   - Cricothyroid pressure (Sellick’s maneuver) is no longer routinely recommended but may be applied to minimize gastric distention during BVM. Release pressure if patient is actively vomiting
3. Select proper ET tube, Bougie and have suction ready
   - Typical tube Size: 7.0-8.0 mm for oral intubation of adults and 6.0-7.0 mm for nasal intubation of adults
4. Using laryngoscope, visualize vocal cords
   - During intubation, the use of external laryngeal manipulation is encouraged
   - In most situations, providers should make no more than 2 intubation attempts before moving to an alternate advanced airway.
   - Limit each intubation attempt to 30 seconds with BVM between attempts
5. Visualize tube passing through vocal cords
6. **Confirm and document tube placement using an waveform end-tidal CO2 monitoring**
   - After 3 ventilations, ETCO2 should be >10 or comparable to pre-intubation values. If < 10, check for adequate circulation, equipment, and ventilatory rate. If ETCO2 still <10 without physiologic explanation, remove the ET Tube and ventilate by BVM
   - If you are unsure of placement, remove tube and ventilate patient with bag valve mask
7. Inflate the cuff with 10 cc of air and release the plunger to enable the pressure to equalize
   - This will ensure there not an appropriate amount of air in the cuff to prevent vascular collapse
8. Secure the tube to the patient’s face with a tube tamer or tape
9. Prior to releasing intubated patient to receiving hospital, physician, or respiratory therapist, appropriate ET tube placement and patency should be confirmed
10. Document ETT size, time, result (success), and placement location by the centimeter marks either at the patient’s teeth or lips on/with the patient care report (PCR). Document all devices used to confirm initial tube placement. Also document positive or negative breath sounds before and after each movement of the patient

**Post-Intubation Sedation to maintain ETT patency and maximize ventilation compliance:**
Should this need arise, use the following sedation dosing guidelines:
- Administer sedation (Diazepam or Midazolam) and Fentanyl.
- Closely Monitor: Blood pressure, SaO2 and ETCO2
Pelvic Binder (SAM Sling®)

Clinical Indications: Potentially unstable pelvic fracture.

Procedure:

1. Unfold Sling with white surface facing up
2. Place white side of Sling beneath patient at level of buttocks along a line drawn between greater trochanters and the symphysis pubis
3. Firmly close Sling by placing black Velcro side of flap down on blue surface of Sling
4. Fold back material as needed
5. Try to place buckle close to midline
6. Grab orange handle on outer surface of flap and release from flap by pulling upward
7. With or without assistance pull both orange handles in opposite directions to tighten Sling
8. Keep pulling until the buckle “clicks” and the free handle stops
9. Maintain tension and firmly press orange handle against the blue surface of the Sling

Contraindications:
Provided the patient is of appropriate size for the size of SAM Sling® available, there are no contraindications for its use in the presence of appropriate assessment findings

***KEY POINT***

- The SAM Sling® is a force-controlled device that won’t allow the belt to be over tightened
- “Autostop” buckle has spring-loaded prongs that lock the buckle in place when the right amount of force is applied
- Except for two small metal springs in the buckle, the SAM Sling® is transparent to X-rays
- Once properly applied, the Sling should be removed only under the supervision of a physician
- If necessary to remove the Sling
  - Do not cut to remove
  - Release orange pull handle in order to remove
**Taser Dart Removal Procedure**

**Designation of Condition:** EMS personnel may be requested to assess patients after Taser deployment, and/or to remove Air Taser probes lodged in a subject’s skin. Be aware that secondary injuries may result from falls sustained after the device has been deployed. Subject may be dazed/confused for several minutes post device deployment. The patient may require additional restraint as de ined in the Involuntary Emergency Transport and Patient Restraint Guidelines.

<table>
<thead>
<tr>
<th>Dart Removal:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Utilize PPE</td>
</tr>
<tr>
<td>2. Place hand in the form of a “V” around the Taser dart in order to stabilize the surrounding skin and to keep loose skin from coming up with the dart. Firmly grasp the probe and with one smooth hard jerk, remove probe from subject’s skin</td>
</tr>
<tr>
<td>3. Prior to probe removal inform all caregivers that you are about to remove the contaminated sharp</td>
</tr>
<tr>
<td>4. Examine the probe and the patient closely in an effort to make sure the probe tip did not break off during removal. Accordingly, it is important that the person removing the barb visually inspect it to make sure that the tip is fully intact. If the barb remains in the subject, the patient will transported to a medical facility for removal</td>
</tr>
<tr>
<td>5. Be careful to avoid accidental needle sticks when removing probes</td>
</tr>
<tr>
<td>6. Promptly dispose of the probe immediately after removal and examination to ensure that it is intact. Place in an appropriate sharps disposal container. If the dart falls into the law enforcement chain of custody ensure it is placed in an appropriate container that contains no other sharps</td>
</tr>
<tr>
<td>7. Provide wound care by cleansing the affected area with saline, and apply a Band-Aid</td>
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<tr>
<td>8. Inform patient of basic wound care and the need to seek additional care in event that signs of infection occur (redness- fever-drainage-swelling-etc.)</td>
</tr>
<tr>
<td>9. Clear and thorough documentation is required in the body of the report narrative whether or not EMS transports the patient</td>
</tr>
<tr>
<td>10. If transport is necessary, transport to the closest appropriate hospital</td>
</tr>
</tbody>
</table>
Transcutaneous Pacing

**PROCEDURE:**
1. Apply limb leads
2. Consider analgesia per the Pain Management protocol
3. If pain management is contraindicated, sedation can be considered with Midazolam or Diazepam
4. Attach defibrillation/pacing pads to the patient and monitor rhythm
5. Place the defibrillation/pacing pads anterior/posterior or anterior/lateral
   - Do not place the pacing pads over the sternum, spine or nipple
6. Push the PACER button
7. Push the RATE button and set the rate to “70 PPM”
8. Push the CURRENT button and increase the joules until you reach electrical and mechanical capture (assess the carotid or femoral pulses to confirm mechanical capture)
   - Another alternative to increasing the CURRENT is to use the dial mechanism on a Lifepack
   - Milliamps should be increased by 10 until mechanical capture is attained
   - Most patients will achieve pacing at 50-100 mAmps
9. If necessary, hold the pause button to stop the pacing so the provider can assess the patients underlying rhythm

**NON-CAPTURE:**
- Notice a QRS does not immediately proceed the pacer spike
- QRS is not a wide complex

**CAPTURE:**
- A QRS is immediately following a pacer spike
- Pulses should match the rate to which the monitor was set
Tourniquet / Pressure Dressing

Designation of Condition: Control of bleeding will be established to prevent hemorrhagic shock from developing.

TOURNIQUET MANAGEABLE WOUND (EXTREMITY):
• If the wound cannot be controlled by direct pressure and perfuse bleeding persists, apply a temporary tourniquet to control bleeding (e.g., commercial tourniquet, BP cuff)
• Procedure and contraindications noted below

NON-TOURNIQUET MANAGEABLE WOUND (PELVIC TRIANGLE, UPPER TORSO):
• Attempt to sweep blood with gloved hand and/or absorb as much blood as possible with a large dressing to locate the source of the bleeding
• Pack the wound with gauze (e.g. standard or hemostatic impregnated), ensuring to keep direct pressure at the source of bleeding during procedure
• Wrap the location with a pressure dressing (e.g. H-bandage or Israeli dressing) or use manual pressure for a minimum of 3 min before reevaluating the wound for bleeding

CONTRAINDICATIONS TO THE USE OF A TOURNIQUET:
• Non-extremity hemorrhage
• Proximal extremity location where tourniquet application is not practical

PROCEDURE OF APPLYING A TOURNIQUET:
• Place tourniquet proximal to wound, the best points of application are high on the upper arm under the axilla for brachial arteries and high on the upper thigh within the groin area for femoral arteries
• Tighten per manufacturer instructions until hemorrhage stops and/or distal pulses in affected extremity disappear
• Secure tourniquet per manufacturer instructions
• Note time of tourniquet application and communicate this to receiving care providers
• Dress wounds per standard wound care protocols
• If delayed or prolonged transport and tourniquet application time >45 minutes: consider reattempting standard hemorrhage control techniques and loosen but leave tourniquet around extremity.
  • If perfuse bleeding occurs when the tourniquet loosens, retighten tourniquet and keep in place
• If one tourniquet is not sufficient or not functional to control hemorrhage, consider the application of a second tourniquet more proximal to the first
• Application of tourniquets will initiate each agency’s Quality Assurance review process
  • Document time applied
  • Re-evaluate every 5 minutes
PROCEDURE:

1. If patient is awake and alert, proceed with standard evaluation and treatment measures

2. If the device makes the audible alert, “RESPOND”, the patient should press and hold the response buttons. It is important that only the patient press and hold the response buttons

3. The LifeVest® therapy pads release blue gel prior to defibrillation, improving electrical conduction and reducing skin burning. Keep the gel in place post-defibrillation in case additional defibrillation becomes indicated

4. After the LifeVest® detects a ventricular dysrhythmia (ventricular tachycardia or ventricular fibrillation), time to defibrillation will be between 25 and 60 seconds depending on the exact dysrhythmia characteristics

5. Avoid patient contact during defibrillation. The LifeVest® will warn impending defibrillation with a tactile vibration alarm, a two tone siren alert and voice commands

6. CPR can be performed as long as the device is not broadcasting “press response buttons”, “electrical shock possible, do not touch patient”, or “bystanders do not interfere” and the LifeVest® is powered off (see #7)

7. To ensure power off status, remove the battery from the LifeVest® monitor. Unbuckle or remove the garment as needed to access the patient’s chest. The LifeVest® monitor should be disconnected from the electrode belt prior to manual defibrillation. The garment and belt do not need to be removed. To power back on, replace the battery and press the Response button

8. If external monitoring and defibrillation is available, the provider may remove the LifeVest® and monitor/treat the patient with the external equipment. Use a damp cloth to remove any excess blue gel prior to placing combo pads on patient’s chest

9. All LifeVest® system components should be transported with the patient to allow for data download and component checks at the hospital when indicated

10. Zoll® LifeVest® support can be contacted at 1-800-543-3267 if the provider has any questions
Designation of Condition: Guidelines for trauma scene responses and rendezvous.

Field providers should always use their best judgment

Within 20 minutes ground transport time to University Hospital:
- Helicopter transport rarely indicated
- Consider if prolonged extrication of patient who is in severe shock or requires airway management
- Consider in MCI with multiple patients meeting 20–40 minute criteria (yellow)

20–40 minutes ground transport time to University Hospital:
- All of the above and GCS <13 and not likely due to intoxication alone
- Signs of shock
- Respiratory distress
- MCI

40 minutes ground transport time to University Hospital:
- All of the above
- Severe mechanism of injury
- Passenger space intrusion >20 inches
- Ejection from vehicle
- Fatality in same vehicle
- Fall > twice patient height
- Prolonged extrication
- High speed rollover
- Auto versus pedestrian or bicyclist
- Auto versus tractor trailer
- Penetrating trauma to head or neck or torso
- Motorcycle/ATV crash
- Other high risk features
- Age >65
- Age <3
- Loss of consciousness >2 minutes
- Limb threatening injuries, amputations, etc.
- Burns >20% BSA or face/airway involvement

The air medical helicopter may be canceled at any time by the paramedic in charge or the Incident Commander when deemed necessary

The Incident Commander, designee, or local Law Enforcement Agency will be responsible for establishing a safe Landing Zone
Critical Care Scene Response

**Designation of Condition:** Guidelines for ground critical care scene responses and rendezvous

**All Providers:**

The ALS crew will NOT delay transport from the scene to await the arrival of critical care. Field providers should always use their best judgment.

Any ALS crew responding to an emergency request for service within Bernalillo County may contact their respective dispatch to request a Critical Care Team (CCT) unit rendezvous and/or response if a patient requires potentially life-saving interventions that cannot be performed by the ALS crew. This includes Rapid Sequence Airways, as well as the administration of medications outside of the ALS scope or those not carried by 911 response units.

In the event that the patient’s condition warrants immediate transport, the ALS crew on scene will request a rendezvous from critical care; in this situation, the crew will contact the CCT dispatch immediately, if they are available. The CCT team will arrange a rendezvous point with the transporting ALS crew. Upon arrival at the rendezvous point, the CCT paramedics will join the transporting crew in the back of the original transport unit, bringing any anticipated equipment with them. The benefits of the rendezvous must outweigh the risks of the potential delay to definitive care.

The CCT team will receive a turnover report from attending ALS crews upon arrival at patient’s side, and will then take over responsibility for patient care and direct others on scene and/or throughout the duration of transport. When requested by an ALS crew, the CCT team will utilize their current CPG’s, online medical control, and MCEP consultations to guide patient care decisions. If the EMS Consortium is also present on scene, the CCT team will work in collaboration with the Consortium MD to provide care with the patient’s best interest in mind. All rendezvous/responses will enter the medical director’s QI process.

The CCT unit may be canceled at any time by the paramedic in charge or the Incident Commander when deemed necessary.
# Emergency Department Transfer of Patient

**Purpose:** To expedite appropriate and timely turnover of pre-hospital patients to the Emergency Department staff including:

- Arrival at hospital
- Patient unloading
- Moving patient from transport unit stretcher to hospital stretcher
- Verbal turnover report to designated hospital personnel

Expeditious and complete patient turnover will be the goals of all personnel involved.

The responsibility for patient care transfers to the ED staff once the patient enters the ED. EMS personnel will strive to do what is medically appropriate for the patient and keep continuity of care until report is given.

It is expected that ED staff will receive pre-hospital personnel in a timely manner on arrival to ED and direct them to the appropriate bed or ED area.

Pre-hospital personnel will assist in moving patient to the hospital gurney and give a complete pre-hospital report.

Except when dictated by call volume, EMS run reports will be left at the hospital when the patient is turned over to the hospital staff.

It is expected that a complete turnover will be completed within 20 minutes of ED arrival or when the relevant EMS run report is complete, whichever is longer.

If the above criteria is not met and the patient remains on the pre-hospital gurney greater than 20 minutes, pre-hospital personnel will seek a safe and appropriate place to unload the patient and give the written run report to the first available ED staff RN and then return to service.

There is no EMS obligation to provide personnel or equipment in the ED.

Transport unit personnel will maintain charge of patient care on arrival at hospital until all of the following are accomplished:

- **Arrival at Hospital:** The pre-hospital team will be responsible for unloading the patient. Hospital personnel will remain outside the transport unit unless asked by the transport paramedic.

- **Patient unloading:** The transport paramedic will be responsible for and oversee all patient care during unloading of the patient. This includes maintenance of all pre-hospital performed procedures (endotracheal tube placement and ventilation, intravenous line placement, etc.). Only the transport unit personnel will operate the stretcher during the unloading procedure. The transport paramedic will maintain charge as the patient is moved into the hospital.

- **Moving Patient from Transport Unit Stretcher to Hospital Stretcher:** The transport paramedic will be responsible for and oversee all patient care during transfer of the patient from the transport unit stretcher to the hospital stretcher. This includes maintenance of all pre-hospital performed procedures (endotracheal tube placement and ventilation, intravenous line placement, etc.). After transfer of patient to the hospital stretcher, the transport paramedic will reassess and verify placement of the endotracheal tube before transferring care to hospital personnel. The transport paramedic will maintain charge during transfer of the patient from the transport unit stretcher to the hospital stretcher.

- **Verbal Turnover Report to Designated Hospital Personnel:** The transport paramedic will give a verbal report as appropriate to inform designated hospital personnel of the recent event.

**NOTE:** While on hospital premises, Emergency Medicine Physician/NP/PA may at any time assume responsibility for the care, transfer and maintenance of lines and tubes as deemed necessary by the physician. In the event the Emergency Medicine Physician/NP/PA takes charge of patient care before transfer of patient care responsibility occurs, the Emergency Medicine Physician/NP/PA assumes responsibility for patency of all procedures performed to that point.
EMS Unit Diversion/ EMTALA

**Purpose:** To promote optimal patient care through the coordinated efforts of the EMS and hospital systems and to allow for proper patient destination based on patient request and facility status during times when the facility staff feels it is temporarily incapable of providing optimal care to additional patients minimizing EMTALA risk to hospitals by EMS transport units.

ALL hospital systems must remain open to receive patients UNLESS the hospital is on “BLACK DIVERT”

  • “BLACK DIVERT” includes
  - Critical Infrastructure Failure (i.e., facility mechanical/electrical supply failure, loss of critical imaging capabilities or treatment capabilities)
  - Building structure or safety compromise (i.e., fire, active shooter, building collapse, flood, etc.)
  - Any “BLACK DIVERT” declared will be bannered on EMResource

Current protocol for patient destination should be maintained including patient request and closest hospital.

If a circumstance arises when a field EMS provider feels it is mandatory to go to a diverting hospital (except for "BLACK DIVERT") because of risk to the patient or provider, they should advise the receiving hospital that they are overriding closed status and give a med report and ETA.

These cases will prompt mandatory QI reporting to the appropriate medical director.

Hospitals may divert within their own system.

Hospitals can transfer patients between hospital systems, as long as an agreement exists to receive the patient.

It is expected that all hospitals will adhere to current status that is reflected in the EMSystem window for ED and inpatient statuses.

When circumstances arise and an EMS transport unit is on a hospital’s property, the EMS unit will not divert to another hospital. Please note that while the VA is a federal hospital, the organization follows the rules/regulations of EMTALA.

If you get a divert order from the facility and you are on their property, you will advise the facility that you are on their property and will not be diverting.

Upon arrival, advise the staff of the EMTALA risk and tell them that an internal quality assurance will be generated and will be reviewed by the medical director.

Radio reports will be done as early as possible during transport to minimize EMTALA risk.
EMS Helicopter Transfers

**Designation of Condition:** Allow for safe transfer of patients from EMS units to a helicopter when the helipad is on hospital grounds

**Circumstances may require utilization of a hospital helipad to facilitate transfer of either a medical or trauma patient to an appropriate facility.**

**Request the helicopter through Albuquerque Base**

**It must be determined that it is in the best interest of the patient for emergent transfer via helicopter versus evaluation in the hospital’s emergency department.**

**Notify the hospital’s emergency department that it’s helipad will be used for the helicopter intercept only and that no evaluation or treatment in the hospital’s emergency department is being requested.**

**Explanation:** EMTALA applies where an individual comes to the hospital’s emergency room and a request is made on the individual’s behalf for examination or treatment of a medical condition. HCFA has interpreted the phrase, “comes to the hospital’s emergency room” to mean that the individual is on the hospital’s premises or in an ambulance owned by the hospital. Where the hospital’s helipad is being used only to accommodate a transfer of a patient from a ground ambulance to an air ambulance, it is necessary that the hospital’s emergency department be informed of what is going on and that no request for examination or treatment is being made.
Introduction: Emergency Medical Services in the Albuquerque Metro Area is provided by several agencies that must interact cooperatively within a two-tiered EMS system. In order to achieve the goal of Quality Patient Care, it is critical that interactions between the services be predictable and consistently professional. The following guidelines have been developed jointly by AFD, BCFD, and AAS, in order to facilitate optimal patient care, transfer and scene flow, and so that all field providers can approach scenes with the same expectations and cooperation.

1. The first arriving unit will relay information regarding scene safety, scene access, equipment needs, and staging, as appropriate, to subsequent arriving units utilizing the 800 MHz radio system or relay through respective communication centers.

2. The ALS transport provider will bring in their stretcher when immediate patient transport is deemed necessary by the first arriving EMS units via radio or once the need for transport has been determined. It is optimal to bring in the stretcher upon arriving on scene on all calls. Good judgment should be used at all times.

3. The first on duty paramedic to arrive on scene will assume charge of and direct patient care (lead paramedic), in accordance with their capabilities. All subsequent pre-hospital providers will take direction from that person.

4. The lead agency (agency first on scene) is responsible for directing patient assessment and care. If a paramedic is not present with the lead agency, the officer, or designated person in charge, will brief the first arriving paramedic on patient condition and transfer patient care responsibilities to the lead paramedic. This includes:
   • Obtaining consent for treatment and transport
   • Obtain a signed and fully documented refusal on any patient who refuses treatment/transport and meets refusal criteria in accordance with the City of Albuquerque/Bernalillo County EMS Guidelines

5. Once the lead paramedic is on scene, the second arriving paramedic will approach the lead paramedic and offer assistance. As soon as it is clinically practical, the lead paramedic will give a brief verbal report to subsequent arriving EMS units.

6. The first arriving unit will bring in appropriate equipment upon their arrival. If ambulance and rescue/paramedic personnel arrive simultaneously, then the rescue/paramedic personnel will take in their equipment and ambulance personnel will bring in their stretcher (if deemed necessary).

7. In the event the ALS transport paramedic and fire/rescue personnel arrive on scene simultaneously, the fire department paramedic will take responsibility of directing patient care. Paramedics will work cooperatively and in a professional manner to ensure high quality patient care. If a disagreement regarding patient care occurs in this context, MCEP guidance will be sought.

8. The first arriving EMS providers will begin to assess the patient, (history and physical) and gather other pertinent information. Other arriving personnel will approach the first EMS provider to obtain patient report (see #3). It is inappropriate for subsequent arriving providers to go directly to the patient and repeat questions that have been asked. Although the first arriving paramedic is in charge of patient care, please remember that this is a team concept and any disagreements will be approached from that standpoint, or deferred to an MCEP.

9. All agencies will assist each other in every possible way (i.e., moving/gathering of equipment and stretcher); however, due to risk management considerations, any time there is a patient on a stretcher, employees from that agency must perform operation of the stretcher at the head and the foot. Other personnel on scene will be utilized to help lift in the interest of patient safety and comfort.
10. The ALS transport paramedic assumes responsibility of patient care after receiving a complete patient turnover report. In critical life-threatening situations, the transfer of patient care responsibility will automatically happen once the patient is loaded into the back of the ambulance. Although the ALS transport paramedic is in charge of patient care, please remember this is a team concept and any disagreements will be approached from that standpoint, or deferred to an MCEP. While awaiting MCEP advice, the ALS transport paramedic will continue to direct patient care. Disagreements will not delay transport. Again, patient care will remain a cooperative effort.

11. Upon transfer of patient care, an appropriate patient turnover report must be given and accepted in a professional manner by both services involved. Once patient care is transferred, a confirmatory patient assessment by the transport paramedic is both appropriate and necessary. However, as a routine, such assessment should not delay transport, and should be done en route if possible. Transport should not be delayed in order for fire/rescue personnel to complete their written patient report.

12. Upon transfer of patient care, an appropriate patient turnover report must be given and accepted in a professional manner by both services involved. Once patient care is transferred, a confirmatory patient assessment by the transport paramedic is both appropriate and necessary. However, as a routine, such assessments should not delay transport, and should be done en route if possible. Transport should not be delayed in order for fire/rescue personnel to complete their written patient report.

13. If a patient has been loaded into the ambulance prior to the fire/rescue unit arrival (BLS or ALS), it is appropriate for the arriving personnel to inquire if they can be of any assistance. If the ALS transport provider deems assistance unnecessary, the fire department unit may cancel at their discretion. Transport will not be delayed in order for BLS or ALS reassessment, information gathering and/or report writing if the patient is loaded and ready for transport.

14. If in the judgment of any paramedics on the scene, patient care requires additional support, other agency personnel may accompany the patient to the hospital in the transporting unit.

15. The ALS transport provider will accept cancellations from all fire/rescue agencies. It is appropriate for on scene agencies to downgrade responding units when emergency response is not medically necessary. If fire/rescue personnel are informed by the transport medic that no assistance is required the fire/rescue units may cancel, without further intervention or assessment as appropriate.

16. The Bernalillo County EMS system follows the Incident Command System structure. Be familiar with the ICS and be able to execute it when called for. A good example of this would be any scene where hazards such as fire, fluids, power lines, etc. exist. In these situations, the incident commander is in charge of all personnel to ensure that only properly protected and/or trained responders will be in the “hot” zones. Fire Department IC will direct all responding EMS personnel to an appropriate staging area for duty assignments.
Involuntary Emergency Transport

New Mexico State Statutes Amended 1978 Chapter 24-10B-9.1 Emergency Transportation

Any person may be transported to an appropriate health care facility by an emergency medical technician, under medical direction, when the emergency technician makes a good faith judgment that the person is incapable of making an informed decision about his/her own safety or need for medical attention and is reasonably likely to suffer disability or death without the medical intervention available at such a facility.
Card or note to be presented to MD at scene, which reads:

An Emergency Medical Services System with comprehensive written guidelines has been established and is monitored by the Albuquerque-Bernalillo County Medical Control Board. By showing proof that you are a licensed medical physician, you may take responsibility for the patient's care if you accept full responsibility for patient management and the issuing of orders conforming to the established protocols, attending the patient to the hospital, and signing the EMS patient report form. If the paramedic believes there is a problem with patient care, they are instructed to contact an Emergency Physician (MCEP) at a local emergency department via radio.
**Pediatric Transport Guideline**

**Designation of Condition:** Any patient less than 18 years of age with a life-threatening illness. When presented with an unstable or critical medical patient, it is important to remember that only hospitals with NICU/PICU capabilities are equipped to handle these patients.

**Unstable Pediatric Life Threatening Illness:** Decreased mental status (GCS < 14), Non-responsive respiratory distress, suspected stroke/atypical seizures, post cardiac arrest, non-responsive hypotension, severe hypo/hyperthermia, status epilepticus, snake bites/envenomation, life threatening ingestion/chemical exposure.

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**The Purpose of this plan is to:**
- Rapidly identify pediatric patients who call 911 or present to EMS with a life-threatening illness
- Minimize the time from EMS contact to definitive care
- Quickly diagnose patients with pediatric life-threatening illness for EMS treatment and stabilization
- Rapidly identify the best hospital destination based on symptom onset time, vital signs, response to treatment, and predicted transport time
  - *Early activation/notification to the hospital prior to patient arrival*

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**Pediatric Trauma: If it meets Trauma Criteria**
- UNMH Trauma Center

**Pediatric Post cardiac Arrest or unstable life threatening illness**
- UNMH (PICU Capable)
- Pres DT (PICU Capable)

**All Other non life threatening or low acuity illness/injury**
- Parent/guardian choice of any local ED

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**KEY POINT**

- **Pediatric Capable Hospital** = a hospital with an emergency and pediatric intensive care capability including but not limited to:
  - Emergency Department staffed 24 hours per day with board certified Emergency Physicians
  - An inpatient Pediatric Intensive Care Unit (with a physician pediatric intensivist)
  - Accepts all EMS patients regardless of bed availability
- **Community Hospital** = a local hospital within the EMS System’s service area which provides emergency care but does not meet the criteria of a Pediatric Capable Hospital
Patient Refusal of Treatment or Transport

**Designation of Condition:** To provide guidelines for instances where patients are not treated or transported to a hospital

**Interpretations and Guidelines:** As emergency service providers, we should respond to all calls with the intention of providing appropriate pre-hospital patient care. At no time should we try to talk the patient out of going to the hospital. Whatever their decision, it must be theirs alone. If the patient asks you whether he/she really needs to go to the hospital or be seen by a physician, it is recommended that you tell them, “We can’t make that determination. If you would like to go to the emergency room to be seen by a doctor, we will provide transportation for you to the hospital of your choice, if available.”

**Requirements for Patient Refusals:** Certain criteria must be met before a patient may sign a refusal of treatment and/or transport.

**Age Criteria:**
- Adult—18 years of age or older
- Emancipated minor—16 years of age and married, a minor in the military, or court order divorcing minor from the parents

**Patient Assessment Criteria:**
- Patient must be alert and able to maintain coherent thought and speech
- Patient must be oriented and able to reference Time/Date/Place/Person/Situation
- Patient judgment must not be clouded with alcohol or drug use
- Patient must not have evidence of suicidal tendencies and must not have evidence that they are a danger to themselves or others
- Patient vital signs must be within normal limits or at patient’s established baseline
- Patient must have a neurologic exam, including coordination and gait that is normal or consistent with their past medical history
- Despite a patient having a life or limb threatening illness or injury if a patient demonstrates appropriate decisional capacity, the patient may refuse care or transport and the on scene provider will document accordingly the risks/benefits of transport with a signed refusal.

If above criteria are met and the patient refuses treatment or transport, they must demonstrate an understanding of their medical situation and the risks associated with refusal.

If the patient meets the above criteria and refuses treatment and/or transport, have the patient signs the patient refusal portion of the run report.

If the patient does not meet the above criteria, attempt to persuade the patient of the need for treatment / transport. If the patient continues to refuse, consider utilizing the Involuntary Emergency Transport Guideline or contact an MCEP.

**Minors:** Reference Guidelines for the Transport of Minors

The refusal MUST BE SIGNED BY: Natural Parent or Adopted Parent or Legal Guardian

In no event will legal consent procedures delay emergent patient care or transport. All cases resulting in non-transport will generate a thorough patient care narrative for each patient seen.
911 Patient Transport and MCEP Order Guidelines

ALL PROVIDERS:

All 911 patients within the City of Albuquerque or Bernalillo County will be transported by a 911 system provider (AFD, BCFD or AAS), excluding MCI events when other ambulance services may be utilized as additional transport resources. If other ambulance service providers encounter a patient in need of EMS, they will activate the 911 system, provide initial stabilization, and wait for the 911 system providers to continue further treatment and transport of the patient, unless patient condition is deemed time sensitive, having a life threat, or is considered critical. If other ambulance service providers are responsible for a scheduled transport patient who deteriorates or is deemed unstable, they may activate 911 for assistance if needed.

Patients will be transported to the closest appropriate hospital within their preferred hospital system, unless protocol or hospital status dictates otherwise. If a patient does not have a hospital preference, (s)he should be transported to the closest appropriate facility.

If MCEP orders (including transport refusal orders) are needed, providers should contact the hospital for simple medication or refusal order scenarios to which the patient will/would be transported (excluding circumstances when it is appropriate to contact an EMS Consortium physician for orders). If providers are unable to contact an MCEP at the intended facility, attempt to contact an EMS Consortium physician.
Transport Drugs

**Designation of Condition:** For EMT-Intermediate and Paramedic.

Drugs allowed for monitoring during inter-facility transport (initiated and administered by the sending facility with the dosing parameters and requiring an infusion pump when given by continuous infusion unless otherwise specified); the infusion may be terminated by the Paramedic if appropriate, but if further adjustments are anticipated, appropriate hospital personnel should accompany the patient, or a critical care transport should be utilized.

Follow this link to the NM EMS Bureau website for information on which drugs are allowable per the state scope of practice: [http://164.64.110.239/nmac/parts/title07/07.027.0011.htm](http://164.64.110.239/nmac/parts/title07/07.027.0011.htm)
Guidelines for the Transport of Minors

**Designation of Condition:** These guidelines are designed to help crews with the difficult job of handling minor patients (<18 years of age) and the situation when a minor has a child.

For minors to make a decision regarding healthcare, they must be emancipated. They must be 16 years of age **AND:**
- Married
- Divorced
- Active military
- Legally declared emancipated in a court of law

Pregnancy in and of itself does not emancipate a minor

When in doubt:
- Use [EMS Act, Section 24-10B.-9.1](#), to transport the patient against their will. Err on the side of transport versus cancellation.
- Contact an [MCEP](#)

When a minor over the age of 16 is evaluated and is uninjured and is refusing further care, the patient can sign the liability release as acknowledgment of evaluation and refusal but this does not absolve the agencies of liability. The minor must be left in a safe environment. Utilize law enforcement and MCEP as necessary.

In certain circumstances, young minors may be left in the care of others who have been left in charge of the minor. Specific caretakers (in loco parentis), including a non-minor sibling or other non-guardian family member, a school bus driver, or an adult group leader (church, scouts, etc.), may take responsibility if they have assumed responsibility for the child and sign the liability release.

An emancipated minor can make decisions for her minor child. There is no law that allows a minor mother to, or prohibits a minor mother from, making decisions for her minor child. Therefore, if the minor mother is not making a decision in the best interest of the child, this would be an area to utilize the EMS Act noted above, an MCEP, or law enforcement if necessary.
- An exception is children 14–18 years of age who have been sexually assaulted. These patients can consent for treatment and can request parents not be contacted.

**NOTE:** When dealing with emancipation issues, document statements made by the parties involved when the appropriate documentation (marriage certificate, court order, etc.) is not readily available. Remember to err on the side of patient care.
Transport of Patients on Ventilators

**Designation of Condition:** Patients on ventilators being transported, either between healthcare facilities during Interfacility transfers or during emergency responses, by a paramedic transport service.

Immediately perform a thorough reassessment of the airway
- Visualize chest excursion and auscultate lung fields and epigastrium.
- Monitor pulse oximetry.
- Place a quantitative EtCO2 detector device inline to continuously confirm proper placement of advanced airway and monitor for adequate ventilation.

**Interfacility Transport**
If the EMS transport unit is equipped with a ventilator that meets the needs of the patient, the patient may be placed on the EMS ventilator and monitored by the paramedic during transport.

If the EMS transport is not equipped with a ventilator, or if the EMS ventilator does not meet the needs of the patient, a trained provider from the transferring facility must accompany the transport paramedic to operate that facility’s ventilator.
- If the referring facility is unable to send a trained healthcare provider to accompany the transport paramedic, the ventilator will be removed and the patient will be ventilated by bag valve mask.
- In this event, a second licensed EMS provider will accompany the paramedic during the transport to monitor vital signs and assist as needed.
- Best practice is contact Albuquerque base to dispatch the CCT team for scene intercept for ventilator and sedation management.

If concerns arise regarding airway or ventilator status, the transport paramedic has final judgment regarding airway management.

**Emergency Response**
If a responding EMS provider is trained and the transport unit is equipped with a ventilator possessing multiple modes of ventilation, including CPAP or BiPAP, the ventilator may be utilized in any mode by a trained provider to manage the patient’s airway and oxygenation/ventilation demands.

If the patient requires emergent transport then proceed with BVM and rapid transport. Otherwise consider CCT for any ventilated patient as remaining on the ventilator is best practice. If emergent transport and time allows for an intercept, contact CCT paramedic for ventilator management.
Designation of Condition: At times, circumstances necessitate transport of several patients in a single transport unit. There will be times that it is necessary to transport these patients to different hospitals. These times should occur only when the number of patients exceeds the number of transporting units.

- Multiple destinations may be the result of patient request or to optimize patient care.
- The more severely ill or injured patient will mandate the first hospital destination. If both patients are deemed equal in illness or injury, the transport unit will go to the closest hospital first.
- Based on EMT/Paramedic judgment, if transport to the second hospital puts the patient at any risk to well-being, the patient should be unloaded at the first destination.
- If a patient is on hospital property and is requesting to be transported to a second hospital against the EMT/Paramedic's advice, clearly document the refusal (consider MCEP consult) of evaluation at the first hospital and transport to the second hospital, if open.
**Abdominal Trauma**

**Designation of Condition:** Blunt or penetrating trauma to the abdomen resulting in the following possible severe injuries: Liver/splenic laceration, aortic disruption, organ evisceration, bladder rupture, bowel injury, pelvic fractures, severe internal hemorrhage.

- ABC’s with focus on ability to keep airway patent
  - EXPOSE PATIENT
  - Vital signs
  - Pulse Oximetry procedure
  - Capnography procedure
  - Oxygen supplementation >90%
  - Assist ventilations as necessary with BVM
  - Spinal precautions as indicated

  Evisceration: Cover with clean saline soaked dressing

  Control external hemorrhage and dress wounds if time available

  If there is an impaled object to abdomen: DO NOT REMOVE—Stabilize with bulky dressing

  If pelvis unstable with concerning mechanism and hypotension consider pelvic binder

- IV/IO NS (two large bore preferred)
  - DO NOT DELAY TRANSPORT TO INITIATE IV ACCESS
  - If hypotensive treat per hemorrhagic shock guideline with goal SBP > 90mmhg
  - Pain management with MCEP contact:
    - Morphine 2–5mg IV/IO/IM q 5 minutes to a max of 20 mg
    - (0.1 mg/kg q 5 minutes to a max of 0.2 mg/kg peds)
      - OR
    - Fentanyl 0.5–1mcg/kg IV/IO/IM/IN q 5 minutes to max total dosage of 3 mcg/kg

- Consider need for advanced airway including cricothyrotomy as indicated

  Pain management as per guideline:
  - Morphine 2–5mg IV/IO/IM every 5 minutes max of 20 mg (0.1 mg/kg q 5 minutes to a max of 0.2 mg/kg peds)
    - OR
  - Fentanyl 0.5–1mcg/kg IV/IO/IM/IN every 5 minutes to max total dosage of 3mcg/kg

***KEY POINT***

Pregnant Trauma: EGA ≥ 20 weeks

- Priority is mother and, ideally, all pregnant females should be transported
- Inform hospital of pregnancy and EGA

Patients with any thoracic, abdominal, or pelvic complaint or injury may require prolonged fetal monitoring in hospital. Patients may be asymptomatic at time of evaluation, so maintain a high index of suspicion

- Avoid supine position:
  - Place in left lateral recumbent position if possible

- Interpret VS with caution. Pregnant patient has:
  - Increased heart rate
  - Decreased blood pressure
  - Increased blood volume
Chest Trauma

**Designation of Condition:** Blunt or penetrating trauma to the thorax resulting in the following possible severe injuries: Pneumothorax, tension pneumothorax, tracheal/bronchial injury, cardiac tamponade, myocardial contusion, pulmonary contusion, flail chest, aortic disruption.

**B**

ABC’s with focus on ability to keep airway patent  
EXPOSE PATIENT  
Vital signs  
Pulse Oximetry procedure  
Capnography procedure  
Oxygen supplementation >90%  
Assist ventilations as necessary with BVM  
Spinal precautions as indicated

If concern for open pneumothorax (sucking chest wound), place occlusive dressing secured on three sides or commercial device  
Control external hemorrhage

If there is an impaled object to chest: DO NOT REMOVE—Stabilize with bulky dressing

**I**

IV/IO NS (two large bore preferred)  
DO NOT DELAY TRANSPORT TO INITIATE IV ACCESS  
If hypotensive treat per hemorrhagic shock guideline with goal SBP > 90 mmhg  
Pain management with MCEP contact:  
Morphine 2–5mg IV/IO/IM q 5 minutes to a max of 20 mg (0.1 mg/kg q 5 minutes to a max of 0.2 mg/kg peds)  
OR  
Fentanyl 0.5–1mcg/kg IV/IO/IM/IN q 5 minutes to max total dosage of 3 mcg/kg

**P**

Consider need for advanced airway, including cricothyrotomy, as indicated  
Continuous cardiac monitoring as arrhythmia is often seen in cardiac contusion  
If concern for developing tension pneumothorax (worsening hypoxia with hypotension, absent lung sounds, increasing respiratory distress, or worsening mental status in the setting of concerning mechanism)  
Perform needle decompression procedure  
Pain management as per guideline:  
Morphine 2–5mg IV/IO/IM every 5 minutes max of 20 mg (0.1 mg/kg q 5 minutes to a max of 0.2 mg/kg peds)  
OR  
Fentanyl 0.5–1mcg/kg IV/IO/IM/IN every 5 minutes to max total dosage of 3mcg/kg
Crush Injury

**Designation of Condition:** Entrapped and crushed under a heavy load for > 30 minutes either extremity or body. Often seen in building or trench collapse, industrial accident or pinned or heavy equipment. It is important to consider possible vascular and orthopedic injuries as well as metabolic derangements due to tissue ischemia.

**A**
- ABC’s with focus on ability to keep airway patent
- EXPOSE PATIENT
- Vital signs
- Pulse Oximetry procedure
- **Capnography procedure**
- Oxygen supplementation >90%
- Assist ventilations as necessary with **BVM**
- **Spinal precautions** as indicated
- Cardiac monitor
- Control external hemorrhage and splint/stabilize orthopedic injuries

**B**
- IV/IO NS (two large bore preferred)
- **Entrapped < 2 hours:** Normal Saline infusion
  - Adult: 1 liter/hour
  - Pediatric: 10 ml/kg per hour
- **Entrapped > 2 hours:** Normal Saline bolus
  - Adult: 2 liters
  - Pediatric: 20 ml/kg
  - **Pain management** with **MCEP** contact

**C**
- Consider need for advanced airway including **cricothyrotomy** as indicated
- **Pain management** as per guideline
- Serial 12 lead **ECG**
- **Immediately Prior to Extrication from Entrapment:**
  - **Sodium Bicarbonate:** 50 meq
  - Peds: 1 meq/kg
- Monitor closely for ECG changes consistent with hyperkalemia and treat per **hyperkalemia guideline**

**D**
- Given the unique nature of crush/confined space injuries with entrapment, patient’s will often suffer from severe anxiety.
- Consider calling EMS Consortium **MCEP** for benzodiazepines order for anxiolysis
- There is a significant risk of airway compromise with this combination of benzodiazepines and narcotics; monitor airway and ETCO2 waveform and O2 as needed
- If the patient is in a position in which you cannot adequately manage the airway, do not give this combination of medications.

***KEY POINT***

A patient with a crush injury may initially present with very few signs and symptoms Therefore, maintain a high index of suspicion for any patient with a compressive mechanism of injury

A fatal medical complication of crush syndrome is hyperkalemia. Suspect hyperkalemia if T-waves become peaked, QRS becomes prolonged (greater than 0.12 seconds), absent P wave, or prolonged QTc

Evaluation for fractures and potential compartment syndrome development (neurovascular status of injured extremity)
Extremity Injury/ Amputation

Designation of Condition: Blunt, penetrating, amputation, or crush injury resulting in pain, swelling, deformity, altered sensation, motor function, diminished pulse or cool extremity due to nerve or blood vessel damage. Injury can present as: abrasions, contusions, lacerations, sprains, dislocations, fractures (open, closed or angulated), and amputations.

ABC’s
- EXPOSE PATIENT/ injured area
- Vital signs
- Evaluate for obvious deformity, shortening, rotation, or instability— check sensation, distal movement, pulse, capillary refill, and estimate degree of blood loss
- Control bleeding with pressure and/or tourniquet, see Tourniquet Procedure
- Remove obvious debris, irrigate open wounds with saline solution, and cover with moist sterile dressing.

Splint extremity as required. Traction splinting is preferred technique for isolated closed midshaft femur fractures.

Complete amputation

Apply Tourniquet without delay:
- Amputated part:
  - Wrap in moist, sterile dressing
  - Place in sealed plastic bag
  - Place bag in ice water
  - Do not freeze part
- Stump:
  - Cover with moist sterile dressing covered by dry dressing

Partial amputation

Life-threatening bleeding

Apply Tourniquet without delay

Non-Life-threatening bleeding

Control with direct pressure to bleeding area or vessel

Apply Tourniquet if unable to control with direct pressure

Cover with moist sterile dressing

Splint near-amputated part in anatomic position

IV/IO NS (two large bore preferred)

DO NOT DELAY TRANSPORT TO INITIATE IV ACCESS

If hypotensive treat per hemorrhagic shock guideline with goal SBP > 90mmhg

Pain management with MCEP contact

Pain management as per guideline

***KEY POINT***

In amputations, time is critical. Transport immediately, with notification of receiving facility.

Hip dislocations and knee and elbow fracture / dislocations have a high incidence of vascular compromise. Urgently transport any injury with vascular compromise.
**Trauma Eye Injuries**

**Designation of Condition:** Injury to the eye that results from blunt trauma, penetrating trauma, chemical exposure, foreign body, or scratch.

<table>
<thead>
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<th><strong>ABC’s</strong></th>
<th><strong>Vital signs</strong></th>
<th><strong>Obtain history</strong></th>
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<tbody>
<tr>
<td>Consider traumatic mechanism and immobilize C-spine if necessary</td>
<td>Assess vision and examine pupils for size, shape, and reactivity to light</td>
<td>Check eye movement in all directions and document any soft tissue injury</td>
</tr>
<tr>
<td>Complete neuro exam</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Penetrating Eye Injuries**

<table>
<thead>
<tr>
<th><strong>B</strong></th>
<th>Protect globe by covering orbital area with moist dressing and bulky padding.</th>
<th>DO NOT apply pressure to globe.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Once a penetrating injury is discovered, further pupillary and eye examination is contraindicated.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>P</strong></th>
<th>If concern for open globe injury (tear drop shaped pupil or concerning mechanism):</th>
<th>Pain control and nausea control per guideline to avoid increasing intraocular pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Protruding Intraocular Foreign Body**

<table>
<thead>
<tr>
<th><strong>B</strong></th>
<th><strong>DO NOT REMOVE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Further pupillary and eye examination is contraindicated.</td>
</tr>
<tr>
<td></td>
<td>Stabilize foreign body, cover with bulky padding, and secure with tape</td>
</tr>
<tr>
<td></td>
<td>Patch unaffected eye to diminish consensual eye movement</td>
</tr>
</tbody>
</table>

**Small particulate foreign bodies (e.g., dust/dirt)**

<table>
<thead>
<tr>
<th><strong>B</strong></th>
<th>Irrigate with saline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flip lids back and irrigate as necessary</td>
</tr>
<tr>
<td></td>
<td>If present, contact lenses should be removed prior to irrigation</td>
</tr>
</tbody>
</table>

**Chemical Injury**

<table>
<thead>
<tr>
<th><strong>Alkalis and Acids:</strong></th>
<th>Immediate treatment upon arrival.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Copious irrigation with saline (brush off dry powders first)</td>
</tr>
<tr>
<td></td>
<td>Continue irrigation en route to hospital</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Mace and Pepper Spray:</strong></th>
<th>Irrigate eyes and affected skin with saline or water until pain relief obtained.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Patients with significant pain after irrigation, prolonged visual impairment, or shortness of breath should be transported to the hospital</td>
</tr>
<tr>
<td></td>
<td>If present, contact lenses should be removed prior to irrigation</td>
</tr>
</tbody>
</table>
**Designation of Condition:** Any injury to the skull with/without loss of consciousness. Consider skull fracture, intra-cranial hemorrhage, c-spine injury, facial fractures, epidural/subdural hematoma, traumatic brain injury which can include hemorrhage, swelling, concussion. Give special consideration to a/w as patients can often vomit and elevated risk for seizure. Pay close attention to mental status and reassess frequently.

| B | ABC’s with focus on ability to keep airway patent  
GCS— serial reassessments to trend neurologic status  
Vital signs  
Pulse Oximetry procedure  
Capnography procedure  
Oxygen supplementation with goal to prevent any desaturation < 90%  
Assist ventilations as necessary with **BVM**—in Adults DO NOT HYPERVENTILATE—keep to 10 breaths/min with goal ETCO2 of 40–45mmHg  
Maintain C-spine precautions  
Control bleeding with direct pressure if no evidence/suspect open skull fx  
Check blood glucose—maintain > 60mg/dl  
Perform neurological exam (pupil exam, extremity strength/sensation)  
Decrease ICP by elevating head 30 degrees if possible. Use reverse Trendelenburg if spinal precautions needed |

| I | IV/IO NS (two large bore preferred) DO NOT DELAY TRANSPORT TO INITIATE IV ACCESS  
Avoid hypotension:  
initiate fluid resuscitation with goal SBP > 110mmHg in adults  
Pediatric hypotension formula:  
0–9 yrs: SBP< [70+(age in years x 2)]  
> 10 yrs: SBP < 90mmHg  
20 ml/kg bolus repeat as needed to goal SBP |

| P | Consider need for advanced airway including **cricothyrotomy** as indicated  
If concern for facial fractures, avoid nasal intubation  
Consider cardiac monitor |

**KEY POINT**

hypothenmia, hypotenstion, hypoxia, hypocapnia and hypoglycemia all increase mortality in traumatic brain injuries and should managed aggressively  
Significant blood loss can occur with scalp lacerations

Hyperventilation lowers CO2 and causes vasoconstriction leading to increased intracranial pressure (ICP) and **should not be done routinely.**

**Use in patients ONLY with evidence of herniation:** (blown pupil, decorticate / decerberate posturing, bradycardia, decreasing GCS) If hyperventilation is needed, ventilate at 14–18 / minute to maintain EtCO2 between 30–35 mmHg.  
Short term option only used for severe head injury typically GCS ≤ 8 or unresponsive.
**Thermal Burns**

**Designation of Condition:** The patient will have suffered a chemical, electrical, or thermal injury. Attempt to obtain type of exposure (heat, gas, chemical), mechanism of injury, time, and location (indoor, closed space, outdoor).

### ABC’s

- ABC’s with specific focus on airway for evidence of smoke inhalation or burns:
  - soot around mouth or nostrils, singed hair, carbonaceous sputum
  - Frequent Airway Reassessment

- Remove from injuring source; remove all smoldering clothing, rings, bracelets/constricting items
- Vital signs, O2 sat and ETCO2 procedure
- Evaluate burn and concomitant injury

  - If suspected of inhalation injury or carbon monoxide poisoning, administer high-flow oxygen
  - **If BSA of burn is <10%**: apply cool, moist dressing—avoid hypothermia
  - **If BSA of burn > 10%**: use dry burn sheet or dry sterile dressing and insulate to prevent hypothermia

### IV/IO

- Fluid bolus if s/sx of shock or > 20% TBSA per ABA guidelines**
- Pain management with MCEP contact: Morphine 2–5mg IV/IO/IM q 5 minutes to a max of 20mg (0.1mg/kg q 5 minutes to a max of 0.2mg/kg peds) OR Fentanyl 0.5–1 mcg/kg IV/IO/IM/IN q 5 minutes to max total dose of 3 mcg/kg

- Avoid placing IV in burned area if possible
- **Do Not Delay Transport for IV Initiation in Critical Patients**

### Pain management

- Cardiac monitoring if intact skin to place electrodes
- Consider cyanide poisoning if pt found inside structure fire with altered mental status, unstable vital signs or pulseless arrest

### **ABA Recommended Prehospital Fluid Therapy**

- 14 and older, 500 mL/hr NS or LR
- 5 – 13 years, 250 mL/hr NS or LR
- Younger than 5 years, 125 mL/hr D5W, NS or LR
- If no signs of clinical hypovolemia or shock, large volumes of IV fluid are not required.

### Major and Moderate burns should be transported to a regional burn center

**Major Burns**
- Partial thickness burns >25% BSA in adults or >20% BSA in peds
- ALL severe full-thickness burns involving ≥10% BSA
- All full-thickness burns to hands, face, eyes, ears, feet, and perineum
- All burns that compromise circulation
- All burns with evidence of respiratory involvement
- ALL high voltage electrical injuries

**Moderate Burns**
- Partial thickness burns of 15–25% BSA in adults, 10–20% BSA in peds
- Full thickness injuries of <10% BSA

### ***KEY POINT***

- Early intubation is required when the patient experiences significant inhalation injuries.
- Burn patients are trauma patients, evaluate for multi-system trauma.
- Circumferential burns to extremities are dangerous due to potential vascular compromise secondary to soft tissue swelling.
Trauma Air Taser Injuries

**Designation of Condition:** EMS personnel may be requested to assess patients after Taser deployment, and/or to remove Air Taser probes lodged in a subject’s skin. Be aware that secondary injuries may result from falls sustained after the device has been deployed. Subject may be dazed/confused for several minutes post device deployment. The patient may require additional restraint as defined in the Involuntary Emergency Transport and Patient Restraint Guidelines.

Scene safety
- Confirm that the Air Taser has been shut off and the probe is no longer connected to the Taser gun.

Remove Air Taser per the Taser Removal Guideline
- Stretch Skin surrounding the probe site until tight
- Pull probe out of the skin in the opposite direction that it penetrated (use firm grip + gauze)
- Clean and bandage puncture wound
- Discard probe in sharps container

Obtain vital signs at the earliest opportunity. Violent and combative behavior may be secondary to intoxication, psychosis, hypoxia, hypoglycemia, overdose, or CNS infection.
- Obtain O2 sat and BGL as soon as it is feasible
- Treat trauma and seizure if applicable

Evaluate the anatomical location of the probe (s) puncture zone(s). High-risk/sensitive zones will require transport to a medical facility for removal. They include:

- Any probe above the level of the clavicles ex. Eyes, Ears, Nose, Mouth, Neck
- Suspicion that probe might be embedded in bone, blood vessels, female breast, genitals or joint
- Darts to scalp, and low risk areas of forehead and cheek, can be removed in the field

***KEY POINT***
Conducted electrical weapon probes are barbed metal projectiles that may embed themselves up to 13 mm into the skin.

Once the probes are removed, inspect and assure they have been removed intact. In the event the probe is not removed intact or there is suspicion of a retained probe, the patient must be transported to the emergency department for evaluation.
Designation of Condition: A patient with a suspected spinal injury based upon a physical assessment and/or mechanism of injury, who is wearing a helmet.

<table>
<thead>
<tr>
<th>Football Helmets: Indications for football helmet removal</th>
</tr>
</thead>
<tbody>
<tr>
<td>• When a patient is wearing a helmet and NOT the shoulder pads</td>
</tr>
<tr>
<td>• In the presence of head and/or facial trauma</td>
</tr>
<tr>
<td>• Patients requiring advanced airway management when removal of the facemask is not sufficient</td>
</tr>
<tr>
<td>• When the helmet is loose on the patient’s head</td>
</tr>
<tr>
<td>• In the presence of cardiopulmonary arrest (the shoulder pads must also be removed)</td>
</tr>
</tbody>
</table>

When the helmet and shoulder pads are both on, the spine is kept in neutral alignment

If the patient is wearing only the helmet or the shoulder pads, neutral alignment must be maintained. 
Either remove the other piece of equipment or pad under the missing piece.

<table>
<thead>
<tr>
<th>All other Helmets:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due to the absence of offsetting padding as in football shoulder pads, all other helmets must be removed in order to maintain spinal alignment. These include, but are not limited to, motorcycle helmets, bicycle helmets, roller blading/skateboarding helmets, and skiing helmets</td>
</tr>
</tbody>
</table>
**Trauma Sexual Assault**

**ED Transport Required**
- Significant AMS / Intoxication / Suspected or confirmed OD
- Decreased SaO2 <90%
- Unstable VS (P>110, RR >24, SBP <90 or >180)
- Dysrhythmia
- Loss of Consciousness
- Incoherent or combative
- Compromised airway or anticipated, based on report of recent strangulation attempt or ligature use
- Injuries requiring ED evaluation and Rx
- Uncontrolled bleeding
- SxS of head injury
- Orthopedic or maxillofacial injury
- Suicidal

Transport to ED per appropriate protocol (sexual assault is a secondary concern)

**ED Transport NOT Required**
- No symptoms listed in box to the left
- Person wants a sexual assault exam and is within 5 days of the assault

Contact Sane Nurse
505-884-SANE (7263)

Provide the following to the nurse:
- Medical condition
- Ability to consent
- Special needs
- Age and gender

Transport the patient to the Family Advocacy Center via POV, Law Enforcement, Cab, or EMS

***SCENE Responsibilities for SANE Referral***

- See above algorithm for SANE Dispatch process. NOTE: SANE nurses are not on-site. You must page the SANE nurse by calling 505-884-7263. Nurse response time to the FAC can be up to 1 hr. It is preferable for the SANE and Paramedic to speak directly to each other. If this is not possible, the EMS dispatch will have to be the intermediary.
- The SANE and Paramedic will consult and proceed accordingly. If possible, the SANE client should be transported to the FAC via private vehicle or law enforcement. If neither of those options is available, then the SANE nurse can dispatch Yellow Cab. Response time for Yellow Cab is usually within 20 minutes, at no charge to the client. NOTE: SANE clients under 16 years of age must be accompanied by an adult in the taxi. It will be assumed that EMS will not transport to FAC unless there are no other available or appropriate means of transportation.
- In the rare instance a SANE client is transported to FAC by EMS, the Paramedic will give report to the SANE nurse via phone or through the EMS dispatch. The FAC access will be at the front of the building. The facility is typically staffed from 0800–1700. When speaking to the SANE nurse, confirm someone is on-site to receive the client. After 1700 hours, EMS personnel will transport to the FAC only if contact has been made with SANE and it is confirmed that staff will be present on arrival to the facility to take charge of the client. If staff is not available to receive the SANE client, the client will be taken to the ED of client choice and SANE will facilitate further treatment.
- Advise client against eating, drinking, bathing, smoking, and urinating, if possible.
- Encourage client to wear or bring the clothing (bag in paper bag only) he/she was wearing at time of assault, if possible.
**Trauma Shock**

**Designation of Condition:** The patient may present with any of the following: an altered mental status (anxious, combative, confused, etc.), pale, clammy skin, weakness, nausea, decreased blood pressure, weak rapid pulse, rapid shallow respirations, and a mechanism (medical or trauma) which may cause severe blood or fluid loss. **Hemorrhagic shock:** Locations of blood loss include the chest, abdomen, pelvis, and multiple long bone fractures. Signs include pale, cool, clammy skin, tachycardia, and/or hypotension. **Neurogenic shock:** May occur after an injury to the spinal cord disrupts sympathetic outflow resulting in unopposed vagal tone. Signs include warm, dry skin, bradycardia, and/or hypotension.

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**ABC’s**
- High-flow oxygen
- Vital signs
- Support respiration and circulation
- Hemorrhage control

Lie patient supine and cover with a blanket to prevent hypothermia. Consider application of pelvic binder in any hypotensive patient with suspicion of abdominal trauma or pelvic trauma.

**Transport to appropriate level trauma facility.**

---

**Adult**

- IV/IO - 2 if possible
- Fluid bolus of 500ml repeated as needed to a max of 20ml/kg.
- Reassess after each bolus

*Maintain SBP >90mmHg*
*If suspected intracranial injury, titrate SBP to 110–120 mmHg*

---

**Pediatric**

- IV/IO
- Fluid bolus of 20ml/kg to improve clinical condition (cap refill <2 sec, improved mental status, improved circulation, skin color)
- Reassess after each bolus

---

**Recognize Compensated Shock**

**Adult:**
- Anxiety
- Tachycardia
- Tachypnea
- Diaphoresis with pallor

**Pediatric:**
- Delayed Cap refill
- Decreased or bounding peripheral pulses
- Palpable central pulse, decreased distal pulse
- Cool extremities
- Altered mental status
- Mild tachypnea

---

**Monitor ECG**

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**If evidence of tension pneumothorax, treat appropriately**

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*****KEY POINT***

Over-aggressive fluid resuscitation may be detrimental in certain hypovolemic shock situations and caution combined with good clinical judgment is required to manage them.

In hypovolemia secondary to penetrating torso trauma, new guidelines support the concept of cautious fluid resuscitation, with a goal of maintaining systolic blood pressure at or about 90–100 mmHg.
Trauma Spinal Immobilization Algorithm

If mechanism exists for spinal injury:
• Consider Major Trauma Treatment
• Perform spinal assessment

Declare positive spinal assessment if any of the following exist:
• Pain, tenderness, or deformity in posterior mid-line over any vertebra
• Abnormal (i.e. not baseline) neurological function or motor strength in any extremity;
• Numbness or tingling (paresthesia);
• Sensation is not intact and symmetrical (or baseline for patient);
• Cervical flexion, extension and rotation elicits midline spinal pain.
• Unreliable spinal exam:
  • Alerted mental status
  • Alcohol/drug intoxication
  • Painful distracting injury
  • Age <3 years old

Positive spinal assessment:
Place C-collar
If patient is ambulatory on scene or if they can safely self-extricate: Assist to cot
If patient is not ambulatory, or if extrication is required:
• Use rigid extrication as needed to move patient to cot
• Remove rigid extrication device once patient on cot if possible
• Secure patient with seatbelts in supine position (or position of comfort if supine position not tolerated)
• If suspect traumatic brain injury, elevate head of bed to 30 degrees

Positive
Assessment findings
Negative

Negative spinal assessment:
• Transport in position of comfort
• Place c-collar if patient age >65

Consider IV/IO access
Consider pain management with MCEP contact

Pain management as per guideline

***KEY POINT***
• No patient shall be transported on a backboard or other rigid extrication device UNLESS removing patient from device interferes with critical treatments or interventions
• Exception: Patient may be transported with vacuum splint in place
• C-Collar may be removed if interfering with airway or airway placement, or if causing extreme distress
Trauma Triage Algorithm
Guidelines for Field Triage of Injured Patients

First: Measure vital signs and level of consciousness

<table>
<thead>
<tr>
<th>Vital Sign</th>
<th>Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glasgow Coma Scale</td>
<td>≤13</td>
</tr>
<tr>
<td>Systolic Blood Pressure</td>
<td>&lt;90 mmHg</td>
</tr>
<tr>
<td>Respiratory Rate</td>
<td>&lt;10 or &gt;29 bpm or need for ventilatory support (&lt;20 in an infant &lt;1yr)</td>
</tr>
</tbody>
</table>

Second: Assess anatomy of injury

- All penetrating injuries to head, neck, torso, and extremities proximal to elbow or knee
- Chest wall instability or deformity (e.g., flail chest)
- Two or more proximal long-bone fractures
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Pelvic fractures
- Open or depressed skull fractures
- Paralysis

Third: Assess Mechanism of Injury and Evidence of Falls

- Adults: >20 ft
- Children: >10 ft or three times the height of the child
- High-Risk auto crash
  - Intrusion into the passenger compartment of >12"
  - Ejection (complete or partial) from automobile
  - Death in same passenger compartment
  - Steering wheel collapse
  - Significant mechanism
- Auto vs. pedestrian/bicyclist thrown, run over, or with significant (>20 mph) impact
- Motorcycle crash >20 mph

Fourth: Assess special patient or system considerations

- Older Adults
  - Risk of injury/death increases after age of 55
  - SBP <110 may represent shock after age of 65
- Children
  - Should be triaged preferentially to pediatric capable trauma centers
- Anticoagulants and bleeding disorders
  - Patients with head injuries are at high risk for rapid deterioration
- Burns
  - Transfer to UNMH
- Pregnancy of >20 weeks
- EMS provider judgment

Transport to a Trauma Center or hospital capable of timely and thorough evaluation and initial management of injuries. Consider MCEP contact.
**Traumatic Arrest**

**Designation of Condition:** A pulseless and apneic patient following a traumatic event without suspected underlying medical cause. If medical cause is suspected, follow cardiac arrest algorithm.

**Patient is pulseless after trauma criteria for Death/No Resuscitation or Injury Incompatible with Life**

**YES**
- Decomposition
  - Rigor mortis
  - Dependent lividity
  - Injury incompatible with life, Traumatic arrest with extended downtime with asystole

**NO**

**Blunt Traumatic Arrest:** (apneic, pulseless, no signs of life)

- ABC’s
  - Open airway via jaw thrust, and airway adjuncts as needed with **spinal precautions** as indicated
  - Assist ventilations as necessary with **BVM**
  - EXPOSE PATIENT
  - Attach cardiac monitor

- **P** Bilateral **needle decompression procedure**

- **Return of Pulses?**
  - **NO**
  - Discontinue Resuscitation Efforts

- **YES**
  - **ROSC**

- **Discontinue resuscitation efforts if:**
  - **Asystole**
  - **PEA < 40 OR**
  - **Transport to UNMH is > 10 minutes**

**Penetrating Traumatic Arrest:** (apneic, pulseless, no signs of life)

- ABC’s
  - Open airway via jaw thrust, and airway adjuncts as needed with **spinal precautions** as indicated
  - Assist ventilations as necessary with **BVM**
  - EXPOSE PATIENT
  - Attach cardiac monitor

- **P** Bilateral **needle decompression procedure**
  - IF penetrating trauma to chest, back, abdomen, or neck

- **Return of Pulses?**
  - **NO**
  - **No Pulse/PEA**

- **YES**

- **Discontinue resuscitation efforts if:**
  - **Asystole**
  - **PEA < 40 OR**
  - **Transport to UNMH is > 10 minutes**

- **Transport to UNMH if:**
  - **Transport time is < 10 minutes AND narrow complex PEA > 40 BPM**

**Rapid Transport to UNMH**

- Assist ventilations as necessary with **BVM** and secure airway with **King/LMA** C spine immobilization per mechanism
- Prevent hypothermia

**IV/IO NS (two large bore preferred)**

- Fluid Resuscitation to goal SBP > 90 mmhg
- If concern for traumatic brain injury maintain SBP ≥ 110 mmHg

**Consider advanced airway with ETT, avoid nasal intubation if severe facial trauma**

- Surgical cric as indicated

---

*****KEY POINT***

**CPR IS NOT INDICATED IN TRAUMATIC ARREST**

Injuries obviously incompatible with life include: decapitation, massively deforming head or chest injuries, dependent lividity, rigor mortis, extended downtime with skin cold.

*****KEY POINT***

**Commotio Cordis:**
- From a direct blow to chest
- Most common in children playing sports (ex. Baseball to chest wall)
- TREAT AS MEDICAL CARDIAC ARREST
Communications

**Purpose:** Provide specific requirements for succinct and expeditious radio reports to receiving medical facilities when transporting stable patients, and describe expectations for communication when transporting critical patients.

Currently EMS providers transmit a patient report for all emergent and non-emergent transports. The limited literature supports little process improvement measures or improvement in patient care outcomes for non-emergent patients and their subsequent radio reports. In an effort to reduce field staff work redundancy and dispatch task saturation, the MCB has developed new radio reduction report guidelines for non-emergent transports on low acuity patients. This guideline is designed to improve efficiency for non-emergent transports while still giving the EDs an appropriate amount of lead-time for safe patient placement, reinforcing our Emergency Department Patient Turnover guidelines. Radio reports should be limited to 30 seconds for the majority of patients.

1. Radio reports are still required for:
   - All emergent patient transports (Any code 3 return to the ED)
   - All hospital alert transports—STEMI, Stroke, Sepsis, and Trauma/Burns
   - Patients that may require additional staff and security due to hostile/aggressive actions/jails/detention centers/in custody or any suicidal/homicidal patients
   - Active labor with imminent delivery, post-delivery or contractions less than 2 minutes apart or any patient pregnant with active abd pain/cramping or vaginal bleeding > or < 20 weeks
   - All Bannered MCI patients

2. At the paramedic/EMTs discretion, based on patient presentation and active treatment, any patient that will most likely meet ED triage criteria will not require a radio transport. ED triage should take EMS patients prior to stable walk-in patients.

3. All other non-priority transports will require a radio report in an effort to allow the ED enough time for bed placement. Examples may include:
   - CPAP use on asthma/COPD/CHF exacerbation
   - Active respiratory treatment—multiple nebs, epi administration, magnesium, nitro
   - Limbs with vascular compromise
   - Extremity fractures with obvious deformity or vascular compromise
   - Patients that are bed bound, unable to sit in chair or triage area. Including morbidly obese, hemi/paraplegia, fractured extremities, hips dislocations, or any additional medical devices or equipment
   - Patients from skilled nursing facilities or rehab hospitals
   - Patients with concern for infectious disease—ex. C diff, MRSA, bed bugs, lice
   - Patients receiving benzo’s or opiates that require closer airway observation
   - Opiate OD’s that require more than single dose of Naloxone for reversal (whether 0.4 IM/IV or 2 IN) or require closer airway and ETCO2 monitoring
   - Anaphylactic reactions
   - Any toxic ingestion/polypharmacy overdose
   - Hypotensive/tachycardic patients requiring frequent or large fluid boluses
   - Arrhythmias—SVT, narrow/wide complex tachycardia, Stable V-Tac
   - Geriatric patients 80 and older with extensive medication lists and complex medical history
Routine requirements for radio reports are as follows:

- Age and gender
- Chief complaint / mechanism of injury (relevant clinical conditions)
- Current status (stable, unstable, suitable for triage)

• ETA
- When required by acuity or complexity, more information may be relayed, including vital signs and treatment rendered.

When transporting a critical patient it is important to provide a “picture” of the patient and their condition. Brevity is still important. It is not important at this stage to include everything about the patient’s recent or past medical history unless something in that history is important in obtaining a medication order.

Patient name, medical record number, or other patient identifiers cannot be given over the radio because these are open channels and the patient’s right to privacy would be violated.

If patient is unstable, contact the ED or Albuquerque Base ASAP from scene to provide early notification (age, chief complaint, and ETA).

Activate UNMH trauma team using Trauma Alert Protocol (TAP) criteria when appropriate.

Advise dispatch and activate MCI protocol when appropriate.

**MCEP Consult**
When requesting to speak to the MCEP, state the reason or need for direct MCEP, for example, forced transport, medication orders, termination of resuscitation or withholding resuscitation. This allows the MCEP to prepare for your call and prioritize it in relation to other patients in the emergency department. Per state statute, nurse practitioners and PAs are not to give on line medical direction nor may thay dictate care on scene.

**UNM EMS Consortium**
This is a group of board certified EM and EMS physicians in conjunction with EMS fellows that are available 24 hours a day. These physicians have the experience and capacity to understand unique and complicated patient/scene circumstances. They are also available for scene response given their EMS expertise. Contact is made through Albuquerque Base on a recorded line at 505-449-5710. These physicians have the final decision making authority in the system as EMS trained physicians and medical directors for the respective programs. If a hospital destination MD and EMS Consortium MD are both contacted, the final decision lies with the Consortium physician.

**Hospital MCEP**
These are Emergency Medicine Physicians based in the emergency department that may/may not have any EMS experience. Hospital based MCEP calls are appropriate for standard medication orders, simple/straight forward termination of cardiac arrest and hospital destination advice based on the patient’s illness or injury.
Communications Failure Guideline

**Purpose:** It is incumbent upon system providers to make MCEP contact in a number of scenarios. These may include, but are not limited to, the discontinuation of resuscitative efforts, administration of dangerous drugs or narcotics as outlined by the board of pharmacy and State of NM DOH guidelines, and atypical treatment of medical or traumatic conditions. Communications are also critical to obtaining medical orders and transmitting patient condition. At times, due to geographic location, communication or technological limitations, and/or catastrophic failure of a communication system, communications may become unlikely or impossible. Should such an event take place, and compromise the ability of field personnel to obtain medical control from an emergency physician, the Communication Failure Guideline may be utilized when it is determined to be in the best interest of patient care.

### ALL PROVIDERS:

- Shall adhere to the scope of practice that their licensure allows, and the “Albuquerque and Bernalillo County Emergency Medical Services Protocols and Guidelines.”
- Shall make reasonable attempts as patient care allows, to obtain MCEP consult during transport until successful or at the receiving facility. Unsuccessful attempts at MCEP contact must be documented in the ePCR with approximate times.
- Adhere to patient privacy regulations when utilizing alternate forms of communication.
- Not all patients will require MCEP consultation, but in situations where it is required by guideline, the paramedic shall attempt to obtain medical control using all reasonably secure forms of communications possible; including, but not limited to, radio Med channels, relay through communications center, and telephone/cellular devices.
- If all attempts to obtain MCEP consultation have been unsuccessful, and the patient’s condition falls under a specific protocol in which a drug or other intervention requires MCEP orders, the provider may follow the treatment guidelines if he or she determines that the patient cannot wait to receive the intervention.
- The provider shall thoroughly document the patient’s condition before and after interventions, circumstances behind the inability to obtain medical control, times of contact attempts, approximate location, and types of communications that were attempted unsuccessfully.
- Providers will immediately notify their agency of utilization of this guideline through the agency’s QI process. All uses of “The Communications Failure Guideline” will be reviewed by the agency’s Medical Director in detail.

### LIMITATIONS:

- This guideline does not provide exemption for MCEP consultation for the “No Guideline” Guideline.
**Dead At the Scene**

**Designation of Condition:** The patient will be unconscious, unresponsive, pulseless, and apneic.

<table>
<thead>
<tr>
<th></th>
<th>Resuscitation efforts may be withheld if any of the following criteria are met:</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Obviously expired:</td>
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<tr>
<td></td>
<td>• Presence of rigormortis or livermortis</td>
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<td></td>
<td>• Obvious external exsanguination</td>
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<td></td>
<td>• Decapitation, burned beyond recognition</td>
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<td></td>
<td>• Massive open or penetrating trauma to the head or chest with obvious organ destruction</td>
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<tr>
<td></td>
<td>• Body decomposition</td>
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<td></td>
<td>• Exteneded down time with cold skin</td>
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</tbody>
</table>

Advanced resuscitation efforts may be withheld in the presence of an approved DNR form.

<table>
<thead>
<tr>
<th></th>
<th>Advanced resuscitation efforts may be withheld in an expected death of a terminal patient without a DNR form, but will require MCEP contact</th>
</tr>
</thead>
</table>
DNR or MOST

EMS—DNR for DOH Reg. 94-10 or MOST

**Designation of Condition:** If the patient has a valid EMS-DNR Order, per DOH Reg. 94-10, or a “New Mexico Medical Orders for Scope of Treatment” (MOST) form, the specific of the document will be followed and care will be administered as outlined.

- The EMS-DNR Order or MOST form does not affect the EMS provider’s ability to administer other emergency medical care, such as oxygen, and other comfort care measures.

  If, in the event, a patient is found in cardiac arrest and the family is unable to find the DNR form:
  - Continue basic life support measures and obtain consensus from family while contacting MCEP for early termination

Alternate DNR/Living Will/ Advanced Medical Directive

**Designation of Condition:** If the patient has an Alternate “Do Not Resuscitate” (DNR) Order, a “Living Will”, or an “Advanced Directive”, the specifics of the document will be followed and will be administered and judged appropriate by the Paramedic.

- Contact MCEP
  - If at the scene of a cardiac arrest:
    - While initiating basic life support, ask if the patient has an “Advanced Directive”, a “Living Will”, or a “Do Not Resuscitate” (DNR) form.

- If the patient does not have a DNR, a “Living Will”, an “Advanced Directive”, or a MOST form that prohibits ACLS intervention in the event of cardiac arrest:
  - Full ALS resuscitation efforts will be initiated. If the patient remains in cardiac arrest after completion of ACLS algorithms, resuscitation may be terminated after MCEP contact. The scene will then be considered an unattended death/crime scene until law enforcement and/or Office of the Medical Investigator (OMI) arrives at the scene.
**Person(s) in Handcuffs**

***KEY POINT***

**LAW ENFORCEMENT with PERSON(S) in HANDCUFFS:**
- “Hogtied” or “Hobbled” handcuffed PRONE position patient(s) are not appropriate for EMS.
- EMS staff shall immediately require that the patient(s) be un-hobbled/un-hogtied prior to assessment and/or treatment.
- EMS Patient Refusal Forms shall be signed by the Patient refusing medical care and/or transport that is in Law Enforcement custody.
- **The applicable sections of the EMS Patient Refusal Form shall not be signed—at any time—by Law Enforcement.**
- If, at any point, the patient cannot sign their EMS Patient Refusal Form, then the Patient Care Report shall reflect why the EMS Patient Refusal Form was not signed by the patient.

- When a patient is in handcuffs (NOT EMS RESTRAINTS) they are legally in the custody of a Law Enforcement Officer/Deputy. If a patient is in handcuffs and transport is required, Law Enforcement must accompany the EMS staff. If Law Enforcement is unable or unwilling to accompany the EMS transport unit with the handcuffed patient, then the patient must be removed from the handcuffs.
- EMS shall not transport a handcuffed patient without Law Enforcement riding in with the patient inside the patient transport compartment area.
- When a patient is being transported in handcuffs (with Law Enforcement accompanying in EMS unit patient transport compartment area) they shall not be handcuffed to the gurney or any other portion of the ambulance (i.e. wall, straps, poles, etc.). The handcuffs shall be placed in the front of the patient to ensure proper seatbelt usage. **Patients are not to be restrained by EMS Restraints unless they present a danger to themselves or the EMS staff.**
- If Law Enforcement is unwilling or unable to accompany EMS personnel in the ambulance then the patient shall not be restrained by an EMS Restraint system (physical or chemical) based only on Law Enforcement request. EMS does not have authority to maintain custody of any person solely for Law Enforcement reasons. The patient must demonstrate a need (danger to themselves or the EMS staff) for EMS Restraint.
- If Law Enforcement refuses to ride along AND/OR refuses to remove the handcuffs, then the EMS crew shall not transport the patient. The EMS staff shall stay on the 911 scene, and the Lead Paramedic from the Transport unit shall contact their EMS Supervisor or EMS Consortium physician on call for online medical control consultation on patient transport.
- If Law Enforcement does not accompany the patient (without handcuffs), EMS will honor the patient’s medical decision making abilities, including the right to refuse further care and transport at any time before, during, or after the EMS transport.
- Law Enforcement **SHALL NOT** transport 911 EMS patients to any Hospital Emergency Department (ED) when the patient requests transport by ambulance after being evaluated by EMS providers outside of the exceptions listed below.
- Exceptions in which Law Enforcement may transport a person to a medical facility:
  - Law Enforcement may transport a mental health patient directly to a mental health facility if vital signs fall within stated parameters and the paramedic does not suspect any other underlying traumatic or medical causes—**Psychiatric Emergencies**;
  - Non-medical/non-traumatic ETOH customers can be transported by Law Enforcement to MATS if patient agrees—**MATS Public Inebriate Intervention Program (PIIP)**;
  - Sexual assault victims, not requiring ED treatment and not requiring EMS transport to SANE as per ABC systems protocol, can be transported by Law Enforcement, POV, or taxi to the SANE unit at the Family Advocacy Center (FAC) at 625 Silver SW for a SA exam—**Sexual Assault**.
New Procedure—Product Trial Guidelines

**Purpose:** To provide an organized system approach to suggestions from EMS Agencies, Medical Directors or field personnel for new procedures and products in a timely fashion.

Suggestions for new procedures, product trials, or other requests not part of the current standing protocols must be made to the Medical Control Board in writing. The proposal will include the following:

1. Request
2. Rationale
3. Service or specific group to be utilized
4. Written protocol for use of procedure or product
5. Time frame planned: start of project, duration
6. Training needs identified and training plan.
7. Cost-analysis information
8. Scientific evidence (bibliography) supporting proposal

The proposal will be prioritized and placed on the next available MCB agenda. The agency sponsoring the proposal should be represented at the meeting.

If accepted, the hospital and pre-hospital representatives will disseminate the appropriate information to their respective agencies.

A follow-up report will be made at the MCB meeting within three months of the actual implementation of the proposal. The report will include:

1. Incidence of use
2. Positive and negative outcomes associated with use
3. Recommended modifications

A written report will be submitted at the end of the project, or at 6 months, and will include the above information, as well as recommendations for future use.
“No Guideline” Guideline

Designation of Condition: Anyone requesting emergency medical care will receive appropriate assessment, care, treatment, and transportation in accordance with the individual’s condition, chief complaint, and Bernalillo County guidelines. It is understood, however, that no set of guidelines could ever be “all inclusive.” At times, EMS providers will be faced with situations that cannot be categorized into an existing Bernalillo County guideline, or no guideline exists addressing the situation.

- The provider on scene may consider all allowable treatment options within the Bernalillo County guidelines and the New Mexico Scope of Practice
- An MCEP (UNM EMS Consortium preferred) will be contacted for treatment guidelines and to discuss appropriate management options; in particular if the on scene provider believes that such interventions are necessary and in the best interests of the patient.
- The provider must inform the MCEP that no protocol exists to cover this particular situation, and the MCEP will then advise the provider as to how to proceed with the treatment of the patient.
- All patient interaction, to include MCEP contact, care, treatment, transport or refusal of transport will be documented accurately and in its entirety.
- The appropriate agency QA process will be initiated as needed.
- Regardless of the MCEP order given, at no time can the provider violate the NM EMS scope of practice
**Pain Management**

**Designation of Condition:** Consider treatment of all patients who present with pain or discomfort. Carefully evaluate and examine the patient prior to administration of pain medication to establish an initial pain level and pain location.

<table>
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<tbody>
<tr>
<td>ABC’s—with focus on ability to keep airway patent</td>
</tr>
<tr>
<td>Vital signs</td>
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<tr>
<td>Pulse Oximetry procedure</td>
</tr>
<tr>
<td>Capnography procedure</td>
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<tr>
<td>Oxygen supplementation &gt;90%</td>
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<tr>
<td>Consider the use of non-pharmaceutical means of pain reduction including position of comfort, ice packs and splints.</td>
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</table>

**Assess pain severity:**

- Use combination of pain scale, vital signs, mechanism of injury, patient appearance—diaphoresis, grimacing, crying

**Mild to Moderate pain**

- PO Ibuprofen 400–600 mg
- Consider Ketorolac IV/IM 15 mg with MCEP contact

**NSAID Contraindications:**
- Pregnancy, kidney disease/dialysis, severe liver disease, GI bleeding, shock or major hemorrhage, headache
- DO NOT GIVE in patients > 65 years old
- Do not use Ketorolac and ASA/Ibuprofen together.

**Tylenol PO 1000 mg**

**Ibuprofen PO 400–600mg**

**BEST PRACTICE IF THE PATIENT CAN TOLERATE AND NO CONTRAINDICATIONS:**

- 400 mg of Ibuprofen in combination with 1000 mg of Tylenol OR Ketorolac IM/IV 15 mg

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**Moderate to Severe Pain**

**In addition to Mild to Moderate pain control options, consider the following:**

- Pain management with MCEP contact: Morphine 2–5mg IV/IO/IM q 5 minutes to a max of 20 mg (0.1 mg/kg q 5 minutes to a max of 0.2 mg/kg peds)
  - OR
  - Fentanyl 0.5–1 mcg/kg IV/IO/IM/IN q 5 minutes to max total dose of 3mcg/kg
  - Or under the supervision and approval of the Paramedic
  - FENTANYL IS FIRST LINE IN TRAUMA OR HYPOTENSIVE PATIENTS

**Tylenol Contraindications:**
- Severe liver disease

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**TYLENOL CONTRAINDICATIONS:**

**KEY POINT**

STRONGLY CONSIDER INTRANASAL OR INTRANASAL ROUTES OF ADMINISTRATION FOR YOUR FIRST DOSE OF ANALGESIC MEDICATIONS

Carefully consider narcotic side effects before administering to patients with respiratory depression or altered mental status.

If hypotension, respiratory depression, or significant mental status change occurs after pain medication is started, perform appropriate supportive care, stop the medication, and do not restart.

Combining analgesia with sedation can be dangerous and is strongly discouraged, unless in post intubation sedation. If the situation requires analgesia, give Fentanyl. Use lower incremental dosing in the elderly.
### Psychiatric and Behavioral Health Emergencies

**Designation of Condition:** Patient may demonstrate bizarre or abnormal behavior with auditory, visual, or tactile hallucinations, false beliefs or delusions. The patients may verbalize or demonstrate harm to themselves or others. There is a high rate of associated drug and alcohol use that may also contribute to aggressive or violent behavior.

<table>
<thead>
<tr>
<th>ABC’s</th>
<th>Vital signs</th>
<th>BGL procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scene safety and provider safety are a priority. Consider police contact if scene safety is a concern.</td>
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</tbody>
</table>

Obtain history of current event; inquire about recent crisis, toxic exposure, drugs, alcohol, emotional trauma, and suicidal or homicidal ideation.

Obtain past history; inquire about previous psychiatric and medical problems, medications.

Observe and record patient appearance and behavior

Consider associated domestic violence or child abuse

A patient who is a danger to self or others may not refuse care, consider calling Mobile Crisis Team (MCT) via APD dispatch for onsite behavioral health evaluation and dispo if patient has NO medical or trauma/injury complaints/concerns. Call UNM EMS consortium for any questions or concerns for care or forced transport

Consider organic causes of abnormal behavior (trauma/ head injury, overdose, intoxication, hypoglycemia, toxic ingestion)

Follow restraint guidelines as indicated based on patient behavior

<table>
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<tr>
<th>IV/O access for IVF and medication admin only if there is a medical concern contributing to cause of psychiatric episode</th>
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</table>

Obtain 12 Lead ECG if concern for polypharmacy overdose or toxidrome

Follow chemical sedation guideline if verbal de-escalation or physical restraint is ineffective. If patient meets criteria for exited delerium syndrome—treat per guideline

Patients may be transferred directly to a mental health facility if they are not under the influence of drugs or alcohol, if pre-hospital personnel harbor no suspicion of OD, and both of the following conditions apply:

1. Patient is alert, with normal vital signs, and has no signs or symptoms of an acute medical illness or injury, and has either an unambiguous psychiatric condition (suicidal ideations) or has a hx of a psychiatric illness that is consistent with current presentation.
2. After consultation with MCEP of the receiving facility, a joint decision is made that the patient does not require an ED evaluation and that the patient is appropriate for transport to a mental health facility, OR prior acceptance of patient has been arranged by the accepting mental health facility
3. If you have a pediatric patient (< 18 y/o) with a primary psych complaint, call UNMH for the peds ED MCEP.

***KEY POINT***

MCT:
The mobile crisis team consists of one APD or BCSO officer and one Masters-level behavioral health provider. Currently, there are four of these teams that operate in the city and county. They are dispatched to low level behavioral health calls (mostly 25a/b) by PD/SO dispatch and **can also be requested to the scene by law enforcement or EMS**. Their goal is to de-escalate patients and determine a better solution than transport to ED or jail. Law enforcement issued certificates of evaluation are not recognized by EMS. Contact EMS Consortium if needed or clarification.
**Patient Restraint**

**Designation of Condition:** The patient will be significantly impaired (e.g., intoxication, medical illness, injury, psychiatric condition, etc.) and will lack the capacity to make an informed decision regarding their own care; **AND/OR** exhibits violent, combative, or uncooperative behavior which does not respond to verbal de-escalation. The application of restraints must be done out of necessity to ensure patient or provider safety or to facilitate patient assessment and treatment.

<table>
<thead>
<tr>
<th>Request law enforcement at the earliest opportunity</th>
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<tbody>
<tr>
<td>• Law Enforcement in this protocol shall indicate any of the following:</td>
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<table>
<thead>
<tr>
<th>Ensure the presence of sufficient personnel to safely apply EMS restraints</th>
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<tbody>
<tr>
<td>• Two (2) main restraints systems used in Bernalillo County:</td>
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</table>

Consider **Chemical Sedation Guideline** in conjunction with EMS Restraint—Versed or if patient meets Exciteted Delerium Criteria—Ketamine

<table>
<thead>
<tr>
<th>Attempt less restrictive measures to control before applying EMS restraints (e.g., verbal de-escalation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Explain to the patient and family why EMS restraints are necessary</td>
</tr>
<tr>
<td>• Use the minimal amount of EMS restraints necessary to control the patient and still insure provider safety during transport</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>• Apply EMS restraints in a humane manner, affording the patient as much dignity as possible. Utilize only appropriate restraint devices (see below).</td>
</tr>
</tbody>
</table>

**Patient Exam:**

<table>
<thead>
<tr>
<th>ABC’s, vital signs (including O2 sat and BGL) at the earliest opportunity.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Treat trauma and seizure if applicable.</td>
</tr>
<tr>
<td>• Continuously monitor the airway, breathing, circulatory status, neurovascular function in restrained limbs, and the need for continued restraint.</td>
</tr>
<tr>
<td>• Maintain the patient in the supine or lateral recumbent position.</td>
</tr>
<tr>
<td>• A paramedic and at least one other EMT will attend restrained patients at all times.</td>
</tr>
</tbody>
</table>

**Documentation:**

<table>
<thead>
<tr>
<th>Reason for the restraint; MCEP involvement as needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Circumstances of the incident</td>
</tr>
<tr>
<td>• Known or suspected causes of agitated or delirious behavior</td>
</tr>
<tr>
<td>• Why the patient could not be transported without restraints</td>
</tr>
<tr>
<td>• Relevant comments made by patient</td>
</tr>
<tr>
<td>• Vital signs, O2 sat and BGL (if obtained)</td>
</tr>
<tr>
<td>• Position of patient, type of restraint, and location of restraints on patient</td>
</tr>
<tr>
<td>• Injury to patient or to EMS personnel: state whether injury occurred before, during, or after the restraint process.</td>
</tr>
<tr>
<td>• In cases of restrained patients, every service on-scene must generate an EMS report. Complete documentation is mandatory.</td>
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</tbody>
</table>

**Appropriate Techniques:**

Restraint techniques that are appropriate for EMS utilization include:

<table>
<thead>
<tr>
<th>Chemical sedation</th>
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<tbody>
<tr>
<td>Soft gauze</td>
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<tr>
<td>Soft patient restraints to gurney</td>
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<tr>
<td>Blankets and sheets</td>
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<tr>
<td>Spit hood (system approved full visibility hood when patient is spitting)</td>
</tr>
<tr>
<td>Other system approved commercially available devices</td>
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</tbody>
</table>
Chemical Sedation for the Agitated and Delirious Patient

**Designation of Condition:** Chemical sedation should be reserved for those patients who remain violently agitated, despite verbal de-escalation attempts and in the judgment of the paramedic, poses a continued risk to themselves and/or to the EMS provider. Patients will often present with agitation, confusion, hallucinations, delusional thoughts and bizarre behavior.

**Excited Delerium Syndrome:** This is a state is defined by its clinical features. Stimulant drug use, including cocaine, methamphetamine, and PCP, demonstrates a well-established association with ExDS and is usually associated with cases of ExDS death. These patients are truly out of control and have a life-threatening medical emergency.

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**ABC’s, Vital signs, BGL procedure**
- Consider possible altered mentation due to overdose/toxic ingestion, traumatic brain injury or multisystem trauma and attempt to treat any reversible causes
- Assemble personnel
- Attempt to reasonably address patient concerns, verbal de-escalation

**Excited Delerium Syndrome:**
- Paranoia, disorientation, hyper-aggression, violent, hallucinations, tachycardia/hypertension, hyperthermia, increased strength

**Patient does not respond to verbal de-escalation techniques**

**B**
- Consider restraint guideline
- Do not hobble/hogtie
- Close monitoring of airway, O2 sat, vital signs
- Ensure the presence of sufficient personnel to safely apply EMS restraints

**IV/O access—DO NOT DELAY SEDATION TO OBTAIN ACCESS**

**I**

**12 Lead monitoring**
- ETCO2
- Midazolam 1–5 mg IV/IO/IM/IN to a max of 10 mg
- NOTE: Patients suffering from Delirium Tremens/Severe Alcohol Withdrawal are often severely agitated:
- Focus on Benzodiazepines (Midazolam) and fluids for these patients.

**P**

If patient is still demonstrated significant agitation, or increasing violence/aggression contact UNM EMS Consortium for additional midazolam or possible Ketamine administration

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**DO NOT GIVE FOR MILD ANXIETY/AGITATION**

**Ketamine**
- 4mg/kg IM slow push
- Goal is rapid tranquilization in order to minimize time struggling and complete restraint guideline

After sedation is achieved:
- 2 large bore IVs
- Normal Saline IV/IO 500cc bolus repeat to max of 2 liters
- Cardiac monitor and 12 Lead
- ETCO2 is mandatory

External cooling measures if concern for hyperthermia
- Frequent airway reassessment—close monitoring for vocal chord spasm
- If hypersecretion present:
  - Atropine 0.1–0.3 mg IV/IO or 0.5 mg IM
- If emergence reaction occurs—give Midazolam 1–5 mg IV/IO/IM/IN
- Wide complex tachycardia can occur in these patients:
  - administer Sodium Bicarbonate 1 meq/kg to max of 100 meq

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**KEY POINT**

Inappropriate use of either physical or chemical EMS restraint (use that does not conform to the designation of condition) may be considered an infringement on the patient’s civil rights.

EMS providers must be aware of risk/benefit of EMS restraint and the need for appropriate documentation.