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 $\geq$ 90 mmHg

*****KEY POINTS*****

Remember this is a primary pump failure with decreased cardiac output

$ETCO_2$ 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

P

If patient is conscious:

- Perform primary and secondary surveys and provide care as appropriate
- 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
- Utilize patient's expertise to ensure patient's ambulatory pump is working properly and is infusing at the correct rate

If the patient is unconscious:

- Perform primary and secondary surveys and provide care as appropriate
- 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
- If it is infusing properly, leave infusion as is and allow patient's ambulatory pump to control the infusion en route to the hospital
- 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
- 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

If the patient is in cardiac arrest:

- Perform a primary survey and treat the cardiac arrest per guideline
- 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.

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

B

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

I

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)

P

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

P

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

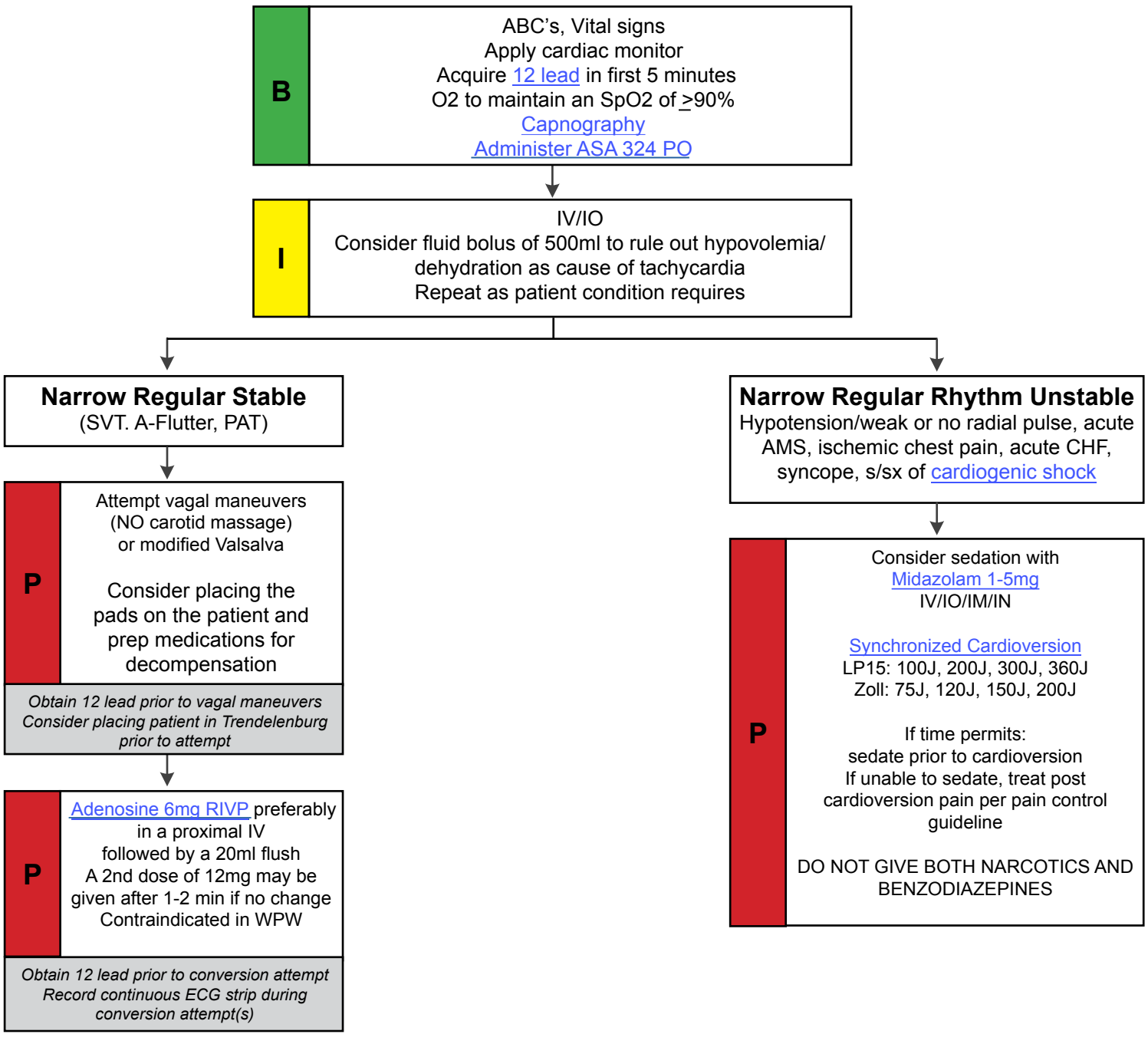
DO NOT GIVE BOTH NARCOTICS AND BENZODIAZEPINES

*****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

Adult Narrow Complex Tachycardia
Regular Rhythm

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



*****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

Adult Symptomatic Bradycardia

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)

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

I
IV/IO

Stable
(SBP >90mmHg / NO Altered Mental Status)

P
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)

P
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

P
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

P
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

If Atropine and TCP are NOT successful with signs and symptoms of profound shock or hypotension

P
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 dehydrtation

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

YES

Wide Polymorphic Stable

P

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

*****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

NO

Wide Polymorphic Unstable

P

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 inrhythm, repeat defibrillation

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

B

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

I

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

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

YES

Regular Monomorphic Stable

P

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

NO

Regular Monomorphic Unstable

P

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

P

Synchronized Cardioversion
Medtronic: 100J
Zoll: 75J

P

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

P

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-arrythmic 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 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

First medical contact to 12 Lead ECG <5 minutes

B

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

I

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

Treat nausea/vomiting with Zofran 4-8 mg ODT or IV

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

Maintain systolic BP >100mmHg

P

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

YES

First medical contact to transport time **<10 minutes**
Immediate transmission of ECG to receiving facility

Early notification PRIOR TO INITIATING TRANSPORT
If no transport unit availble, 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

P

If Sympathomimetic Overdose (cocaine/meth) induced STEMI consider
benzodiazepine 2.5-5 mg IV/IM/IN/IO for pain control—do 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

B Shockable rhythm

YES

B AED Procedure

NO

B Continue CPR 2 minutes
Repeat and reassess

B Manage airway with BVM / Extraglottic / King

NO

P Cardiac monitor

P Shockable rhythm

YES

VF/VT Protocol

NO

Aystole/PEA Protocol

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

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

- All interventions have been implemented for at least 30 minutes, and
- 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

B

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

P

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

B

Check for responsiveness and pulse (<10sec)

Initiate CPR (100-120 compressions / min) to capnography of >10mmHg
NPA/OPA
NRB @ 15lpm
Apply cardiac monitor (AED procedure if BLS/ILS) and **assess for rhythm**
Apply Mechanical Compression Device
Start monitor's metronome while compression device placed or if not available
Capnography procedure
(Capnography can be used to monitor effectiveness of compressions)

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

I

IV/IO
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

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 addtional 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

*****KEY POINT*****

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

B

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

I

IV/IO access

MILD
Normal Heart Rate
Elevated BP

P

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

NO

MODERATE/ SEVERE
Elevated Heart Rate
Elevated BP

B

CPAP for increasing SOB/dyspnea, work of breathing

I

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

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

CARDIOGENIC SHOCK
Hypotention with variable HR

P

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

Titrate to BP >90 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.

Hypoxia (Patient with a history of Asthma or COPD)	If wheezing/decreased lung sounds, give nebulizer with Albuterol/Ipratropium and consider magnesium if patient has a history of COPD or asthma.
Hypovolemia/Tamponade Suspected	Fluid bolus of 500ml, repeated as necessary to a max of 20ml/kg
Hypothermia (Patient tympanic temperature <90°F)	Allow 30-45 seconds to ascertain if carotid pulse present. If ANY pulse is detected, **DO NOT PERFORM CPR** Defibrillation should only be performed once at 200J Epinephrine should only be given once during cardiac arrest See Hypothermia Guideline
Hyperkalemia (Patient with a history of renal insufficiency)	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
Tension Pneumothorax	Needle Chest Decompression
Tricyclic Antidepressant Overdose	Sodium Bicarbonate 1mEq/kg IV/IO (give Sodium Bicarb in a dedicated line)
Calcium Channel Blockers	Calcium Chloride 1gm or Calcium Gluconate 3gm IV/IO
Beta Blockers	Calcium Chloride 1gm or Calcium Gluconate 3gm IV/IO If PEA wide QRS (>140ms), consider Sodium Bicarbonate 1mEq/kg IV/IO (give Sodium Bicarb in a dedicated line)
Torsades de Pointes	Magnesium Sulfate 2g IV/IO slow push

Adult Post-Resuscitation Cardiac Arrest Care

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

B

Manage airway with basic adjuncts and suction PRN
Avoid hyperoxygenation. Administor 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

I Ensure IV/IO patency

I If BGL ≤60mg/dl, proceed to hypoglycemia guideline

Bradycardia

P Treat per the bradycardia protocol

Hypotension
Maintain SBP >90 mmHg

I IV/IO
NS bolus, 250-500 ml to a max of 20cc/kg as appropriate

P 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
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

Maintain BP of 90-100mmHg
Or MAP of 65-80 mmHg

Chest Pain/STEMI
Obtain post-conversion 12 Lead ASAP and transmit.

P Activate STEMI alert prior to initiating transport

Post-ROSC dysrhythmias

P Treat per the appropriate protocol

P If sedation is required to maintain airway, administer Midazolam 2.5-5mg IV/IO/IM

P 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

B

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

↓

I

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

↓

P

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 10mcg/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

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

Adult Ventricular Fibrillation/ Pulseless Ventricular Tachycardia

*****KEY POINT*****

As soon as possible, designate the following positions:

Team leader
Monitor
Airway

Mechanical Compression Device(AutoPulse/ LUCAS) application if available

AT ANY TIME ROSC, go to post-ROSC guideline

B

Check for responsiveness and pulse (<10sec)

Initiate CPR (100-120 compressions / min) to capnography of >10mmHg NPA/ OPA
NRB @ 15lpm
Apply cardiac monitor (AED procedure if BLS/ILS) and **assess for rhythm**
Apply Mechanical Compression Device
Start monitor's metronome while compression device placed or if not available
Capnography procedure
(Capnography can be used to monitor effectiveness of compressions)

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

P

Defibrillate ASAP

↓

B

Immediate resumption of CPR for 200 compressions
At 175 compressions or 1m 45sec, pre-charge monitor to 360J (LP15) or 200J (Zoll)
NPA/OPA
NRB @ 15lpm

↓

I

IV/IO
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

↓

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
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

↓

P

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

Lidocaine is contraindicated in suspected TCA overdoses

↓

P

If persistent VF/Pulseless VT or Torsades de Pointes
Administer
Magnesium Sulfate 2gm IV/IO

Consider termination of resuscitation if appropriate based on cardiac arrest guideline

*****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

Adult Airway

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

YES → Supplemental Oxygen with goal saturation ≥ 90%

NO

B

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

Airway Obstructed

YES → Follow Adult Foreign Body or Peds Foreign Body obstruction guideline

NO

P Direct Laryngoscopy attempt to visualize FB and remove with McGills
Consider Cricothyrotomy procedure

Breathing/ Oxygentation Support Needed?

YES → **B** Consider CPAP
Bag Vave Mask with supplemental oxygen ≥ 90%
Supraglottic Airway procedure (SGA)

NO

P Oral/ Nasotracheal intubation procedure

Needle Decompression procedure if indicated

Monitor/ Reassess
Supplemental Oxygen if inidcated

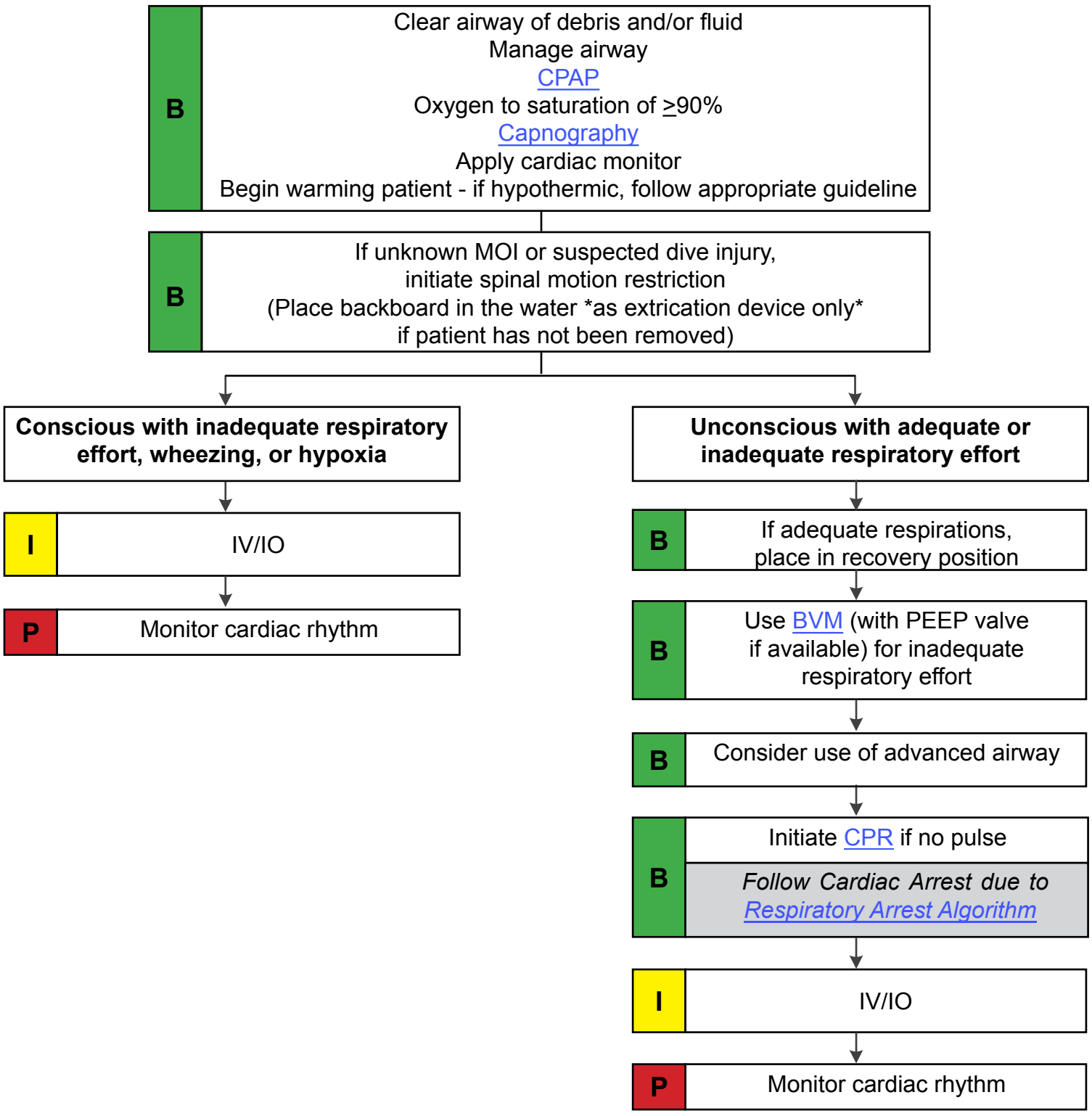
*****KEY POINT*****

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 pathophysiologiccondition 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. *****

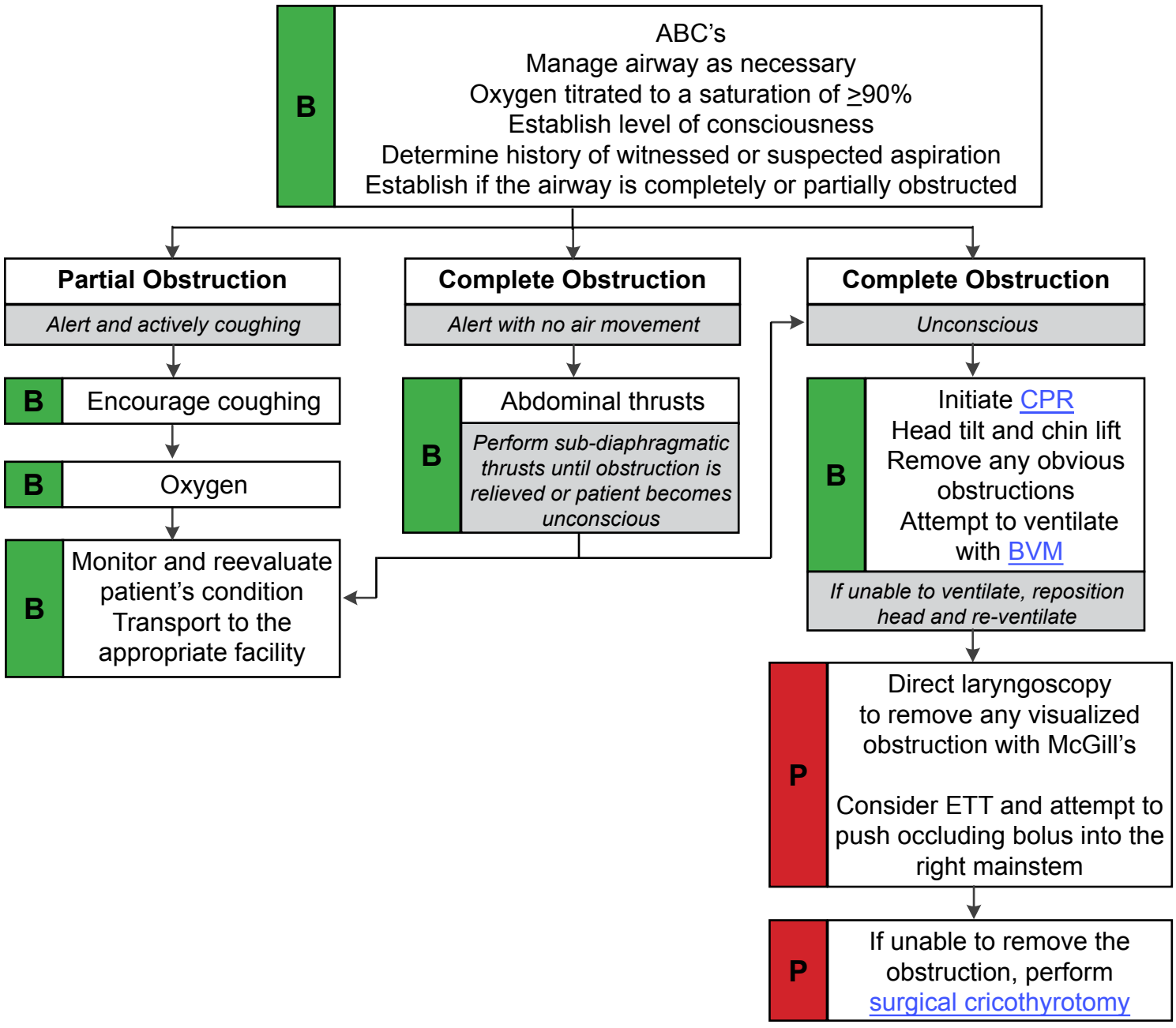
Adult Airway Drowning / Near Drowning

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.



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.



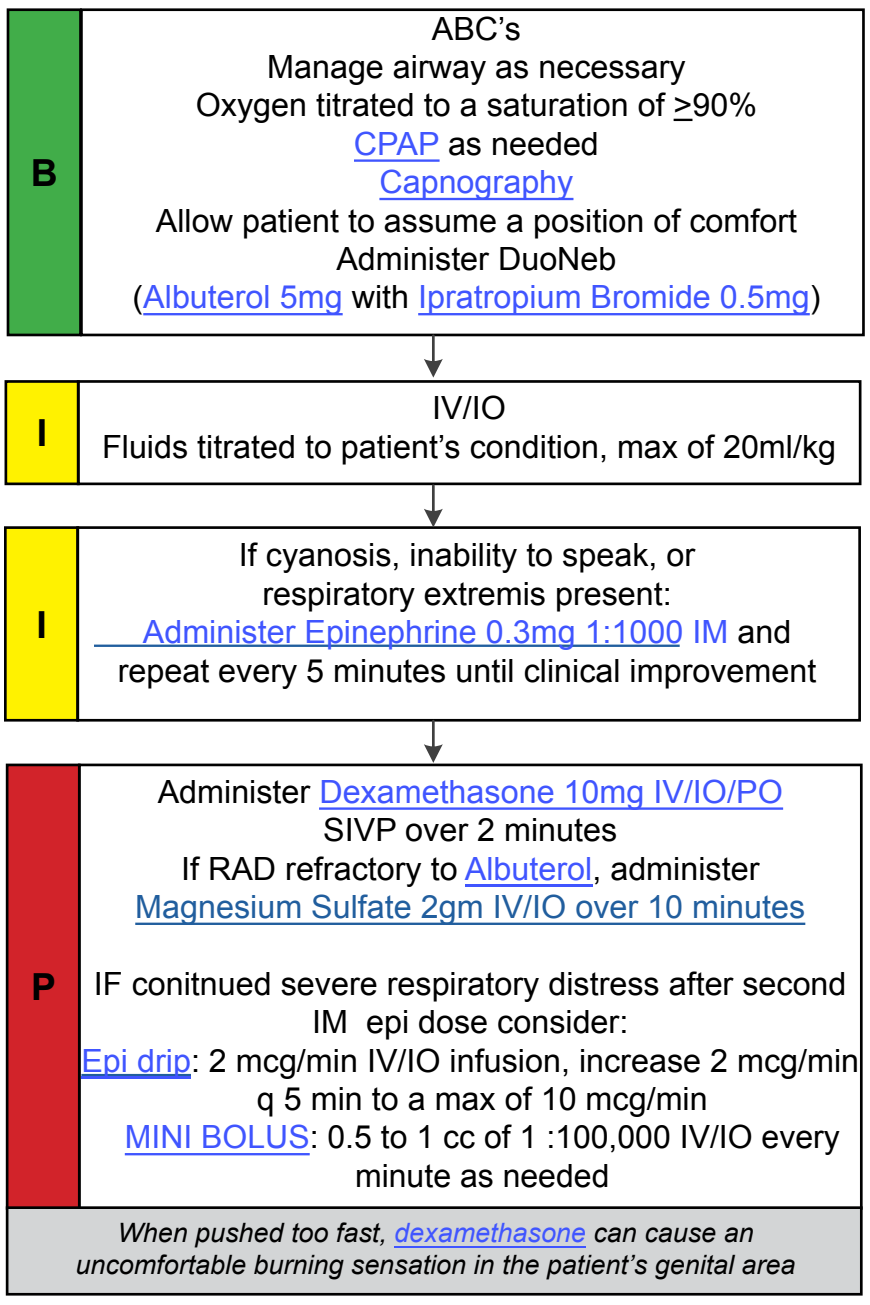
*****KEY POINT*****

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%).



*****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?

YES → Supplemental Oxygen with goal saturation ≥ 90%

NO

B

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

Airway Obstructed

YES → Follow Pediatric foreign body/obstruction guideline

P Direct Laryngoscopy attempt to visualize FB and remove with McGills

NO

Breathing/ Oxygentation Support Needed?

YES → **B** Consider CPAP with age appropriate mask
Bag Vave Mask with supplemental oxygen ≥ 90%
Supraglottic Airway procedure (SGA)

NO

Monitor/ Reassess
Supplemental Oxygen if inidcated

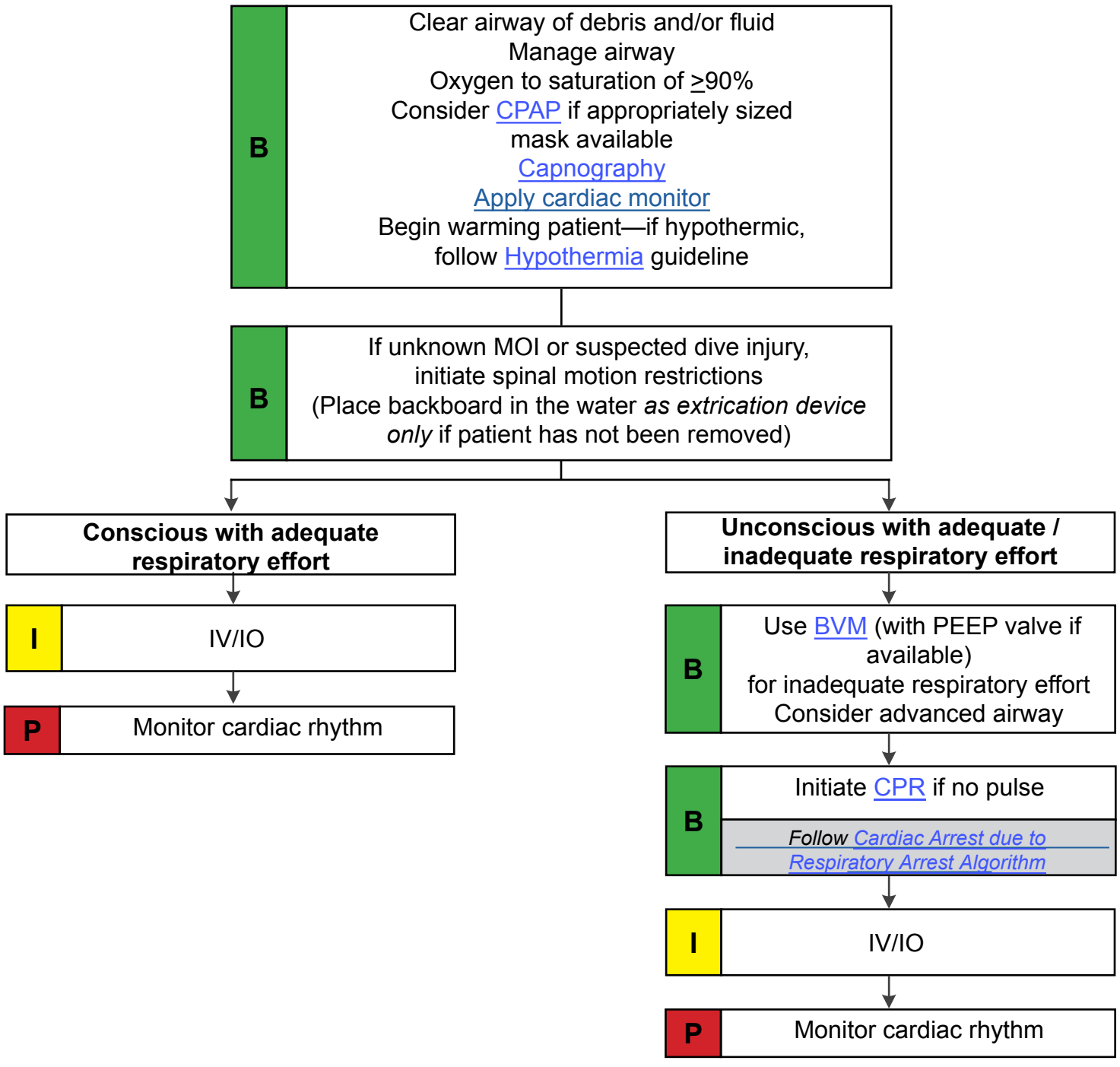
KEY POINT

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

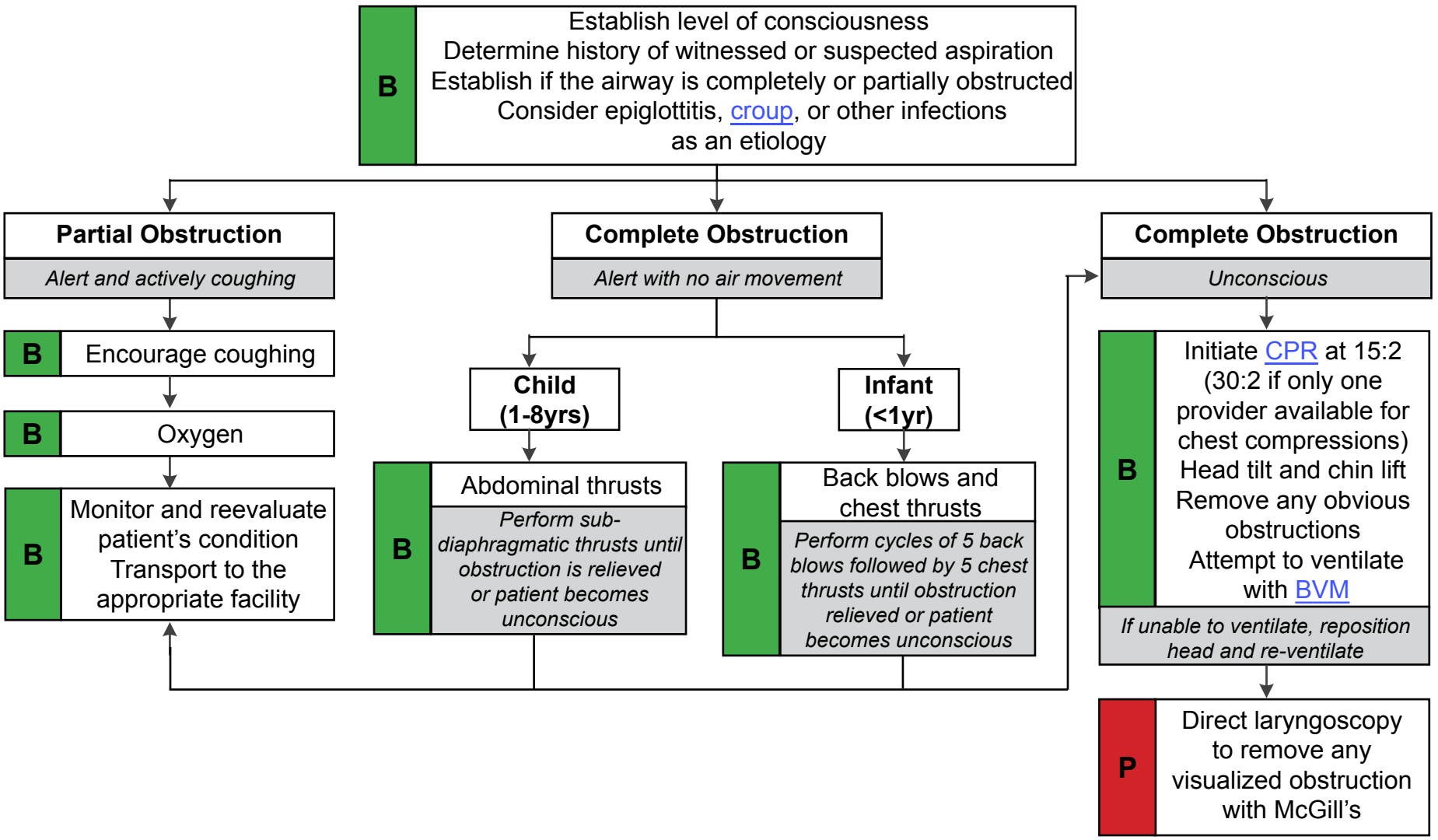
Pediatric Airway Drowning / Near Drowning

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.



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.



*****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 CROUP/ GUIDELINE

B

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

< 2 y/o with wheezing consider bronchoilitis

B

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

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

P

If necessary, provide nasal suctioning with appropriately sized French catheter

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

I

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

P

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

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

Bronchoilitis is the most common dioagnosis 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

Pediatric Airway Stridor/Croup

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).

Early notification of receiving facility is critical

B

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

P

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

P

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

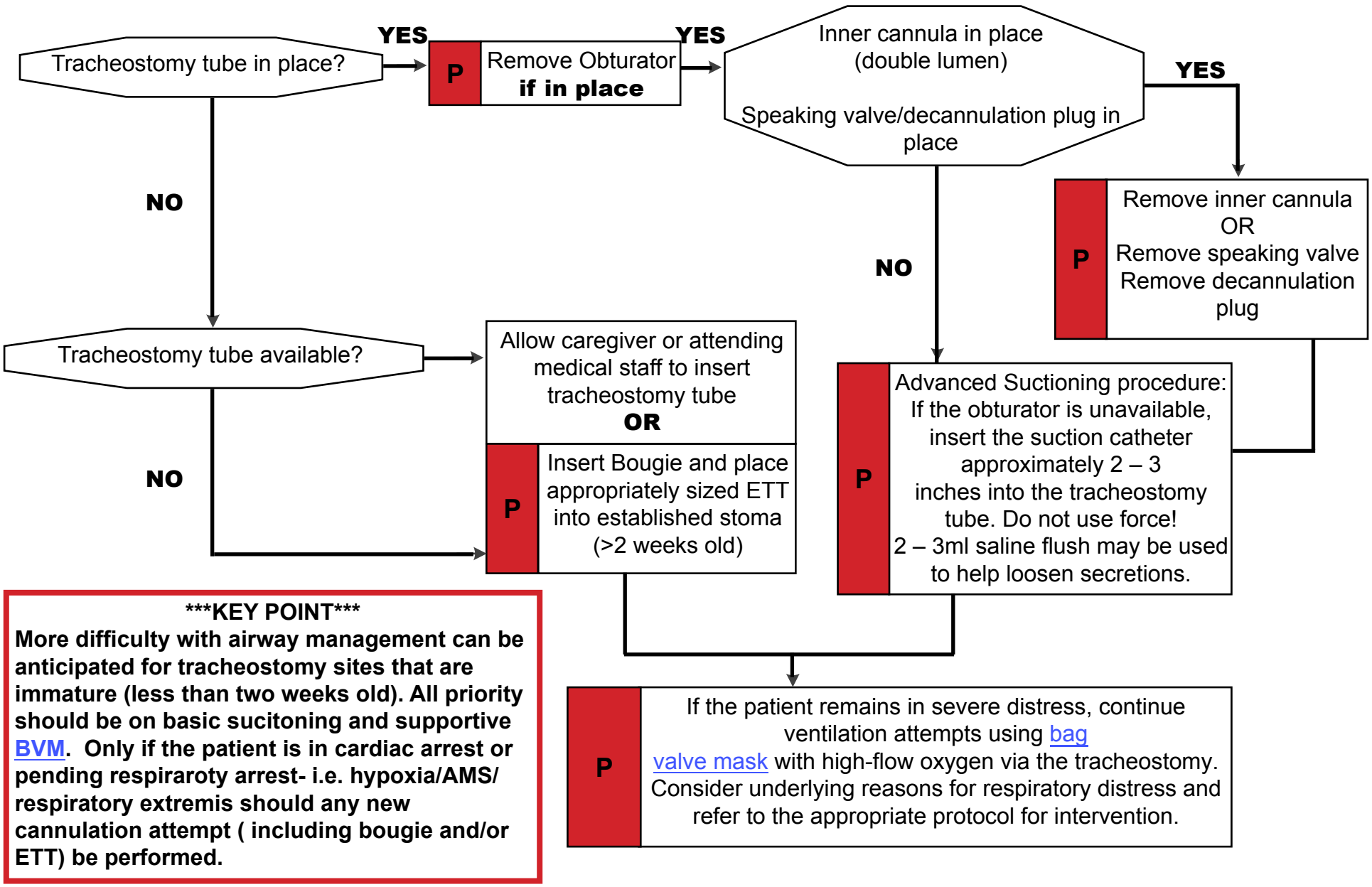
Epiglottitis is exceedingly rare. May consider in the unimmunized child.

- **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 permement 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.

B	Consult with the patient's caregivers for assistance. Assess tracheostomy tube: Look for possible causes of distress which may be easily correctable, such as a detached oxygen source. If the patient's breathing is adequate but exhibits continued signs of respiratorydistress, administer high-flow oxygen via non-rebreather mask or blow-by, as tolerated, over the tracheostomy. Suction any VISIBLE mucus plugs to help clear airway but do not suction deep into the tracheostomy itself. If patient's breathing is inadequate, remove from ventilator and assist ventilations using bag valve mask device with high-flow oxygen.



*****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 sucitoning and supportive BVM. Only if the patient is in cardiac arrest or pending respiraroty arrest- i.e. hypoxia/AMS/ respiratory extremis should any new cannulation attempt (including bougie and/or ETT) be performed.

Appendix A:
Patient Distribution Guidelines

Benchmarks for an MCI will be:

"TRIAGE REPORT"

"ALL IMMEDIATES TRANSPORTED"

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

Appendix A:
START Triage Categorization Criteria

Triage Category	Description
Red Tape (Immediate/Critical)	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.
Yellow Tape (Delayed/Serious)	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.
Green Tape (Minor/Stable)	Patients who may have treatment and/or transport delayed, but MAY require treatment and transport. They may be the last to be transported.
Black Tape (Deceased)	Patients who are already dead, or so severely injured, that death is certain within a short time, regardless of treatment given.

START Triage Algorithm		
Move Walking Wounded	MINOR	
No Resp After Head Tilt/OPA	DEAD/DYING	
Respirations >30	IMMEDIATE	
Pulse–No Radial Pulse	IMMEDIATE	
Mental Status–Unable to follow commands	IMMEDIATE	
Otherwise...	DELAYED	

*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.

B	Provider Safety: All responders should wear personal protective gear, including appropriate gown, gloves (rubber or neoprene), and goggles. • Thoroughly decontaminate the patient. • Ensure no possibility of secondary contamination. • Remove patient from contaminated environment. • Immediately flush exposed areas with large amounts of water. • After thorough initial irrigation apply 2.5% calcium gluconate gel (if available) to burned area of skin every 15 minutes and massage gently until pain resolves • Rubber or neoprene gloves must be worn while touching victim. **(Latex gloves are not an effective barrier against HF)** • 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. • If inhalational exposure: Give 100% oxygen by mask
I	• IV/IO NS or saline lock away from site of exposure. • Pain Control with Morphine 2–5mg IV/IO/IM q 5 minutes to a max of 20mg (0.1 mg/kg q 5 minutes to a max of 0.2mg/kg peds) **OR** Fentanyl 0.5–1mcg/kg IV/IO/IM/IN q 5 minutes to max of 3mcg/kg • If patient shows signs of hypovolemia: • Adult: NS Bolus in 250 ml increments, reassessing between boluses • Infant/Child: NS Bolus in 10–20 ml/kg increments, reassessing between boluses
P	Monitor ECG If inhalation injury presents: • As soon as possible give calcium gluconate neb, mix 1mL of CG with 3mLs of NS. (If available) • Place solution in nebulizer and connect to oxygen to provide effective fog. • Carefully watch the patient for edema of the upper airway with respiratory obstruction. Consider endotracheal intubation or crichothyrotomy if necessary. Suspect systemic toxicity if there is a large surface area exposure or inhalational exposure. Signs of systemic toxicity include tetany, ECG changes (Prolonged QTc. (> 500 msec), or ventricular arrhythmias. If present treat with IV Calcium gluconate. (If available) • Adult: • Administer 10% calcium gluconate IV/IO 0.1ml/kg up to a max of 10ml. • Pediatric: • Administer 10 % calcium gluconate IV/IO 0.1ml/kg up to a max of 10ml. • Transport patient to Regional Burn Center. • If multiple patients see MCI Appendix A

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, HHNM, 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 toprioritize 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.

Appendix B:
Medical Control Emergency Physician Handbook P. 3

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

Age ≥12

As soon as possible:

Place Mechanical Compresison Device (AutoPulse or LUCAS Device) with designated operator

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)

↓

200 Compressions at a rate of 100–120 per minute

↓

Simultaneous with compressions:
IV/IO
NPA/OPA
NRB@15lpm
EtCO2 (if available)

↓

Drugs: Refer to the specific protocol for the presenting rhythm

↓

At 175 compressions, or if ECD in place at 1m 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

↓

Airway management:
Ventilate with a BVM
Give asynchronous ventilations at a rate of 8–10 bpm
and progress to an advanced airway

*****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

Age ≥12

As soon as possible:

Place Mechanical Compresison Device (AutoPulse or LUCAS Device) with designated operator

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)

↓

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 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

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

Initiate Compressions in a 15:2 compression / ventilation ratio (2 minutes) at a rate of at least 100 bpm

↓

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
Establish airway, consider an Extraglottic Airway Device

↓

Drugs: Refer to the specific protocol for the presenting rhythm

↓

At 1:30 sec into compressions, pre-charge the monitor to 4J/kg (LP15 or Zoll)

↓

Analyze rhythm, check pulse (<10 sec)
Shock if indicated

No pulse check after shock

↓

15:2 Compressions / Ventilations

↓

Continue with 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 3:1 compression / ventilation ratio (2 minutes) at a rate of at least 100 bpm

↓

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 to remove airway obstruction

↓

Compressions in a 3:1 compression / ventilation ratio (2 minutes)

↓

Simultaneous with compressions:
IV/IO
Establish airway, consider an Extraglottic Airway Device

↓

Drugs: Refer to the specific protocol for the presenting rhythm

↓

At 1:30 sec into compressions, pre-charge the monitor to 4J/kg (LP15 or Zoll)

↓

Analyze rhythm, check pulse (<10 sec)
Shock if indicated

No pulse check after shock

↓

3:1 Compressions / Ventilations

↓

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

Acetaminophen (Tylenol)

Fever		
P	Adult	1 gram PO
B	Pediatric	15 mg/kg, not to exceed 50 mg/kg/24 hours Weight Based Pediatric Dosing Chart Link

Pain Management		
P	Adult	1 gram PO
	Pediatric	15 mg/kg, not to exceed 50 mg/kg/24 hours Weight Based Pediatric Dosing Chart Link

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)

Adult Cardiac Narrow Complex Tachycardia Pediatric Cardiac - Narrow Complex Tachycardia		
P	Adult	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
	Pediatric	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 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

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

Albuterol (Pro-Air, Proventil, Ventolin)

Adult Airway - Reactive Airway Disease Adult Medical - Anaphylaxis Pediatric Airway - Reactive Airway Disease		
B	Adult >2yo	5 mg Nebulized, repeat as needed if VS permit
	Pediatric <2yo	2.5 mg Nebulized, repeat as needed if VS permit Weight Based Pediatric Dosing Chart Link

Adult Medical - Hyperkalemia		
B	Adult	10 mg Nebulized

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)

Acute Coronary Syndrome (ACS) Adult Cardiac - Symptomatic Bradycardia Adult Cardiac - Wide Complex Tachycardia Irregular Adult Cardiac Congestive Heart Failure / Pulmonary Edema		
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

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

Atropine

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

*****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

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

Calcium Chloride

Adult Medical - Hyperkalemia Adult Cardiac Arrest Adult Medical - Drug Overdose		
P	**Adult**	1 Gram IV/IO
	Pediatric	Not Indicated

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

Hydrofluoric Acid Exposures and Burns		
B	2.5% Calcium Gluconate Gel	
	Adult	After thorough irrigation, apply to burned area q 15 minutes
P	Calcium Gluconate Nebulized (mix 1mL of CG with 3mL's of NS)	
	Adult	2.5% as mixed above nebulized
	Calcium Gluconate IV/IO	
	Adult	0.1 ml/kg up to 10 ml IV
	Pediatric	Same (monitor closely) Weight Based Pediatric Dosing Chart Link

Adult Medical - Hyperkalemia Adult Cardiac Arrest Adult Medical - Drug Overdose		
P	Adult	3 Gram IV/IO
	Pediatric	Not indicated

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

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)

[Adult Airway - Reactive Airway Disease](#) [Adult Medical - Anaphylaxis](#) [Pediatric Airway - Reactive Airway Disease](#) [Pediatric Croup/Epiglotitis](#)		
P	**Adult**	10 mg IV/IO/IM/PO over 2 minutes (repeat once)
	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

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

Dextrose (D10W)

Adult Medical - Diabetic Emergencies Medical - Convulsive Seizures, Status Epilepticus Pediatric Cardiac - Neonatal Resuscitation Obstetrics Pre-Eclampsia and Eclampsia										
	Grey 3-5 Kg	Pink 6-7 Kg	Red 8-9 Kg	Purple 10-11Kg	Yellow 12-14 Kg	White 15-18 Kg	Blue 19-23 Kg	Orange 24-29 Kg	Green 30-36 Kg	Adult >36 Kg
I	IV 2 g 20 mL	IV 3 g 30 mL	IV 4 g 40 mL	IV 5 g 50 mL	IV 6.5 g 65 mL	IV 8 g 80 mL	IV 10.5 g 105 mL	IV 13.5 g 135 mL	IV 16.5 g 165 mL	IV 25 g 250 mL

*****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

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

Diazepam (Valium)

Airway Management & Intubation Guidelines and Procedure **Analgesia or Sedation for Transcutaneous Pacing** **Adult Cardiac Narrow Complex Tachycardia** **Adult Cardiac - Wide Complex Tachycardia Irregular** **Obstetrics - Pre-Eclampsia and Eclampsia**		
P	**Adult**	1-5 mg IV/IO/IM q 3-5 to a maximum of 10 mg
Pediatric Cardiac - Narrow Complex Tachycardia **Pediatric Cardiac Wide Complex Tachycardia**		
P	**Pediatric**	0.05-0.1 mg/kg IV/IO/IM to a max of 5 mg Weight Based Pediatric Dosing Chart Link
Adult Medical - Drug Overdose **Adult Medical - Convulsive Seizures, Status Epilepticus**		
P	**Adult**	1-5 mg IV/IO/IM q 3-5 to a maximum of 10 mg
	Pediatric	0.05-0.1 mg/kg IV/IO/IM to a max of 5 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

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

Diphenhydramine (Benadryl)

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

*****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 patent clear ventilatory passages

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 ½ 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

Epinephrine

Adult Cardiac Arrest Pediatric Cardiac Arrest Neonatal Resuscitation Adult Medical - Hypothermia		
I	Adult	Epi 1:10,000—1 mg IV/IO q 10 minutes
	Pediatric	Epi 1:10,000—0.01mg/kg IV/IO (0.1 mL/kg) q 10 minutes Weight Based Pediatric Dosing Chart Link

Pediatric Cardiac - Symptomatic Bradycardia		
P	Pediatric	Epi 1:10,000–0.01mg/kg IV/IO (0.1 mL/kg) q 3-5 minutes

Adult Airway - Reactive Airway Disease Pediatric Airway - Reactive Airway Disease Adult Medical - Anaphylaxis		
I	Adult	Epi 1:1000—0.3 mg IM, may repeat in 5 minutes and repeat to effect
	Pediatric	Epi 1:1000—0.01 mg/kg IM (max of 0.3 mg) Weight Based Pediatric Dosing Chart Link

Adult Medical - Anaphylaxis Pediatric Croup/Epiglottitis		
P	Adult	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
	Pediatric	As above Weight Based Pediatric Dosing Chart Link

Adult Medical - Sepsis/Septic Shock Pediatric Medical Sepsis/Septic Shock Adult Medical - Drug Overdose		
P	Adult	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
	Pediatric	Epi Drip—0.1-1 mcg/kg/min (Epi is the recommended vasopressor for pediatrics) Weight Based Pediatric Dosing Chart Link

Adult Cardiac - Symptomatic Bradycardia Adult Cardiac - Congestive Heart Failure / Pulmonary Edema Ventricular Assist Device (VAD) Adult Medical - Anaphylaxis **Snakebite**		
P	Adult	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

Epinephrine

*****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

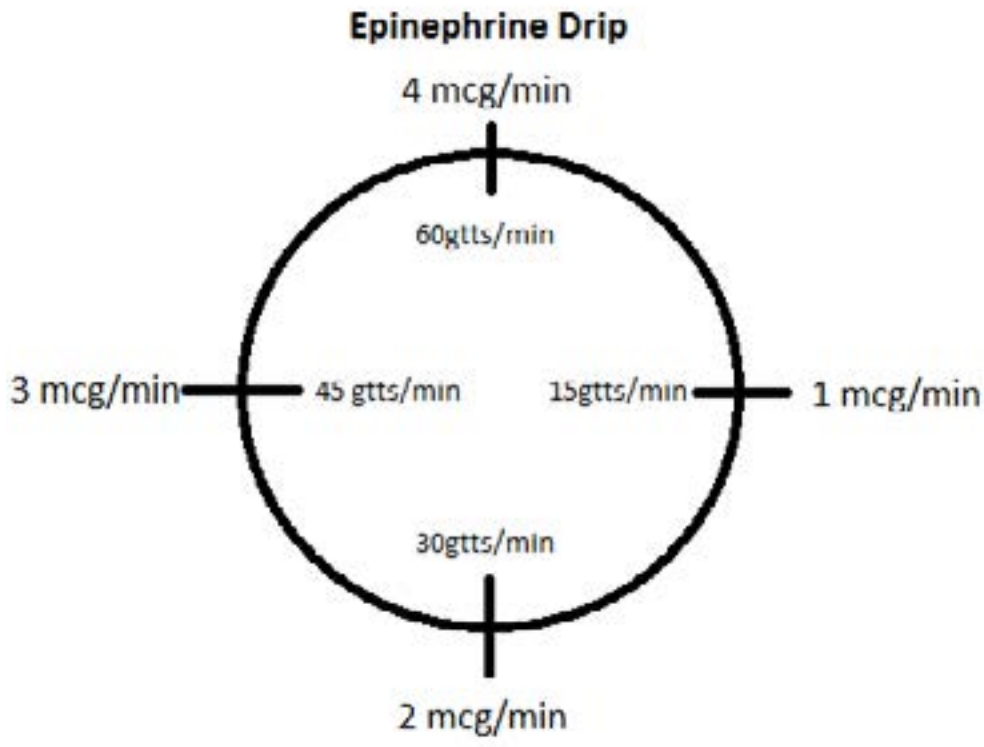
Mini-Bolus Mixing Instructions:

- 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
- Cautions: 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)

Acute Coronary Syndrome (ACS) Thermal Burns Pain Management Hydroflouric Acid Exposure/Burns		
I	**Adult**	1-3 mcg/kg IV/IO/IM/IN to a max of 3 mcg/kg
	Pediatric	Same as above Weight Based Pediatric Dosing Chart Link
Analgesia or Sedation for Transcutaneous Pacing Pediatric Cardiac - Symptomatic Bradycardia		
P	**Adult**	1-3 mcg/kg IV/IO/IM/IN to a max of 3 mcg/kg
	Pediatric	Same as above Weight Based Pediatric Dosing Chart Link

*****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
- If no EMT-paramedic available, contact MCEP prior to administering narcotic medications

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: (Route: IV)

- 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

Hydroxocobalamin (CyanoKit)

Cyanide Poisoning		
I	Adult	5 grams IV/IO over 15 minutes (If available). Re-assess blood pressure during and after infusion
	Pediatric	70 mg/kg IV/IO over 15 minutes (If available). Re-assess blood pressure during and after infusion Weight Based Pediatric Dosing Chart Link

*****KEY POINT*****

A SEPARATE IV is necessary to give this medication due to the multiple drug interaction potentials

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

Ibuprofen (Advil, Motrin)

	Pain Management **Fever**	
B	**Adult**	400-600 mg PO
	Pediatric >6 mts old (Liquid)	10mg/kg PO (pill or liquid)

*****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

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

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, thromboxytopenia, coagulation defects, renal impairment

Adverse reactions:
- 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 and death

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

Ipratropium Bromide (Atrovent)

Adult Airway - Reactive Airway Disease Pediatric Airway - Reactive Airway Disease		
B	Adult	0.5mg nebulized (Given in conjunction with Albuterol as a Duo Neb in first administration)
	Pediatric	Pediatrics receive the above dosage if over 8kg Weight Based Pediatric Dosing Chart Link

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

Ketamine (Ketalar)

Pain Management		
P	Adult	0.5 mg/kg IN (max single dose 25 mg; max cummulative dose 100mg) 0.25 mg/kg IM q 10 minutes (max single dose 25 mg; max cummulative dose 100mg)
P	Pediatric 3-12 years	0.5 mg/kg IN (max dose 25mg) 0.25 mg/kg IM q 10 minutes (max dose 25 mg)
Patient Restraint—Excited Delirium		
P	Adult	4mg/kg IM DO NOT GIVE TO PATIENTS < 12 y/o or < 40 kg

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, hypersalavation, 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)

Pain Management		
P	**Adult**	15 mg IV/IO/IM (Single dose)
	Pediatric >2 years	1 mg/kg IM max of 15 mg 0.5 mg/kg IV/IO max of 15 mg
Fever Pain Management		
I	**Adult**	15 mg IV/IM with MCEP contact

*****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%

Adult Cardiac Arrest **Adult Cardiac - Wide Complex Tachycardia Irregular** **Pediatric Cardiac Arrest** **Adult Medical - Hypothermia**		
P	**Adult**	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)
	Pediatric	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
Intraosseous Access and Infusion Procedure		
I	**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

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

Lorazepam (Ativan)

P	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

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

Magnesium Sulfate

Adult Cardiac Arrest Adult Cardiac Wide Complex Tachycardia (Unstable)		
P	Adult	2 gm IV/IO Push; can repeat x 1 to a total of 4 grams

Adult Cardiac Wide Complex Tachycardia (Stable)		
P	Adult	2 gm IV/IO over 10 minutes; can repeat x 1 to a total of 4 grams

Pediatric Cardiac Arrest		
P	Pediatric	25 mg/kg for patients under 50kg IVP; can repeat same dose with MCEP consult Weight Based Pediatric Dosing Chart Link

Pediatric Cardiac Wide Complex Tachycardia		
P	Pediatric	**Stable:** 25 mg/kg IV/IO over 10 minutes IVP; can repeat same dose with MCEP consult **Unstable:** 25 mg/kg for patients under 50kg IVP; can repeat with MCEP consult Weight Based Pediatric Dosing Chart Link

Adult Airway - Reactive Airway Disease Pediatric Airway - Reactive Airway Disease		
P	Adult	2 gm IV/IO over 10 minutes; repeat with MCEP consult
	Pediatric	25 mg/kg for patients under 50kg over 10 minutes IV/IO; can repeat with MCEP consult >50kg, give 2gm over 10 minutes IV/IO Weight Based Pediatric Dosing Chart Link

Obstetrics - Pre-Eclampsia and Eclampsia		
P	Adult	**Pre-Eclampsia:** 2 gm IV/IO over 10 minutes; can repeat x 1 to a total of 4 grams **Eclampsia:** 4 gm IV/IO Push

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 in not available, use this formula to run the drip:

$$\frac{125cc \times 10gtt/ml}{Time}$$

- 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 in not available, use this formula to run the drip:

$$\frac{100cc \times 10gtt/ml}{Time}$$

- 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

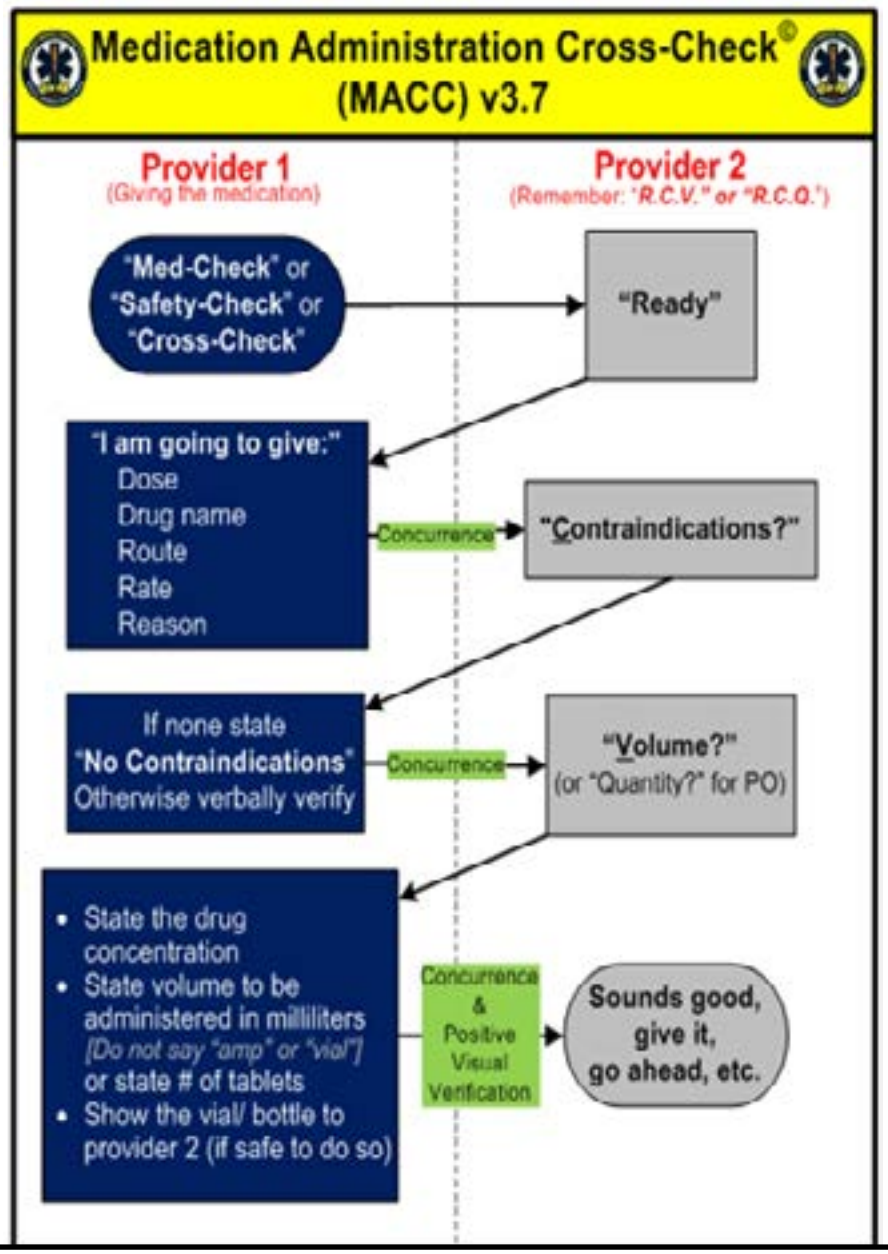
Contraindications:

- 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)

Airway Management & Intubation Guidelines and Procedure **Analgesia or Sedation for Transcutaneous Pacing** **Adult Cardiac Narrow Complex Tachycardia** **Adult Cardiac Wide Complex Tachycardia** **Obstetrics - Pre-Eclampsia and Eclampsia** **Adult Medical - Overdose**		
P	**Adult**	1-5 mg IV/IO/IM/IN to a max of 10 mg
Pediatric Cardiac - Narrow Complex Tachycardia **Pediatric Cardiac Wide Complex Tachycardia**		
P	**Pediatric**	0.05-0.1 mg/kg IV, IO, IM 0.1-0.2mg/kg IN max 5 mg Weight Based Pediatric Dosing Chart Link
Adult Medical -Convulsive Seizures, Status Epilepticus		
P	**Adult**	1-5 mg IV/IO/IM/IN to a max of 10 mg
	Pediatric	0.1-0.2mg/kg IN, 0.05-0.1 mg/kg IV/IO/IM max 5 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

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

Morphine Sulfate

Acute Coronary Syndrome (ACS) Thermal Burns Pain Management Hydroflouric Acid Exposure/Burns Abdominal Trauma		
I	Adult	(16 y/o or >) 2-20 mg IV/IO/IM 2-5 mg increments q 5 minutes to max
	Pediatric	(15 y/o or <) 0.1 - 0.2 mg/kg IV/IO/IM q 5minutes to maximum of 0.2 mg/kg Weight Based Pediatric Dosing Chart Link

Analgesia or Sedation for Transcutaneous Pacing Pediatric Cardiac - Symptomatic Bradycardia		
P	Adult	(16 y/o or >) 2-20 mg IV/IO/IM 2-5 mg increments q 5 minutes to max
	Pediatric	(15 y/o or <) 0.1-0.2 mg/kg IV/IO/IM q 5minutes to maximum of 0.2 mg/kg 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

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

Naloxone (Narcan)

Adult Medical - Drug Overdose		
B	Adult	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)
	Pediatric	0.1 mg/kg IM/IN to a maximum of 2.0 mg Weight Based Pediatric Dosing Chart Link
I	Adult	0.4 mg IV/IO/IM q 2-4min to a maximum of 10 mg or 2 mg IN (Repeat IN once if necessary as noted below)
	Pediatric	0.1 mg/kg IV/IO/IM/IN to a maximum of 2.0 mg Weight Based Pediatric Dosing Chart Link

*****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

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

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		
I	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)

[Adult Cardiac - Symptomatic Bradycardia](#) [Adult Cardiac - Congestive Heart Failure / Pulmonary Edema](#) [Ventricular Assist Device (VAD)](#) [Adult Medical - Anaphylaxis](#) [Adult Medical - Snakebite](#) [Adult Medical - Sepsis/Septic Shock](#) [Pediatric Medical Sepsis/Septic Shock](#) [Adult Medical - Drug Overdose](#)		
P	**Adult**	4 mcg/min IV/IO infusion, increase 2 mcg/min q 5 min to a max of 10 mcg/min

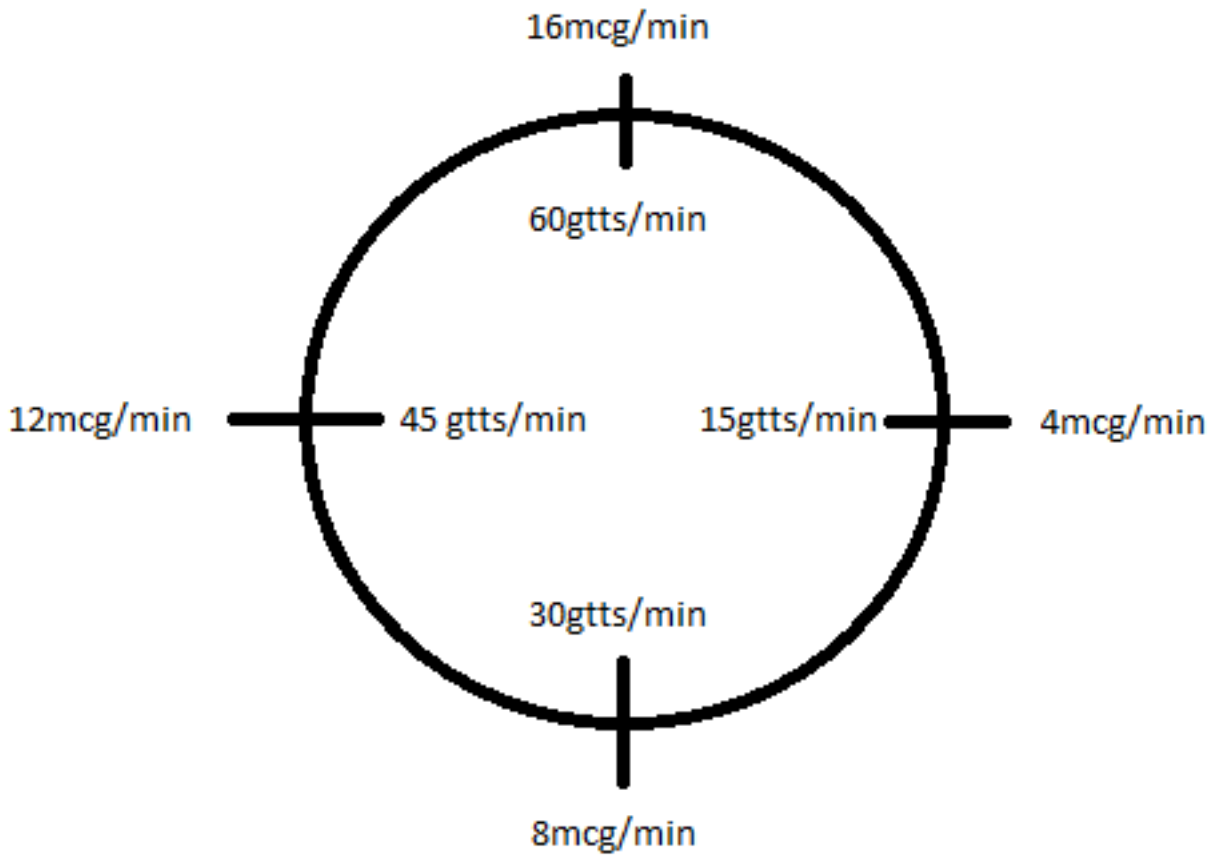
*****KEY POINT*****

Administration 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

Norepinephrine (Levophed)



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)

Adult Medical Nausea and Vomiting		
I	Adult	4 mg IM/IV/IO/ODT(oral disintegrating tablet) may repeat 4mg dosage x1 if needed
	Pediatric	0.15 mg/kg IM/IV/IO/PO to max of 8 mg, contact MCEP for additional (may give liquid form orally) Weight Based Pediatric Dosing Chart Link

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

Oral Glucose

Adult Medical - Diabetic Emergencies		
B	Adult	15 grams Oral
	Pediatric	15 grams Oral

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

Pediatric Dosing Chart

Pediatric Formulary v1.1 — 2/2017

	3kg	4kg	5kg	6-7kg	8-9kg	10-11kg	12-14kg	15-18kg	19-23kg	24-29kg	30-36kg	ADULT
Acetaminophen	45mg	60mg	75mg	90mg	115mg	135mg	180mg	224mg	275mg	320mg	320mg	Not
160mg/5ml	1.4ml	1.9ml	2.3ml	2.8ml	3.6ml	4.2ml	5.6ml	7ml	8.6ml	10ml	10ml	Indicated
Adenosine (1st dose)	0.3mg	0.4mg	0.5mg	0.65mg	0.85mg	1mg	1.3mg	1.65mg	2.1mg	2.65mg	3.3mg	6mg
6mg/1ml	0.05ml	0.07ml	0.08ml	0.11ml	0.14ml	0.18ml	0.22ml	0.28ml	0.35ml	0.44ml	0.55ml	1ml
6mg/2ml	0.1ml	0.13ml	0.16ml	0.22ml	0.28ml	0.33ml	0.43ml	0.55ml	0.7ml	0.88ml	1.1ml	2ml
Adenosine (2nd dose)	0.6mg	0.8mg	1mg	1.3mg	1.7mg	2mg	2.6mg	3.3mg	4.2mg	5.3mg	6.6mg	12mg
6mg/1ml	0.1ml	0.13ml	0.17ml	0.22ml	0.28ml	0.33ml	0.44ml	0.55ml	0.7ml	0.89ml	1.1ml	2ml
6mg/2ml	0.2ml	0.27ml	0.33ml	0.43ml	0.57ml	0.67ml	0.88ml	1.1ml	1.4ml	1.8ml	2.2ml	4ml
Albuterol	2.5mg	2.5mg	2.5mg	2.5mg	2.5mg	2.5mg	5mg	5mg	5mg	5mg	5mg	5mg
2.5mg/3ml	3ml	3ml	3ml	3ml	3ml	3ml	6ml	6ml	6ml	6ml	6ml	6ml
Atropine	0.1mg	0.1mg	0.1mg	0.13mg	0.17mg	0.21mg	0.26mg	0.33mg	0.42mg	0.5mg	0.5mg	1mg
1mg/10ml	1ml	1ml	1ml	1.3ml	1.7ml	2.1ml	2.6ml	3.3ml	4.2ml	5ml	5ml	10ml
Calcium Chloride												1gm
	Not Indicated for Pediatrics											
Calcium Gluconate	0.6mg	0.8mg	1mg	1.3mg	1.7mg	2mg	2.6mg	3.3mg	4.2mg	5.3mg	6.6mg	3gm
100mg/50ml	0.3ml	0.4ml	0.5ml	0.65ml	0.85ml	1ml	1.3ml	1.65ml	2.1ml	2.65ml	3.3ml	1.5ml
Dexamethasone	1.8mg	2.4mg	3mg	3.9mg	5.1mg	6.3mg	7.8mg	10mg	10mg	10mg	10mg	10mg
10mg/1ml	0.18ml	0.24ml	0.3ml	0.39ml	0.51ml	0.63ml	0.78ml	1ml	1ml	1ml	1ml	1ml
Dextrose 10%	1.5g	2g	2.5g	3.25g	4.25g	5.25g	6.5g	8.25g	10.5g	13.2g	16.5g	25g
25g/250ml	15ml	20ml	25ml	32.5ml	42.5ml	52.5ml	65ml	82.5ml	105ml	132ml	165ml	250cc
Diazepam	0.23mg	0.3mg	0.38mg	0.49mg	0.64mg	0.79mg	0.98mg	1.24mg	1.61mg	2mg	2.5mg	5mg
10mg/2ml	0.05ml	0.06ml	0.08ml	0.1ml	0.13ml	0.16ml	0.2ml	0.25ml	0.32ml	0.4ml	0.5ml	1ml
Diphenhydramine	3mg	4mg	5mg	6.5mg	8.5mg	10.5mg	13mg	16.5mg	21mg	26.5mg	33mg	50mg
50mg/1ml	0.06ml	0.08ml	0.1ml	0.13ml	0.17ml	0.21ml	0.26ml	0.33ml	0.42ml	0.53ml	0.66ml	1ml
Epinephrine 1:10,000	0.03mg	0.04mg	0.05mg	0.065mg	0.085mg	0.1mg	0.13mg	0.17mg	0.21mg	0.27mg	0.33mg	1mg
1mg/10ml	0.3ml	0.4ml	0.5ml	0.65ml	0.85ml	1ml	1.3ml	1.7ml	2.1ml	2.7ml	3.3ml	10ml
Epinephrine 1:1,000	0.03mg	0.04mg	0.05mg	0.065mg	0.085mg	0.1mg	0.13mg	0.17mg	0.21mg	0.27mg	0.3mg	0.3mg
1mg/1ml	0.03ml	0.04ml	0.05ml	0.065ml	0.085ml	0.1ml	0.13ml	0.17ml	0.21ml	0.27ml	0.3ml	0.3ml
Epinephrine (Nebulized)	0.15mg	0.2mg	0.25mg	0.33mg	0.43mg	0.53mg	0.65mg	0.83mg	1.1mg	1.33mg	1.65mg	3mg
1mg/1ml	0.15ml	0.2ml	0.25ml	0.33ml	0.43ml	0.53ml	0.65ml	0.83ml	1.1ml	1.33ml	1.65ml	3ml
Fentanyl	3mcg	4mcg	5mcg	6.5mcg	8.5mcg	10.5mcg	13mcg	16.5mcg	21mcg	26.5mcg	33mcg	50mcg
100mcg/2ml	0.06ml	0.08ml	0.1ml	0.13ml	0.17ml	0.21ml	0.26ml	0.33ml	0.42ml	0.53ml	0.66ml	1ml
	3kg	4kg	5kg	6-7kg	8-9kg	10-11kg	12-14kg	15-18kg	19-23kg	24-29kg	30-36kg	Adult

Pediatric Dosing Chart

Pediatric Formulary v1.1 — 2/2017

	3kg	4kg	5kg	6-7kg	8-9kg	10-11kg	12-14kg	15-18kg	19-23kg	24-29kg	30-36kg	Adult
Hydroxocobalamin	210mg	280mcg	350mg	455mg	595mg	735mg	910mg	1.15gm	1.47gm	1.85gm	2.3gm	5gm
5g/200ml	8.4ml	11.2ml	14ml	18.2ml	23.8ml	29.4ml	36.4ml	46ml	58.8ml	74ml	92ml	200ml
Ipratropium Bromide					0.5mg	0.5mg	0.5mg	0.5mg	0.5mg	0.5mg	0.5mg	0.5mg
0.5mg/3ml	Not Indicated				3ml	3ml	3ml	3ml	3ml	3ml	3ml	3ml
Lidocaine (Cardiac)	3mg	4mg	5mg	6.5mg	8.5mg	10.5mg	13mg	16.5mg	21mg	27.5mg	33mg	100mg
100mg/5ml	0.15ml	0.2ml	0.25ml	0.33ml	0.43ml	0.53ml	0.65ml	0.83ml	1.05ml	0.14ml	1.65ml	5ml
Lidocaine (IO)	1.5mg	2mg	2.5mg	3.25mg	4.3mg	5.25mg	6.5mg	8.3mg	10.5mg	13.25mg	16.5mg	40mg
100mg/5ml	0.075ml	0.1ml	0.125ml	0.16ml	0.22ml	0.26ml	0.33ml	0.42ml	0.53ml	0.66ml	0.83ml	2ml
Lorazeparm	0.23mg	0.3mg	0.38mg	.49mg	0.64mg	0.79mg	0.98mg	1.24mg	1.58mg	2mg	2mg	2mg
2mg/1ml	0.12ml	0.15ml	0.19ml	0.25ml	0.32ml	0.4ml	0.49ml	0.62ml	0.76ml	1ml	1ml	1ml
Magnesium Sulfate	75mg	100mg	125mg	162.5mg	212.5mg	262.5mg	325mg	412.5mg	525mg	662.5mg	825mg	2g
4g/100ml	1.88ml	2.5ml	3.125ml	4.06ml	5.31ml	6.56ml	8.125ml	10.31ml	13.13ml	16.56ml	20.63ml	50ml
5g/10ml	0.15ml	0.2ml	0.25ml	0.33ml	0.43ml	0.53ml	0.65ml	0.83ml	1.05ml	1.33ml	1.65ml	4ml
Mag Sulfate (Unstable)	150mg	200mg	250mg	325mg	425mg	525mg	650mg	825mg	1050mg	1325mg	1650mg	2gm
4g/100ml	3.75ml	5ml	6.25ml	8.125ml	10.63ml	13.13ml	16.25ml	20.63ml	26.25ml	33.1ml	41.25ml	50ml
5g/10ml	0.3ml	0.4ml	0.5ml	0.65ml	0.85ml	1.05ml	1.3ml	1.65ml	2.1ml	2.65ml	3.3ml	4ml
Midazolam (IN)	0.3mg	0.4mg	0.5mg	0.65mg	0.85mg	1mg	1.3mg	1.7mg	2.1mg	2.7mg	3.3mg	5mg
5mg/1ml/ 10mg/2ml	0.06ml	0.08ml	0.1ml	0.13ml	0.17ml	0.2ml	0.26ml	0.34ml	0.42ml	0.54ml	0.66ml	1ml
Midazolam (IM,IV,IO)	0.15mg	0.2mg	0.25mg	0.33mg	0.43mg	0.5mg	0.65mg	0.85mg	1.05mg	1.35mg	1.65mg	5mg
5mg/1ml/ 10mg/2ml	0.03ml	0.04ml	0.05ml	0.07ml	0.09ml	0.1ml	0.13ml	0.17ml	0.21ml	0.27ml	0.33ml	1ml
Morphine Sulfate	0.3mg	0.4mg	0.5mg	0.65mg	0.85mg	1mg	1.3mg	1.7mg	2.1mg	2.7mg	3.3mg	5mg
10mg/1ml	0.03ml	0.04ml	0.05ml	0.07ml	0.09ml	0.1ml	0.13ml	0.17ml	0.21ml	0.27ml	0.33ml	0.5ml
Naloxone	0.3mg	0.4mg	0.5mg	0.65mg	0.85mg	1mg	1.3mg	1.7mg	2mg	2mg	2mg	0.4mg
0.4mg/1ml	0.75ml	1ml	1.25ml	1.63ml	2.13ml	2.5ml	3.25ml	4.25ml	5ml	5ml	5ml	1ml
2mg/2ml	0.3ml	0.4ml	0.5ml	0.65ml	0.85ml	1ml	1.3ml	1.7ml	2ml	2ml	2ml	0.4ml
Norepinephrine	Not Indicated for Pediatrics											4mcg/min
Ondansetron (IV)							2mg	2.5mg	3mg	4mg	5mg	8mg
4mg/2ml							1ml	1.25ml	1.5ml	2ml	2.5ml	4ml
Sodium Bicarbonate	3mEq	4mEq	5mEq	6.5mEq	8.5mEq	10.5mEq	13mEq	16.5mEq	21mEq	26.5mEq	33mEq	100mEq
50mEq/50ml	3ml	4ml	5ml	6.5ml	8.5ml	10.5ml	13ml	16.5ml	21ml	26.5ml	33ml	100ml
	3kg	4kg	5kg	6-7kg	8-9kg	10-11kg	12-14kg	15-18kg	19-23kg	24-29kg	30-36kg	Adult

Sodium Bicarbonate

Adult Cardiac Arrest **Pediatric Cardiac Arrest** **Adult Cardiac Wide Complex Tachycardia** **Pediatric Wide Complex Tachycardia** **Adult Medical - Overdose** **Adult Medical - Hyperkalemia**		
P	**Adult**	1 mEq/kg IV/IO, (contact MCEP prior to additional administration)
	Pediatric	1 mEq/kg IV/IO, (contact MCEP prior to additional administration) Weight Based Pediatric Dosing Chart Link

*****KEY POINT*****

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

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

Adult Medical Allergic Reaction/ Anaphylaxis

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.

Never give Epi 1:1000 IV

EMT - Basic can only administer Epi in a 0.3ml syringe or auto-injector

B Oxygen
Capnography
Apply cardiac monitor and assess vital signs

I IV/IO

Assess Symptom Severity / Suspected Exposure to Allergen

Mild

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

B **Consider** Epinephrine 1:1000 IM or Epi-Pen if Hx of severe reactions

I 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

B **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

I Diphenhydramine 0.5–1mg/kg IV/IO/IM to a max of 50mg

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

Severe

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

B Epinephrine 1:1000 IM
DuoNeb
Albuterol 5mg and Ipratropium 0.5mg Consider CPAP if no immediate airway swelling

I Diphenhydramine 0.5–1mg/kg IV/IO/IM to a max of 50mg
Fluid bolus 20cc/kg to maintain a SBP ≥90mmHg

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

Consider as first line:
Epinephrine mini-bolus of 0.5–1cc of 1:100,000 IV/IO q 1 min PRN
or
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
Goal of SBP >90mmHg

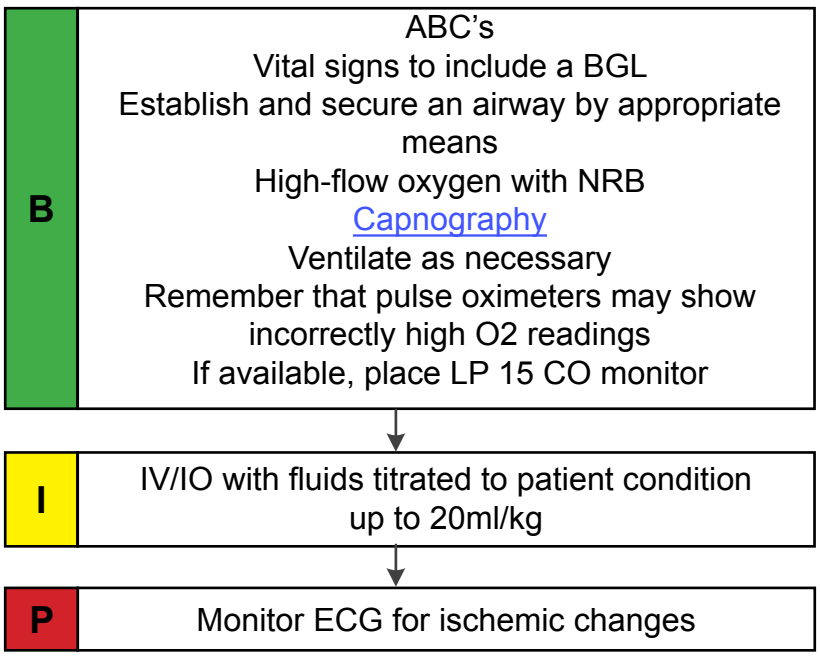
Adult Altered Mental Status

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

B	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 Obtain history from pt or bystander, if able attempt to obtain baseline mental status and duraiton of symptoms or time of onset Consider possible overdose or ingestion Evaluate for traumatic injuries Consider environmental exposures
I	IV/IO with fluids titrated to patient condition up to 20 ml/kg
P	Monitor ECG and 12 Lead procedure if indicated

Adult Medical Carbon Monoxide Poisoning

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.



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.

Adult Medical Convulsive Seizures, Status Epilepticus

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.

B

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

I

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

Status Epilepticus

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

P

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

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)

*****KEY POINT*****

Consider IN and IM routes for first dose administration

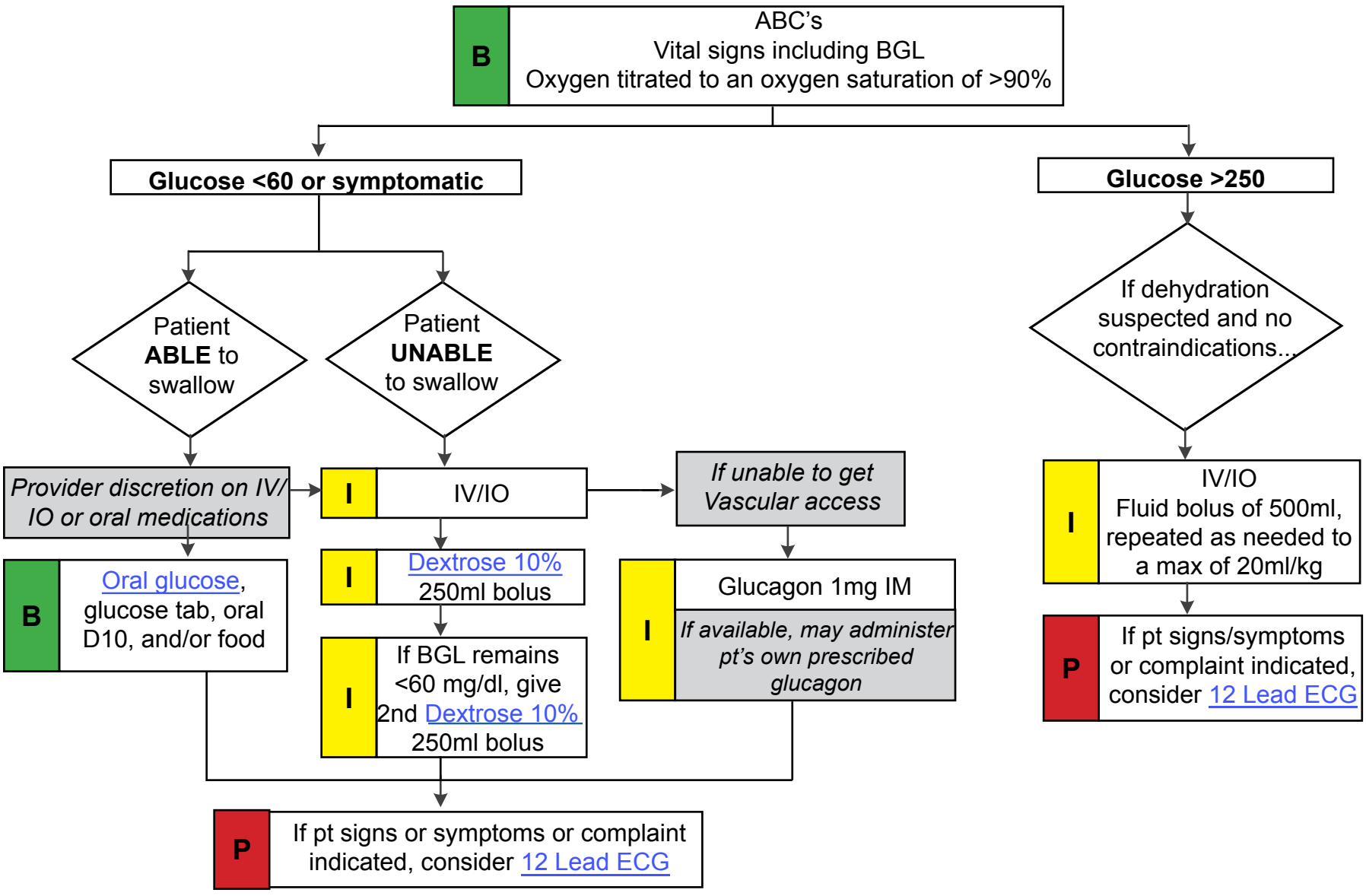
Patient may be combative while in postictal state. Protect patient from injury and attempt to keep oxygen on patient.

Consider spinal precautions based on possible trauma

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

Adult Medical Diabetic Emergencies

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.



*****KEY POINTS*****

Patient refusal:

If the patient refuses transport after being treated for a documented hypoglycemic episode, follow these guidelines:

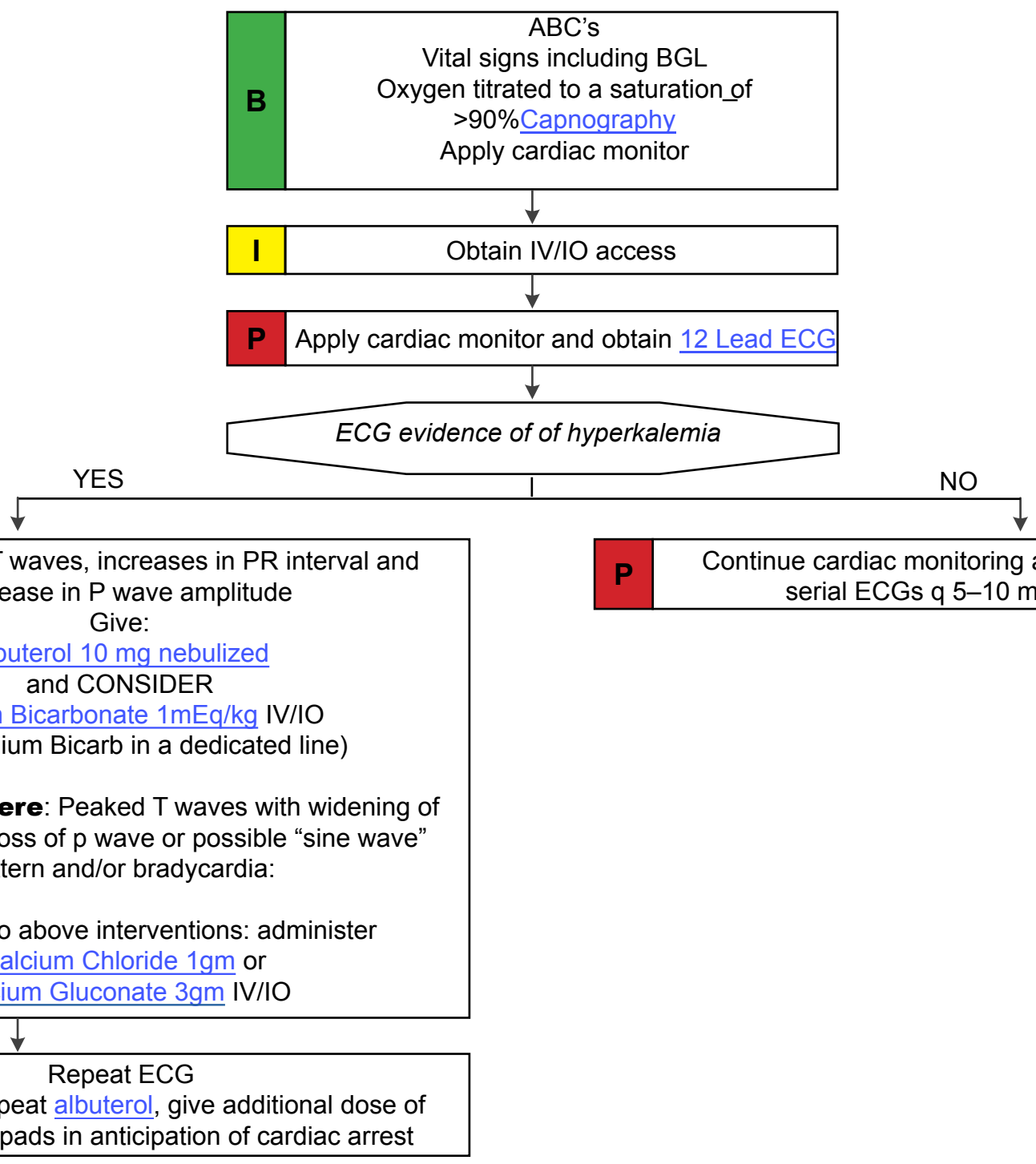
- The patient meets all refusal criteria as delineated in the Patient Refusal guideline AND
- The patient is able to be monitored for 2–3 hrs and/or witnessed to eat prior to EMS departure
- With normalizing blood sugar levels and mentation

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.



Adult Medical Hyperthermia

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.

B 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	Moderate	Severe
Heat cramps, sweating, no AMS, warm/moist skin temp <104°	*Headache, nausea, vomiting, orthostatic hypotension, tachycardia*	*AMS, temperature >104° with or without sweating*
B Passive cooling PO fluids as tolerated *Loosen clothing, fan, turn on AC, PO fluids*	**B** Passive cooling *Loosen clothing, misting fan, turn on AC*	**B** Active cooling *Remove clothing, turn on AC in ambulance, place ice pack in groin, axillary, and neck* ***DO NOT*** *induce shivering*
	I IV/IO Fluid bolus as needed to a max of 20ml/kg	**I** IV/IO Fluid bolus as needed to a max of 20ml/kg
		P 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 DeliriumGuidelines. 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

B

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

↓

I

IV/IO
Warm crystalloid fluids of 20 ml/kg, if available, in 500 ml increments up to a total of 2L

The IV tubing can be wrapped around a hot pack to help warm fluids

↓

P

Monitor ECG/ Obtain 12 Lead

If the patient goes into cardiac arrest, follow CPR protocol with the following exceptions:

- Allow up to 1 minute to ascertain if carotid pulse present. If ANY pulse is detected, **DO NOT PERFORM CPR**
- Defibrillation should only be performed once at 360J
- After first dose of Epinephrine, a second dose can be given once after 10 minutes or if the patient temp increases by 5–10°F from basline, 1 additional dose of epinephrine if in persistent VT/VF
- Atropine should not be given to a bradycardic rhythm.
- Consider TCP procedure if bradycardia is severe (<35 bpm) ***and temp ≥90 °F***

*****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.

B

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

I

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

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

P

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
or
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
Suspicion 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.

KEY POINT
Consider calling Poison Control (1-800-

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

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

***DO NOT** use circumferential taping*

↓

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

Adult Medical Stroke

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

B

ABC's
Vital signs to include a BGL
Establish and secure an airway by appropriate means
Oxygen to maintain saturation of ≥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 facilites 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

↓

I IV/IO with fluids titrated to patient condition

↓

P 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: Prevously 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.

B	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
I	Consider IV/IO with fluids titrated to patient condition up to 10ml/kg
P	Monitor ECG as indicated

*****KEY POINT*****

Any child suspected of experiencing an BRUE/ALTE should be transported to a hospital with pediatric admission capabilities

Medical Drug Overdose

Designation of Condition: The patient will have ingested, inhaled, or injected an unknown quantity of one or more medications or substances.

B

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

I

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

P

Monitor ECG/ Obtain 12 Lead ECG

Known or suspected narcotic

B

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

P

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

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

P

If any of the follwing 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

Stimulant to include sympathomimetics

P

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),
L(acrimation),
U(rination),
D(efecation),
G(astrointestinal distress),
E(mesis)

D(iarrhea),
U(rination),
M(yosis),
B(ronchorrhea/Bradycardia),
E(mesis),
L(acrimation),
S(alivation/sweating)

P

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

*****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

B
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)

I
IV/IO with fluids titrated to patient condition

P
Monitor ECG , obtain 12 Lead

Calcium Channel Blockers (Amlodipine (Norvasc®), Diltiazem (Cardizem®, Tiazac®), Verapamil (Calan®, Verelan®), etc.)

P
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.)

I
Anticipate hypoglycemia and treat accordingly with D10

P
If QRS >100 ms, administer Sodium Bicarbonate 1mEq/kg

P
Consider pressors with hypotension after adequate f uid 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

P
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.

B

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
or
Adults: Administer ~~Ibuprofen~~ 400– 600 mg PO

↓

I

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

↓

P

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.

Infection Control pg 2

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

MATS Public Inebriate Intervention Program (PIIP)

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

↓

No → Transport to MATS

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 incriments, 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

B

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

↓

I

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

↓

P

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)

	Heart rate	Respiratory Rate	Systolic blood pressure
Newborn	100–160	30–60	50–70
1 to 6 weeks	100–160	30–60	70–95
6 months	90–120	25–40	80–100
1 years	90–120	20–30	80–100
3 years	80–120	20–30	80–100
6 years	70–100	18–25	80–110
10 years	60–90	16–22	90–120

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.

First medical contact to 12 Lead ECG <5 minutes

B

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*****

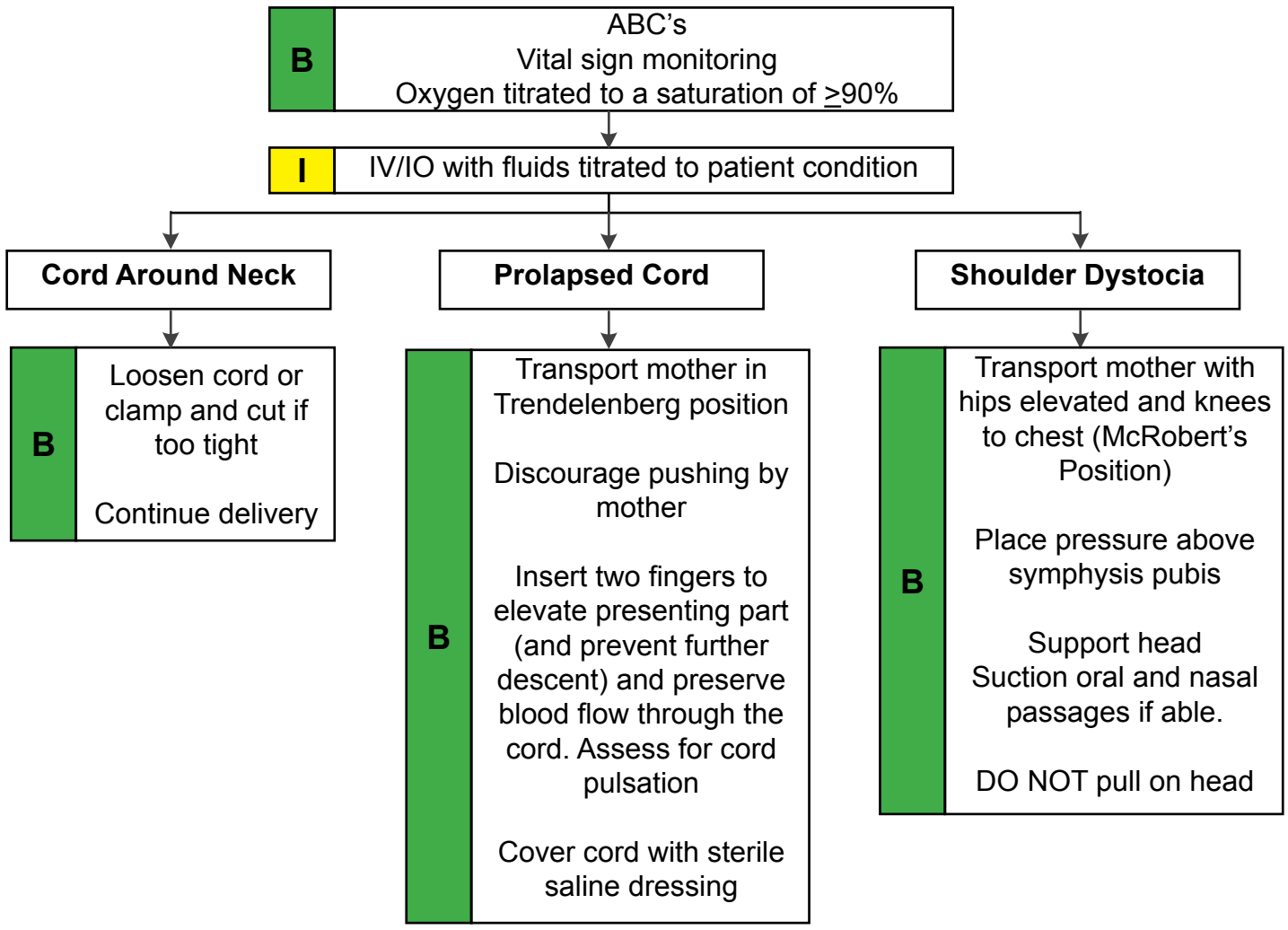
- This is a high-risk complaint. Obtain detailed history, physical, and neurological exam.
- Syncope with no preceding symptoms or event may be associated with arrhythmia.
  - Consider cardiac etiology in patients > 50, diabetics and / or women especially with upper abdominal complaints.
- Abdominal / 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
  - Breath holding spells
  - Toxins (marijuana, opioids, cocaine, CO, etc.)
  - Heat intolerance
  - BRUE (Brief Resolved Unexplained Events, formerly ALTE)
- 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.



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

Obstetrics Breech Delivery

Transport immediately if single limb presenting

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.

B

ABC's
Vital signs including BGL
Oxygen titrated to a saturation of ≥94%

Follow general treatment guidelines as indicated in Imminent Vertex Delivery guideline

↓

B 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.

↓

B Do not encourage mother to push

↓

B

- 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 toward 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.

↓

B If unable to deliver within 3 minutes, maintain "V" formation and transport mother with hips elevated and knees to chest

↓

I 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.

B

ABC's
Vital sign monitoring
Oxygen titrated to a saturation of ≥90%

Estimated gestational age
Date of last menstrual period
Duration and time interval of contractions
Vaginal bleeding? Amount?
Amniotic fluid? Color? When noted?
Previous deliveries
Prenatal care
Known abnormal presentation or obstetrical complication
Single or multiple gestation
Drug or alcohol use
Examine perineum for:
Visible cord or presenting parts in vagina other than head
Head crowning
Active vaginal bleeding
Amniotic fluid and/or meconium staining

↓

I

IV/IO

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 contradindicated 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.

B

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 guidlines
- 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 dely 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 depsite fundal massage, place infant to breast, continued fundal massage
- **DO NOT DELAY TRANSPORT FOR DELIVERY OF PLACENTA**

I

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

Once delivered, is the infant cyanotic, limp, apneic or HR < 100?

YES → Go to Neonatal Resuscitation

NO ↓

B

Dry/stimulate baby with sterile towels.
Keep infant covered (including head) to prevent heat loss
Suction mouth and nose ONLY if signs of obstruction by secretions
Respiraitons should begin within 15 seconds after stimulation, if not assist ventilations at 30–40 breaths/min
With normal delivery, after umbilical cord stops pulsating, double clamp approx 6 " from infant abd wall and cut between clamps. If no sterile cutting instrument available, lay infant on mother's abd and do not cut clamped cord.
Calculate 1 minute and 5 minute APGAR
Transport to NICU Capable Facility:
UNMH
Pres DT
Lovelace Women's

*****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

Apgar Scale (evaluate @ 1 and 5 minutes postpartum)				
	Sign	**2**	**1**	**0**
A	Activity (muscle tone)	Active	Arms and legs flex	Absent
P	Pulse	>100bpm	<100bpm	Absent
G	Grimace (reflex irritability)	Sneezes, coughs, pulls away	Grimaces	No response
A	Appearance (skin color)	Pink/normal over entire body	Cyanotic or pale extremities	Cyanotic/pale all over
R	Respirations	Good, crying	Slow, irregular	Absent

Pediatric Cardiac Neonatal Resuscitation

One Minute

BIRTH

Term? Tone good? Breathing or crying appropriately?

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

NO

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

Apnea, gasping, or HR below 100bpm?

NO → Labored breathing or persistent cyanosis

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

YES

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

HR <100bpm?

NO → Post-resuscitation care

YES

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

HR <60bpm?

NO

YES

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

HR <60bpm?

NO

YES → **I** 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 pneumthorax
Check BGL If <45 mg/dl administer Dextrose 10% based on weight-based chart

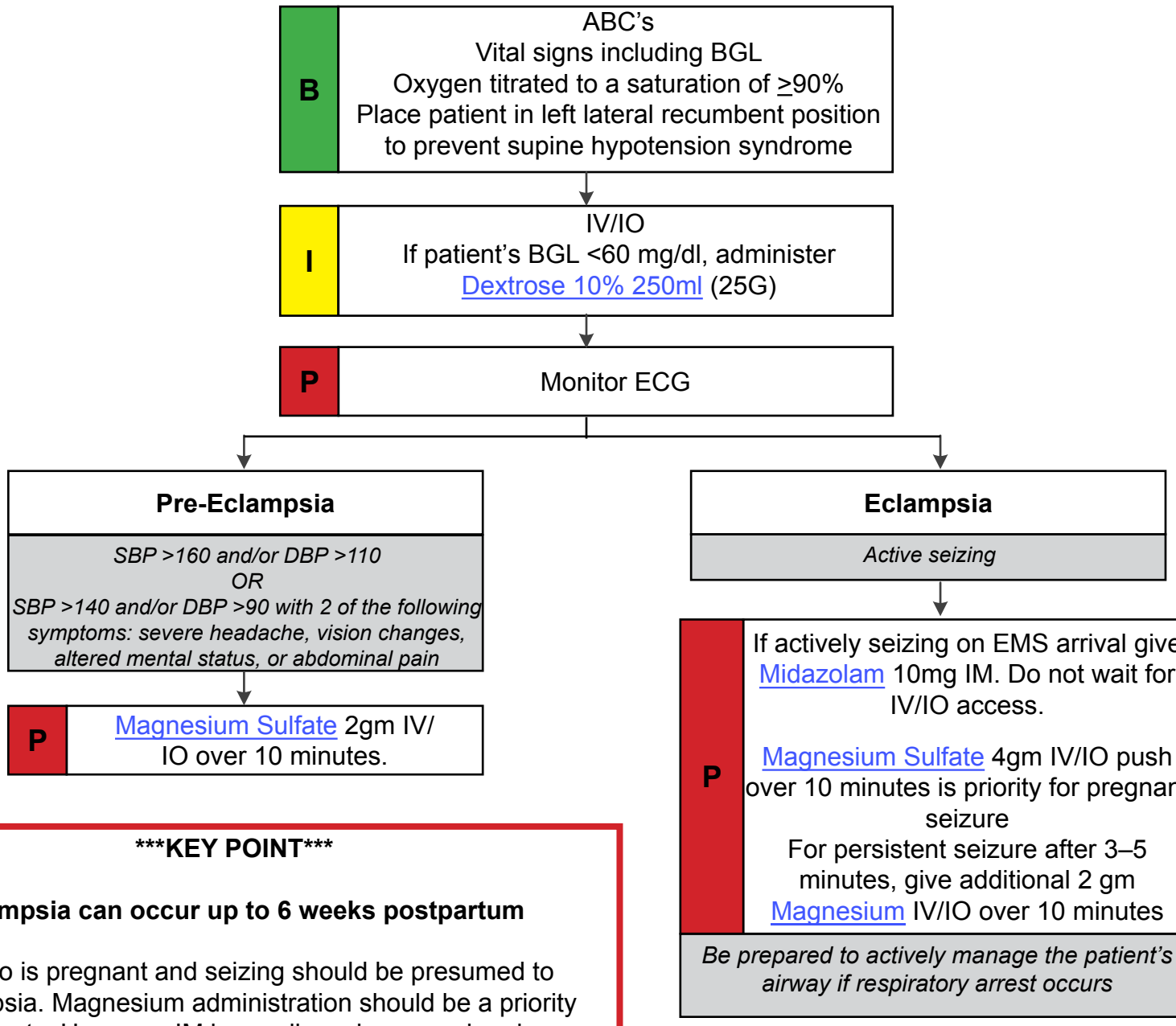
*****KEY POINT*****

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.



*****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

Obstetrics Vaginal Bleeding During Pregnancy

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.

B	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
I	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.

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

Patient < 30 days old → **YES** → Follow New Born Resucitation Guidleine

NO

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

B
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

I
IV/IO
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

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

KEY POINT

As soon as possible, designate the following positions:

Team leader
Monitor
Airway

Mechanical compression device application if available AND PATEINT MEETS DIMENSION CRITERIA

AT ANY TIME ROSC, go to post-ROSC guideline

Asystole / PEA

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

V-Fib / V-Tach

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/IOover 1–2 minutes q 3–5 min
maximum of 2 grams

KEY POINT

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.

Pediatric Narrow Complex Tachycardia

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

B	ABC's, Vital sign monitoring Apply cardiac monitor O2 to maintain an SpO2 of >90%Capnography
I	IV/IO Consider Fluid bolus of 10 ml/ kg and may repeat x1 to a max of 20ml/kg
P	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

Idenify and treat underlying cause

Probable SVT
Compatible hx- abrupt onset
Pwaves absent or abnormal

Hemodynamically Stable

P 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

P Adenosine 0.1mg/kg RIVP with f ush 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)

Symptomatic and Hemodynamically Unstable

P Consider sedation with
Midazolam 0.05–0.1 mg/kg IV/IO/IM or
0.1–0.2mg/kg IN to max of 5mg

P Synchronized Cardioversion
0.5–1J/kg (LP15 or Zoll)
If unsuccessful, repeat at 2J/kg x1

Pediatric Cardiac Section

B

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

P

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.

	Heart rate	Respiratory Rate	Systolic blood pressure
Newborn	100–160	30–60	50–70
1 to 6 weeks	100–160	30–60	70–95
6 months	90–120	25–40	80–100
1 years	90–120	20–30	80–100
3 years	80–120	20–30	80–100
6 years	70–100	18–25	80–110
10 years	60–90	16–22	90–120
12 years	60–90	15–20	105–135

Pediatric Cardiac Post-Resuscitation Cardiac Arrest Care

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

B

Manage airway with basic adjuncts and suction PRN
Avoid hyperoxygenation. Administor 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.

I Ensure IV/IO patency

I If BGL ≤60mg/dl, proceed to hypoglycemia guideline

Bradycardia

P Treat per the bradycardia protocol

Hypotension
Maintain SBP >90 mmhg

I IV/IO
NS bolus to a max of 20cc/kg as appropriate

P
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)

Chest Pain/STEMI
Obtain post-conversion 12 Lead ASAP and transmit

P Activate STEMI alert prior to initiating transport

Post-ROSC dysrhythmias

P Treat per the appropriate protocol

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

P 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

*****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

B

ABC's
Vital signs to include BGL
Assure 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

↓

I

IV/IO

↓

P

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

P

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***

P

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

	Heart rate	Respiratory Rate	Systolic blood pressure
Newborn	100–160	30–60	50–70
1 to 6 weeks	100–160	30–60	70–95
6 months	90–120	25–40	80–100
1 years	90–120	20–30	80–100
3 years	80–120	20–30	80–100
6 years	70–100	18–25	80–110
10 years	60-90	16-22	90-120
12 years	60-90	15-20	105-135

Pediatric Cardiac Wide Complex Tachycardia—Monomorphic

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

Do not delay cardioversion for sedation procedures

B	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
I	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 inclusing altered mentation, mottled skin, cyanosis, hypotension)

↓

P	Obtain and interpret 12- lead EKG
P	Consider sedation with Midazolam 0.05–0.1 mg/kg IV/IO/IM or 0.1–0.2mg/kg IN to max of 5mg
P	Synchronized Cardioversion **LP15 or Zoll:** 0.5–1 J/kg Repeat synchronized cardioversion if necessary **LP15 or Zoll:** 2J/kg

*****KEY POINT*****

V -Tach is relatively uncommon in prediatric 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

Pediatric Cardiac Wide Complex Tachycardia—Polymorphic

Designation of Condition: The patient will have a pulse and show sustained ventricular tachycardia (wide QRS >0.09 sec) on the monitor. Plymorhpic VT has QRS complexes that are different in shape and amplitude. Torsades de Pointes is a common type of polymorphic VT and is assosicted with long QT intervals

Do not delay cardioversion for sedation procedures

B	ABC's and establish patent airway Maintain O2 sats of ≥90% Vital signs Reassess vital signs and perfusion status frequently 12 Lead ECG If stable: Supportive care Treatment of symptoms Close observation
I	IV/IO Fluid bolus of 10 ml/ kg may repeat x 1 to a max 20ml/kg to rule out

↓

Unstable Polymorphic
(pulses present with signs of shock/poor perfusion)

↓

P	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

↓

P	Defibrillation **LP15 or Zoll:** 2J/kg Repeat defibrillation if necessary

↓

P	If suspected Torsades de Pointes: Magnesium Sulfate 25–50 mg/kg q 3–5 minutes to a max dose of 2 grams

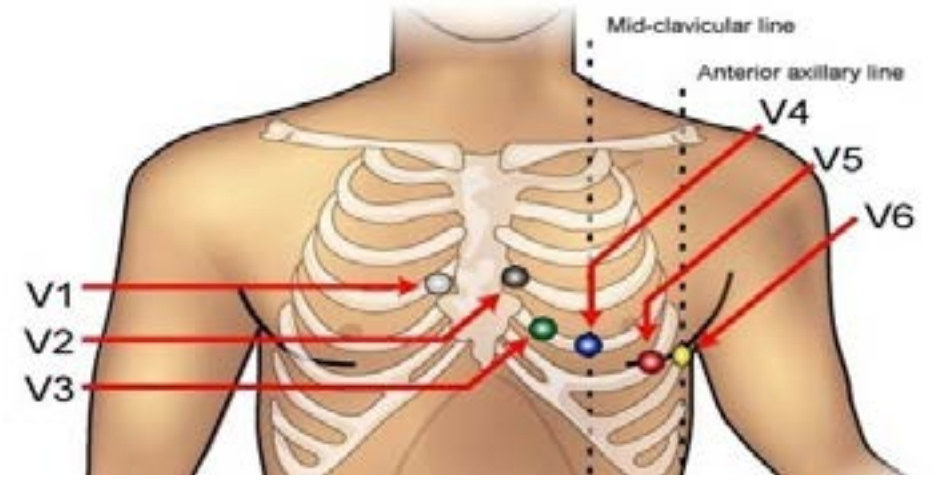
*****KEY POINT*****

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

12 Lead ECG

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



B

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.

B	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 f exion of the head.

Airway Management & Intubation Guidelines

P

Oral Intubation (Patients 13 and older ONLY): Before intubation, the patient should be pre-oxygenated with a BVM with high flow oxygen. Cricothryroid 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

	Pediatric				Adult			
Mask size	#1	#1½	#2	#2½	#3	#4	#5	#6
Packaging color code	●	●	●	●	●	●	●	●
Patient weight	<5 kg	5-10 kg	10-20 kg	20-30 kg	30-50 kg	50-70 kg	70-100 kg	>100 kg
Maximum cuff inflation volume	4 ml	7 ml	10 ml	14 ml	20 ml	30 ml	40 ml	50 ml
Maximum intra-cuff pressure	60 cm H_2O							
Airway connector	15 mm ISO 5356-1							
Min. I.D. Tube	6.6 mm	7.2 mm	9.0 mm	10.2 mm	11.0 mm	12.7 mm	12.9 mm	12.9 mm
Inflation valve	Luer cone ISO 594-1							
Appropriate storage temperatur	+10° C - +25° C							
Weight	14 g	18 g	25 g	40 g	45 g	63 g	86 g	88 g
Internal volume of ventilatory pathway	3.3 ml	4.4 ml	10.2 ml	18.3 ml	17 ml	25 ml	33 ml	33 ml
Pressure drop	0.0 cm H2O at 15 l/min	0.0 cm H2O at 15 l/min	0.1 cm H2O at 30 l/min	0.1 cm H2O at 30 l/min	<0.1 cm H2O at 60 l/min	<0.1 cm H2O at 60 l/min	0.1 cm H2O at 60 l/min	<0.0 cm H2O at 60 l/min
Min. interdental gap	11.6 mm	13.2 mm	16.2 mm	18.5 mm	21.0 mm	24.0 mm	25.9 mm	26.6 mm
Internal pathway	9.4 cm	11.0 cm	12.7 cm	15.6 cm	14.2 cm	16.2 cm	19.0 cm	19.0 cm
Intubation use								
Max. ET-tube	3.5	4.0	5.0	5.5	6.5	7.5	8.0	8.0
Gastric channel use								
Max gastric tube	6 FR	8 FR	10 FR	10 FR	16 FR	16 FR	16 FR	16FR

Bag Valve Mask

Designation of Condition: Patients with apnea, severe hypoxia or bradypnea that are in need of ventilatory support.

B

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

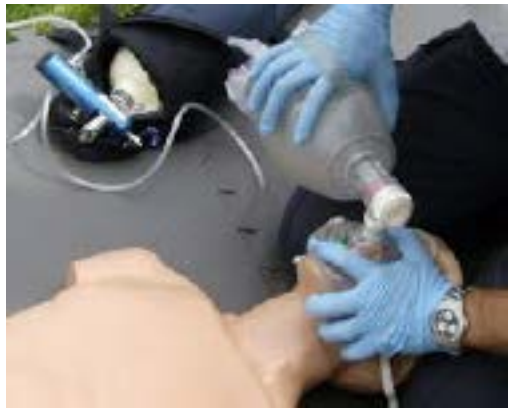
4. Create a good seal by using the "C" and "E" technique
   - Fingers forming the "E" will be lifting the jaw
   - Fingers forming the "C" will be holding the mask to the face
   - Remember to bring the jaw and mouth to mask rather than pushing the mask down upon the patients' mouth and nose—which may 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*****

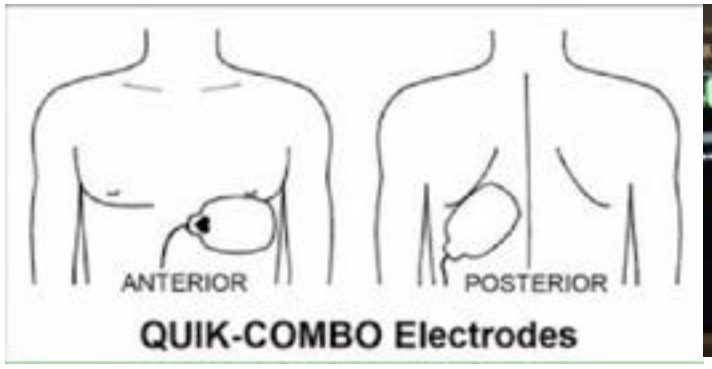
- Pay close attention to technique.
- DO NOT insufflate the stomach.
- Avoid generating high intra-thoracic pressures; ventilate slowly.
- If possible, have an assistant provide cricoid pressure (Sellick's maneuver) during ventilations to prevent air from entering the stomach. When utilizing Sellick's 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).

Synchronized Cardioversion

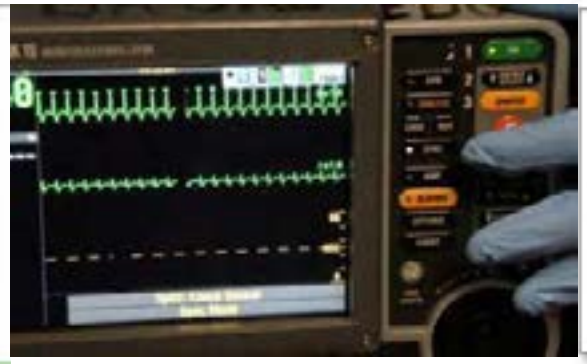
P

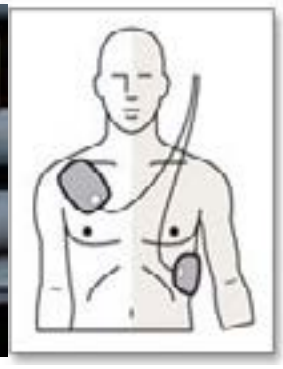
PROCEDURE:

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 lead
   - 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



QUIK-COMBO Electrodes





*****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.

B

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 cm H20 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.

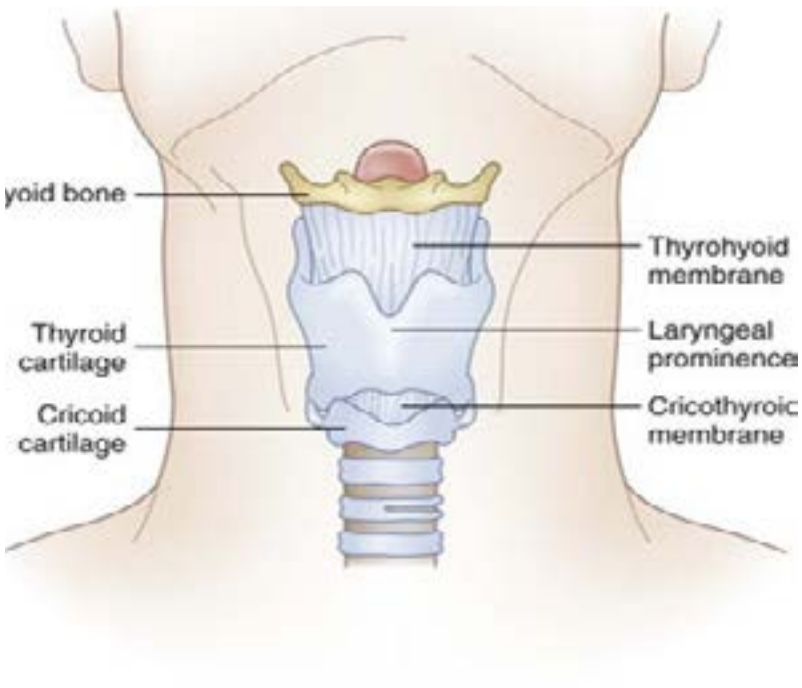
CONTRAINDICATIONS

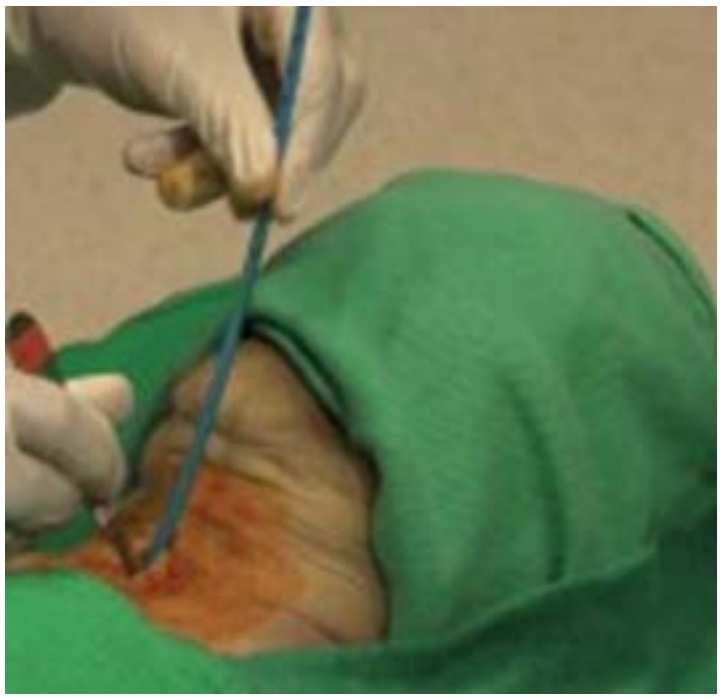
- Ability to oxygenate and ventilate an airway with less invasive means (i.e. BVM, LMA, KING, etc.)
- Children ≤12 years old
  - Needle Cricothyrotomy is not in the NM Scope of Practice and should not be used
  - Managing the airway with a less invasive means (i.e. BVM) will need to be attempted with rapid transport

P

- 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.

I	**Procedure:** 1. Place the patient in a supine head down position where possible to distend the neck veins 2. Turn the patient's head toward the opposite side if no risk of cervical injury exists 3. Prep the site as per peripheral IV site 4. Align the catheter with the vein and aim toward the same side shoulder 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 6. Attach the IV and secure the catheter avoiding circumferential dressing or taping 7. Avoid using cervical collars with external jugular venous access. If needed, other methods of cervical motion restriction should be used 8. Document the procedure, time, and result (success) on/with the Patient Care Report (PCR)

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.

P

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*****

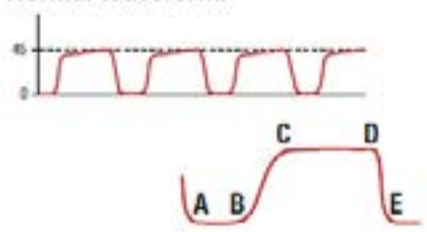
If a service does not have quantitative capnography, then direct laryngoscopy is strictly prohibited

Capnography / End Tidal CO2

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.

B	**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

Normal Waveform:



A–B	Respiratory baseline
B–C	Expiratory upslope
C–D	Expiratory plateau
D	End-tidal value—peak CO_2 concentration—at the end of exhalation
D–E	Inspiratory downstroke

Capnography • Intubated Patient

Applications on intubated patients:
- Verification of ET tube placement
- Monitoring and detection of ET tube dislodgement
- Detection of loss of circulatory function
- Determination of adequate CPR compressions
- Confirmation of return of spontaneous circulation

Examples:

Sudden loss of waveform, $EtCO_2$ near zero
- ET tube disconnected, dislodged, kinked or obstructed
- Loss of circulatory function

Decreasing $EtCO_2$ with loss of plateau
- ET tube cuff leak or deflated cuff
- ET tube in hypopharynx
- Partial obstruction

CPR Assessment
- Attempt to maintain minimum of 10 mmHg

Sudden increase in $EtCO_2$
- Return of spontaneous circulation

Capnography • Non-intubated Patient

Applications on non-intubated patients include:
- Assessment of asthma and COPD
- Documented monitoring during procedural sedation
- Detection of apnea or inadequate breathing
- Measurement of hypoventilation
- Evaluation of hyperventilation

Examples:

Plateau has curved, "shark-fin" appearance
- Asthma
- COPD

Slow rate with increased $EtCO_2$
- Hypoventilation
- Partial airway obstruction

Rapid rate with decreased $EtCO_2$
- Hyperventilation

Decreased $EtCO_2$, variable waveform
- Apnea, inadequate breath
- Sedation

MIN 3203100-001

IUSA | Rx Only

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.

*****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.

I

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

Intraosseous Infusion

I

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® 25mm Needle Set (blue hub) should be considered for patients 3 kg and greater
EZ-IO®15mm 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 2cm 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 25mm:
- 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 45mm:
- 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

I

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.

B

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.

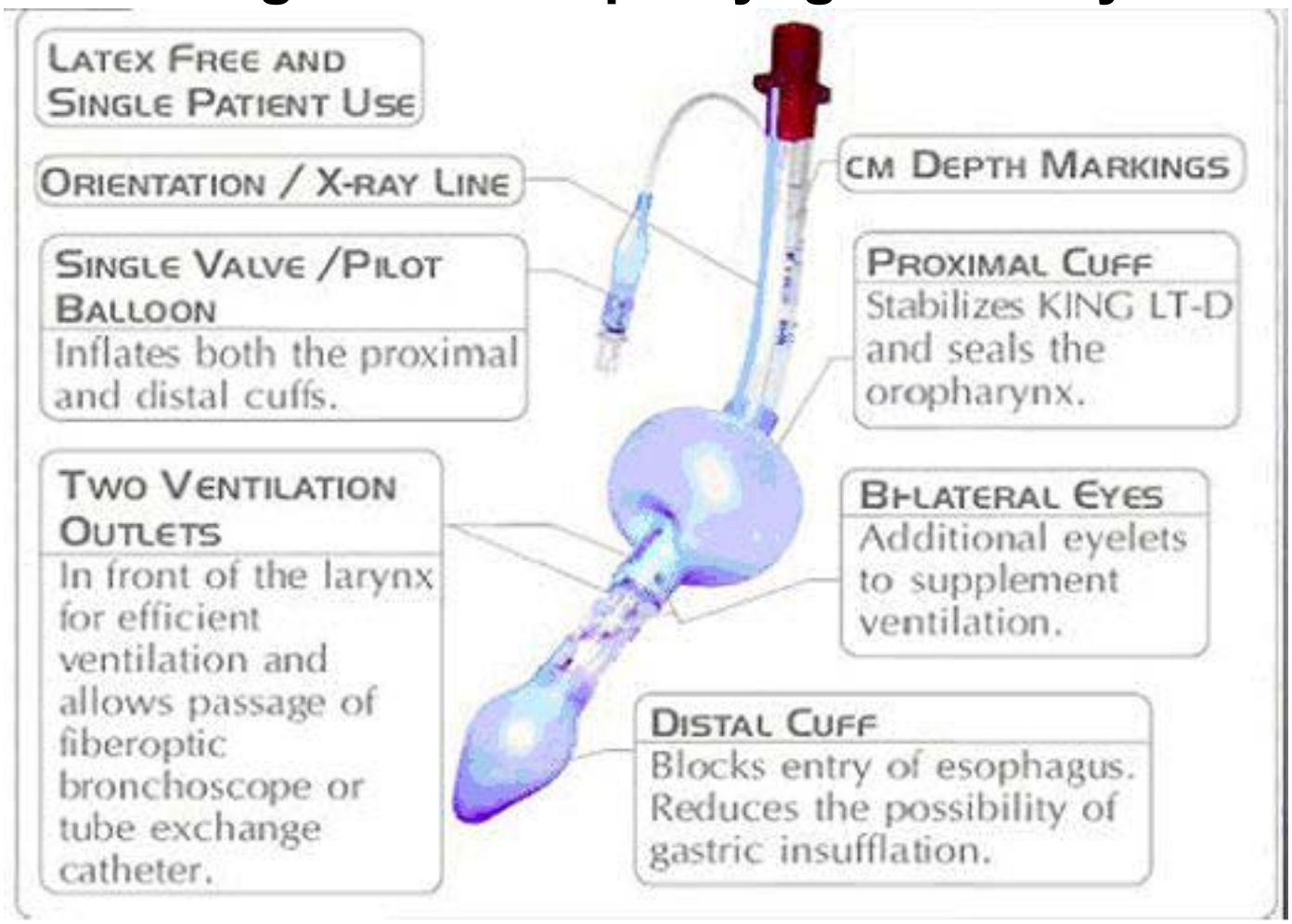
CONTRAINDICATIONS:

- 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 45–90º 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



Sizing Information

	Pediatric				Adult		
Tube Size	**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 90-115 cm	25-35 kg 105-130 cm	4-5 feet (122-155 cm)	5-6 feet (155-180 cm)	greater than 6 feet (>180 cm)
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 H_2O						
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.

B

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)

B

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

B

INTRAMUSCULAR

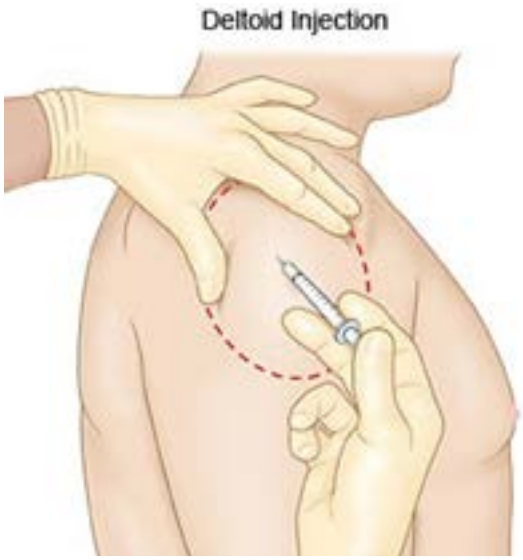
PROCEDURE:

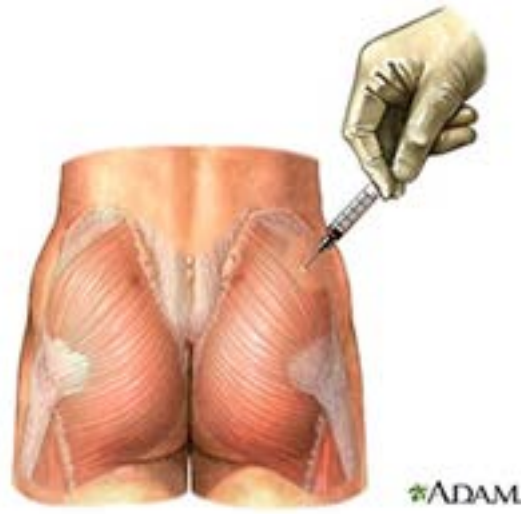
1. Prepare equipment and medication expelling air from the syringe
2. Utilize the medication "Cross Check" to confirm:
   - Drug, Dose, Route, Rate, Reason, Contraindications and Volume
3. Confirm there is no allergies to the medication being given
4. The possible injection sites for intramuscular injection 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 intermuscular 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)

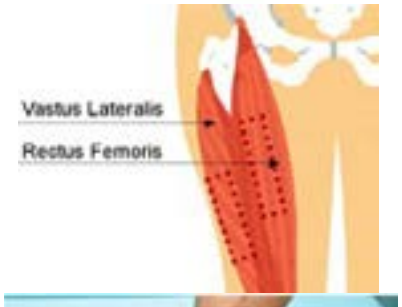
SUBCUTANEOUS

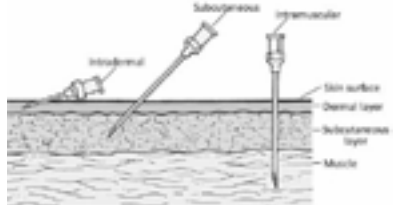
PROCEDURE:

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 sire
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.

B	**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.

P

Procedure:

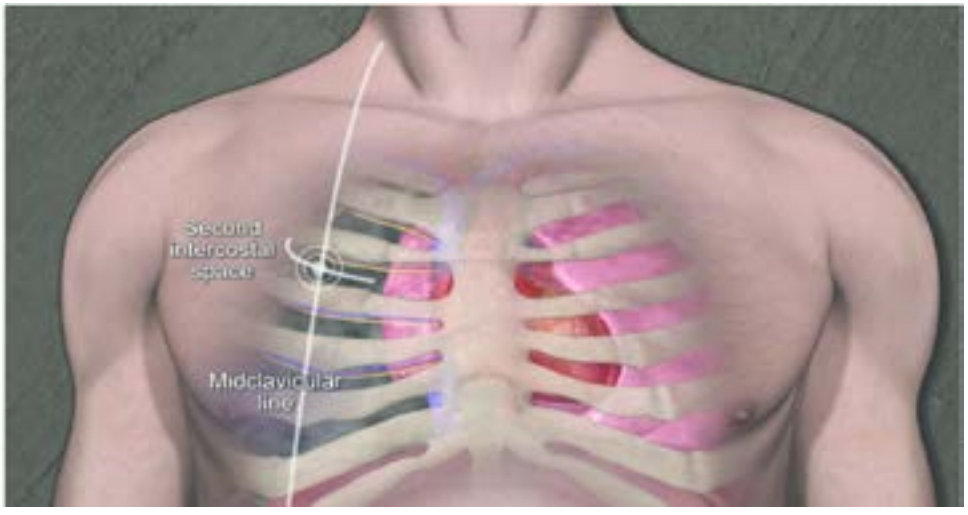
- Administer 100% O2 via BVM
- Confirm presence of a tension pneumothorax or identify strong clinical evidence in a rapidly deteriorating patient in the setting of major trauma. Consider in the setting of refractory PEA / traumatic arrest
- Locate the insertion site:
  - On the anterior chest; 3rd intercostal 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

Age Appropriate Catheter Sizes

Age (years)	Size (kg)	Needle Size
0-5	0-20	18g
5-12	21-40	16g
>12	>40	14g

*****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.

P

Contraindications:
- Apneic patient
- Patient under the age of 12 years old
- Severe nasal or mid-face congenital of 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

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).

P

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.

P

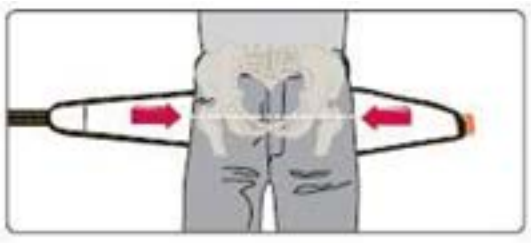
Procedure:

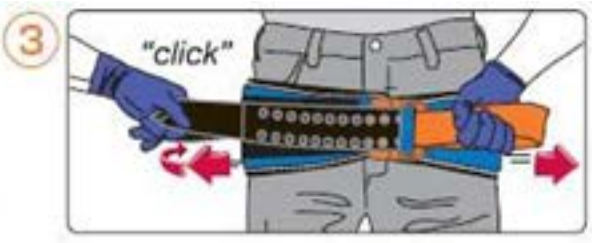
1. Unfold Sling with white surface facing up
2. Place white side of Sling beneath patient at level of buttocks along a line drawn between greater trochanters and the symphysis pubis
3. Firmly close Sling by placing black Velcro side of flap down on blue surface of Sling
4. Fold back material as needed
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.

B	**Dart Removal:** 1. Utilize PPE 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 3. Prior to probe removal inform all caregivers that you are about to remove the contaminated sharp 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 5. Be careful to avoid accidental needle sticks when removing probes 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 7. Provide wound care by cleansing the affected area with saline, and apply a Band-Aid 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.) 9. Clear and thorough documentation is required in the body of the report narrative whether or not EMS transports the patient 10. If transport is necessary, transport to the closest appropriate hospital

Transcutaneous Pacing

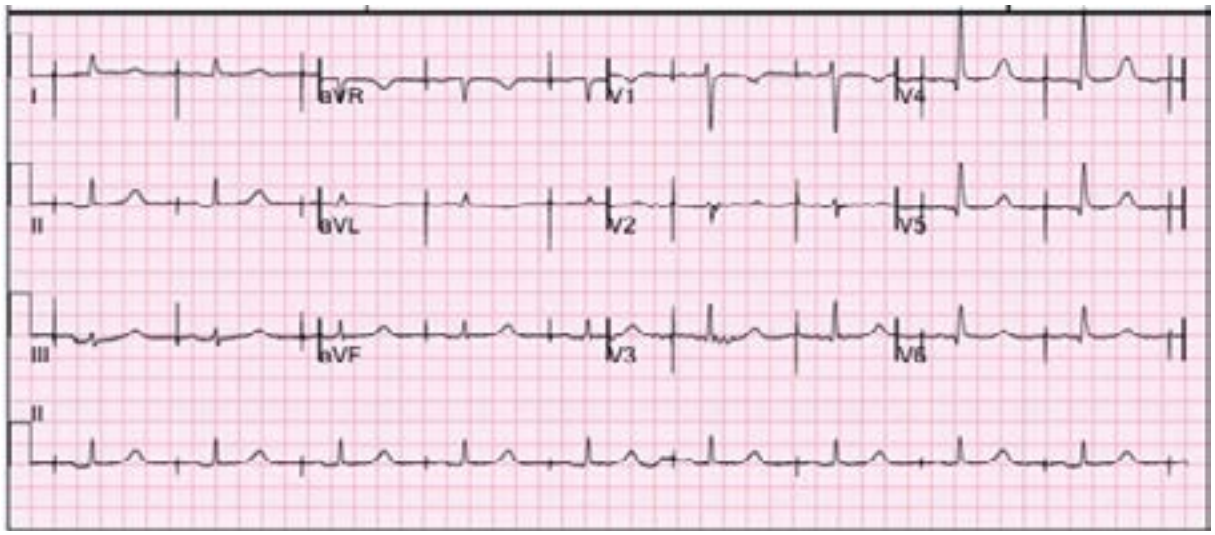
P

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

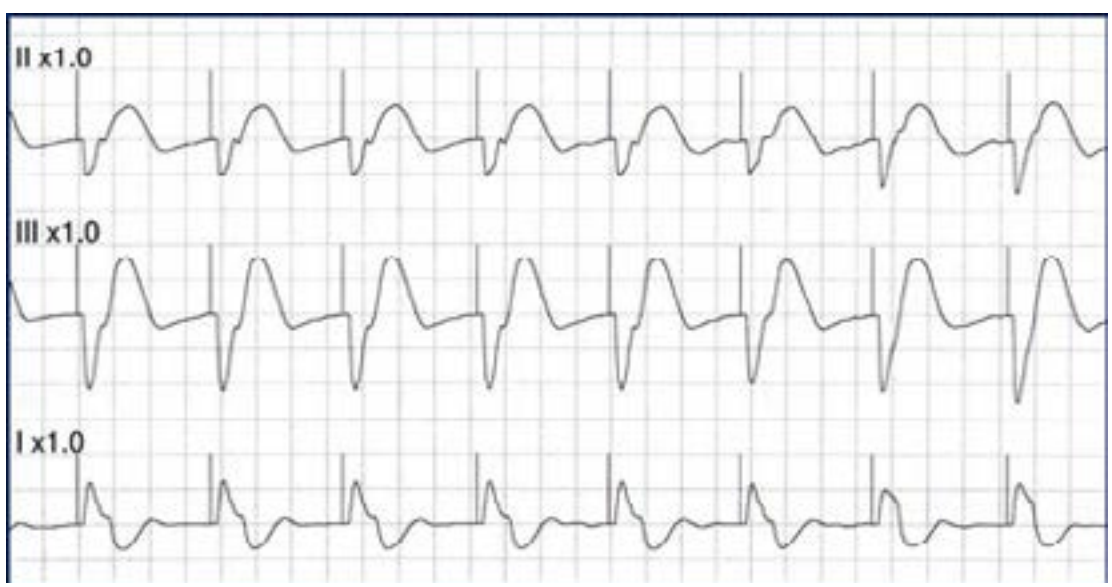
NON-CAPTURE:

- 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.

B

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:

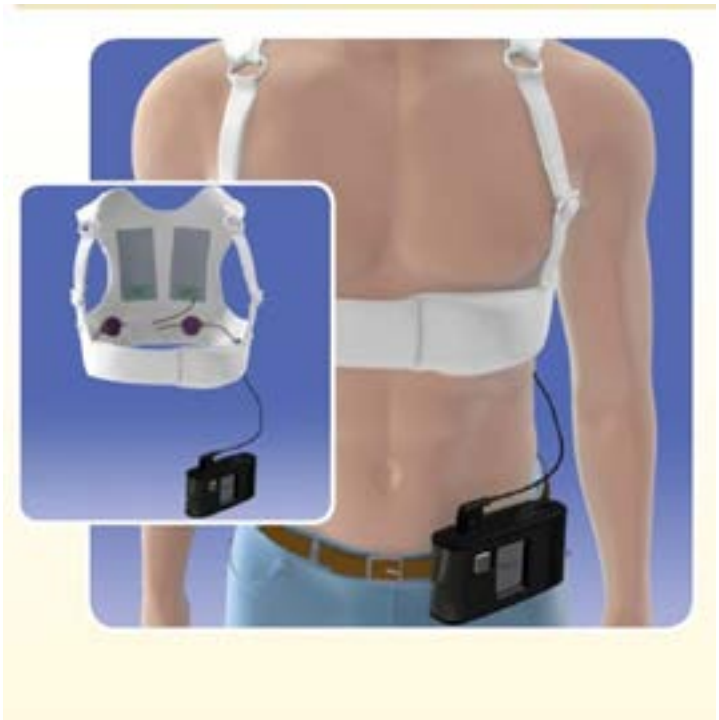
- Place tourniquet proximal to wound, the best points of application are high on the upper arm under the axilla for brachial arteries and high on the upper thigh within the groin area for femoral arteries
- Tighten per manufacturer instructions until hemorrhage stops and/or distal pulses in affected 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

Zoll®LifeVest®

P

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



Air Medical Helicopter

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 organizaiton 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.

Interagency Interaction Guidelines

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.

Interagency Interaction Guidelines Continued

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.

MD at Scene

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

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

Pediatric Trauma: If it meets Trauma Criteria	Pediatric Post cardiac Arrest or unstable life threatening illness	All Other non life threatening or low acuity illness/injury
↓	↓	↓
UNMH Trauma Center	UNMH (PICU Capable) Pres DT (PICU Capable)	Parent/ guardian choice of any local ED

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 Hospita**l = 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

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.

P	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.

Transport to Multiple Destinations

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

B	•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 rup-ture, bowel injury, pelvic fractures, severe internal hemorrhage.

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

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

↓

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 > 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

↓

P

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 orthopeadic injuries as well as metabolic derangements due to tissue ischemia.

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
Cardiac monitor
Control external hemorrhage and splint/stabilize orthopedic injuries

I

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

P

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

B

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.

YES ← Complete amputation → **NO** Partial amputation

B

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**

B

Apply Tourniquet without delay

Partial amputation → **Non-Life-threatening bleeding**

B

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

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 > 90mmhg Pain management with MCEP contact

P

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.

B	ABC's Vital signs Obtain history Consider traumatic mechanism and immobilize C-spine if necessary Assess vision and examine pupils for size, shape, and reactivity to light Check eye movement in all directions and document any soft tissue injury Complete neuro exam

Penetrating Eye Injuries

B	Protect globe by covering orbital area with moist dressing and bulky padding. DO NOT apply pressure to globe. Once a penetrating injury is discovered, further pupillary and eye examination is contraindicated.
P	If concern for open globe injury (tear drop shaped pupil or concerning mechanism): Pain control and nausea control per guideline to avoid increasing intraocular pressure

Protruding Intraocular Foreign Body

B	**DO NOT REMOVE** Further pupillary and eye examination is contraindicated. Stabilize foreign body, cover with bulky padding, and secure with tape Patch unaffected eye to diminish consensual eye movement

Small particulate foreign bodies (e.g., dust/dirt)

B	Irrigate with saline Flip lids back and irrigate as necessary If present, contact lenses should be removed prior to irrigation

Chemical Injury

B	**Alkalis and Acids:** Immediate treatment upon arrival. Copious irrigation with saline (brush off dry powders first) Continue irrigation en route to hospital **Mace and Pepper Spray:** Irrigate eyes and affected skin with saline or water until pain relief obtained. Patients with significant pain after irrigation, prolonged visual impairment, or shortness of breath should be transported to the hospital If present, contact lenses should be removed prior to irrigation

Head Trauma/ Traumatic Brain Injury

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*****

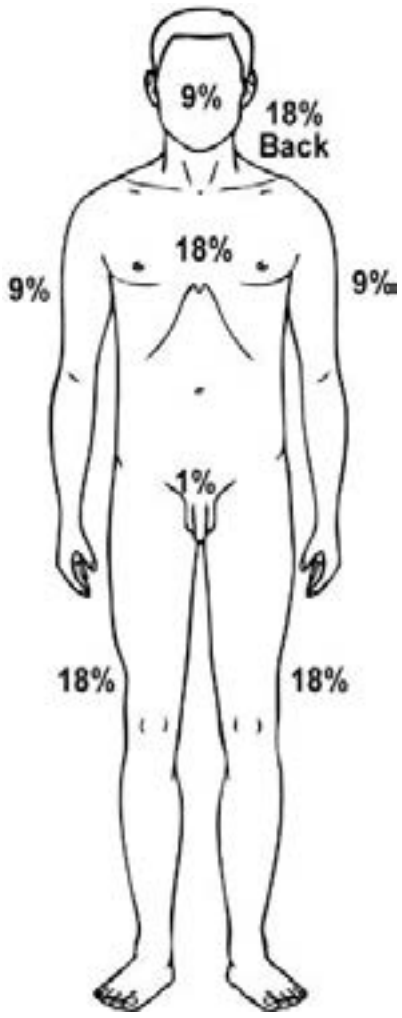
hypothermia, hypotension, hypoxia, hypocapnia and hypoglycemia all increase mortality in traumatic brain injuries and should managed aggressively
Significant blood loss can occur with scalp lacerations

Hyperventilation lowers CO_2 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 $EtCO_2$ 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).



B

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

I

IV/IO
Fluid bolus if s/sx of shock or > 20 %TBSA perABAguidelines**
Pain management with MCEP contact: Morphine 2–5mg IV/IO/IM q 5 minutes to a max of 20mg (0.1 mg/kg q 5 minutes to a max of 0.2mg/kg peds) OR Fentanyl 0.5–1mcg/kg IV/IO/IM/IN q 5 minutes to max total dose of 3mcg/kg

Avoid placing IV in burned area if possible
DO NOT DELAY TRANSPORT FOR IV INITIATION IN CRITICAL PATIENTS

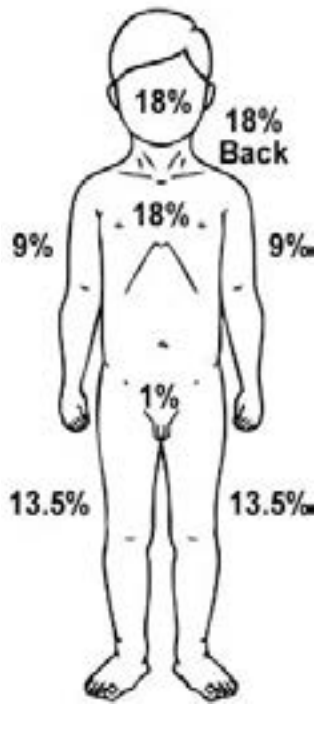
P

Frequent airway assessment for possible intubation or cric as indicated

Pain management as per guideline with early consideration for ketamine

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.



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.

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
- Al burns that compromise circulation
- All burns with evidence of respiratory involvement
- ALL high voltage electrical injuries
- Burns associated with multi-system trauma
- All high-risk patients
- Any burn that involves hydrofluoric acid

Moderate Burns
- Partial thickness burns of 15–25% BSA in adults, 10–20% BSA in peds
- Full thickness injuries of <10% BSA

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.

B	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.

Trauma Helmet Removal

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.

B	**Football Helmets: Indications for football helmet removal** •When a patient is wearing a helmet and NOT the shoulder pads •In the presence of head and/or facial trauma •Patients requiring advanced airway management when removal of the facemask is not sufficient •When the helmet is loose on the patient's head •In the presence of cardiopulmonary arrest (the shoulder pads must also be removed) When 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.	

B	**All other Helmets:** 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

Trauma Sexual Assault

B

EMS personnel determine if the sexual assault victim requires further medical assessment and/or treatment at an ED prior to a Sexual Assault (SA) exam

Individuals not requiring ED treatment can be referred to the SANE unit at the Family Advocacy Center (FAC) at 625 Silver SW for a SA exam

Contact with Sexually Assaulted Patient that is willing to be assessed and transported

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.

B

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

I

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

I

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

P Monitor ECG

P If evidence of tension pneumothorax, treat appropriately

Recognize Compensated Shock
Adult:

- Anxiety
- Tachycardia
- Tachypnea
- Diaphoresis with pallor

Recognize Compensated Shock
Pediatric:

- Delayed Cap refill
- Decreased or bounding peripheral pulses
- Palpable central pulse, decreased distal pulse
- Cool extremities
- Altered mental status
- Mild tachypnea

*****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

Universal Patient Care

B

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

Assessment findings

Positive

B

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 one 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

Negative

B

Negative spinal assessment:
- Transport in position of comfort
- Place c-collar if patient age >65

I

Consider IV/IO access
Consider pain management with MCEP contact

P

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

Glasgow Coma Scale	≤13
Systolic Blood Pressure	<90mmHg
Respiratory Rate	<10 or >29 bpm or need for ventilatory support (<20 in an infant <1yr)

YES → TRANSPORT TO A TRAUMA CENTER

NO ↓

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

YES → TRANSPORT TO A TRAUMA CENTER

NO ↓

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 (>20mph) impact

Motorcycle crash >20mph

YES → TRANSPORT TO A TRAUMA CENTER

NO ↓

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

YES → Transport to a Trauma Center or hospital capable of timely and thorough evaluation and initial management of injures. Consider MCEP contact

NO ← TRANSPORT TO APPROPRIATE ED

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)

B
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

Penetrating Traumatic Arrest: (apneic, pulseless, no signs of life)

B
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

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

B
Rapid Transport to UNMH
Assist ventilations as necessary with BVM and secure airway with King/LMA C spine immobilization per mechanism
Prevent hypothermia

I
IV/IO NS (two large bore preferred)
Fluid Resuscitation to goal SBP > 90 mmhg
If concern for traumatic brain injury maintain SBP ≥ 110 mmHg

P
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 patent 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 andETCO2 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

Communications Continued

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 practioners and PAs are not to give on line medical direction nor may thay dictate care on scene.

UNM EMS Consortioum

This is a group of board certified EM and EMS physicians in conjuction 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.

B	Resuscitation efforts may be withheld if any of the following criteria are met: Obviously expired: •Presence of rigormortis or livermortis •Obvious external exsanguination •Decapitation, burned beyond recognition •Massive open or penetrating trauma to the head or chest with obvious organ destrucution •Body decomposition •Exteneded down time with cold skin Advanced resuscitation efforts may be withheld in the presence of an approved DNR form.

D	Advanced resuscitation efforts may be withheld in an expected death of a terminal patient without a DNR form, but will require MCEP contact

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.

B	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.

B	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.

P	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 soley 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.

B	• 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 prefered) 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

B

ABC's—with focus on ability to keep airway patent
Vital signs
Pulse Oximitery proceedure
Capnography proceedure
Oxygen supplementation >90%
Consider the use of non-pharmaceutical means of pain reduction including position of comfort, ice packs and splints.

ETCO2 is Required for Narcotics and Ketamine

Assess pain severity:
Use combination of pain scale, vital signs, mechanism of injury, patient appearance—diaphoresis, grimacing, crying

Mild to Moderate pain

I

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.

P

Tylenol PO 1000 mg
OR
Ibuprofen PO 400–600mg
OR
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

Tylenol Contraindications: Severe liver disease

Moderate to Severe Pain

I

In additon 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

P

In addition to above listed modalities **without** MCEP contact, consider Ketamine in patient with severe pain

Ketamine may be administered as a first line medication **OR** following the administration of maximum dose opioid AND with UNM EMS Consortium consult.

Adult:
0.5 mg/kg IN (max single dose 25 mg; max cummulative dose 100mg)
0.25 mg/kg IM every 10 minutes (max single dose 25 mg; max cummulative dose 100mg)

Pediatric:
0.5 mg/kg IN (single max dose 25mg)
0.25 mg/kg IM every 10 minutes (max dose 25 mg)
Assess and treat possible nausea/vomiting

*****KEY POINT*****
STRONGLY CONSIDER INTRAMUSCULAR OR INTRANASAL ROUTES OF ADMINISTRATION FOR YOUR FIRST DOSE OF ANALGESIC MEDICATIONS
Carefully consider narcotic side effects before administering to patients with respiratorydepression 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: Paient may demonstrate bizarre or abnormal behavoir 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.

B	ABC's Vital signs BGL proceedure Scene safety and provider safety are a priority. Consider police contact if scene safety is a concern. 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 voilence 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 behavoiral 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
I	IV/O access for IVF and medication admin only if there is a medical concern contributing to cause of psychiatric episode
P	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
D	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. Currenty, 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 enforment issued certficates of evaluaiton are not recognized by EMS. Contact EMS Consortium if needed or clarificaiton.

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.

- Request law enforcement at the earliest opportunity
  - Law Enforcement in this protocol shall indicate any of the following:
    - Law Enforcement Officer
    - Fire Department Arson Officer
    - Corrections Officer
    - Federal Officer
    - Federal Agent
- Ensure the presence of sufficient personnel to safely apply EMS restraints
  - Two (2) main restraints systems used in Bernalillo County:
    - Physical EMS Restraints—Velcro Soft Restraints System

Consider Chemical Sedation Guideline in conjunction with EMS Restraint—Versed or if patient meets Exciteted Delerium Criteria- Ketamine

- Attempt less restrictive measures to control before applying EMS restrains (e.g., verbal de-escalation)
- Explain to the patient and family why EMS restraints are necessary
- Use the minimal amount of EMS restraints necessary to control the patient and still insure provider safety during transport
  - Watch for positional asphyxia
- Apply EMS restraints in a humane manner, affording the patient as much dignity as possible. Utilize only appropriate restraint devices (see below).

Patient Exam:

- ABC's, vital signs (including O2 sat and BGL) at the earliest opportunity.
- Treat trauma and seizure if applicable.
- Continuously monitor the airway, breathing, circulatory status, neurovascular function in restrained limbs, and the need for continued restraint.
- Maintain the patient in the supine or lateral recumbent position.
- A paramedic and at least one other EMT will attend restrained patients at all times.

Documentation:

- Reason for the restraint; MCEP involvement as needed
- Circumstances of the incident
- Known or suspected causes of agitated or delirious behavior
- Why the patient could not be transported without restraints
- Relevant comments made by patient
- Vital signs, O2 sat and BGL (if obtained)
- Position of patient, type of restraint, and location of restraints on patient
- Injury to patient or to EMS personnel: state whether injury occurred before, during, or after the restraint process.
- In cases of restrained patients, every service on-scene must generate an EMS report. Complete documentation is mandatory.

Appropriate Techniques:

Restraint techniques that are appropriate for EMS utilization include:

- Chemical sedation
- Soft patient restraints to gurney
- Spit hood (system approved full visibility hood when patient is spitting)
- Soft gauze
- Blankets and sheets
- Other system approved commercially available devices

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, dellusional thoughs and bizzare behavoir.

Excited Delerium Syndrome: This is 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.

B

ABC's, Vital signs, BGL proceedure
Consider possible altered mentaiton due to overdose/toxic ingestion, traumatic brain injury or multiystem trauma and attempt to treat any revisble causes
Assemble personnel
Attempt to reasonbly address patient concerns, verbal de- escalation

****Ketamine is currently a special skill: ONLY GIVEN BY AN AAS Paramedic**

Excited Delerium Syndrome:
Paranoia, disorientation, hyper- aggression,voilent, hallucinations, tachycardia/hypertension, hyperthermia, increased strength

NO

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

I

IV/O access—DO NOT DELAY SEDATION TO OBTAIN ACCESS

P

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.

D

If patient is still demonstrated significant agiatation, or increasing violence/agression contact UNM EMS Consortium for additional midazolam or possible Ketamine administration

YES

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

P

After sedation is acheived:
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

*****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.