Ocala/Marion County
EMS Pre-Hospital
Medical Protocols and Procedures

Introduction

This document describes the methods by which Marion County EMS system will continue to provide the best care possible in our practice of medicine. This document represents the collective knowledge of pre-hospital medicine and the years of service and experience gained by those in our system. This is a dynamic document that will continue to evolve and change to adopt the latest in clinical science and new lessons learned. As our practice will continue to change in the years to come we should always strive to keep the patient at the center of our focus. Marion County has a history of providing excellent care through the use of progressive and carefully applied treatment guidelines.

The clinical operating guidelines are presented in an algorithmic format. This serves several purposes. The format functions as a constant reminder that the patient is the focus of all that we do regardless of our level of training. Our patients do not concern themselves with who delivers their care only that we do well with compassion and kindness. The format is a rapid reference guide and reduces the need for extensive reading and is a clinical tool to improve quality and reduce the risk of error. While this format and approach helps to improve safety it does not absolve us of our duty to thoughtfully apply the prescribed treatments. We are also still dependent upon the knowledge and teamwork of all our providers.

The following protocols are intended to serve as guidelines to Emergency Medical Services (EMS) certified personnel in the management of pre-hospital patient care.

These protocols are not intended to be absolute treatment doctrines, but rather guidelines which have sufficient flexibility to meet the complex challenges faced by the EMS/ALS provider in the field.

Frank Fraunfelter, M.D.
Medical Director Ocala / Marion County
June 2021

James Banta
Fire Chief Marion County Fire Rescue
June 2021

Shane Alexander
Fire Chief Ocala Fire Rescue
June 2021

Table of Contents

ADULT MEDICAL PROTOCOLS

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Scene Size-Up - ALS & BLS

- **A.** Review the dispatch information
- **B.** Assess the scene safety.
  - **1.** On any scene with more than one patient, or where there is a single patient with complicating factors (fire, extrication, hazardous materials present), utilize the Incident Command System.
  - **2.** A patient is defined as a person with an acute illness or suspected injury based on appearance or mechanism of injury (MOI); has a complaint resulting in a call for help or a 3rd party caller indicates individual is ill, injured, or gravely disabled.
- **C.** Determine the mechanism of injury/nature of Illness.
- **D.** Determine the number and location of patients.
- **E.** Determine the need for additional resources.
- **F.** Follow ABC sequence with attention to the need for spinal immobilization and concerns regarding removing the patient to a place of safety and a place for transport.

Initial Assessment - ALS & BLS (is required for every encounter)

- **A.** General impression of the patient
- **B.** Assess mental status (AVPU); maintain spinal immobilization as needed.
  - **A – A**lert & Oriented
  - **V – V**erbal
  - **P – P**ain
  - **U – U**nresponsive
- **C.** Assess the patient's airway & breathing.
- **D.** Assess circulation.
- **E.** Rapid evaluation of pulse
- **F.** Control major bleeding.
- **G.** Assess skin color, condition, and temperature.
- **H.** Assess distal pulses, motor and sensory
- **I.** Assess the need for defibrillation: VF / VT without a pulse
- **J.** Expose patient as appropriate or indicated
- **K.** Perform a rapid head to toe survey.
- **L.** Check the patient's back when the patient is rolled on his / her side.

***Secondary Assessment* - ALS & BLS**

- **A.** Conduct a focused head-to-toe survey.
- **B.** Conduct a Neurological Exam:
  - **1.** Pupillary response
  - **2.** Glasgow coma score (GCS)

Best Eye Response	Best Verbal Response	Best Motor Response
4. Eyes open spontaneously **3. Eye opening to verbal Command** **2. Eye opening to pain** **1. No eye opening**	**5. Orientated** **4. Confused** **3. Inappropriate words** **2. Incomprehensible sounds** **1. No verbal response**	**6. Obeys Commands** **5. Localizing pain** **4. Withdrawal from pain** **3. Flexion to pain** **2. Extension to pain** **1. No motor response**

- **C. Assess Vital Signs:**
  - **1. Respirations**
  - **2. Capnography:** Should be used for:
    - **a.** All patients with respiratory complaints
    - **b.** All patients with an advanced airway.
    - **c.** All patients receiving medication for pain or sedation
  - **3. Blood Pressure**
  - **4. Capillary Refill**

5. **Assess Skin:**
   - **a.** Color
   - **b.** Temperature
   - **c.** Condition
6. **Lung Sounds**
7. **A minimum of two sets of vital signs:**
   - **a.** Should be obtained during each patient encounter. If two sets are not obtained, documentation should include the reason why. Ideally, vital signs should be obtained and documented every 10 minutes for a non-critical patient and every 5 minutes for a critical patient.
   - **b.** Vital signs should be repeated after each medication administration.
   - **c.** Vital signs should be repeated after any change in clinical status.
   - **d.** If vital signs appear to be abnormal, then vital signs should be obtained using a manual method

D. Obtain a (SAMPLE) medical history:

S – Symptoms – Assessment of the chief complaint
- **O – O**nset and location
- **P – P**rovocation
- **Q – Q**uality
- **R – R**adiation/Referred
- **S – S**everity
- **T – T**ime

A – Allergies
M – Medications
P – Past medical history
L – Last oral intake
E – Events leading to the illness or injury

Assess the Patient's Airway & Breathing:

A. BLS

1. **Airway with attention to spinal immobilization** should be an immediate concern.
2. **BLS methods of opening the airway**
3. **Identification and relief of airway obstruction**
4. **Oral or nasal airways**
5. **Supplemental oxygen:** Supplemental oxygen should be used whenever the patient is short of breath or has a condition expected to improve with increased inspired oxygen concentration (angina, asthma, COPD, oxygen saturation less than 94%).
6. **Oxygen saturation:** Monitor should be used whenever airway interventions are undertaken or are expected to be, the presenting complaint includes shortness of breath, wheezing, difficulty breathing, or noisy respiration and/or the paramedic suspects hypoxia as a contributor to the patient's condition.

B. ALS

1. **Oral or Nasal Intubation** with or without sedation or sedation and paralysis. **Attempts shall be limited to 2 at a maximum**. If unsuccessful, consider another method of airway control.
2. **King LTS-D™, King LT-D™ May be utilized as first-line treatment to replace endotracheal intubation.**
3. **Cricothyroid puncture**
4. **Capnography:** Should be applied to all patients with:
   - **a.** All respiratory related problems.
   - **b.** All intubated patients.
   - **c.** Patients receiving medication for pain or sedation
5. **CPAP:** (if available). Should be applied to treat severe respiratory distress with evidence of bronchospasm (COPD, severe asthma) and as a treatment for cardiogenic pulmonary edema.
6. **Autovent 4000:**

a. May be used for ventilation of adult patients in cardiopulmonary arrest.

b. May be used for interfacility transports.

Cardiac Management

A. BLS

1. Rapid evaluation of pulse
2. Cardiopulmonary Resuscitation (CPR)
3. Automated External Defibrillator (AED)
4. Assist in the initiation of Therapeutic Hypothermia Protocol
5. Assist in the application of monitor and 12-lead

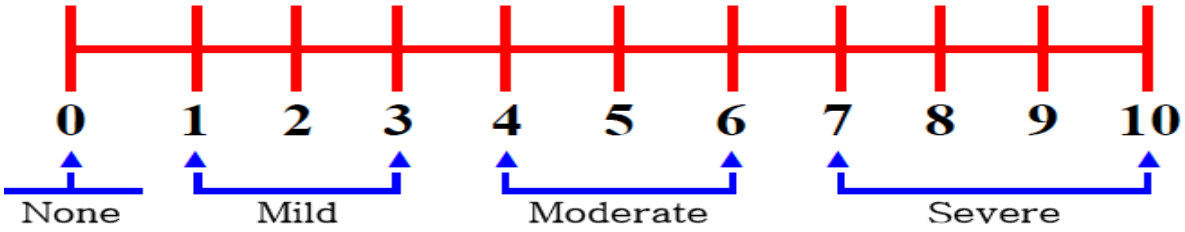
B. ALS – Heart Monitor Shall be Applied:

1. Cardiopulmonary arrest
2. History of palpitation, weakness, or syncope/near-syncope.
3. For complaints that appear to be cardiac-related.
4. Abdominal pain.
5. The patient has stroke or hypertension symptoms.
6. The patient has complaint of dizziness.
7. Prior to medications being administered (other than oxygen, ammonia inhalants, Glucagon and oral glucose).
8. All patients greater than or equal to 35 years with any suspected cardiac etiology or ACS (Acute Coronary Syndrome) or risk factors.
9. 12 lead, when available, should be considered based upon protocol.

Assessment and Treatment of Pain (pain should be addressed whenever appropriate)

A. BLS

1. **Assess the pain using 0 – 10 Numeric Rating Scale**
2. **Indications:** Adults and children (older than 9 years old) who can to use numbers to rate the intensity of their pain. Use scale in all patient care settings



B. ALS

1. **PAIN should be treated whenever appropriate**, as indicated for pain but without causing a substantial decrease in the level of consciousness or respiratory effort. **Caution**: do not sedate the patient to the point that it is difficult for the receiving physician to examine and question the patient.
2. **Pain may be treated with the following medications if available:**
   a. Fentanyl: 25 – 100 mcg IV/IO initial dose followed by 50 mcg increments titrated to pain relief, up to a total of 200 mcg for an adult. If administering more than 50 mcg Fentanyl, consider administering Ondansetron Hydrochloride (Zofran) 4 mg undiluted IV over 2 to 5 minutes (contraindicated in pregnancy). Contact OLMC if more than 200 mcg of Fentanyl is needed. Repeat V/S after each dose and maintain BP equal to 90 mmHg or greater. Fentanyl may be given IM **only if, IV access cannot be achieved**, and the BP is over 100 mmHg.

If Fentanyl is unavailable

   b. Ketamine: 0.1- 0.3 mg/kg IV/IO Maximum dose of 15mg (Ketamine must be diluted 100mg in 100mL of NS or D5W and then draw up the appropriate dose up to 15cc (Maximum dose 15mg)

and administered over (1-2 minutes) and titrated to pain. Consider administering Ondansetron Hydrochloride (Zofran) 4 mg undiluted IV over 2 to 5 minutes (contraindicated in pregnancy).

Or

c. **Morphine Sulfate** may be given slow IVP in 2mg increments every 3-5 minutes titrated to pain relief, up to a maximum of 10mg. Maintain BP equal to 90 mmHg or greater. Consider administering Ondansetron Hydrochloride (Zofran) 4 mg undiluted IV over 2 to 5 minutes (contraindicated in pregnancy).

Or

d. **Dilaudid (Hydromorphone)** Administer 1 mg increments IV/IM over 2-5 minutes, titrated to pain relief, with a maximum dose of 2 mg. Systolic blood pressure must be greater than 90 mmHg. Consider administering Ondansetron Hydrochloride (Zofran) 4 mg undiluted IV over 2 to 5 minutes (contraindicated in pregnancy).

3. **Sedation**
   a. **Midazolam (Versed):** 2-4 mg increments IV/IM, up to a max of 10 mg. used for patient comfort during cardioversion and pacing.

   Or

   b. **Lorazepam (Ativan)**: 1 mg increments IV/IM, to a maximum of 2 mg. used for patient comfort during cardioversion and pacing.

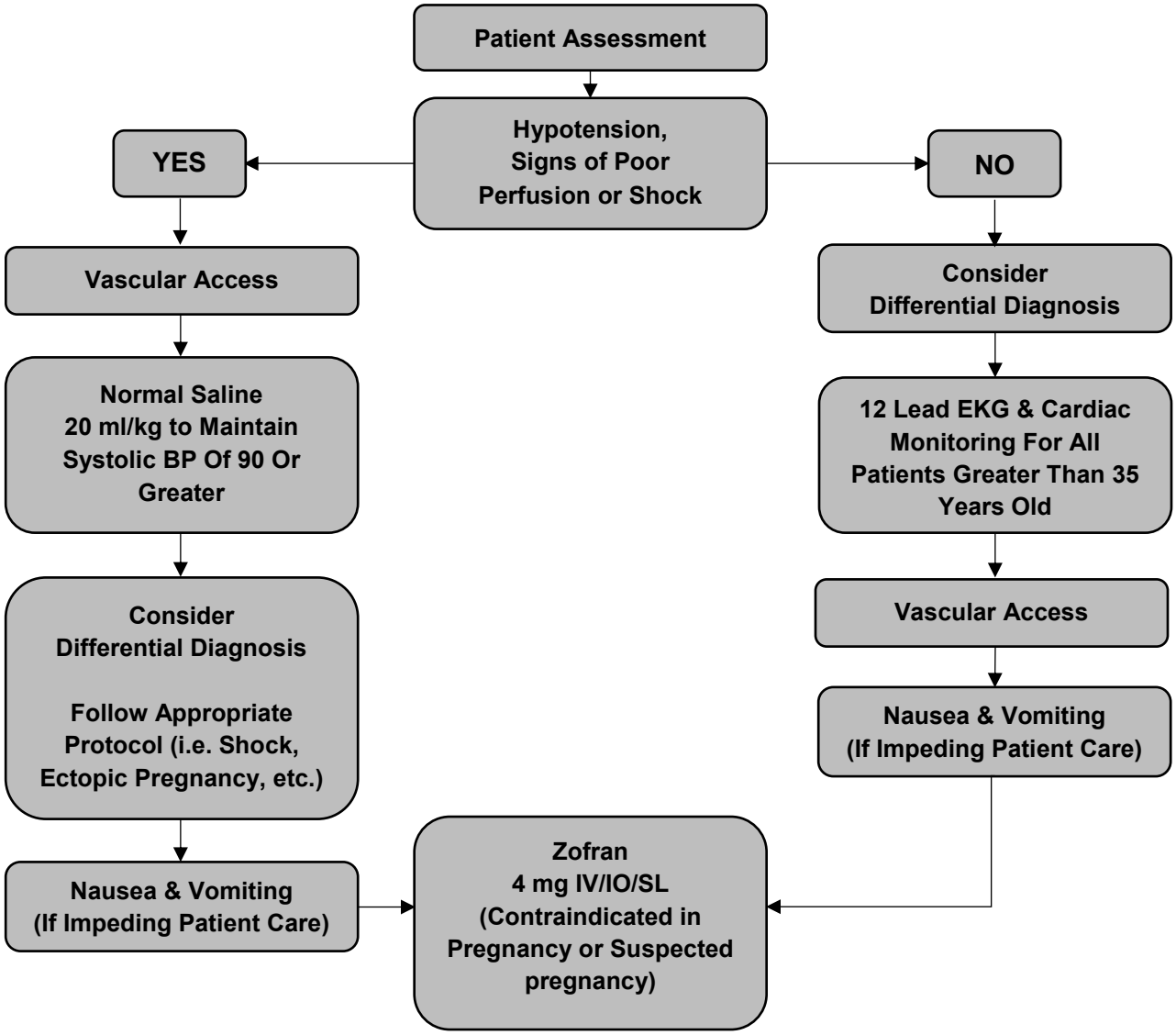
   Or

   c. **Diazepam (Valium)**: 2-4 mg increments IV/IM, to a maximum of 10 mg. used for patient comfort during cardioversion and pacing.

Intravenous Access

Should be obtained whenever the paramedic feels one of the following conditions exists (see IO protocol for alternate vascular access situations):

A. The patient needs intravenous fluids (e.g. volume depletion, hypotension, right-sided or inferior wall MI, heat-related illness).
B. The patient needs intravenous medicine per protocol.
C. The patient is likely to need intravenous medication enroute to the hospital.
D. The Paramedic feels there is any reason why intravenous medicine or fluid may be necessary.



Signs & Symptoms

Pain, tenderness, nausea, vomiting, diarrhea, dysuria, constipation, vaginal bleeding/discharge, pregnancy, bowel movements (black, bloody, or change in nature).

Differential Considerations

Myocardial infarction, kidney stone, bowel obstruction, pancreatitis, abdominal aneurysm, gastroenteritis, peptic ulcer disease/gastritis, ectopic pregnancy, ovarian cyst, appendicitis, testicular torsion and bladder/prostate disorder.

A. Consider cardiac etiology in patients greater than 35 years old, diabetics and/or women especially with upper abdominal complaints.

B. Abdominal pain in women of childbearing age should be treated as pregnancy related until proven otherwise

C. Abdominal aneurysm should be considered with abdominal pain in patients over 50

D. Promethazine (Phenergan) 12.5 mg slow IVP if Zofran is unavailable.

Therapeutic Goal:

To recognize the patient with an aortic aneurysm and to provide and maintain adequate oxygenation/ventilation and tissue perfusion; to provide expeditious transport to the nearest appropriate medical facility; and to ensure adequate pain control. Abdominal aortic aneurysms (AAAs) are much more common than thoracic aneurysms and represent a degenerative process of the aorta that is often attributed to atherosclerosis; however, the exact cause is not known.

Signs and Symptoms:

AAA may present in many ways; the classic presentation of a symptomatic AAA is abdominal or back pain with a pulsatile abdominal mass noted on physical exam. However, the symptoms may be vague, and the abdominal mass may be missed. Symptoms may include:

- **A.** Groin pain
- **B.** Syncope
- **C.** Paralysis, or flank pain.
- **D.** The diagnosis may be confused with renal calculi, diverticulitis, incarcerated hernia, or lumbar spine disease.

Physical Examination:

- **A.** Abdominal Exam Includes:
  - **1.** Gentle palpation of the aorta to estimate the size of the aneurysm
  - **2.** Bruits may indicate the presence of renal or visceral artery stenosis
  - **3.** A thrill is possible with aortocaval fistulae
- **B.** Palpate the femoral, popliteal and pedal pulses (dorsalis pedis or posterior tibial) to determine if an associated aneurysm (femoral/popliteal) or occlusive disease exists.
- **C.** Exam the flank for ecchymosis (Grey Turner sign) this represents retroperitoneal hemorrhage.

Treatment:

- **A.** Patient assessment
- **B.** If patient displays signs of inadequate perfusion, begin resuscitation with NS
- **C.** Notify the receiving facility.
- **D.** Consider pain management.
- **E.** Consider sedation for anxiety or agitation.
- **F.** ****CCT Consider**
  - **1.** If the patient is being transferred from a facility that has a blood bank the transport team should consider taking packed RBC's for transfusion in the event of hypotension. FFP and/or platelets should also be considered for patients who are anticoagulated.
  - **2.** If the patient has tachycardia and hypertension (diastolic BP greater than 110mmHg) consider a short-acting anti-hypertensive such as Esmolol, Nitroprusside or Nicardipine.

**** Management of the patient with a symptomatic AAA is operative and extremely time dependent. The transport team should minimize scene time by performing all non-critical interventions while enroute to receiving facility.**

Acute adrenal insufficiency or Addison's disease is an endocrine disorder that occurs when the adrenal glands do not produce sufficient amounts of cortisol and other glucocorticoid hormones needed to respond to stress and inflammatory reactions needed to re-establish homeostasis after a stress response.

Signs and Symptoms:

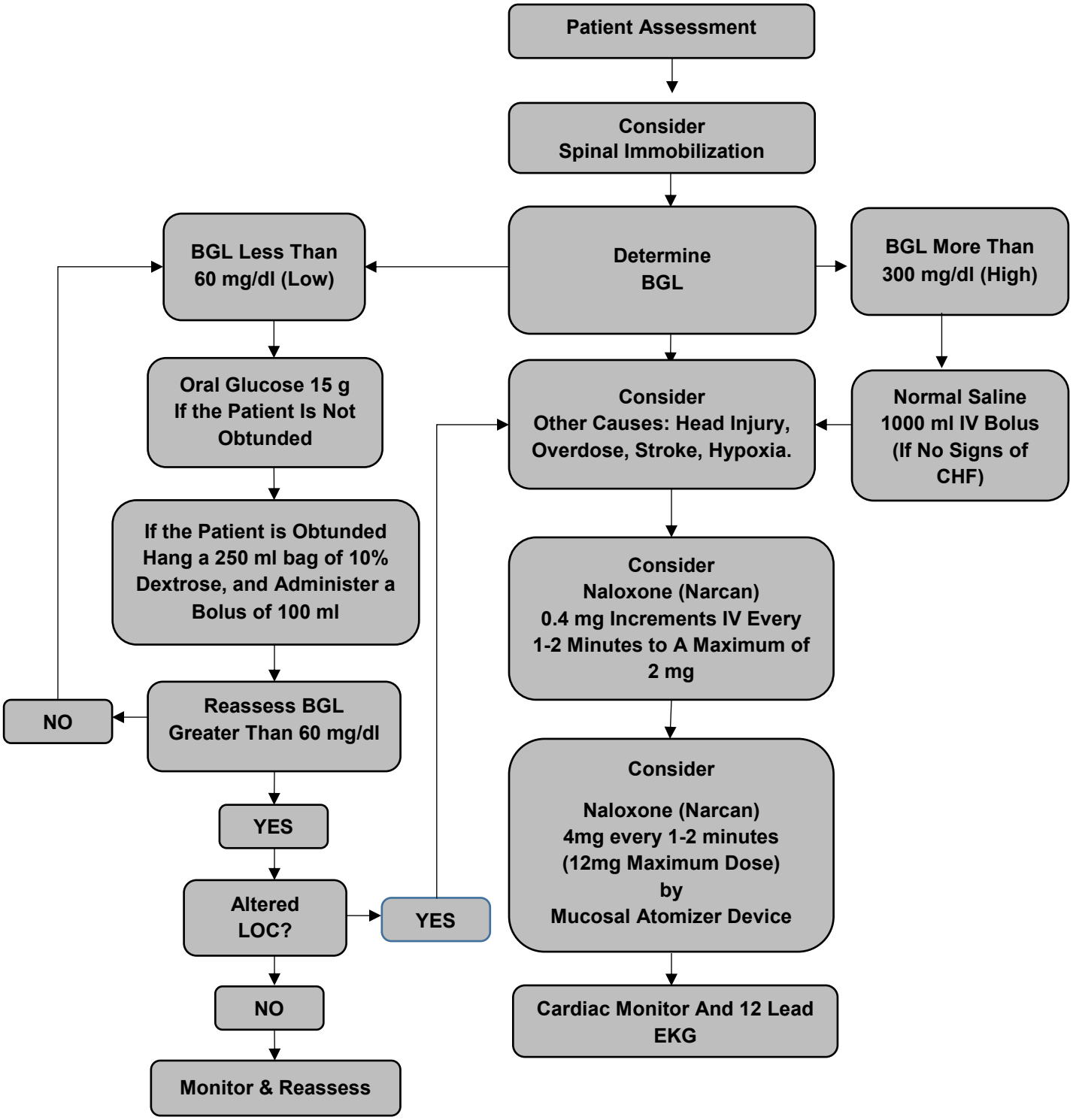
- **A.** Severe weakness
- **B.** Confusion
- **C.** Pain in your lower back or legs
- **D.** Severe abdominal pain, vomiting and diarrhea, leading to dehydration
- **E.** Reduced consciousness or delirium
- **F.** Low blood pressure
- **G.** Hyperkalemia (High potassium)
- **H.** Hyponatremia (low sodium)

If left untreated, symptoms may progress to hypotension, shock, seizures and eventual heart failure.

Treatment:

Treatment based on identification, assessment and patient's level of distress

A. Supplemental 100% Oxygen to maintain O2 saturation > 95%
B. ETCO2 level
C. BGL
D. monitor vital signs including temperature
E. Cardiac Monitor and 12 lead
F. Vascular Access
    a. If indicated (i.e. tachycardia, hypotension), 20 ml/kg NaCl to maintain systolic BP ≥ 90 mmHg
G. For patient's confirmed to have acute adrenal insufficiency by either the presence of a medical alert bracelet, designation of medical records or other patient, family or medical confirmations administer Solu-Medrol 125mg slow IV push.


Patient Assessment
Consider Spinal Immobilization
Determine BGL
BGL Less Than 60 mg/dl (Low)
BGL More Than 300 mg/dl (High)
Oral Glucose 15 g If the Patient Is Not Obtunded
Normal Saline 1000 ml IV Bolus (If No Signs of CHF)
Consider Other Causes: Head Injury, Overdose, Stroke, Hypoxia.
If the Patient is Obtunded Hang a 250 ml bag of 10% Dextrose, and Administer a Bolus of 100 ml
Consider Naloxone (Narcan) 0.4 mg Increments IV Every 1-2 Minutes to A Maximum of 2 mg
NO
Reassess BGL Greater Than 60 mg/dl
Consider Naloxone (Narcan) 4mg every 1-2 minutes (12mg Maximum Dose) by Mucosal Atomizer Device
YES
Altered LOC?
YES
NO
Cardiac Monitor And 12 Lead EKG
Monitor & Reassess

Signs & Symptoms

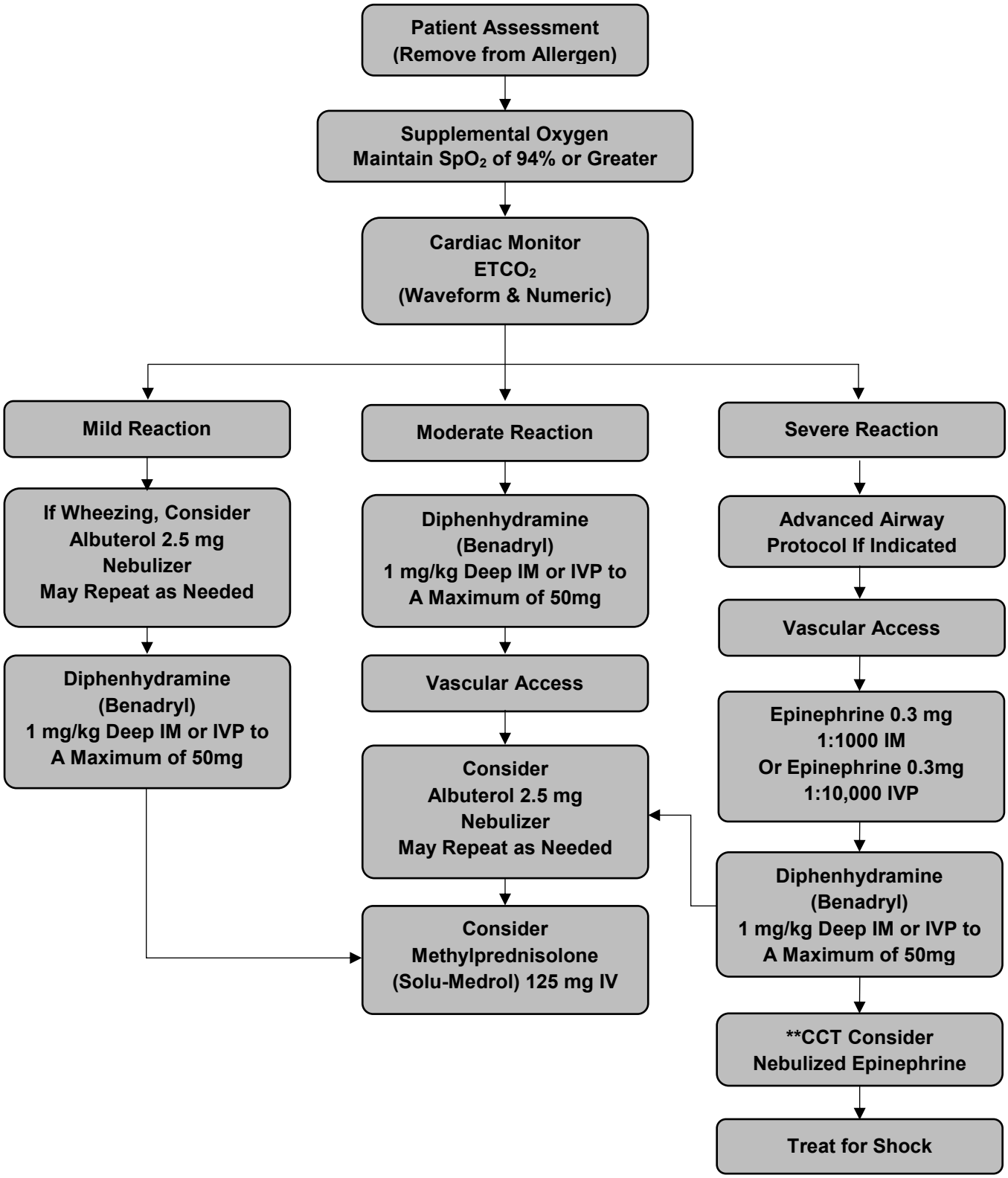
Decreased mental status or lethargy, change in baseline mental status, bizarre behavior, irritability, hypoglycemia (cool, diaphoretic skin), hyperglycemia (warm, dry skin, fruity breath, Kussmaul respirations, signs of dehydration).

Differential Considerations

Head trauma, hypothermia, medication reactions, hot/cold emergencies, stroke, seizure, cardiac (MI, CHF), recent emotional crisis, electrolyte abnormality, infection, psychiatric disorder, thyroid (hyper/hypo), diabetes (hyperglycemia, hypoglycemia), possible poisoning (inhaled/contact/ingested), ETOH or drug intoxication

You should not assume that recreational drug use and/or alcohol are the sole reasons for AMS as more serious underlying medical and trauma conditions may be the cause.

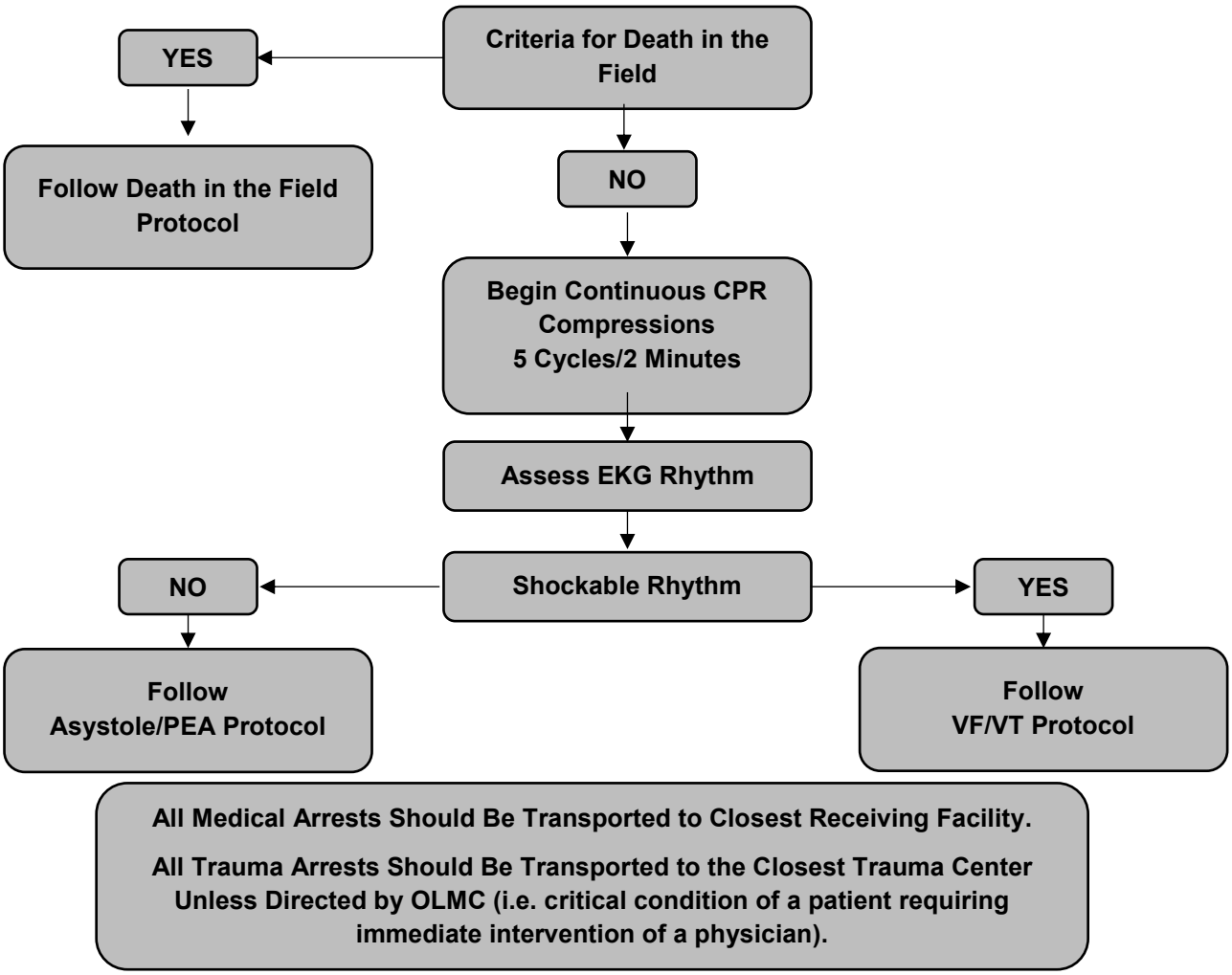
- **A.** Hang a 250 ml bag of D10%, and administer a bolus of 100 ml. Clamp the tubing and recheck the BGL. If needed repeat boluses as needed until the patient becomes alert and oriented, and/or until a normal BGL is achieved. The use of D10% allows you to titrate the dose for both pediatric and adult patients.
- **B.** Trauma patients with AMS should be treated in conjunction to the Adult Head Trauma Protocol
- **C.** AMS may be a presenting sign of an environmental toxin or Haz-Mat exposure
- **D.** If the patient is combative, protect the patient's airway and administer Midazolam (Versed®) 2-4mg IVP/IM increments max of 10 mg. Monitor LOC and BP
- **E.** If Midazolam is unavailable Diazepam (Valium) 2-4mg IV/IM increments to a maximum of 10mg or Lorazepam (Ativan) 1mg IV / IM to maximum of 2mg may be given for combative or seizing patients.
- **F.** Fentanyl overdose may require higher doses of Narcan. If the patient has known narcotic usage and/or the patient is not responsive to the normal dose of Narcan, Fentanyl and/or Carfentanil toxicity should be suspected. Administer Narcan 2mg every 1-2 minutes to a maximum of 10mg (OLMC should be contacted if further doses are required).
- **G.** If IV access cannot be established Narcan can be given via Mucosal Atomizer Device Administer Narcan 4mg every 1-2 minutes to a maximum of 12mg (OLMC should be contacted if further doses are required).


Patient Assessment
(Remove from Allergen)
Supplemental Oxygen
Maintain SpO_2 of 94% or Greater
Cardiac Monitor
$ETCO_2$
(Waveform & Numeric)
Mild Reaction
If Wheezing, Consider
Albuterol 2.5 mg
Nebulizer
May Repeat as Needed
Diphenhydramine
(Benadryl)
1 mg/kg Deep IM or IVP to
A Maximum of 50mg
Moderate Reaction
Diphenhydramine
(Benadryl)
1 mg/kg Deep IM or IVP to
A Maximum of 50mg
Vascular Access
Consider
Albuterol 2.5 mg
Nebulizer
May Repeat as Needed
Consider
Methylprednisolone
(Solu-Medrol) 125 mg IV
Severe Reaction
Advanced Airway
Protocol If Indicated
Vascular Access
Epinephrine 0.3 mg
1:1000 IM
Or Epinephrine 0.3mg
1:10,000 IVP
Diphenhydramine
(Benadryl)
1 mg/kg Deep IM or IVP to
A Maximum of 50mg
**CCT Consider
Nebulized Epinephrine
Treat for Shock

Signs & Symptoms

Flushing of the skin, itching, swelling, cyanosis, dyspnea, sneezing/coughing, wheezing, stridor, tachycardia, hypotension, vomiting, abdominal cramping, diarrhea, tearing (lacrimation)

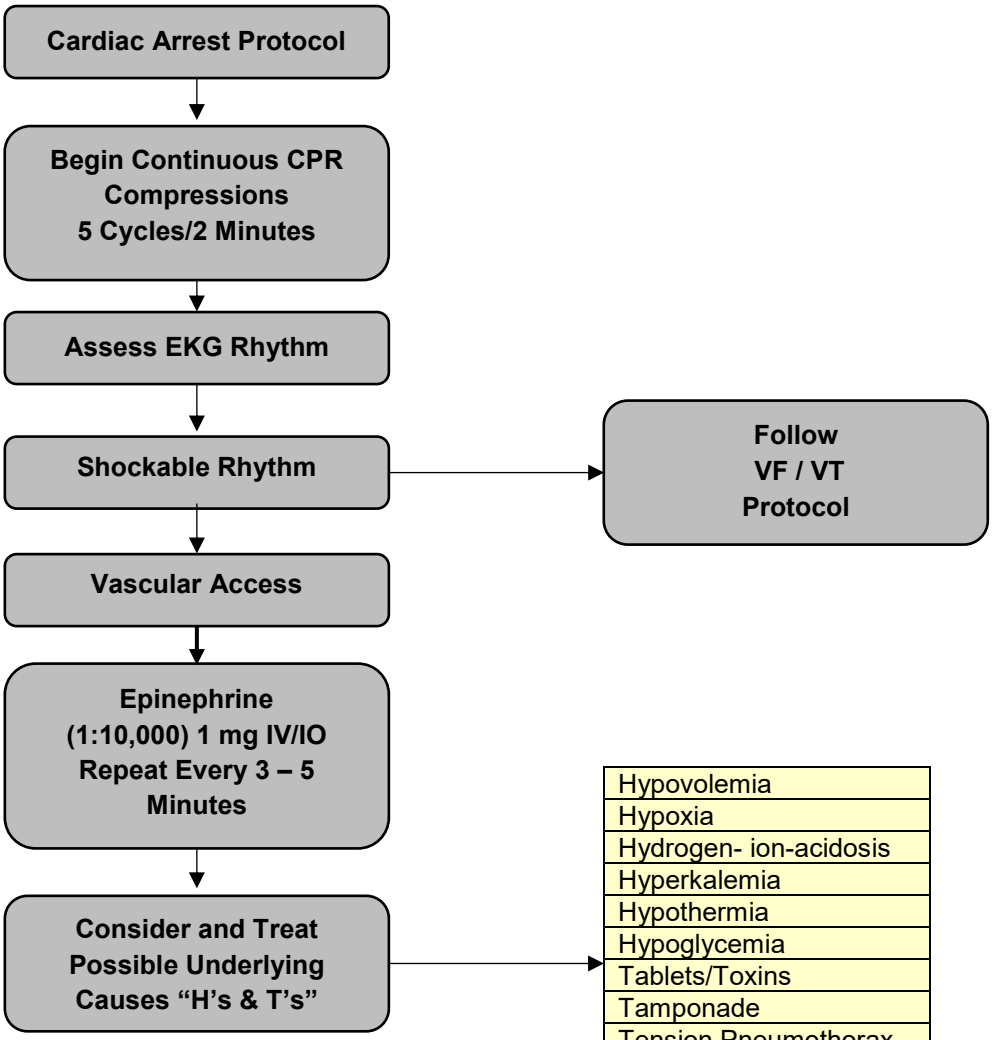
- ***A.*** The diagnosis of anaphylaxis is based on recognition of characteristic symptoms and signs occurring within minutes to a few hours after exposure to potential triggering agents or events.
- **B.** Caution should be used with the administration of Epinephrine when the patient has a history of hypertension or heart disease.
- **C.** Albuterol or Ipratropium ***should be used cautiously*** if the patient's heart rate is greater than 140 BPM.



The initial primary focus for a patient in **Cardiac Arrest** is quality continuous and uninterrupted compressions at a rate of 100 - 120 per min. Compression depth should be at least 2 inches in the adult and you should allow for the complete recoil of the chest. Quality continuous compressions and early defibrillation provide the greatest chance of Return of Spontaneous Circulation (ROSC) and survival. It is also important to consider other differentials (causes) in patients in cardiac arrests.

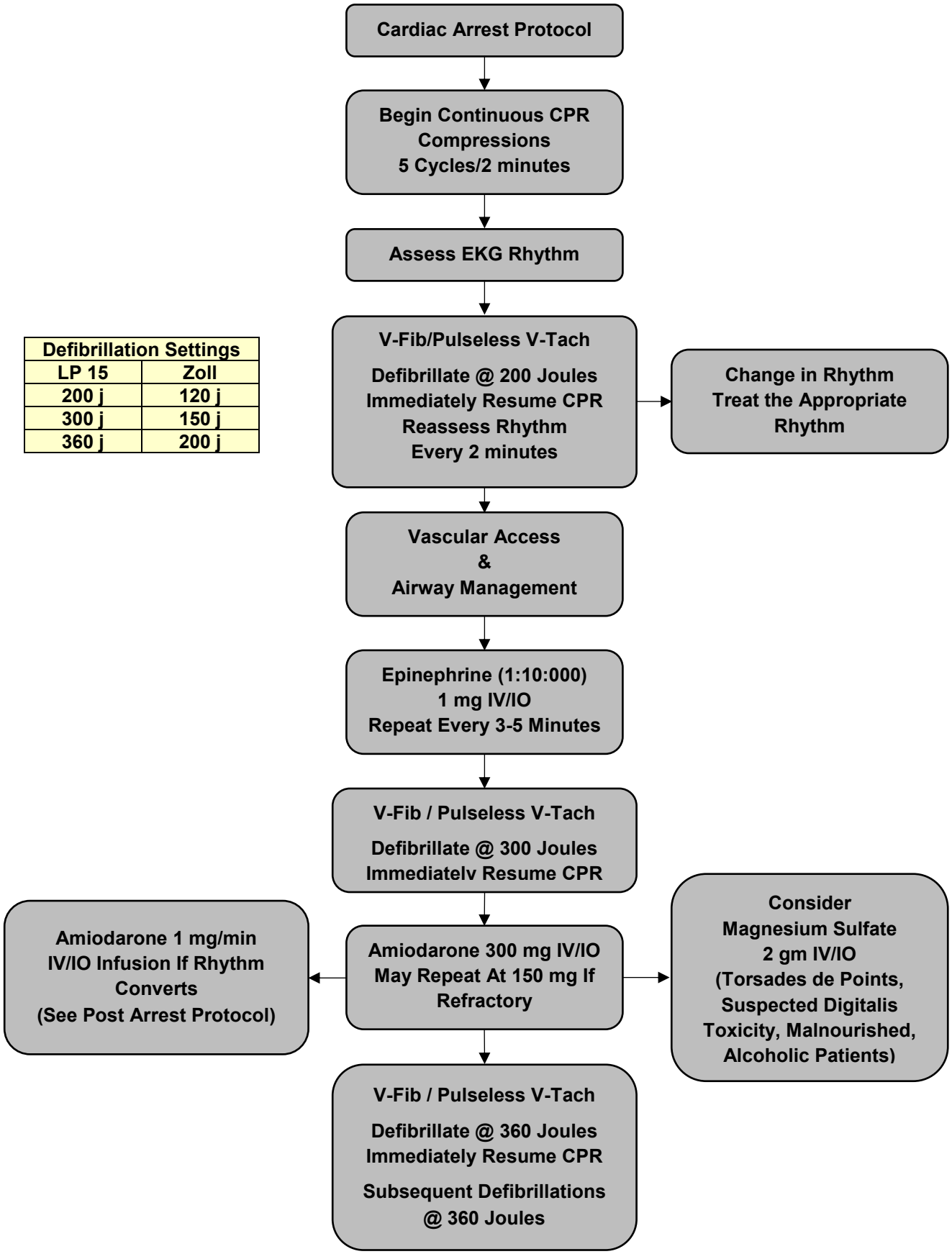
Consider the H's and T's

Causes	Treatments
Hypovolemia	Fluid Challenge
Hypoxia	Airway Management
Hydrogen- ion-acidosis	Airway management, Ventilation, consider Sodium Bicarbonate
Hyperkalemia	Consider Calcium Chloride 1g (By Physician Order) Consider Sodium Bicarbonate
Hypothermia	Treat for cold-related emergencies
Hypoglycemia	If blood sugar is less than 60 consider D50 or Glucagon
Tablets/Toxins	Consider Narcan and consult OLMC for other specific treatment
Tamponade	
Tension Pneumothorax	Perform Chest decompression
Thrombosis, Pulmonary	
Thrombosis, Coronary	
Trauma	



Compressions should be maintained with minimal interruptions (Interruptions should be kept to less than 10 seconds). Compressions should be maintained during treatment modalities. Treatments should be preceded by 2 minutes of CPR.

For PEA or Asystole, the most important aspect is finding a reversible cause. Consider: Is this a primary cardiac event, primary respiratory event, drug overdose, drowning or trauma? It is also important to consider other differentials (causes) with patients in cardiac arrests. "Consider the H's and T's". Lightning and electrocution victims should be aggressively resuscitated even if found in Asystole with unknown down-time



Defibrillation Settings	
LP 15	Zoll
200 j	120 j
300 j	150 j
360 j	200 j

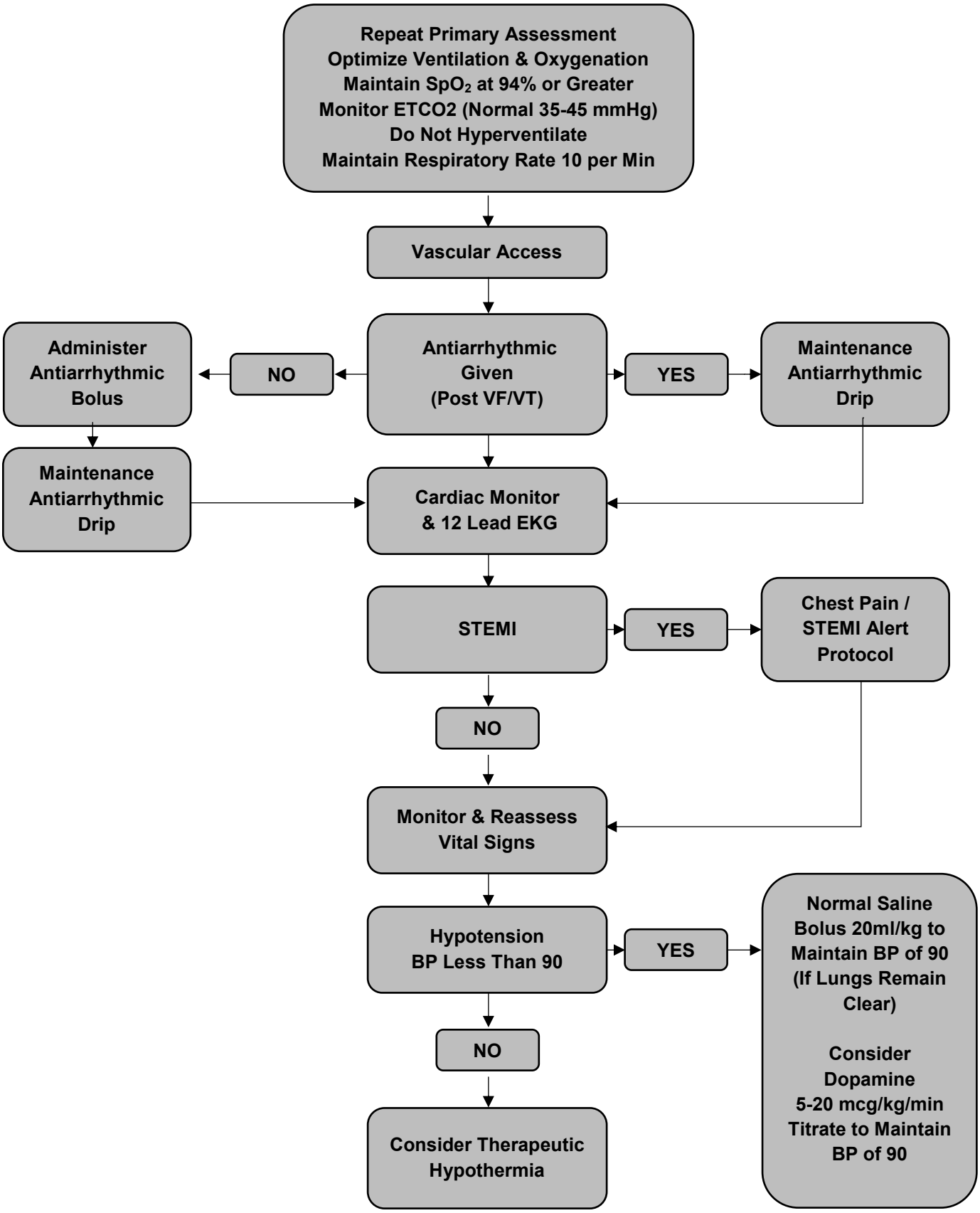
Compressions should be maintained with minimal interruptions (Interruptions must be kept to less than 10 seconds). Compressions should be maintained during treatment modalities. Defibrillation and treatments should be preceded by 2 minutes of CPR.

A. Endotracheal Intubation attempts should be limited to 2 attempts. The King Airway may be considered as first-line treatment to manage the airway in Cardiac Arrest patients. ***Do not interrupt compressions to place endotracheal tube or King Airway. Do not hyperventilate. Ventilate at a rate of 10 breaths per min with an advanced airway.***

B. Monitor and record the $EtCO_2$ reading (numerical value and waveform)

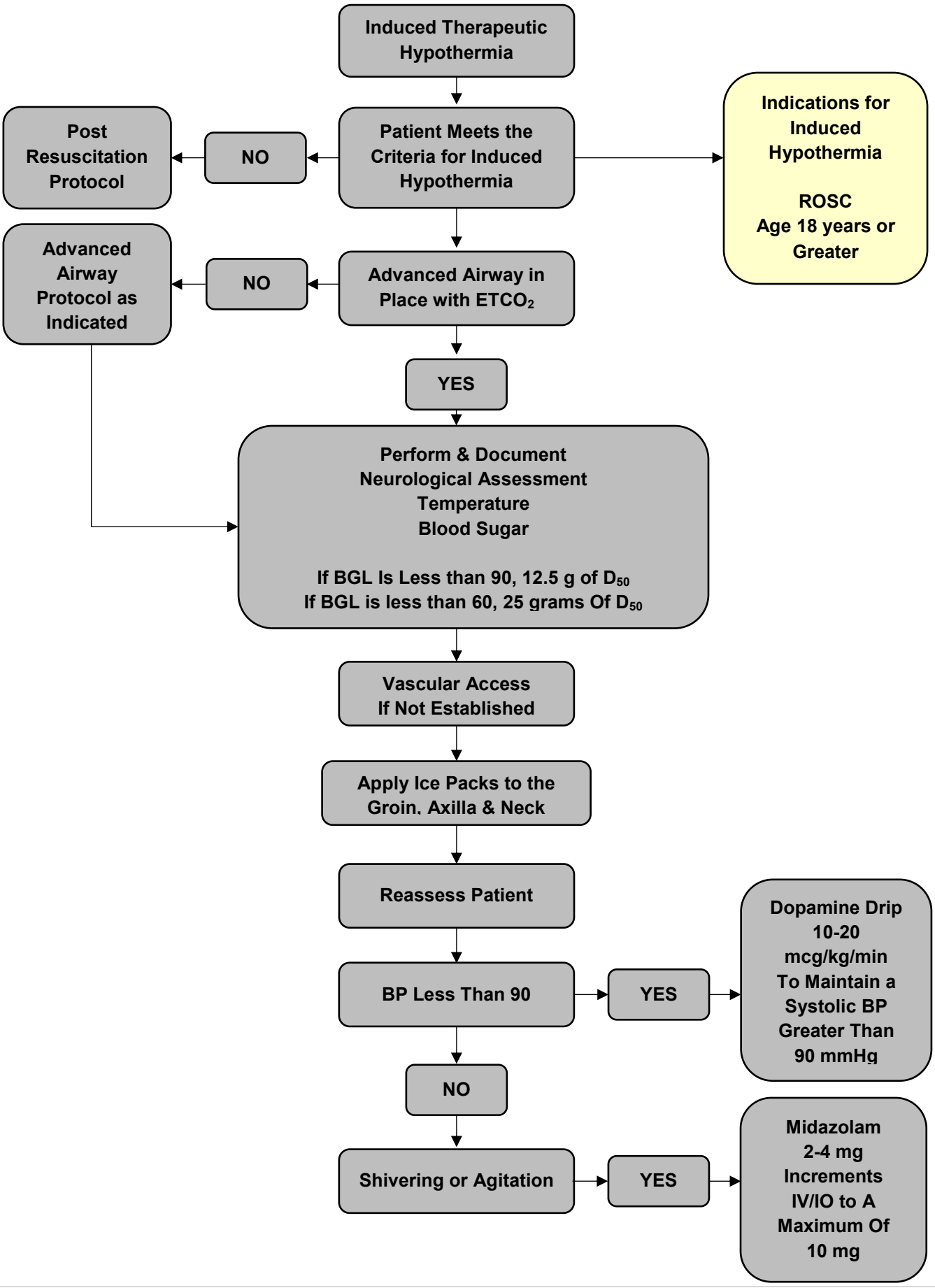
C. Magnesium Sulfate 2 gm IV / IO should be administered for Torsades de Pointes, and considered for suspected Digitalis toxicity, malnourished patients and alcoholics.

D. If Hyperkalemia is suspected (Renal failure, dialysis etc.) consider Sodium bicarbonate or contacting OLMC for the administration of Calcium Chloride.


Repeat Primary Assessment
Optimize Ventilation & Oxygenation
Maintain SpO2 at 94% or Greater
Monitor ETCO2 (Normal 35-45 mmHg)
Do Not Hyperventilate
Maintain Respiratory Rate 10 per Min
Vascular Access
Antiarrhythmic Given (Post VF/VT)
NO
Administer Antiarrhythmic Bolus
YES
Maintenance Antiarrhythmic Drip
Maintenance Antiarrhythmic Drip
Cardiac Monitor & 12 Lead EKG
STEMI
YES
Chest Pain / STEMI Alert Protocol
NO
Monitor & Reassess Vital Signs
Hypotension BP Less Than 90
YES
Normal Saline Bolus 20ml/kg to Maintain BP of 90 (If Lungs Remain Clear)
Consider Dopamine 5-20 mcg/kg/min Titrate to Maintain BP of 90
NO
Consider Therapeutic Hypothermia

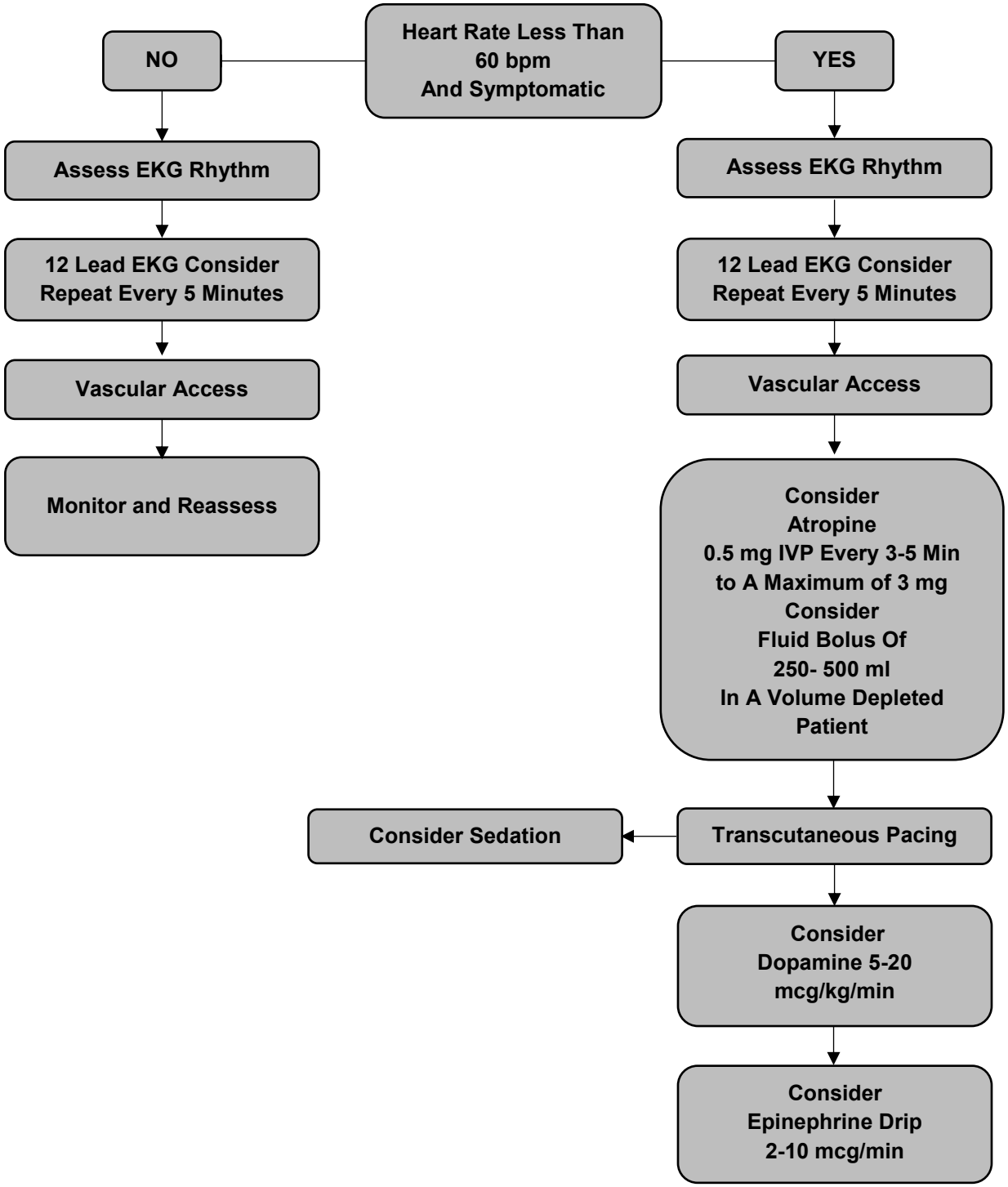
The principal objective of post-resuscitation care is the re-establishment of effective perfusion of organs and tissue. After ROSC in the out-of-hospital setting, the provider must consider and treat the cause of the arrest and the consequences of any hypoxemic/ischemic/reperfusion injury. The Paramedic / EMT should optimize hemodynamic, respiratory, and neurologic support; identify and treat reversible causes of arrest; and monitor temperature and consider treatment for disturbances of temperature regulation and metabolism.

- **A.** Optimize oxygenation and ventilation to maintain oxygen saturation at 94% or greater. Hyperventilation must be avoided due to induced hypotension, decreased cardiac output and oxygen injury.
- **B.** Common causes of post-resuscitation hypotension include hyperventilation, hypovolemia, pneumothorax, and medication reaction to ALS drugs.
- **C.** Control body temperature and induce therapeutic hypothermia unless contraindicated.
- **D.** Search for and treat correctable causes
- **E.** 12 Lead to identify possible STEMI.
- **F.** Establish a maintenance drip of the antiarrhythmic medication administered prior to ROSC.


Induced Therapeutic Hypothermia
Patient Meets the Criteria for Induced Hypothermia
NO
Post Resuscitation Protocol
Indications for Induced Hypothermia
ROSC
Age 18 years or Greater
Advanced Airway in Place with ETCO2
NO
Advanced Airway Protocol as Indicated
YES
Perform & Document
Neurological Assessment
Temperature
Blood Sugar
If BGL Is Less than 90, 12.5 g of D50
If BGL is less than 60, 25 grams Of D50
Vascular Access If Not Established
Apply Ice Packs to the Groin, Axilla & Neck
Reassess Patient
BP Less Than 90
YES
Dopamine Drip 10-20 mcg/kg/min To Maintain a Systolic BP Greater Than 90 mmHg
NO
Shivering or Agitation
YES
Midazolam 2-4 mg Increments IV/IO to A Maximum Of 10 mg

Therapeutic Hypothermia is indicated for comatose adult patients who have had return of spontaneous circulation with basic and advanced cardiac life support.
Contraindications are: Trauma, hypovolemia, severe hypotension that is not correctable by fluid infusion, vasopressors.
Relative Contraindications are: Pregnancy and Sepsis. OLMC should be contacted prior to administering Therapeutic Hypothermia.
Caution should be used as hypothermia may cause Brady arrhythmia, ventricular arrhythmias, hypotension, seizures, hypokalemia and hyperglycemia

Do not delay transport to initiate induced hypothermia
Do not hyperventilate


Heart Rate Less Than
60 bpm
And Symptomatic
NO
YES
Assess EKG Rhythm
12 Lead EKG Consider
Repeat Every 5 Minutes
Vascular Access
Monitor and Reassess
Assess EKG Rhythm
12 Lead EKG Consider
Repeat Every 5 Minutes
Vascular Access
Consider
Atropine
0.5 mg IVP Every 3-5 Min
to A Maximum of 3 mg
Consider
Fluid Bolus Of
250- 500 ml
In A Volume Depleted
Patient
Transcutaneous Pacing
Consider Sedation
Consider
Dopamine 5-20
mcg/kg/min
Consider
Epinephrine Drip
2-10 mcg/min

Bradycardia is a condition where the heart rate is less than 60 bpm and is considered treatable if symptomatic and the rate is inadequate for the clinical condition. Consideration should be given to treatable causes.

Signs & Symptoms

Heart rate less than 60 bpm, hypotension, decreased mental status or lethargy, chest pain, syncope, respiratory distress, seizures, etc.

Differential Considerations

Pacemaker failure, atrio-ventricular block, hypoxia, beta blockers, head injury or stroke, overdose, sick sinus syndrome, calcium channel blockers, well-conditioned athletes, acute myocardial infarction, spinal cord lesion

A. Consider **Atropine:** 0.5 mg IV while awaiting pacer. May repeat to a total dose of 3 mg. If ineffective, begin pacing.

B. Consider **Dopamine:** 5 to 20 mcg/kg per min. if pacing is ineffective

C. Consider the administration of **Epinephrine** 2 to 10 mcg/min.

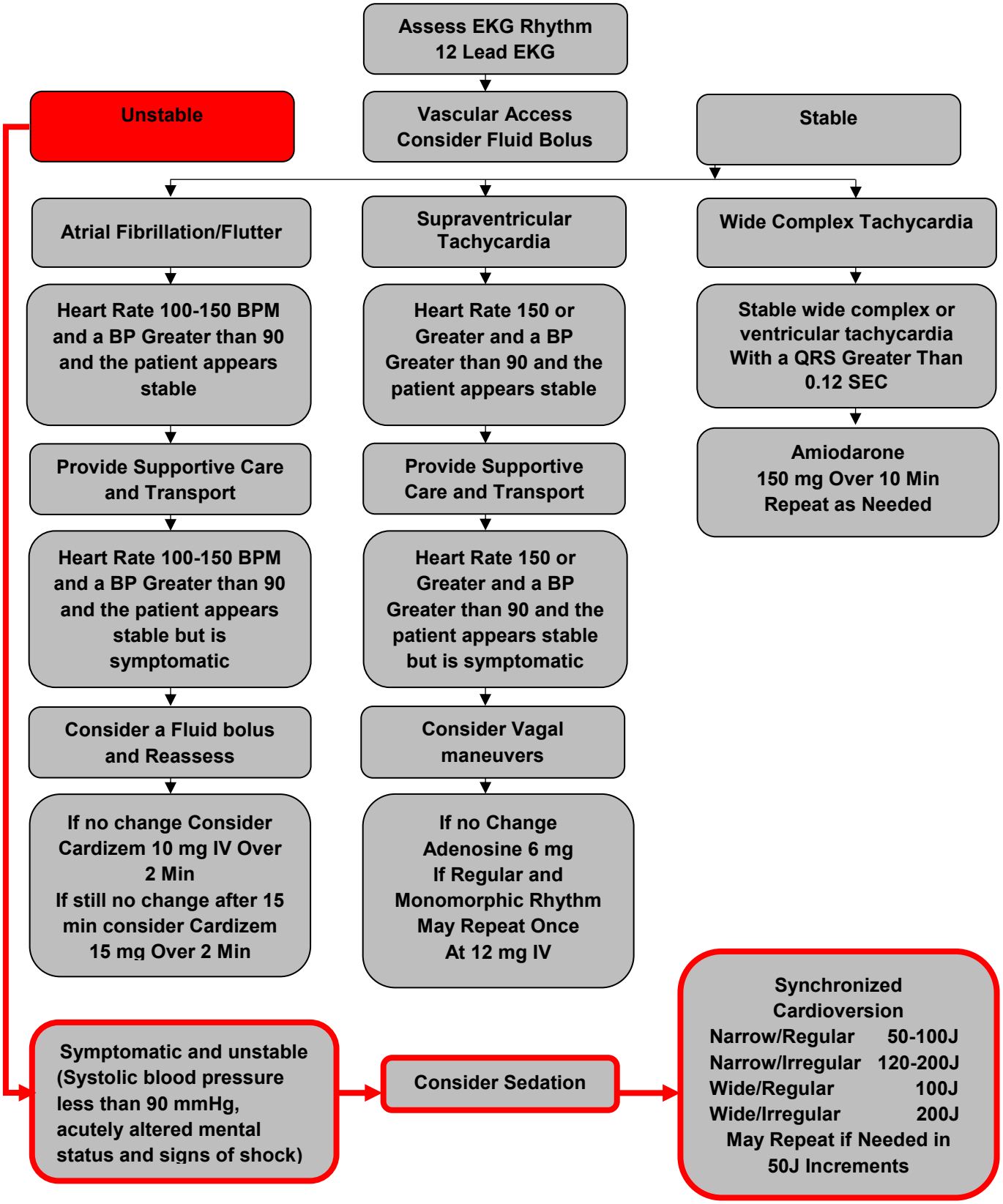
D. Consider **Midazolam** (Versed) 2-4mg increments IV/IM up to a maximum of 10 mg for sedation or pacing. **Diazepam** (Valium) 2-4mg IV/IM increments up to a maximum of 10mg or **Lorazepam** (Ativan) 1mg IV/IM to a maximum of 2mg may be used if **Midazolam** is unavailable

Caution

A. The use of Atropine for bradycardia in the presence of an AMI may worsen heart damage.

B. The use of Lidocaine, Amiodarone, Beta Blockers, and Calcium Channel Blockers in heart block can worsen bradycardia and lead to asystole and death.

C. Transcutaneous pacing may be ineffective in cardiac transplantation patients.



Amiodarone Bolus Administration
(Adult with a pulse)
150 mg in 100 cc D5W
10 gtts/ml set - 100 gtts/min= 150 mg/10 min

Amiodarone Maintenance Drip for V-Tach
150mg in 100cc D5W
10gtts/ml set- 3gtt/min = 0.5mg/min
60gtts/ml set – 20gtts/min = 0.5mg/min

Patients with tachycardia may or may not exhibit symptoms. Narrow complex tachycardia can have many origins.

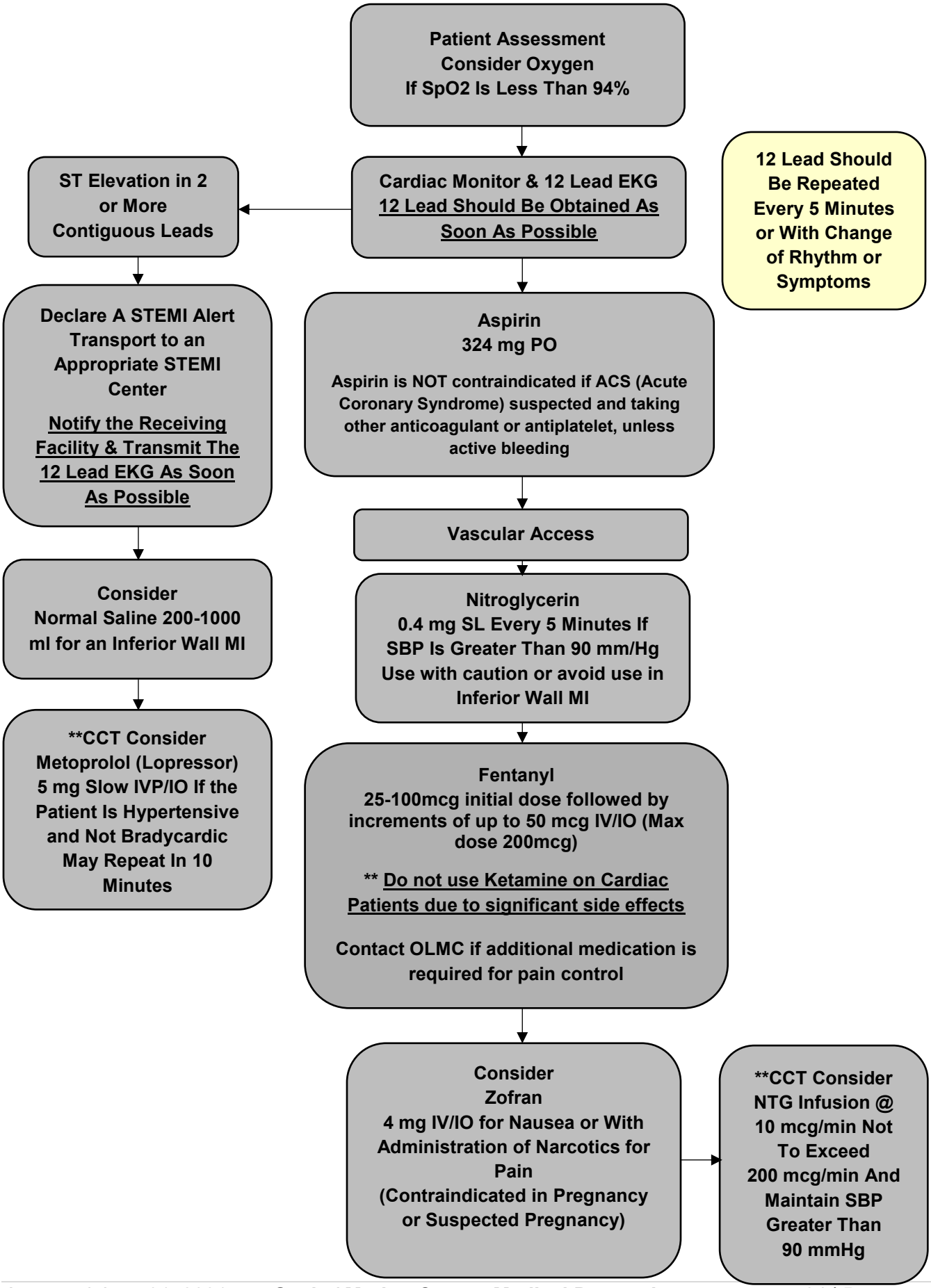
Tachycardia is a faster than normal heart rhythm that is usually classified as narrow complex (QRS is less than 0.12 seconds on ECG) or wide complex (QRS greater than 0.12 seconds on ECG). The patient's maximum sustained heart rate can be calculated by subtracting the patient's age from 220. The underlying cause should be considered prior to treatment. **Tachycardia that is not symptomatic does not require treatment.** The Paramedic should provide supportive care and look for the underlying cause.

Causes of Tachycardia

- **A.** Sepsis, fever, shock, respiratory distress, electrolyte imbalance, myocardial infarction, drug induced, sick sinus syndrome, hypovolemia/fluid loss, heart disease, WPW, pain / emotional stress, etc.
- **B.** Vagal maneuvers and adenosine are preferred therapies for stable SVT.
- **C.** Adenosine may not be effective in identifiable atrial flutter/fibrillation
- **D.** Monitor for hypotension after administration of calcium channel blockers.
- **E.** Document all rhythm changes and obtain monitor strips with each therapeutic intervention.

Caution

- **A. If patient has history or 12 Lead ECG reveals Wolfe Parkinson White (WPW), DO NOT administer a Calcium Channel Blocker (e.g. Diltiazem) or Beta Blockers**
- **B.** Do not use carotid sinus massage on any patient.
- **C.** Noncardiac cause of tachycardia (i.e. sepsis, fever, hypovolemia/fluid loss, electrolyte imbalance etc.) must be corrected before the administration of **Calcium Channel Blocker (e.g. Diltiazem) or Beta Blockers**


Patient Assessment
Consider Oxygen
If SpO2 Is Less Than 94%
Cardiac Monitor & 12 Lead EKG
12 Lead Should Be Obtained As Soon As Possible
12 Lead Should Be Repeated Every 5 Minutes or With Change of Rhythm or Symptoms
ST Elevation in 2 or More Contiguous Leads
Declare A STEMI Alert
Transport to an Appropriate STEMI Center
Notify the Receiving Facility & Transmit The 12 Lead EKG As Soon As Possible
Consider
Normal Saline 200-1000 ml for an Inferior Wall MI
**CCT Consider
Metoprolol (Lopressor) 5 mg Slow IVP/IO If the Patient Is Hypertensive and Not Bradycardic
May Repeat In 10 Minutes
Aspirin
324 mg PO
Aspirin is NOT contraindicated if ACS (Acute Coronary Syndrome) suspected and taking other anticoagulant or antiplatelet, unless active bleeding
Vascular Access
Nitroglycerin
0.4 mg SL Every 5 Minutes If SBP Is Greater Than 90 mm/Hg
Use with caution or avoid use in Inferior Wall MI
Fentanyl
25-100mcg initial dose followed by increments of up to 50 mcg IV/IO (Max dose 200mcg)
** Do not use Ketamine on Cardiac Patients due to significant side effects
Contact OLMC if additional medication is required for pain control
Consider
Zofran
4 mg IV/IO for Nausea or With Administration of Narcotics for Pain
(Contraindicated in Pregnancy or Suspected Pregnancy)
**CCT Consider
NTG Infusion @ 10 mcg/min Not To Exceed 200 mcg/min And Maintain SBP Greater Than 90 mmHg

This protocol is indicated for any patient who is experiencing **chest pain** or discomfort and signs and symptoms associated with acute coronary syndrome (ACS). Non-traumatic chest pain should first be assessed as a possible AMI.

Signs & Symptoms

Dyspnea, nausea/vomiting, weakness/fatigue, chest pain, chest pressure, tightness, epigastric pain, dizziness, diaphoresis, pale, radiation of pain to the shoulders, jaw and arms, etc.

Differential Considerations

Reflux or hiatal hernia, angina vs. myocardial infarction, aortic dissection or aneurysm, pulmonary embolism, asthma / COPD, pneumothorax, trauma vs. medical, pericarditis, pleural pain, overdose (cocaine) or methamphetamine, chest wall injury or pain, etc.

A. **Morphine Sulfate IVP** in 2mg increments every 3-5 min to a max of 10mg or **Dilaudid 1mg IV/IM** over 2-5 min to a max of 2 mg if Fentanyl is unavailable.

B. ****CCT - If Metoprolol (Lopressor) is unavailable, Esmolol (Brevibloc) 500mcg/kg/min over 1 min then begin an infusion at 50 mcg/kg/min. Titrate every 5 min by repeating bolus and increasing infusion by 50mcg/kg/min. Esmolol infusion may be repeated to a maximum dose of 300 mcg/kg/min**

Caution:

A. If the patient has taken erectile dysfunction medications within the past 24 to 48 hours (Viagra, Levitra, Cialis, etc.).

B. Do not administer Nitroglycerin if systolic BP is less than 90 mmHg.

C. Patients that present with an Inferior Wall MI should receive Nitroglycerin cautiously.

D. Unexplained diaphoresis with no other symptoms should be considered MI until proven otherwise.

E. Diabetics/women/elderly patients may have atypical symptoms without chest pain and should be assessed with this in mind.

Clinical Indications:

A. The patient has ST-elevation of 1mm or more on any 2 contiguous leads in the absence of a bundle branch block. Contiguous is considered any lead looking at the same wall (inferior, lateral) of the heart or any two precordial leads that are next to one another.

B. A right sided EKG should be considered in the presence of an Inferior wall MI. Elevation in V4R suggests a Right Ventricular STEMI Alert and the patient should be carefully monitored. Nitrates should be used cautiously and fluid administration considered.

Procedure:

A. Notify dispatch of a "STEMI Alert". Advise receiving facility, the age of patient, and time of onset of symptoms.

B. This should be done as soon as possible after patient contact.

C. A 12 Lead ECG should be transmitted to the receiving facility as soon as possible, if equipped.

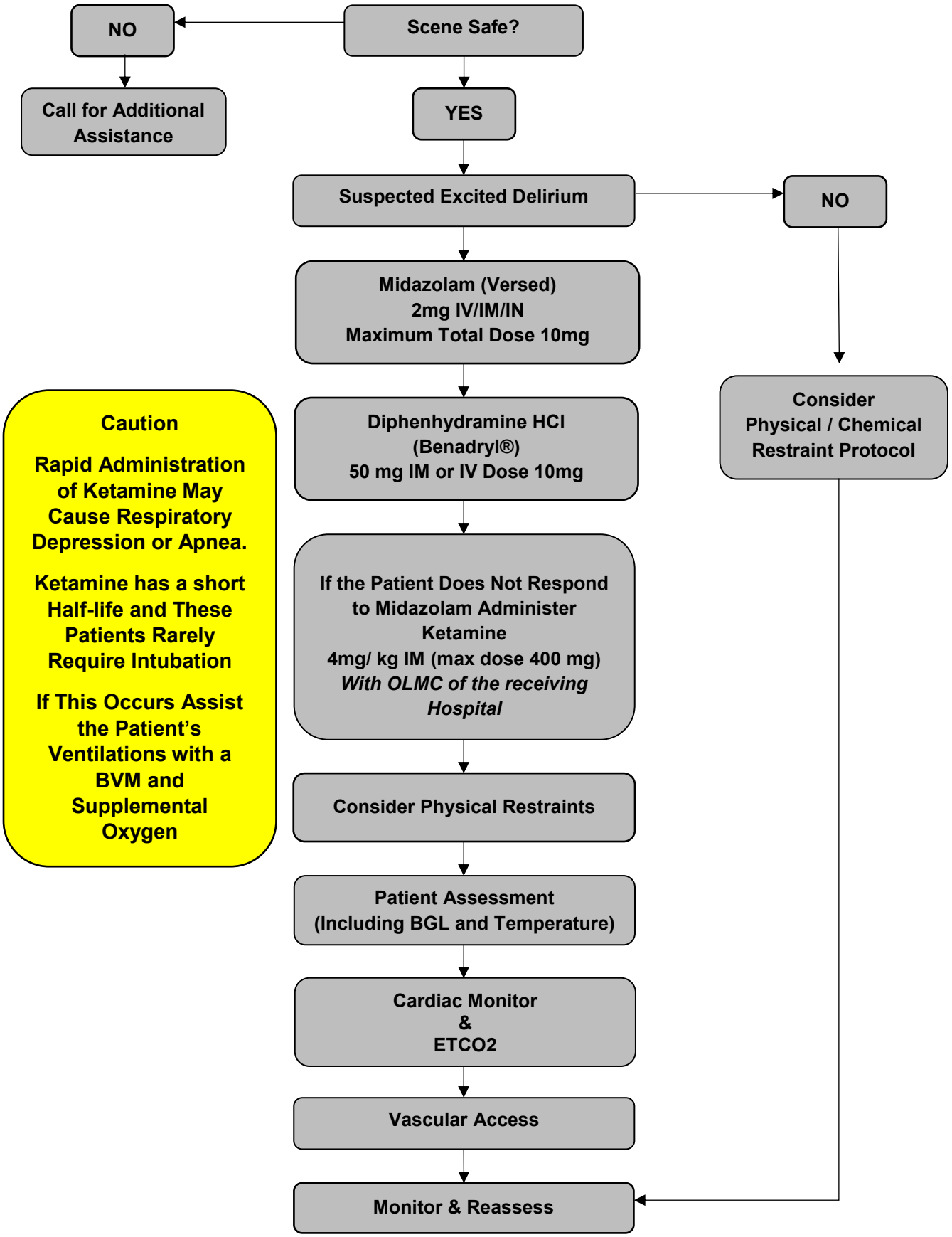
D. STEMI Alert Patients should be transported to a hospital that has the capability to perform immediate cardiac catheterization. The following hospitals are considered STEMI receiving facilities at this time:

1. AdventHealth-Ocala
2. Ocala Regional Medical Center
3. West Marion Community Hospital
4. The Villages Regional Medical Center
5. North Florida Regional Hospital
6. Putnam Community Hospital
7. Shands Hospital Gainesville
8. Seven Rivers Regional Medical Center

E. Treat according to protocol.

F. If the patient meets STEMI Alert criteria and is asymptomatic call OLMC for treatment options.

G. Document per documentation protocol.


Scene Safe?
NO
Call for Additional Assistance
YES
Suspected Excited Delirium
NO
Midazolam (Versed)
2mg IV/IM/IN
Maximum Total Dose 10mg
Diphenhydramine HCl
(Benadryl®)
50 mg IM or IV Dose 10mg
If the Patient Does Not Respond to Midazolam Administer Ketamine
4mg/ kg IM (max dose 400 mg)
With OLMC of the receiving Hospital
Consider Physical Restraints
Patient Assessment
(Including BGL and Temperature)
Cardiac Monitor
&
ETCO2
Vascular Access
Monitor & Reassess
Consider Physical / Chemical Restraint Protocol
Caution
Rapid Administration of Ketamine May Cause Respiratory Depression or Apnea.
Ketamine has a short Half-life and These Patients Rarely Require Intubation
If This Occurs Assist the Patient's Ventilations with a BVM and Supplemental Oxygen

Excited delirium syndrome is a mental state characterized by an acute onset of disorientation, disorganized thought process, speech abnormalities and violent behavior. Patients with excited delirium syndrome display violent behavior, increased pain tolerance and superhuman strength. These patients are difficult to physically restrain and continue to struggle even once restrained.

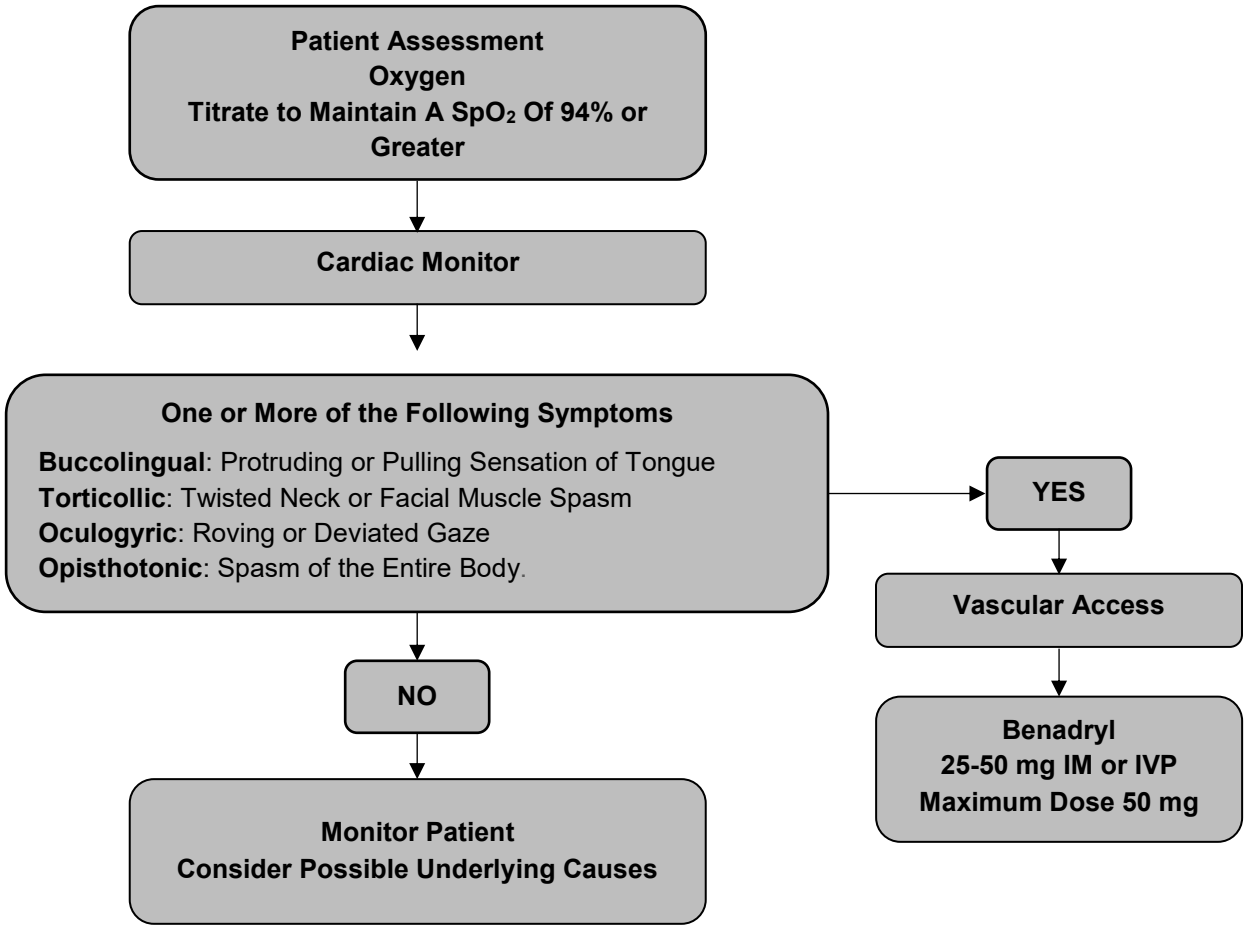
Excited delirium syndrome **is generally brought on by:**

- Overdose on stimulant or hallucinogenic drugs.
- Drug withdrawal.
- Patients with a mental health history who have been of their medication for a significant amount of time.

Patients may present with:

- Aggressive and Violent Behavior
- Confusion
- Superhuman strength
- Profuse sweating
- Dilated pupils
- Bizarre behavior and thoughts.
- Disorientation
- Profuse sweating.
- Shivering
- Incoherent speech
- Hallucinations and paranoia
- Extreme Agitation.
- High body temperature
- Fear and panic

** Excited delirium syndrome can progress to sudden cardiac arrest; a key symptom is sudden “instant tranquility.” This is generally seen with excited delirium syndrome patients who have been very violent and vocal suddenly becomes quiet and docile.



Dystonic reactions are adverse extrapyramidal effects that often occur shortly after the initiation of neuroleptic drug therapy (Haldol and other psychiatric medications). These reactions may occur with a wide variety of medications and may occur with the use of anti-emetics (i.e. Zofran or Promethazine). Dystonic reactions (i.e. dyskinesia) are characterized by intermittent spasmodic or sustained involuntary contractions of muscles in the face, neck, trunk, pelvis, and extremities. Dystonic reactions are rarely life-threatening yet are very uncomfortable and often produce significant anxiety and distress for patients.

Hyperkalemia can produce different symptoms in patients. The severity of the elevated potassium levels can also lead to different issues. In many cases, no symptoms are apparent in an individual with hyperkalemia. Treatment for hyperkalemia is based on patient history. Renal failure may elevate blood potassium levels (hyperkalemia) causing bradycardia, hypotension, weakness, weak pulse and shallow respirations. Other patients who are predisposed to hyperkalemia are those who have Muscular Dystrophy, paraplegic/quadriplegic crush injury, or patients who have sustained serious burns greater than 24 hours previously. A 12 lead EKG may be helpful in identifying patients with this condition.

EKG Changes that may be present with Hyperkalemia

• Peaked T Waves • Lowered P Wave amplitude or the loss of a P Wave	• Second Degree AV Block • Prolonged P-R interval greater than 0.20 sec	• Widened QRS complex • Shortened QT interval

Signs & Symptoms

• Irregular heartbeat • Cardiac arrhythmia • Palpitations	• Fatigue • Nausea and vomiting • Paralysis	• Mild hyperventilation • Difficulty breathing • Other

If Hyperkalemia is suspected, contact OLMC.

A. Calcium Chloride 10% solution: 1g (10cc) slow IVP over 5-10 min in a proximal port.

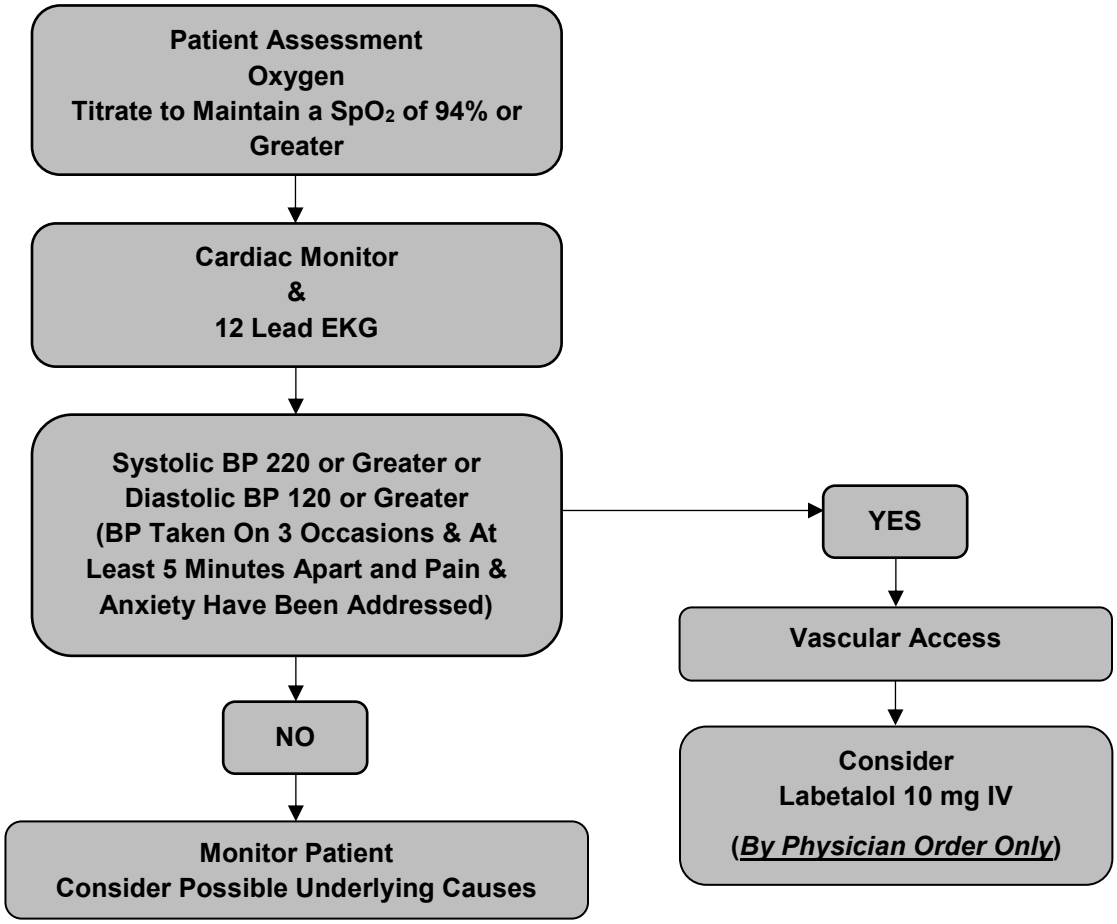
B. If no change in rhythm and transport time is prolonged, consider the following with OLMC

1. **High Dose Albuterol** (5 -10 mg by continuous nebulizer).
2. **Administer 50 mEq of Sodium Bicarbonate IV**.
3. **Glucose and regular Insulin, if available after OLMC consult.**

Caution:

Do not mix Sodium Bicarbonate solutions with Calcium preparations. Slowly flush remaining Calcium Chloride from the catheter prior to administering Sodium Bicarbonate.

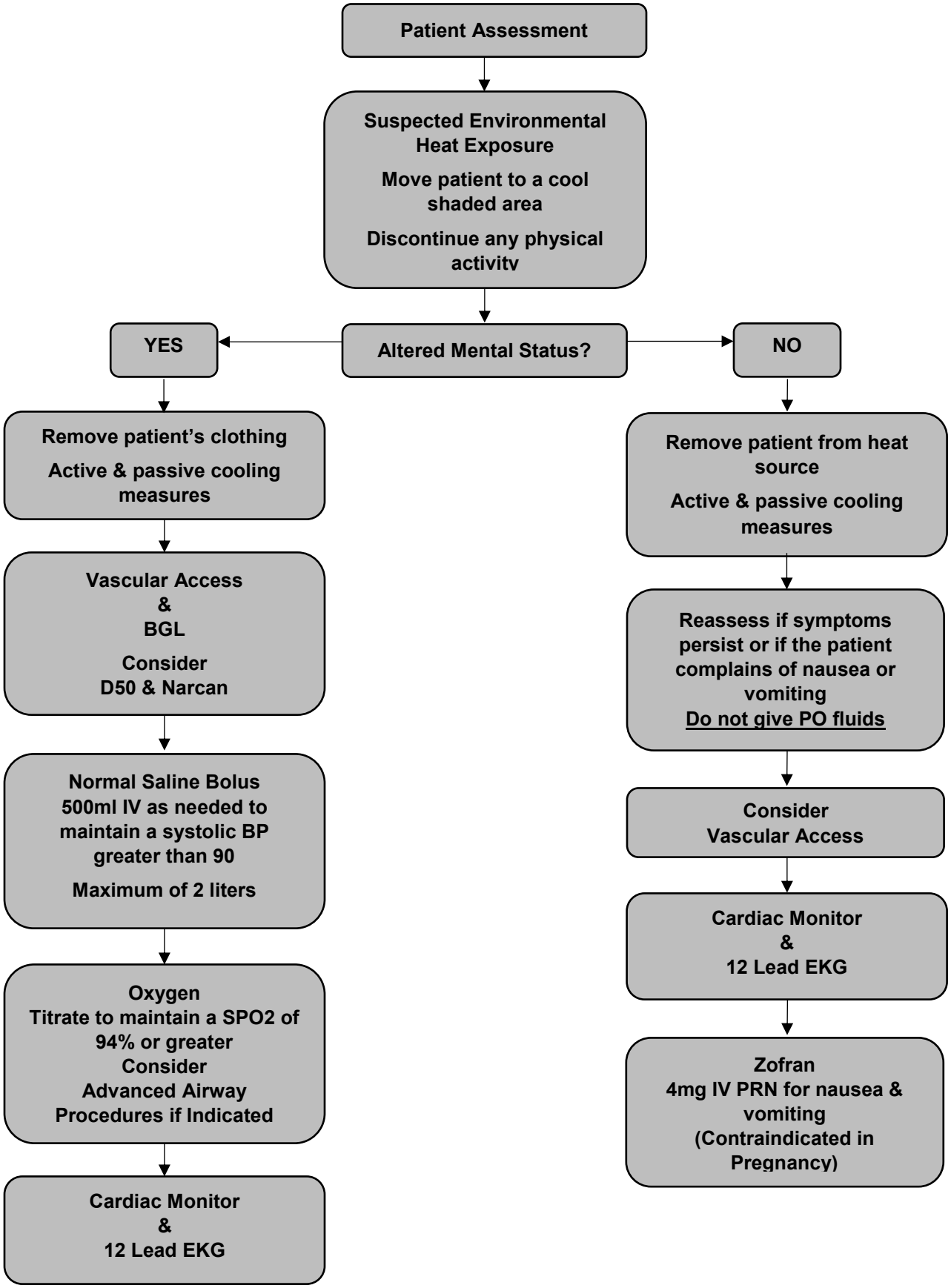
Supportive measures such as fluid, pacing, and pressor agents may not be effective in the presence of hyperkalemia.



For patients with a heart rate below 60 and/or CHF with a systolic pressure greater than 220mmHg and/or a diastolic pressure greater than 120mmHg

Exit & proceed to the CHF Protocol

Hypertension is not uncommon, especially in an emergency setting. Hypertension is usually transient and in response to stress and/or pain. A hypertensive emergency is based on blood pressure (systolic BP greater than 220 mmHg and / or diastolic BP greater than 120 mmHg) along with symptoms which suggest an organ is suffering damage such as MI, CVA or renal failure. This is very difficult to determine in the pre-hospital setting in most cases. Aggressive treatment of hypertension can result in harm. ***Most patients, even with significant elevation in blood pressure need only supportive care.*** Specific complaints such as chest pain, dyspnea, pulmonary edema or altered mental status should be treated based on specific protocols and consultation with Medical Control.

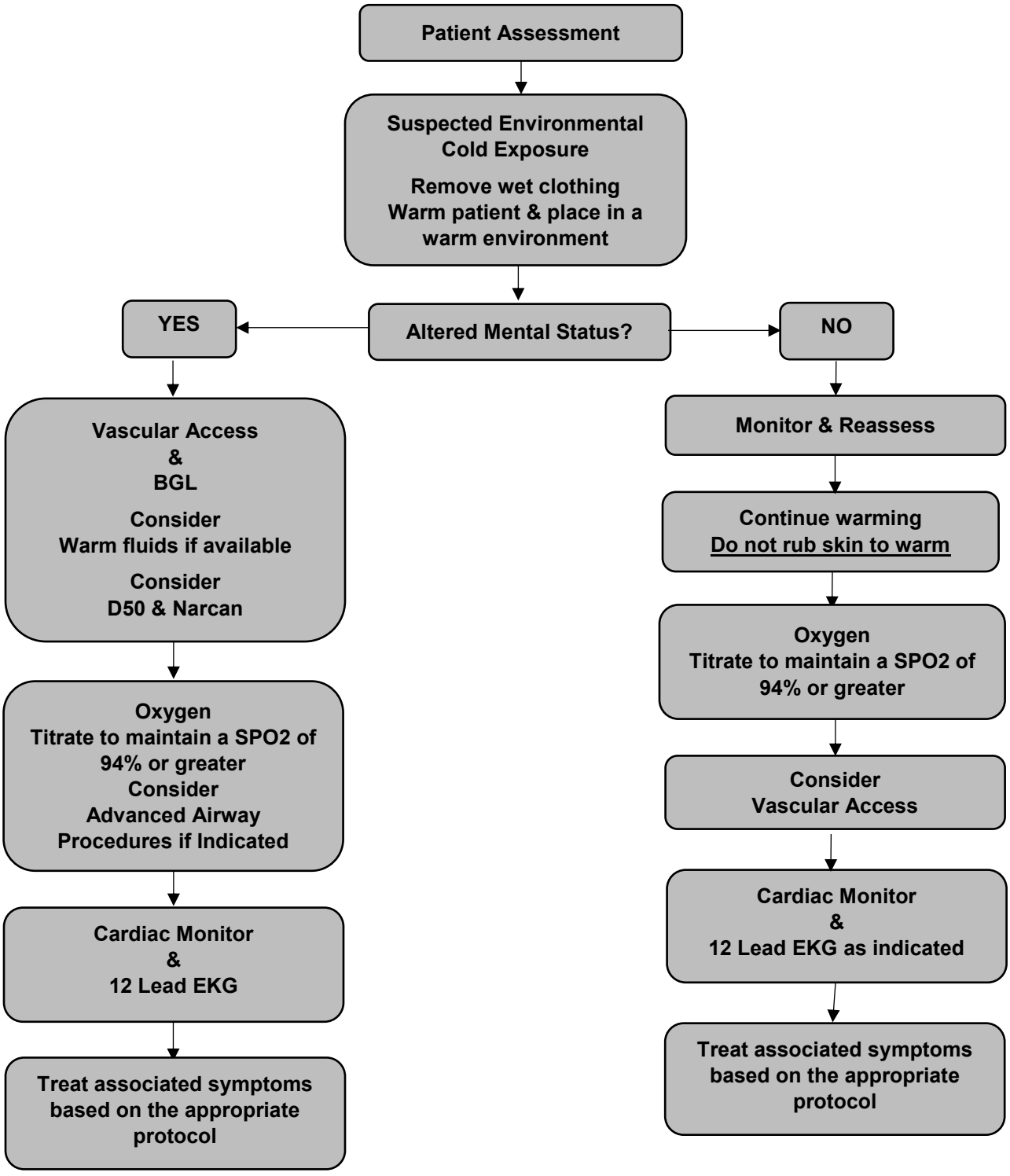

Patient Assessment
Suspected Environmental Heat Exposure
Move patient to a cool shaded area
Discontinue any physical activity
Altered Mental Status?
YES
NO
Remove patient's clothing
Active & passive cooling measures
Vascular Access & BGL
Consider D50 & Narcan
Normal Saline Bolus 500ml IV as needed to maintain a systolic BP greater than 90
Maximum of 2 liters
Oxygen
Titrate to maintain a SPO2 of 94% or greater
Consider Advanced Airway Procedures if Indicated
Cardiac Monitor & 12 Lead EKG
Remove patient from heat source
Active & passive cooling measures
Reassess if symptoms persist or if the patient complains of nausea or vomiting
Do not give PO fluids
Consider Vascular Access
Cardiac Monitor & 12 Lead EKG
Zofran
4mg IV PRN for nausea & vomiting
(Contraindicated in Pregnancy)

Hyperthermia occurs when the patient is exposed to increased environmental temperatures and can manifest as heat cramps, heat exhaustion or heat stroke. Certain drugs may also cause an increase in temperature (i.e. Cocaine, Ecstasy, Amphetamines, Salicylates, Succinylcholine). The elderly and pediatric patients are more prone to heat emergencies. Certain medical conditions may also cause hyperthermia (i.e. sepsis, hyperthyroidism, delirium tremors, CNS lesions or tumors, malignant hyperthermia, etc.)

Caution

Avoid using vasopressors and anticholinergic drugs (i.e. Dopamine and Atropine) these drugs may potentiate heat stroke by inhibiting sweating.

If the patient begins to shiver, stop cooling measures. Do not let cooling measures in the field delay transport.


Patient Assessment
Suspected Environmental Cold Exposure
Remove wet clothing
Warm patient & place in a warm environment
Altered Mental Status?
YES
NO
Vascular Access & BGL
Consider Warm fluids if available
Consider D50 & Narcan
Oxygen Titrate to maintain a SPO2 of 94% or greater
Consider Advanced Airway Procedures if Indicated
Cardiac Monitor & 12 Lead EKG
Treat associated symptoms based on the appropriate protocol
Monitor & Reassess
Continue warming
Do not rub skin to warm
Oxygen Titrate to maintain a SPO2 of 94% or greater
Consider Vascular Access
Cardiac Monitor & 12 Lead EKG as indicated
Treat associated symptoms based on the appropriate protocol

Hypothermia is most often caused by exposure to cold weather or immersion in a cold body of water. Primary treatments for hypothermia are methods to warm the body back to a normal temperature. The elderly and pediatric patients are more prone to cold/related emergencies. Other factors that predispose and/or cause a patient to develop hypothermia are; poor nutrition, diabetes, hypothyroidism, brain tumors, head trauma, sepsis, alcohol use and certain drugs. Hypothermia may ~~also~~ be result from unanticipated exposure, for example; inadequate shelter for a homeless person, an outdoor sport enthusiast caught off guard by the elements or the elderly lying on the floor for an extended period of time after a fall.

Caution

A. **In the profoundly hypothermic patient**, medications may not be effective until circulation is adequately restored. Repeat dosages of cardiac medications may not be advised.

B. **Intubation** can cause ventricular fibrillation, so it should be done gently by the most experienced person.

C. **Do not hyperventilate** the patient as this can cause ventricular fibrillation.

D. Consider withholding CPR if the patient has organized rhythm or has other signs of life. Contact OLMC immediately for CPR and medication instructions.

E. ***If patient is in VF, VT, or Asystole, DO CPR and follow Cardiac Arrest Protocols. Contact OLMC prior to administering medications. If the patient's temperature is below 30 degrees C or 86 F, then only defibrillate 1 time if defibrillation is required. Normal defibrillation procedure may resume once the patient reaches 30 degrees C or 86 F.***

Vomiting is usually harmless, but it can be a sign of a more serious illness. Vomiting and nausea are not illnesses but common symptoms that accompany many diseases and conditions. Some examples of serious conditions that may result in nausea or vomiting include; AMI, concussions, meningitis (infection of the membrane linings of the brain), intestinal blockage, appendicitis, brain tumors, dehydration. The elderly and pediatric patients are more susceptible to problems with dehydration.

Treatment

BLS

A. Initial and secondary assessment

B. Monitor vital signs: Consider possible underlying causes.

C. Administer supplemental oxygen to maintain SpO2 greater than or equal to 94%

ALS

A. Cardiac monitor / 12 Lead EKG: Cardiac monitor should remain on the patient until patient transfer has been completed.

B. Establish vascular access

C. If vomiting sufficient to interfere with exam and treatment, administer

1. **Ondansetron hydrochloride (Zofran)** 4mg undiluted IV/IM over 2 to 5 minutes. May repeat with 4 mg IV/IM after two minutes if the patient is still vomiting (contraindicated in pregnancy)

   OR

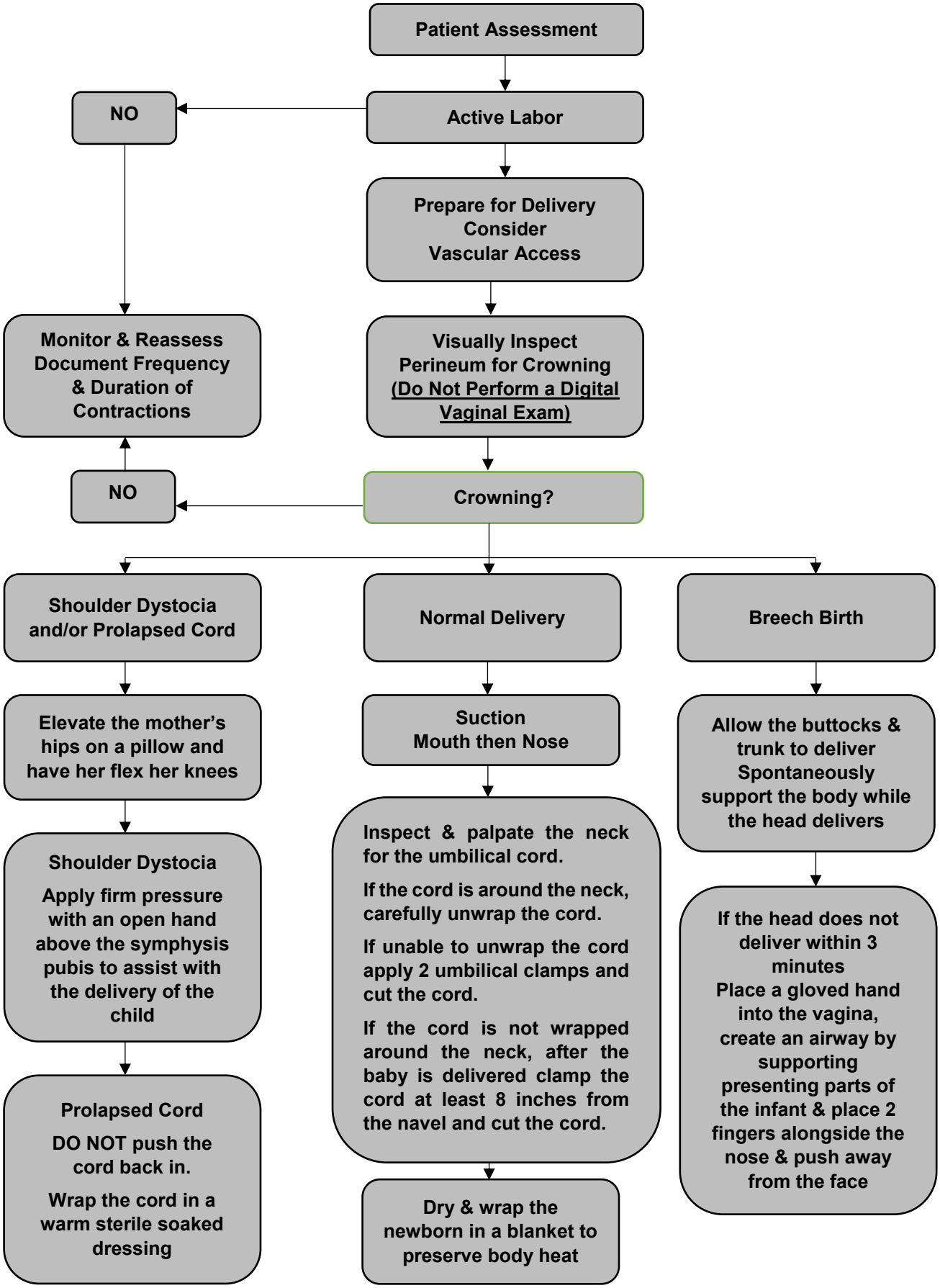
2. **Ondansetron hydrochloride (Zofran)** 4mg Sublingual/Tab. May repeat with 4 mg IV after two minutes if the patient is still vomiting (contraindicated in pregnancy).

   OR

3. **Phenergan (Promethazine hydrochloride)** 12.5mg IV (only) over 1-2 minutes. May repeat with 12.5 mg IV (only) after two minutes if the patient is still vomiting.

****** If the patient becomes restless or develops extrapyramidal symptoms after **Ondansetron hydrochloride, give Diphenhydramine 25-50 mg IV or deep IM (See EPS Protocol)**

D. Consider fluid challenge for patients with hypotension.


Patient Assessment
Active Labor
NO
Prepare for Delivery
Consider
Vascular Access
Monitor & Reassess
Document Frequency
& Duration of
Contractions
Visually Inspect
Perineum for Crowning
(Do Not Perform a Digital
Vaginal Exam)
NO
Crowning?
Shoulder Dystocia
and/or Prolapsed Cord
Normal Delivery
Breech Birth
Elevate the mother's
hips on a pillow and
have her flex her knees
Suction
Mouth then Nose
Allow the buttocks &
trunk to deliver
Spontaneously
support the body while
the head delivers
Shoulder Dystocia
Apply firm pressure
with an open hand
above the symphysis
pubis to assist with
the delivery of the
child
Inspect & palpate the neck
for the umbilical cord.
If the cord is around the neck,
carefully unwrap the cord.
If unable to unwrap the cord
apply 2 umbilical clamps and
cut the cord.
If the cord is not wrapped
around the neck, after the
baby is delivered clamp the
cord at least 8 inches from
the navel and cut the cord.
If the head does not
deliver within 3
minutes
Place a gloved hand
into the vagina,
create an airway by
supporting
presenting parts of
the infant & place 2
fingers alongside the
nose & push away
from the face
Prolapsed Cord
DO NOT push the
cord back in.
Wrap the cord in a
warm sterile soaked
dressing
Dry & wrap the
newborn in a blanket to
preserve body heat

The majority of **pregnancies** proceed normally with minimal risks. Patients in uncomplicated labor usually require only supportive therapy. Early assessment is important to determine if delivery is imminent.

Signs of Imminent Delivery

• Crowning	• Uncontrollable pushing	• Meconium
• Perineal or rectal bulging	• Vaginal discharge or bleeding	• Sensation of an impending bowel movement

A. Document all times (delivery, contraction frequency, and length).

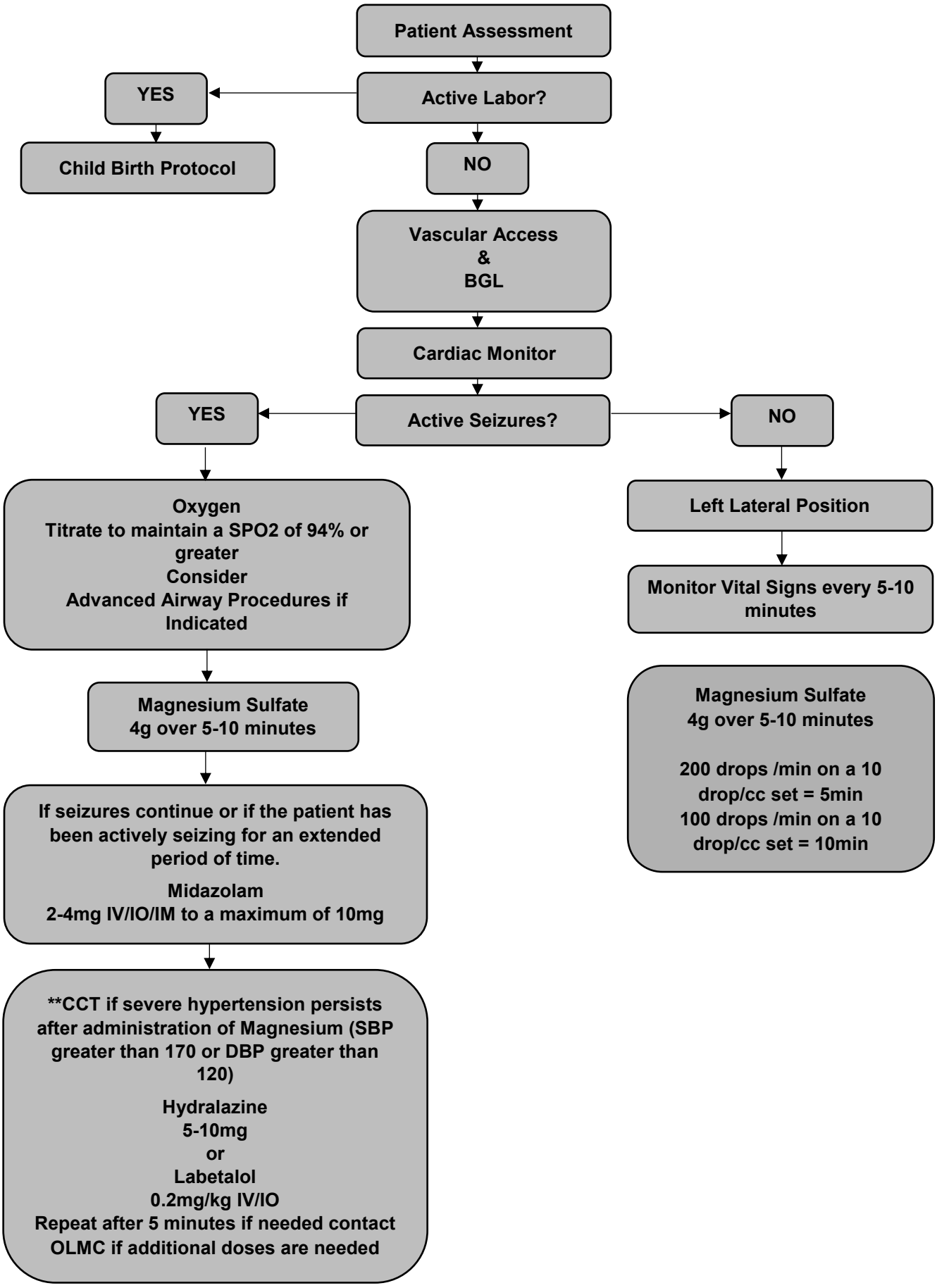
B. ***Record APGAR at 1 minute and 5 minutes after birth.***

C. If maternal seizures occur, refer to the Obstetrical Emergencies (Pre-Eclampsia) Protocol.

D. After delivery, allowing the child to nurse. Massaging the uterus (lower abdomen) after placental delivery will promote uterine contraction and help to control post-partum bleeding. Some perineal bleeding is normal with any childbirth. Large quantities of blood or free bleeding are abnormal.

E. ** If an infant delivers at less than 20 weeks and has no signs of life (heartbeat and/or respiratory effort), resuscitation efforts should be withheld. If the gestational age is unclear, or the infant makes an attempt to breathe and/or has a heartbeat, supportive care is indicated.

	Sign	0 Points	1 Point	2 Points
A	**Activity (Muscle Tone)**	Absent	Arms and legs flexed	Active movement
P	**Pulse**	Absent	Below 100 bpm	Above 100 bpm
G	**Grimace (Reflex Irritability)**	No response	Grimace	Sneeze, cough, pulls away
A	**Appearance (Skin Color)**	Blue-gray, pale all over	Normal, except for extremities	Normal over entire body
R	**Respiration**	Absent	Slow, irregular	Good, crying


Patient Assessment
Active Labor?
YES
Child Birth Protocol
NO
Vascular Access
&
BGL
Cardiac Monitor
Active Seizures?
YES
NO
Oxygen
Titrate to maintain a SPO2 of 94% or greater
Consider
Advanced Airway Procedures if Indicated
Magnesium Sulfate
4g over 5-10 minutes
If seizures continue or if the patient has been actively seizing for an extended period of time.
Midazolam
2-4mg IV/IO/IM to a maximum of 10mg
**CCT if severe hypertension persists after administration of Magnesium (SBP greater than 170 or DBP greater than 120)
Hydralazine
5-10mg
or
Labetalol
0.2mg/kg IV/IO
Repeat after 5 minutes if needed contact OLMC if additional doses are needed
Left Lateral Position
Monitor Vital Signs every 5-10 minutes
Magnesium Sulfate
4g over 5-10 minutes
200 drops /min on a 10 drop/cc set = 5min
100 drops /min on a 10 drop/cc set = 10min

Women with pre-eclampsia are at increased risk for abruptio placenta, acute renal failure, cerebral hemorrhage, disseminated intravascular coagulation, pulmonary edema, circulatory collapse, and eclampsia. Eclampsia occurs when pre-eclampsia is complicated by seizures or coma. ***Eclampsia is immediately life-threatening for both the baby and the mother and can be fatal if untreated.*** Pre-eclampsia & Eclampsia generally occur between the 20th week of pregnancy and up to 6 weeks postpartum.

History & Risk Factors

• **20th week of gestation or greater** • **Primigravida** • **Maternal age greater than 40 or younger than 20 years**	• **Hypertension** • **Multiple gestations** • **Diabetes mellitus** • **Renal disease**	• **Prior or family history of preeclampsia or eclampsia**

Signs & Symptoms

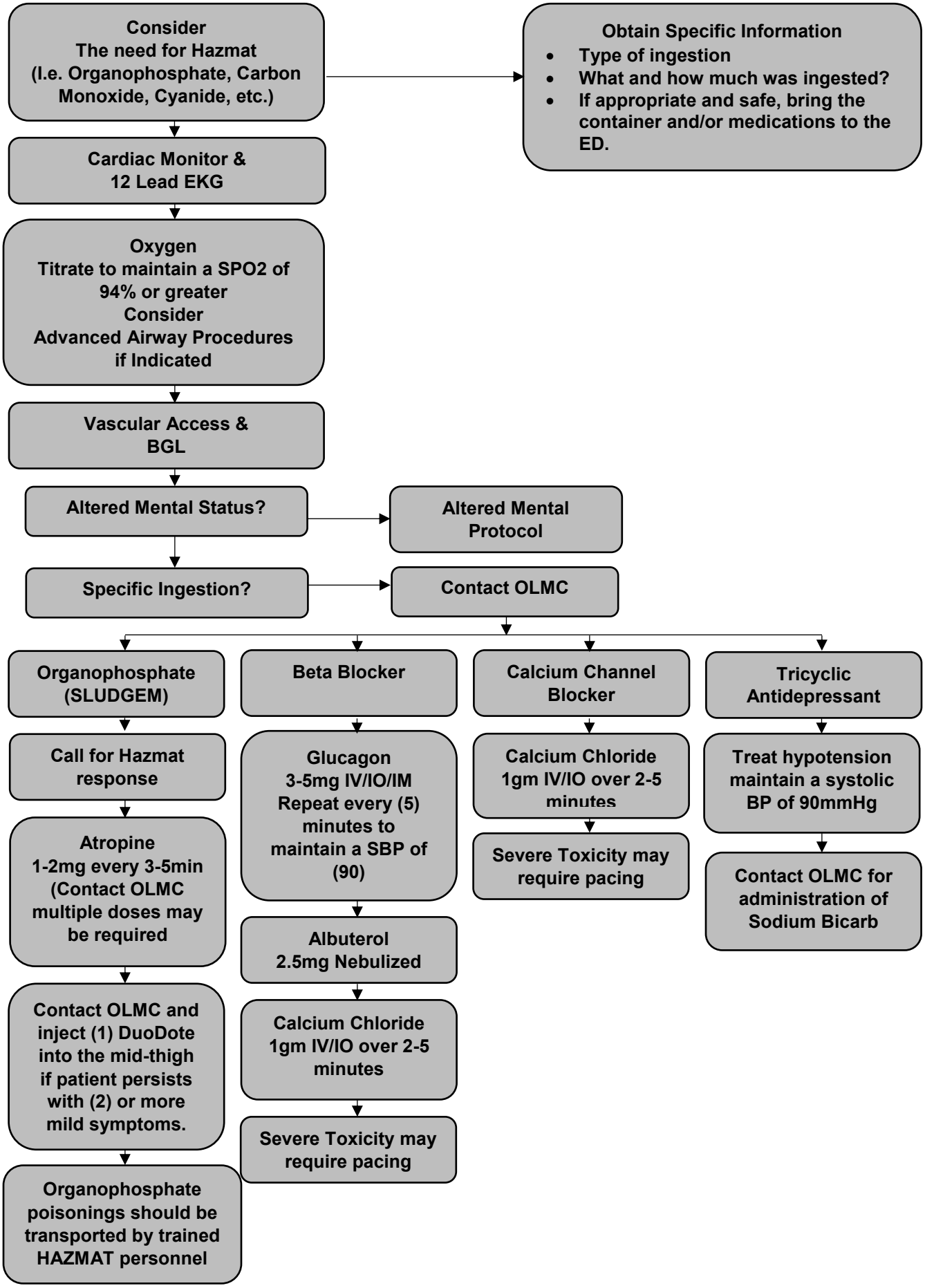
• **Hypertension (140/90)(with repeated V/S)** • **Decreased urine output** • **Mental status changes** • **Generalized edema (especially of the face, hands, ankles)**	• **Tachycardia** • **Vomiting / Nausea** • **Visual disturbances** • **Right upper quadrant (RUQ) abdominal pain**	• **Tachypnea** • **Headache** • **Pulmonary edema** • **Other**

A. Seizures associated with Eclampsia can occur up to 6 weeks post delivery

B. If Midazolam is unavailable, consider Lorazepam or Diazepam

Caution

A. Caution should be used when administering anti-hypertensive medication. Lowering the BP less than 150/100 in severe Pre-eclampsia may compromise fetal blood flow.


Consider
The need for Hazmat
(I.e. Organophosphate, Carbon Monoxide, Cyanide, etc.)
Obtain Specific Information
Type of ingestion
What and how much was ingested?
If appropriate and safe, bring the container and/or medications to the ED.
Cardiac Monitor &
12 Lead EKG
Oxygen
Titrate to maintain a SPO2 of 94% or greater
Consider
Advanced Airway Procedures if Indicated
Vascular Access &
BGL
Altered Mental Status?
Altered Mental Protocol
Specific Ingestion?
Contact OLMC
Organophosphate (SLUDGEM)
Call for Hazmat response
Atropine
1-2mg every 3-5min
(Contact OLMC multiple doses may be required
Contact OLMC and inject (1) DuoDote into the mid-thigh if patient persists with (2) or more mild symptoms.
Organophosphate poisonings should be transported by trained HAZMAT personnel
Beta Blocker
Glucagon
3-5mg IV/IO/IM
Repeat every (5) minutes to maintain a SBP of (90)
Albuterol
2.5mg Nebulized
Calcium Chloride
1gm IV/IO over 2-5 minutes
Severe Toxicity may require pacing
Calcium Channel Blocker
Calcium Chloride
1gm IV/IO over 2-5 minutes
Severe Toxicity may require pacing
Tricyclic Antidepressant
Treat hypotension maintain a systolic BP of 90mmHg
Contact OLMC for administration of Sodium Bicarb

Poisonings and Overdoses

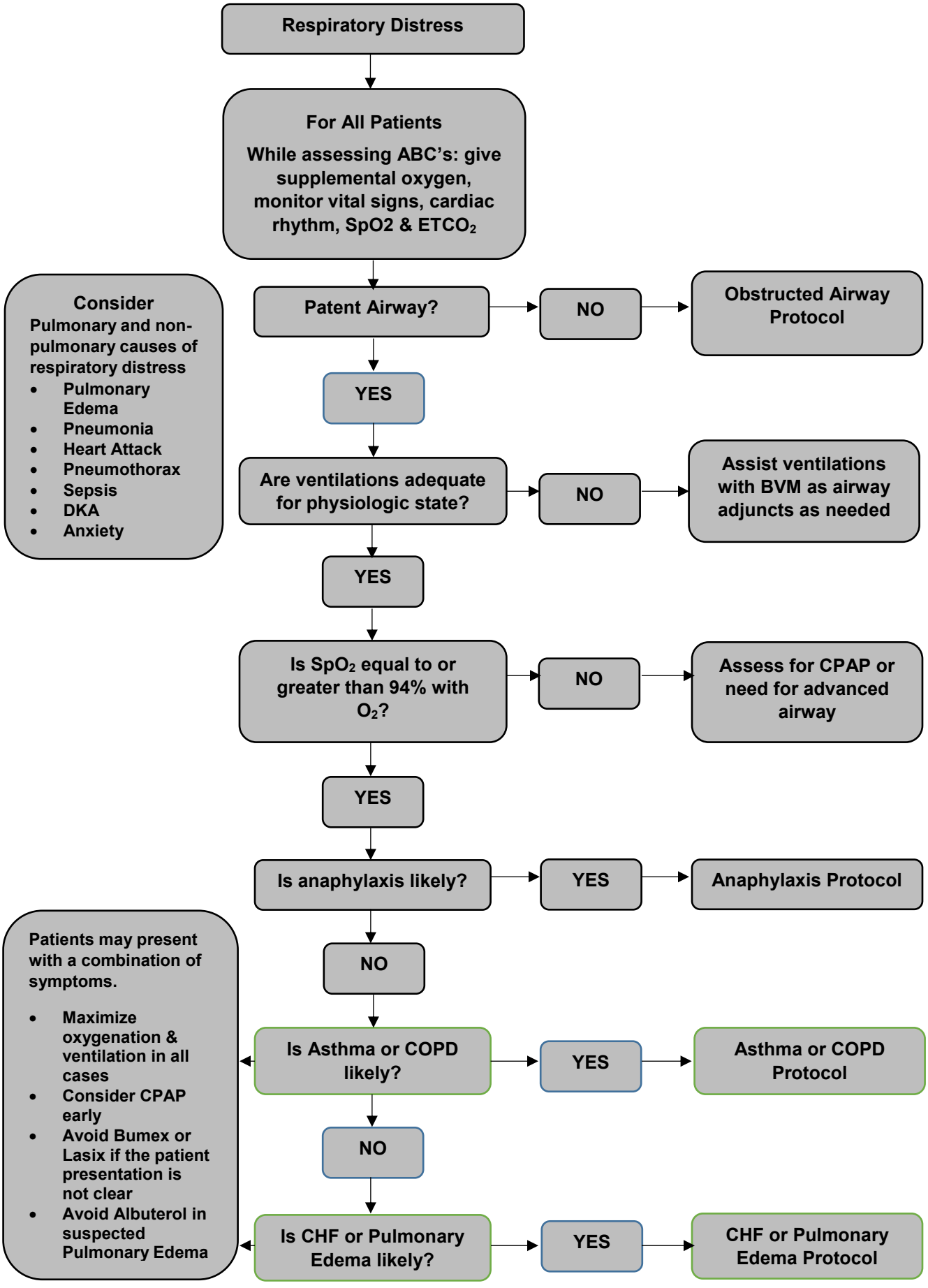
A. A careful assessment of the scene should be done to determine if the scene is safe to enter.

B. If you suspect a possible intentional or unintentional toxicological exposure Hazmat should be contacted immediately.

C. Not all overdoses are intentional. If the substance is identified, contact OLMC as soon as possible for assistance.

D. If an overdose patient appears fine and refuses transport, whether intentional or unintentional, the patient should be evaluated by a physician. **OLMC** should be contacted prior to allowing any overdose or toxic exposure patient to refuse transport.

E. If respiratory depression is present or other signs of narcotic use, see altered mental status protocol.


Respiratory Distress
For All Patients
While assessing ABC's: give supplemental oxygen, monitor vital signs, cardiac rhythm, SpO2 & ETCO2
Consider
Pulmonary and non-pulmonary causes of respiratory distress
Pulmonary Edema
Pneumonia
Heart Attack
Pneumothorax
Sepsis
DKA
Anxiety
Patent Airway?
NO
Obstructed Airway Protocol
YES
Are ventilations adequate for physiologic state?
NO
Assist ventilations with BVM as airway adjuncts as needed
YES
Is SpO2 equal to or greater than 94% with O2?
NO
Assess for CPAP or need for advanced airway
YES
Is anaphylaxis likely?
YES
Anaphylaxis Protocol
NO
Patients may present with a combination of symptoms.
Maximize oxygenation & ventilation in all cases
Consider CPAP early
Avoid Bumex or Lasix if the patient presentation is not clear
Avoid Albuterol in suspected Pulmonary Edema
Is Asthma or COPD likely?
YES
Asthma or COPD Protocol
NO
Is CHF or Pulmonary Edema likely?
YES
CHF or Pulmonary Edema Protocol

Assessment of the adult patient in **respiratory distress** requires specific attention to the patient's respiratory function.

Initial Assessment:

• **Initial and secondary assessment** • **Auscultation of lung sounds**	• **Pulse Oximetry** • **End Tidal CO2 Monitoring**	• **Assessment of accessory muscle use** • **Assessment of chest wall movement, the rate and depth of ventilations and symmetrical rise and fall**

Assess for Signs of Hypoxia or Respiratory Distress

• **Mental status change** • **Tachypnea** • **SPO2 less than 92 %** • **Respiratory rate greater than 36**	• **Nasal flaring** • **Tachycardia** • **Cyanosis** • **Use of accessory muscles**	• **Pursed lips** • **Abnormal lung sounds** • **Respiratory rate less than 10**

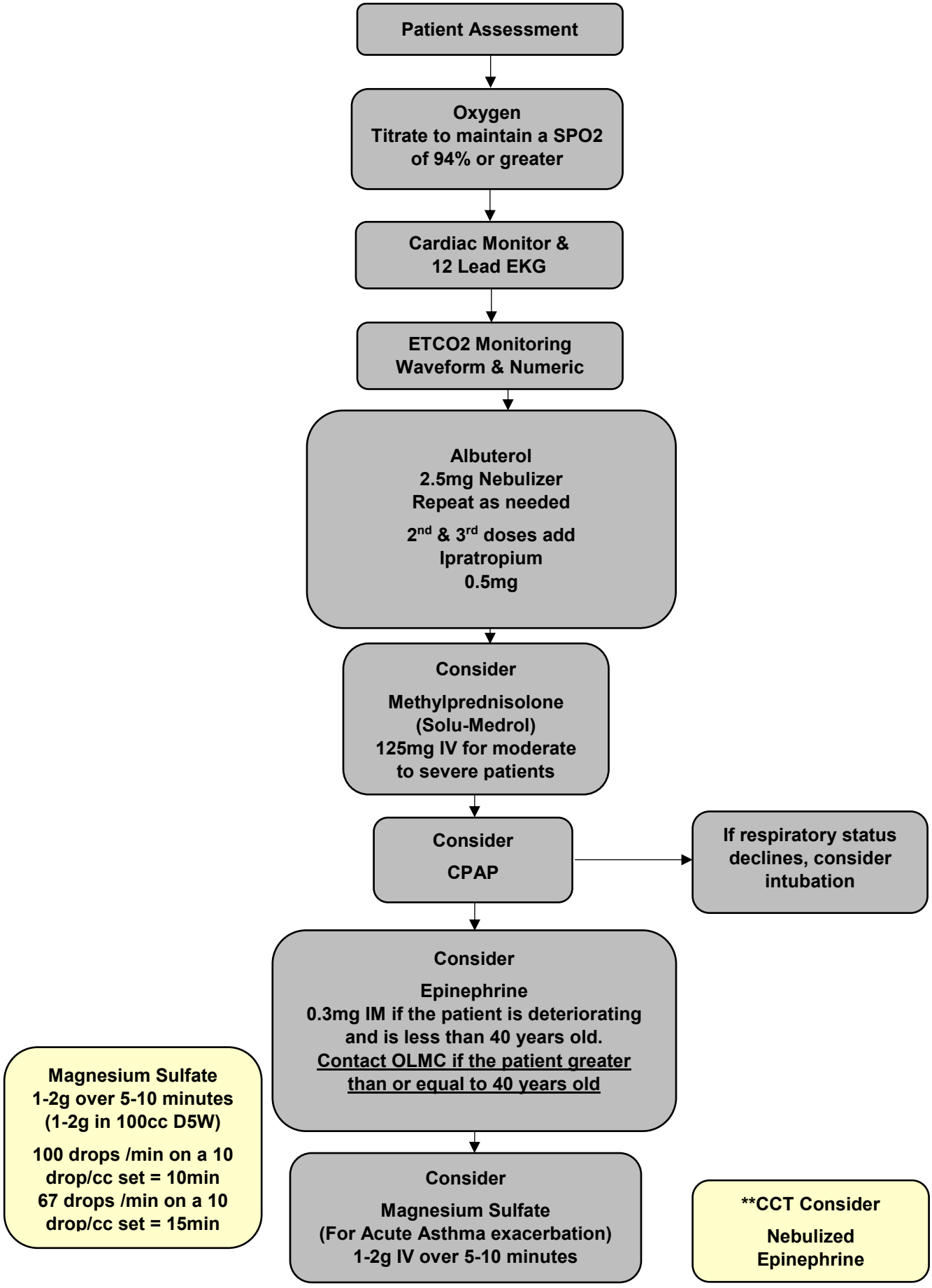
Precautions and Considerations

A. A respiratory rate less than 10 or greater than 36 and cyanosis may indicate the need for aggressive airway intervention.

B. Aggressive airway management, including early intubation, is appropriate for the patient who does not respond to treatment or is rapidly deteriorating.

C. Hyperventilation may be a response to an underlying medical problem. Do not treat hyperventilation by re-breathing CO_2 and look carefully for specific causes (i.e. pulmonary embolus).

D. The best indicator of the cause of respiratory distress is past history (recent and long-term). Consider medications, environment, trauma (surgeries), & symptoms.


Patient Assessment
Oxygen
Titrate to maintain a SPO2 of 94% or greater
Cardiac Monitor & 12 Lead EKG
ETCO2 Monitoring Waveform & Numeric
Albuterol
2.5mg Nebulizer
Repeat as needed
2nd & 3rd doses add Ipratropium 0.5mg
Consider
Methylprednisolone (Solu-Medrol)
125mg IV for moderate to severe patients
Consider
CPAP
If respiratory status declines, consider intubation
Consider
Epinephrine
0.3mg IM if the patient is deteriorating and is less than 40 years old.
Contact OLMC if the patient greater than or equal to 40 years old
Magnesium Sulfate
1-2g over 5-10 minutes
(1-2g in 100cc D5W)
100 drops /min on a 10 drop/cc set = 10min
67 drops /min on a 10 drop/cc set = 15min
Consider
Magnesium Sulfate
(For Acute Asthma exacerbation)
1-2g IV over 5-10 minutes
**CCT Consider
Nebulized Epinephrine

Asthma / COPD patients will often present with a complaint of dyspnea and wheezing. A patient with a history of CHF who has wheezing should not automatically be classified as an Asthma/COPD patient. If the CHF patient does not have a history of Asthma/COPD or allergic reaction, assess for CHF (cardiac asthma). These patients may present with the following complaints:

Signs & Symptoms

• **Shortness of breath** • **Pursed lip breathing** • **Decreased ability to speak**	• **Wheezing** • **Rhonchi** • **Use of accessory muscles**	• **Fever, cough** • **Tachycardia** • **Increased respiratory rate and effort**

A. Moderate Shortness of Breath: inability to speak full sentences, increased work of breathing

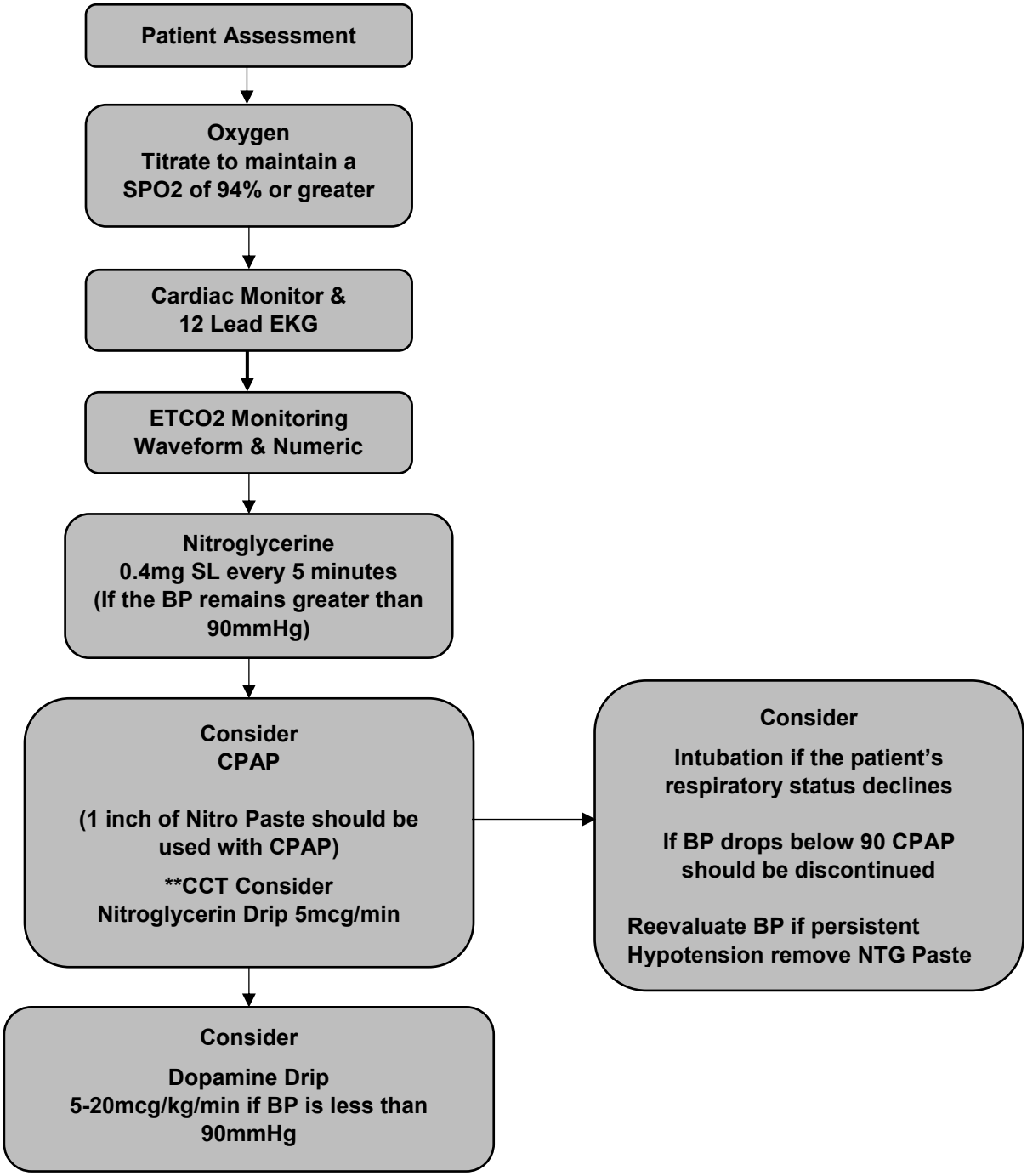
B. Severe Shortness of Breath: confusion, cyanosis, severe agitation, inadequate respiratory effort

Caution

A. The silent chest, (severe bronchospasm) may present with absent air entry and no evidence of wheezing. If this occurs, the patient may require epinephrine and/or assisted ventilations.

B. OLMC should be contacted in any patient over the age of 40 years old prior to the administration of Epinephrine

C. Caution in giving Epinephrine to a patient with ischemic heart disease or if patient is pregnant.


Patient Assessment
Oxygen
Titrate to maintain a
SPO2 of 94% or greater
Cardiac Monitor &
12 Lead EKG
ETCO2 Monitoring
Waveform & Numeric
Nitroglycerine
0.4mg SL every 5 minutes
(If the BP remains greater than
90mmHg)
Consider
CPAP
(1 inch of Nitro Paste should be
used with CPAP)
**CCT Consider
Nitroglycerin Drip 5mcg/min
Consider
Intubation if the patient's
respiratory status declines
If BP drops below 90 CPAP
should be discontinued
Reevaluate BP if persistent
Hypotension remove NTG Paste
Consider
Dopamine Drip
5-20mcg/kg/min if BP is less than
90mmHg

Patients will exhibit dyspnea with rales and/or wheezing (cardiac asthma). These patients may also have diminished air exchange. A patient with a history of CHF who has wheezing should not automatically be classified as an Asthma patient. If the CHF patient does not have a history of Asthma or allergic reaction, CHF may also be present with wheezing. These patients may present with:

Signs & Symptoms

• **Respiratory distress** • **Bilateral rales** • **Hypotension**	• **Orthopnea** • **Apprehension** • **Shock**	• **Peripheral edema** • **Diaphoresis** • **Chest pain**	• **Jugular vein distention** • **Pink, frothy sputum** • **Hypertension**

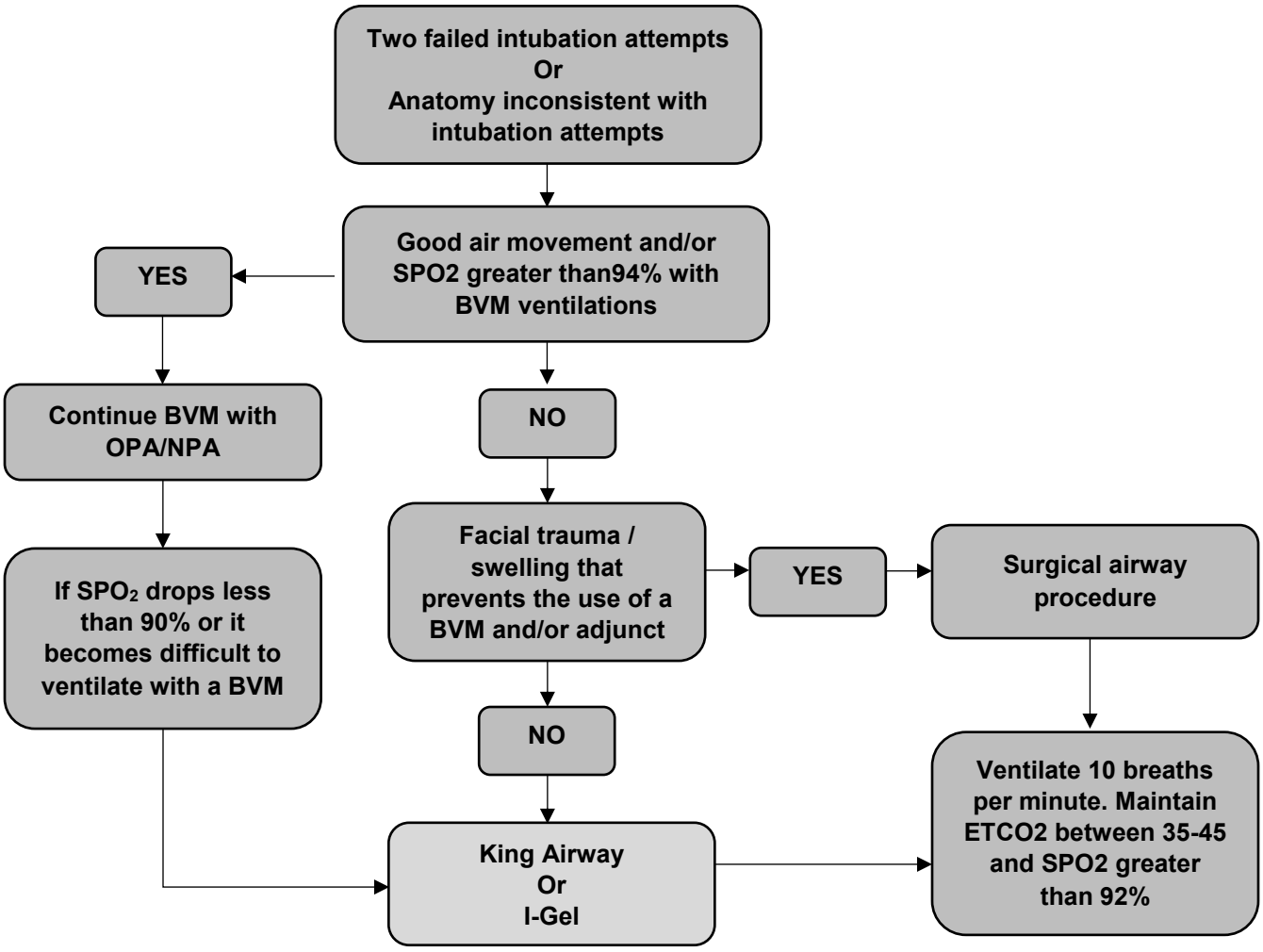
A. Intubation should be considered early

B. Consider Morphine (if available) 2 mg IVP increments to a total of 10 mg for patients who are awake and have a systolic blood pressure greater than 90 mmHg after Nitroglycerine has been administered.

C. Cardiogenic Shock should be considered if BP is less than 90 mmHg

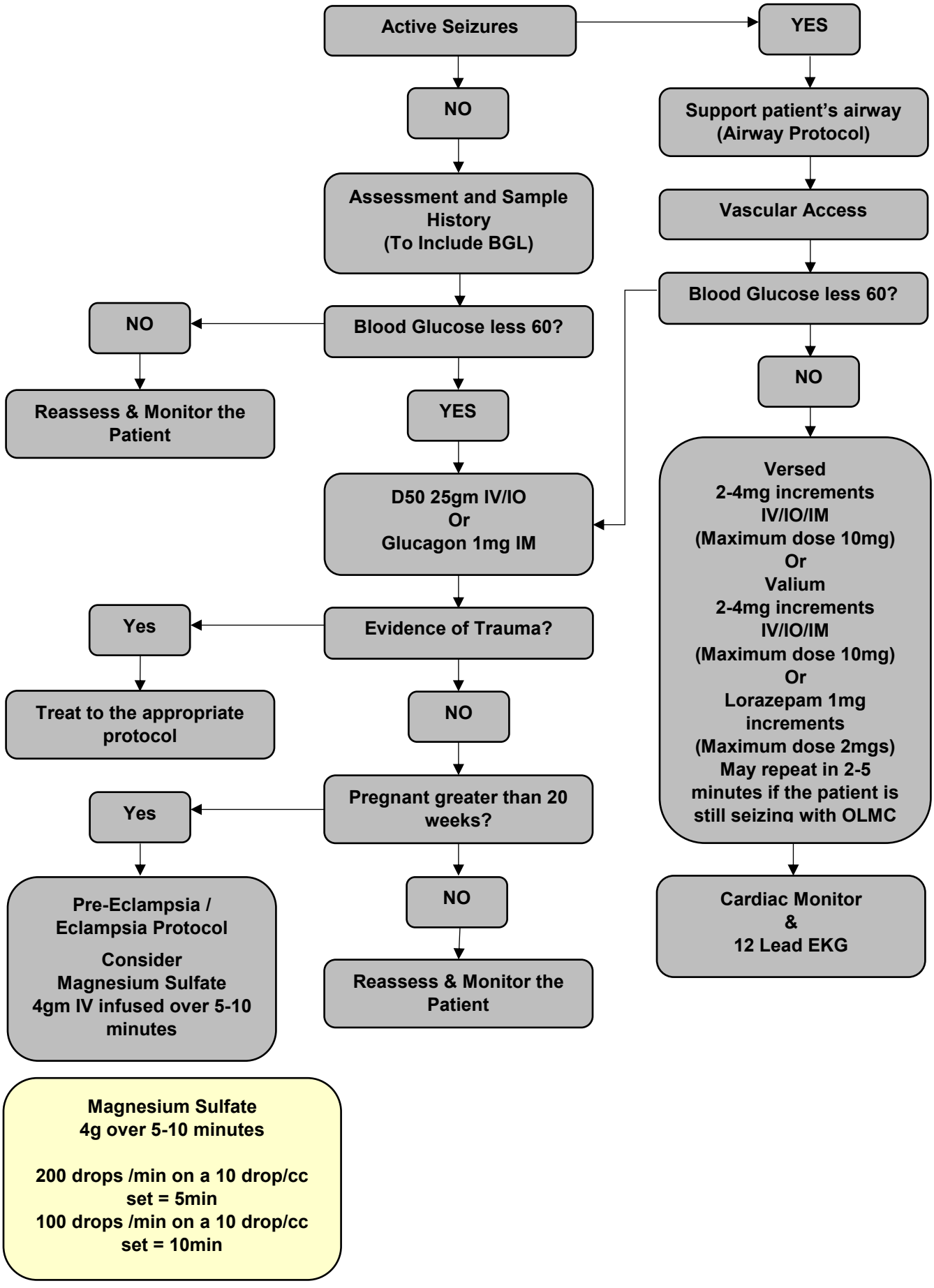
Caution

A. Avoid Nitroglycerine in any patient who has used Viagra or Levitra in the past 24 hours or Cialis in the past 36 hours



A failed airway occurs when a provider begins a course of airway management by endotracheal intubation and identifies that intubation by that means will not succeed. Conditions which define a Failed Airway:

- **A.** Failure to maintain adequate oxygen saturation at 90-92 % or greater after 2 failed intubation attempts.
- **B.** For a patient that is near death or dying and BVM techniques are insufficient.
- **C.** Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function
- **D.** $EtCO_2$ shall be applied and monitored.
- **E.** Notify Medical Control AS EARLY AS POSSIBLE about the patient's difficult/failed airway.
- **F.** If unable to obtain or maintain a sufficient airway, transport to the closest appropriate receiving facility.


Active Seizures
YES
NO
Support patient's airway (Airway Protocol)
Assessment and Sample History (To Include BGL)
Vascular Access
Blood Glucose less 60?
NO
Blood Glucose less 60?
Blood Glucose less 60?
NO
Reassess & Monitor the Patient
YES
Versed 2-4mg increments IV/IO/IM (Maximum dose 10mg) Or Valium 2-4mg increments IV/IO/IM (Maximum dose 10mg) Or Lorazepam 1mg increments (Maximum dose 2mgs) May repeat in 2-5 minutes if the patient is still seizing with OLMC
D50 25gm IV/IO Or Glucagon 1mg IM
Yes
Evidence of Trauma?
Treat to the appropriate protocol
NO
Yes
Pregnant greater than 20 weeks?
Pre-Eclampsia / Eclampsia Protocol
Consider Magnesium Sulfate 4gm IV infused over 5-10 minutes
NO
Cardiac Monitor & 12 Lead EKG
Reassess & Monitor the Patient
Magnesium Sulfate 4g over 5-10 minutes
200 drops /min on a 10 drop/cc set = 5min
100 drops /min on a 10 drop/cc set = 10min

Seizures can result from almost any type of damage to the brain, including injury and infection. The most common types of seizures are partial, petit mal, and generalized tonic-clonic, or grand mal, seizures.

Status epilepticus is defined as a prolonged seizure or two or more consecutive seizures without a period of consciousness or recovery. This is a true emergency requiring rapid airway control, treatment, and transport.

Grand mal seizures: (generalized) are associated with loss of consciousness, incontinence, and tongue trauma.

Focal seizures: (petit mal) effect only a part of the body and are not usually associated with a loss of consciousness.

Be prepared for airway problems and continued seizures. Assess the possibility of occult trauma and substance abuse.

For any seizure in a pregnant patient, follow the OB Emergencies Protocol

Patient Assessment

Oxygen
Titrate to maintain a SPO2 of 94% or greater

Cardiac Monitor

Suspected infection

Yes

Does the patient have two or more of the Following?

- **Temperature > 38° C (100.4° F) OR < 36° C (96.8° F)**
- **Respiratory Rate > 20 breaths/min**
- **Heart Rate > 90 beats/min**
- **ETCO2 ≤ 30 mmHg**
- **Signs of end organ damage (Altered mental status, respiratory distress, hypotension, decreased urination) are criteria for severe sepsis therefore presence of these signs along with suspected infection should be sepsis alerted**

NO

Monitor patient
Consider
Possible underlying causes

Septic patients are intravascular volume depleted and require aggressive fluid resuscitation in order to reduce morbidity and mortality

Yes

Notify the receiving facility of the Sepsis Alert

Vascular Access

Normal Saline
30ml / kg bolus

Monitor patient
Consider
Possible underlying causes

Consider
Dopamine 5-20 mcg/kg/min

If systolic BP remains < 90 mmHg or a MAP of 65 after completion of 30 ml/kg bolus

- **Norepinephrine infusion at 0.5-16 mcg/minute IV/IO, titrated to maintain SBP > 90 mm (if available)**
- **Epinephrine Drip Mix 2mg of Epinephrine 1:1,000 in a 250mL NS Bag**

Early recognition of sepsis and early goal-directed therapy can sometimes halt the progression of sepsis to severe sepsis and septic shock. The estimated mortality for sepsis is 30% to 50% for severe sepsis and 50% to 60% for septic shock and can be higher if the patient develops additional complications.

If your patient does not meet criteria for a Sepsis Alert, but has additional comorbidities, medications or additional issues, a Sepsis Alert can be issued based on Paramedic Discretion

Patients that are risk are:

• **65 and older**	• **Under the age of 1 year**	• **Decreased mobility**
• **Immunosuppressed**	• **Dementia**	• **Decreased gag reflex**
• **Skin Breakdown**	• **Poor bladder emptying**	• **Chronic Illness**

Additional Considerations

Sepsis Screening Tool

1. **Is the patient's history suggestive of a new infection?**

• **Pneumonia, empyema**	• **Skin/soft tissue infection**	• **Endocarditis**
• **Urinary tract infection**	• **Bone/joint infection**	• **Implantable device infection**
• **Acute abdominal infection**	• **Wound infection**	• **Other infection**
• **Meningitis**	• **Blood stream catheter infection**	

2. Are any two of following signs & symptoms of infection both present and new to the patient?

• **Hyperthermia > 38.3 °C (101.0 °F)**	• **Tachycardia > 90 bpm**	• **Leukocytosis (WBC count >12,000 µL–1)**
• **Hypothermia < 36 °C (96.8°F)**	• **Tachypnea > 20 bpm**	• **Leukopenia (WBC count < 4000 µL–1)**
• **Altered mental status**	• **Hyperglycemia (plasma glucose >140 mg/dL)**	

If the answer is yes, to both questions 1 and 2, suspicion of infection is present

Cincinnati Stroke Scale:

Cincinnati Stroke Scale (FAST) is a system used to diagnose the presence of a stroke in a patient. It tests three signs for abnormal findings which may indicate that the patient is having a stroke. If any one of the three tests show abnormal findings and onset less 24 hours, consider patient to be a **STROKE ALERT**. A TIA should be treated as an acute neurological deficit and be considered a **STROKE ALERT**.

Assess the patient for the following:

A. Airway, Vital Signs, BGL, Temperature Pulse Oximetry

B. Cincinnati Stroke Scale (FAST) Exam

F (Face) Facial Droop: Have patient smile or show teeth (look for asymmetry).
Normal: Both sides of the face move equally or not at all.
Abnormal: One side of the patient's face droops.

A (Arm) Motor Weakness: Arm drift (close eyes, extend arms, palms up)
Normal: Arms remain extended equally, drift equally, or do not move at all.
Abnormal: One arm drift down when compared with the other.

S (Speech) Speaking: "You can't teach an old dog new tricks" (repeat phrase).
Normal: Phrase is repeated clearly and correctly.
Abnormal: Words are slurred (dysarthria), abnormal (aphasia), or none.

T (Time) TIME LAST SEEN NORMAL:
Determine the time the patient was last seen normal.

C. Stroke Alert patients should be transported expeditiously to nearest state approved Comprehensive Stroke Center. If doubt exists or family requests another facility contact OLMC for guidance.

1. Ocala Regional Medical Center
2. Shands at UF Gainesville
3. North Florida Regional Gainesville
4. Orlando Regional Medical Center

D. Prior to transport obtain Family / witness information (name and telephone numbers)

E. Elevate the head 30 degrees during transport if possible

F. Enroute establish vascular access, Place the patient on the cardiac monitor and 12-lead should be obtained if time permits.

G. Complete the Ocala/Marion County Stroke Alert Checklist. **This form is to be handed off to hospital staff on arrival at the Emergency Department/Stroke Center.** The following must be documented:

1. Witness information - name and telephone numbers.
2. Symptom onset, time last seen normal.
3. BGL
4. LAMS (Los Angeles Motor Scale Exam).
5. Location of any missed IV's.
6. Whenever possible, a family member should accompany the patient to hospital to provide additional history and/or consent.

Los Angeles Motor Scale

Symptom		**Score**
Facial Droop *Unilateral Droop*	Absent.....	☐ - 0
	Present.....	☐ - 1
Arm Drift *Unilateral Motor Weakness*	Absent.....	☐ - 0
	Drifts Down.....	☐ - 1
	Falls Rapidly.....	☐ - 2
Grip Strength *Unilateral Motor Weakness*	Normal.....	☐ - 0
	Weak Grip.....	☐ - 1
	No Grip.....	☐ - 2
	Total	_____

ALL Stroke Alerts Should Be transported to a Comprehensive Stroke Center.

Ocala/Marion County Stroke Alert Checklist

Date:	Incident #:	Last Known Normal Time:	BGL:
Patient Name:		Age:	Gender:
Witness Name:		Contact #	

***** Family/Witness name and contact information must be obtained whenever possible. *****

Cincinnati Stroke Scale (FAST)

Check if abnormal

☐ F (Face) Facial Droop: Have patient smile or show teeth (look for asymmetry).
- Normal: Both sides of the face move equally or not at all.
- Abnormal: One side of the patient's face droops.

☐ A (Arm) Motor Weakness: Arm drift (close eyes, extend arms, palms up).
- Normal: Arms remain extended equally, drift equally, or do not move at all.
- Abnormal: One arm drifts down when compared with the other.

☐ S (Speech) Speaking: "You can't teach an old dog new tricks" (repeat phrase).
- Normal: Phrase is repeated clearly and correctly.
- Abnormal: Words are slurred (dysarthria), abnormal (aphasia), or none.

☐ T (Time) TIME LAST SEEN NORMAL:
- Document all information listed at the top of the form and provide to receiving facility.

If F, A, or S are checked and the onset of symptoms is equal to or less than 24 hours, issue a STROKE ALERT and transport to a Comprehensive Stroke Center. Enroute, provide the receiving facility early notification of the above information and complete the Los Angeles Motor Scale (LAMS) below.

Los Angeles Motor Scale

Symptoms	Score
Unilateral Droop	☐ **- 0 Absent** ☐ **- 1 Present**
Arm Drift **Unilateral Motor Weakness**	☐ **- 0 Absent** ☐ **- 1 Drifts Down** ☐ **- 2 Falls Rapidly**
Grip Strength **Unilateral Motor Weakness**	☐ **- 0 Normal** ☐ **- 1 Weak Grip** ☐ **- No Grip**
	Total Score: _____

Is the patient taking any of the following anticoagulants?	
☐ **- Pradaxa/Dabigatran**	☐ **- Coumadin/Warfarin**
☐ **- Xarelto/Rivaroxaban**	☐ **- Lovenox/Enoxaparin**
☐ **- Eliquis/Apixaban**	☐ **- Edoxaban/Savaysa**
☐ **- Heparin**	☐ **- Other**

Therapeutic Goal:

To recognize the patient with a hemorrhagic stroke which includes intraparenchymal hemorrhage (IPH) and intraventricular hemorrhage (IVH) and to provide and maintain adequate oxygenation/ventilation and tissue perfusion. To provide emergent treatment, prevent secondary brain injury, and provide expeditious transport to the nearest appropriate medical facility. Hemorrhagic strokes represent less than 15% of strokes and are often combined with subarachnoid hemorrhage (SAH); however, the pathophysiology of a hemorrhagic stroke is different than that of SAH and treatment is different.

Risk Factors:

- **A.** Hypertension
- **B.** Diabetes
- **C.** Smoking
- **D.** Previous stroke
- **E.** Cerebral amyloid angiopathy (virtually unknown to patients and often found at autopsy)

Assessment:

The patient's presenting symptoms will depend on the type, extent, and location of the bleed. The physical examination findings may be normal. A headache may or may not be present. Vomiting may or may not be present. Global depression of neurological function may be noted, including altered level of consciousness and state of confusion. Patients may quickly progress into a stupor or coma. A history of anticoagulant use should be elicited.

Indicators of impending herniation include:

- **A.** Unconscious and unresponsiveness
- **B.** Extensor posturing
- **C.** Asymmetric, dilated or nonreactive pupils
- **D.** Progressive neurologic deterioration
- **E.** Decrease in the patient's GCS score of more than two points from the patient's prior best score in patients with an initial GCS of less than 9
- **F.** Radiographic signs of midline shift on non-contrast CT of head

Treatment:

- **A.** Patient Assessment
- **B.** Obtain a complete neurological exam
- **C.** Maintain head of bed at 30-degree angle if spinal cord injury is not suspected
- **D.** Pain control per the pain management protocol If patient has nausea, administer Ondansetron Hydrochloride (Zofran) 4 mg undiluted IV over 2 to 5 minutes. If vomiting is not resolved repeat with 4 mg IV after two minutes.
- **E.** Consider Sedation
- **F.** Maintain systolic blood pressures between 160 – 180 mmHg in patients without ICP monitoring, in the event of excessive hypertension greater than 180 mmHg consider:
  1. ****CCT - Nicardipine:** 5 mg/hr IV continuous infusion, increase 2.5 mg/hr q 5-15 minutes, up to a maximum dose of 15 mg/hr. When target BP is achieved, decrease rate to 2.5 mg/hr.
  2. ****CCT - Consider Labetalol with OLMC:** 10-20 mg slow IVP (over 2 min). May repeat q 10 min with additional doses of 40 mg and then 80 mg until a maximum of 300 mg is administered. (***0nly after CT Scan***)
- **G.** If patient has intracranial pressure monitor in place, maintain CPP between 70-100 mmHg
- **H.** Treat hypotension aggressively. Maintain systolic blood pressure above 90 mmHg with continuous intravenous
  1. Isotonic fluid bolus
  2. Alpha receptor agonist vasopressors (e.g., phenylephrine).
- **I.** Treat seizure per the Seizure protocol if needed
- **J.** Maintain ETCO2 30-35 mmHg
- **K.** Consider Mannitol with OLMC 1g/kg over 5-10 minutes (A filtered line must be used with Mannitol administration)

The initial assessment of the **trauma patient** should include determination of Trauma Alert criteria. If the patient meets Trauma Alert Criteria, the patient should be transported to the nearest appropriate trauma center. If the patient does not meet Trauma Alert criteria and in the paramedic's judgment or in consultation with OLMC, the injuries sustained or mechanism of injury (MOI) indicate a high potential for serious injury, transport to a trauma center should also be considered. Scene time should be limited to ten (10) minutes whenever possible when the patient meets the criteria of a Trauma Alert or there is high suspicion of severe injury. Transport should not be delayed establishing vascular access, bandage every wound, or splint every injury. Treatment priorities on scene should be geared toward airway management, control of gross hemorrhage and preparation for rapid transport (i.e. spinal immobilization etc.). All trauma alert patients must be transported to a State Approved Trauma Center (SATC) nearest the location of the incident if the incident is within 30 minutes by ground or air transport or within 50 miles by air transport. Situations may occur where the EMS providers or medical director have determined it would be in the best medical interest of the trauma alert patient to be transported to a hospital other than those specified as trauma centers. Patients not meeting the criteria for a Trauma Alert should be transported to the most appropriate local hospital as outlined in the hospital destination protocol.

Situations Where Transport to a Hospital other than a Trauma Center may be considered:

- **A.** Critical condition of a patient requiring immediate intervention of a physician, such as airway control, tension pneumothorax or cardiac arrest in which the patient would benefit from stabilization at a closer receiving hospital.
- **B.** A mass casualty incident in which trauma centers are overwhelmed.
- **C.** Patient does not meet Trauma Alert criteria

Injuries / MOI That May Indicate Serious injury but may not Meet Trauma Alert Criteria

- Multiple Rib and/or Sternal fractures
- Pelvic instability or pain or tenderness
- Significant abdominal or chest pain or tenderness
- Geriatric patients should be evaluated with a high index of suspicion. Often occult injuries are more difficult to recognize, and patients can decompensate unexpectedly with little warning.

BLS

- **A. Scene safety:**
- **B. Rapid Trauma Assessment:** (A focused assessment should be performed enroute to the hospital even if the patient is stable and does not meet Trauma Alert criteria, or if the injuries sustained and/or mechanism of injury (MOI) does not indicate a high potential for serious injury).
- **C. Determine Baseline Vital Signs:** this should include GCS, Pulse, BP, Respirations, BGL, and $ETCO_2$/SPO2.
- **D. Trauma Alert Should be issued and the receiving facility notified as soon as possible** (If Applicable); if prolonged extrication of a patient or patients is required, consideration should be given to the need for Additional resources and early contact of OLMC. (Early consideration of potential needs i.e. air medical support /or a situation that may require a physician on the scene or on scene medical direction).
- **E. Administer supplemental Oxygen** to maintain SpO_2 greater than or equal to 94%.
- **F. Maintain the patient's airway**
- **G. Control major bleeding**
  - **1.** Consider use of Combat Application Tourniquet for uncontrolled bleeding
- **H. The injured area should be exposed**. In multi-trauma all of the patient's clothing may need to be removed. (if conditions and personnel are available, an effort should be made to protect the patient's modesty
- **I. Splint the fracture or dislocation:**
- **J.** For femur fractures (open or closed), use a traction splint
  - **1.** For other extremity fractures, if a bone is protruding, cover with moist dressing. Splint in place unless total ischemia (no PMS) is present distal to the fracture.
  - **2.** For pelvic fractures, consider applying T-Pod®, if unavailable consider snugly wrapping pelvic region with a sheet or blanket and securing the patient to a backboard to minimize movement and internal blood loss.

3. For suspected hip fracture (indicated by pain, shortening and/or rotation of the affected extremity), splint with padding to protect the hip and comfort the patient. ***The use of a T-Pod is not indicated for patients with a suspected hip fracture.***

K. **Maintain the patient's body heat** (Trauma patients may become hypothermic even in warm environments).

L. **Remove any constriction items** (rings bracelets etc.)

M. **Spinal Immobilization** (if Indicated)

ALS

A. **Cardiac Monitor:** Cardiac monitor should remain on the patient until the patient transfer has been completed.

B. **Advanced airway procedures if indicated** (i.e. RSI, surgical airway, chest decompression etc.)

C. **Establish vascular access.** Normal Saline 20ml / kg to maintain systolic BP 90mmHg.

D. Fluid resuscitation should begin prior to extrication whenever possible.

E. **With OLMC Approval of the receiving trauma center**, Consider Tranexamic Acid (TXA) for an adult in traumatic hemorrhagic shock with a suspected need for massive blood transfusion. Clinical evidence for the use of TXA are:

1. Marked blood loss – internal or external.
2. Sustained tachycardia.
3. Hypotension

F. Elderly patients should be monitored closely for volume overload but do not withhold fluids unless signs and symptoms of volume overload present

G. Trauma injuries can be painful. Isolated injuries may be treated for pain:

a. **Fentanyl:** 25 – 100 mcg IV/IO initial dose followed by 50 mcg increments titrated to pain relief, up to a total of 200 mcg for an adult. If administering more than 50 mcg Fentanyl, consider administering Ondansetron Hydrochloride (Zofran) 4 mg undiluted IV over 2 to 5 minutes (contraindicated in pregnancy). Contact OLMC if more than 200 mcg of Fentanyl is needed. Repeat V/S after each dose and maintain BP equal to 90 mmHg or greater. Fentanyl may be given IM **only if, IV access cannot be achieved**, and the BP is over 100 mmHg.

If Fentanyl is unavailable

b. **Ketamine:** 0.1- 0.3 mg/kg IV/IO Maximum dose of 15mg (Ketamine must be diluted 100mg in 100mL of NS or D5W and then draw up the appropriate dose up to 15cc (Maximum dose 15mg) and administered over (1-2 minutes) and titrated to pain. Consider administering Ondansetron Hydrochloride (Zofran) 4 mg undiluted IV over 2 to 5 minutes (contraindicated in pregnancy).

Or

c. **Morphine Sulfate** may be given slow IVP in 2mg increments every 3-5 minutes titrated to pain relief, up to a maximum of 10mg. Maintain BP equal to 90 mmHg or greater. Consider administering Ondansetron Hydrochloride (Zofran) 4 mg undiluted IV over 2 to 5 minutes (contraindicated in pregnancy).

Or

d. **Dilaudid (Hydromorphone)** Administer 1 mg increments IV/IM over 2-5 minutes, titrated to pain relief, with a maximum dose of 2 mg. Systolic blood pressure must be greater than 90 mmHg. Consider administering Ondansetron Hydrochloride (Zofran) 4 mg undiluted IV over 2 to 5 minutes (contraindicated in pregnancy).

DOCUMENTATION

It is important that all procedures and medications are documented in the narrative of the patient care report and the following also shall be documented:

A. Time of incident

B. Type of injury

C. Mechanism of injury (MOI) (i.e., crush, penetrating, amputation, blunt trauma etc.)
D. Open vs closed fracture (if applicable)
E. Wound contamination Loss of consciousness (LOC) / GCS
F. Medication and treatments performed.
G. Treatments performed
H. Helmet use (if applicable)
I. Vehicle damage (if applicable)
J. Restraints / protective equipment (if applicable)

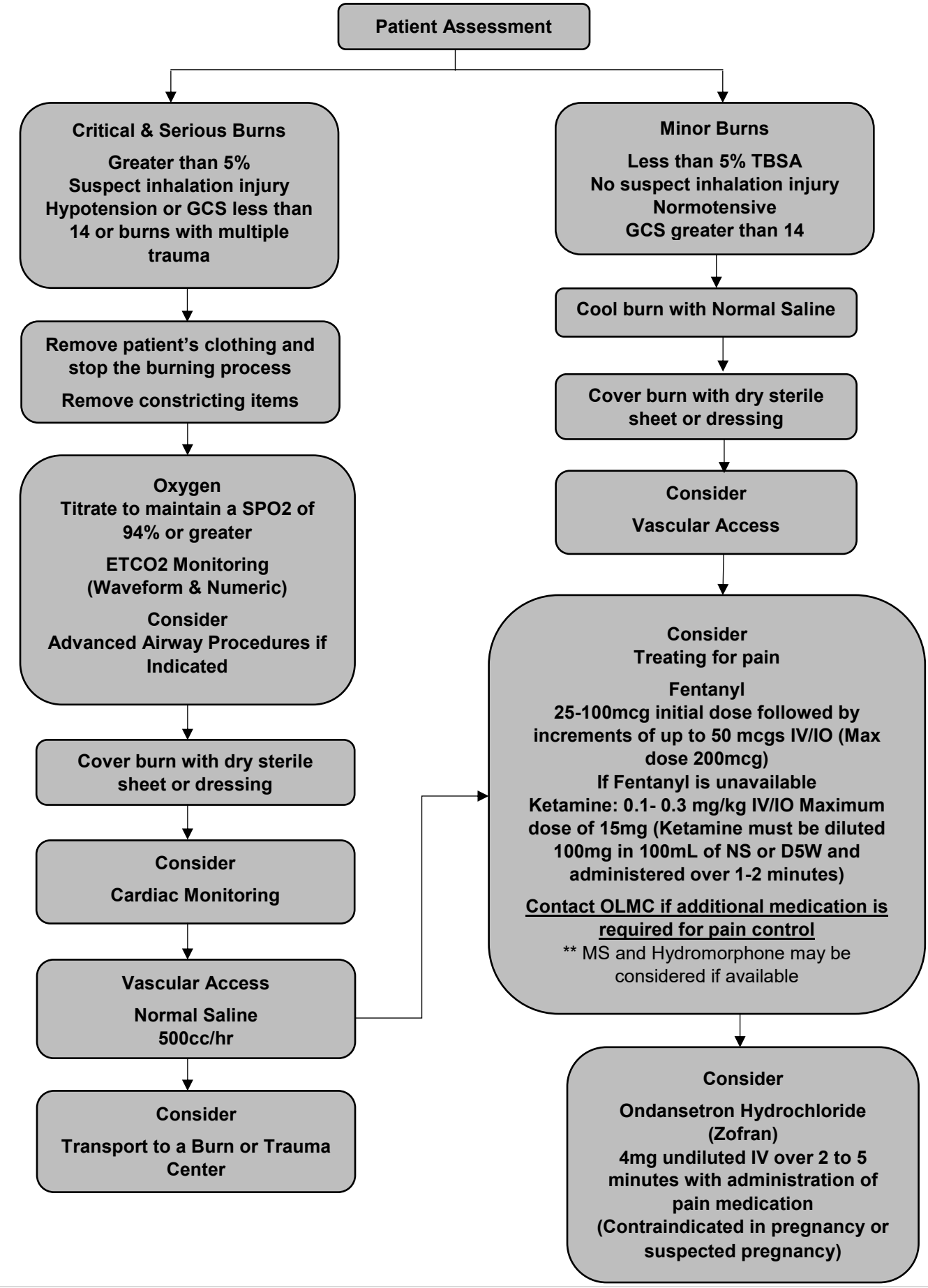
The following guidelines are to be used to establish the criteria for a "Trauma Alert" patient and determine which patient(s) will be transported to a trauma center. Any patient that meets any **one** of the **"RED"** criteria will be a trauma alert, while any patient that meets any **two** of the **"BLUE"** criteria will be a trauma alert.

Red Criteria

- **A. Active Airway Assistance:** Active ventilation assistance required due to injury/injuries causing ineffective or labored breathing beyond the administration of oxygen.
- **B. Circulation:** Patient lacks a radial pulse with a sustained heart rate greater than 120 beats per minute or has a blood pressure of less than 90mmHg.
- **C. Best Motor Response (BMR):** Patient exhibits a score of four or less on the motor assessment component of the Glasgow Coma Scale; exhibits the presence of paralysis; suspicion of a spinal cord injury; or the loss of sensation.
- **D. Cutaneous:** 2nd or 3rd degree burns to 15 percent or more of the total body surface area; electrical burns (high voltage/direct lightening) regardless of surface area calculations; an amputation proximal to the wrist or ankle; any penetrating injury to the head, neck, or torso (excluding superficial wounds where the depth of the wound can be determined).
- **E. Long Bone Fracture:** Patient reveals signs or symptoms of two or more long bone fractures sites (humerus, radius/ulna, femur, or tibia/fibula).
- **F. Pregnant (Marion County protocol):** Any pregnant female greater than 20 weeks gestation who has been involved in a MVC greater than 35mph, rollover, ejection, steering wheel deformity and or there is a significant traumatic mechanism with high index of suspicion.

Blue Criteria (Any Two of the Following)

- **A. Airway:** Respiratory rate of 30 or greater.
- **B. Circulation:** Sustained heart rate of 120 beats per minute or greater.
- **C. Best Motor Response:** BMR of 5 on the motor component of the Glasgow Coma Scale.
- **D. Cutaneous:** Soft tissue loss from either a major degloving injury, or a major flap avulsion greater than 5 inches, or has sustained a gunshot wound to the extremities of the body.
- **E. Long bone Fracture:** Patient reveals signs or symptoms of a single long bone fracture resulting from a motor vehicle collision or a fall from an elevation of 10 feet or greater.
- **F. Age:** Patient is 55 years of age or older.
- **G. Mechanism of Injury:**
  1. Patient has been ejected from a motor vehicle, (excluding any motorcycle, moped, all-terrain vehicle, bicycle or the open body of a pick-up truck), or the driver of the motor vehicle has impacted with the steering wheel causing steering wheel deformity.
  2. Ejection from a non-enclosed vehicle with a significant rate of speed 20 MPH (i.e. motorcycle, Pick-up truck etc.).


Patient Assessment
Critical & Serious Burns
Greater than 5%
Suspect inhalation injury
Hypotension or GCS less than 14 or burns with multiple trauma
Remove patient's clothing and stop the burning process
Remove constricting items
Oxygen
Titrate to maintain a SPO2 of 94% or greater
ETCO2 Monitoring (Waveform & Numeric)
Consider
Advanced Airway Procedures if Indicated
Cover burn with dry sterile sheet or dressing
Consider
Cardiac Monitoring
Vascular Access
Normal Saline
500cc/hr
Consider
Transport to a Burn or Trauma Center
Minor Burns
Less than 5% TBSA
No suspect inhalation injury
Normotensive
GCS greater than 14
Cool burn with Normal Saline
Cover burn with dry sterile sheet or dressing
Consider
Vascular Access
Consider
Treating for pain
Fentanyl
25-100mcg initial dose followed by increments of up to 50 mcgs IV/IO (Max dose 200mcg)
If Fentanyl is unavailable
Ketamine: 0.1- 0.3 mg/kg IV/IO Maximum dose of 15mg (Ketamine must be diluted 100mg in 100mL of NS or D5W and administered over 1-2 minutes)
Contact OLMC if additional medication is required for pain control
** MS and Hydromorphone may be considered if available
Consider
Ondansetron Hydrochloride (Zofran)
4mg undiluted IV over 2 to 5 minutes with administration of pain medication
(Contraindicated in pregnancy or suspected pregnancy)

Burns can be caused by thermal, chemical and electrical sources. Burn victims rarely die immediately as a result of thermal injury; immediate death is typically the result of coexisting trauma or airway compromise. Many burns are associated with inhalation injury. Early intubation should be considered when the patient experiences significant inhalation injuries. Chemical powders (dry) should be brushed off while being careful to avoid direct contact with the chemical. ***Consider consulting Hazmat with all Chemical Burns***

Signs and Symptoms of an Inhalation Injury

• **Blackened sputum** • **Nasal and oropharyngeal burns**	• **Abnormal breath sounds** • **Charring of the tongue and teeth**	• **Respiratory distress** • **Singed nasal and facial hair**

Caution

Electrical or Lightning injuries can occur from direct contact, an arc or a flash of electricity and from a direct hit or splash from lighting. The movement of electrical current through the body can cause violent muscle contractions that can lead to fractures. As a consequence, the patient's c-spine should be protected. Thermal energy can cause external burns, but in many cases the majority of thermal damage is internal, with few signs of injury.

A. Be certain that the scene is safe and that the patient is no longer in contact with the electrical current prior to initiating treatment.

B. Lightning strike scenes where there are multiple patients, ***reverse triage*** shall be applied and patients in cardiac arrest and respiratory arrest shall be worked first. Dilated pupils should not be used as an indication of brain damage because these findings can be induced by the lightning strike without head injury.

C. Cardiac Monitor should be applied and remain on the patient until patient transfer. Anticipate Ventricular or Atrial Irregularity to include V-Tach, V-Fib. Heart Blocks etc.

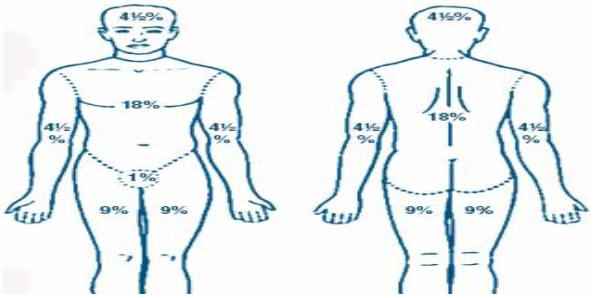
D. Maintain the patient's body heat. Trauma patients may become hypothermic even in warm environments.

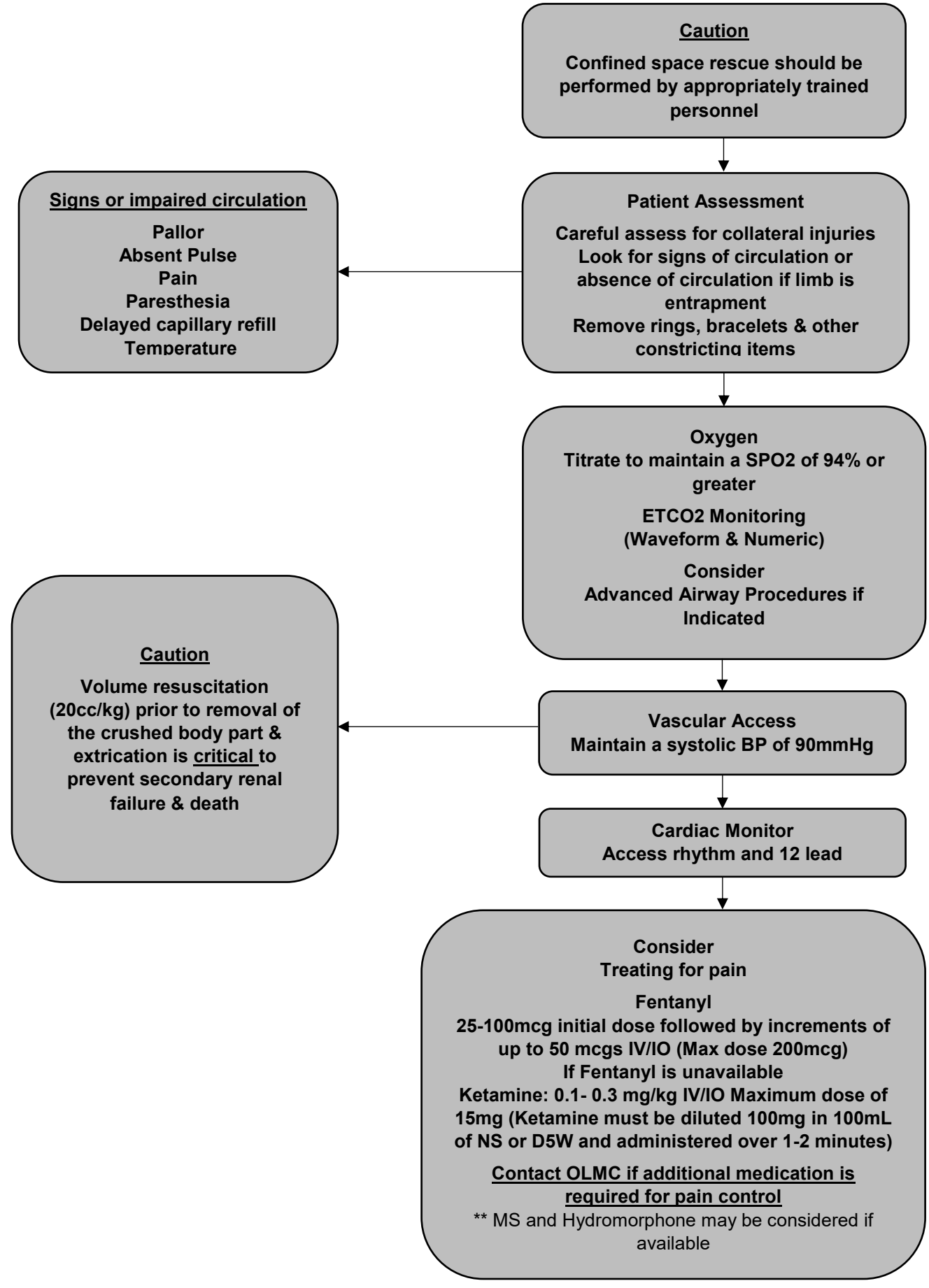
E. Trauma Alert should be issued and the receiving facility notified as soon as possible (If applicable)

Modified Parkland Burn Formula

Pt weight (kg)		30	35	40	45	50	55	60	70	80	90	100	110	120
% BSA	10	75	88	100	113	125	138	150	175	200	225	250	275	300
	20	150	175	200	225	250	275	300	350	400	450	500	550	600
	30	225	263	300	338	375	413	450	525	600	675	750	825	900
	40	300	350	400	450	500	550	600	700	800	900	1000	1100	1200
	50	375	438	500	563	625	688	750	875	1000	1125	1250	1375	1500
	60	450	525	600	675	750	825	900	1050	1200	1350	1500	1650	1800
	70	525	613	700	788	875	963	1050	1225	1400	1575	1750	1925	2100
	80	600	700	800	900	1000	1100	1200	1400	1600	1800	2000	2200	2400
	90	675	788	900	1013	1125	1238	1350	1575	1800	2025	2250	2475	2700
	100	750	875	1000	1125	1250	1375	1500	1750	2000	2250	2500	2750	3000

Fluid quantity is amount (in mL's) to be infused during the first hour after injury




Caution
Confined space rescue should be performed by appropriately trained personnel
Patient Assessment
Careful assess for collateral injuries
Look for signs of circulation or absence of circulation if limb is entrapment
Remove rings, bracelets & other constricting items
Signs or impaired circulation
Pallor
Absent Pulse
Pain
Paresthesia
Delayed capillary refill
Temperature
Oxygen
Titrate to maintain a SPO2 of 94% or greater
ETCO2 Monitoring
(Waveform & Numeric)
Consider
Advanced Airway Procedures if Indicated
Vascular Access
Maintain a systolic BP of 90mmHg
Caution
Volume resuscitation (20cc/kg) prior to removal of the crushed body part & extrication is critical to prevent secondary renal failure & death
Cardiac Monitor
Access rhythm and 12 lead
Consider
Treating for pain
Fentanyl
25-100mcg initial dose followed by increments of up to 50 mcgs IV/IO (Max dose 200mcg)
If Fentanyl is unavailable
Ketamine: 0.1- 0.3 mg/kg IV/IO Maximum dose of 15mg (Ketamine must be diluted 100mg in 100mL of NS or D5W and administered over 1-2 minutes)
Contact OLMC if additional medication is required for pain control
** MS and Hydromorphone may be considered if available

Crush syndrome is localized crush injury with systemic manifestations. These systemic effects are caused by a traumatic rhabdomyolysis (muscle breakdown) and the release of potentially toxic muscle cell components and electrolytes into the circulatory system. Crush syndrome can cause local tissue injury, organ dysfunction, and metabolic abnormalities, including acidosis, hyperkalemia, and hypocalcemia. Crush syndrome should be considered when a force or compression is applied to the body for an extended period of time, generally greater than 30 minutes.

A. Volume resuscitation should begin prior to extrication whenever possible. Volume resuscitation prior to removal of the crushed body part and extrication is critical to prevent secondary renal failure and death. OLMC should be consulted.

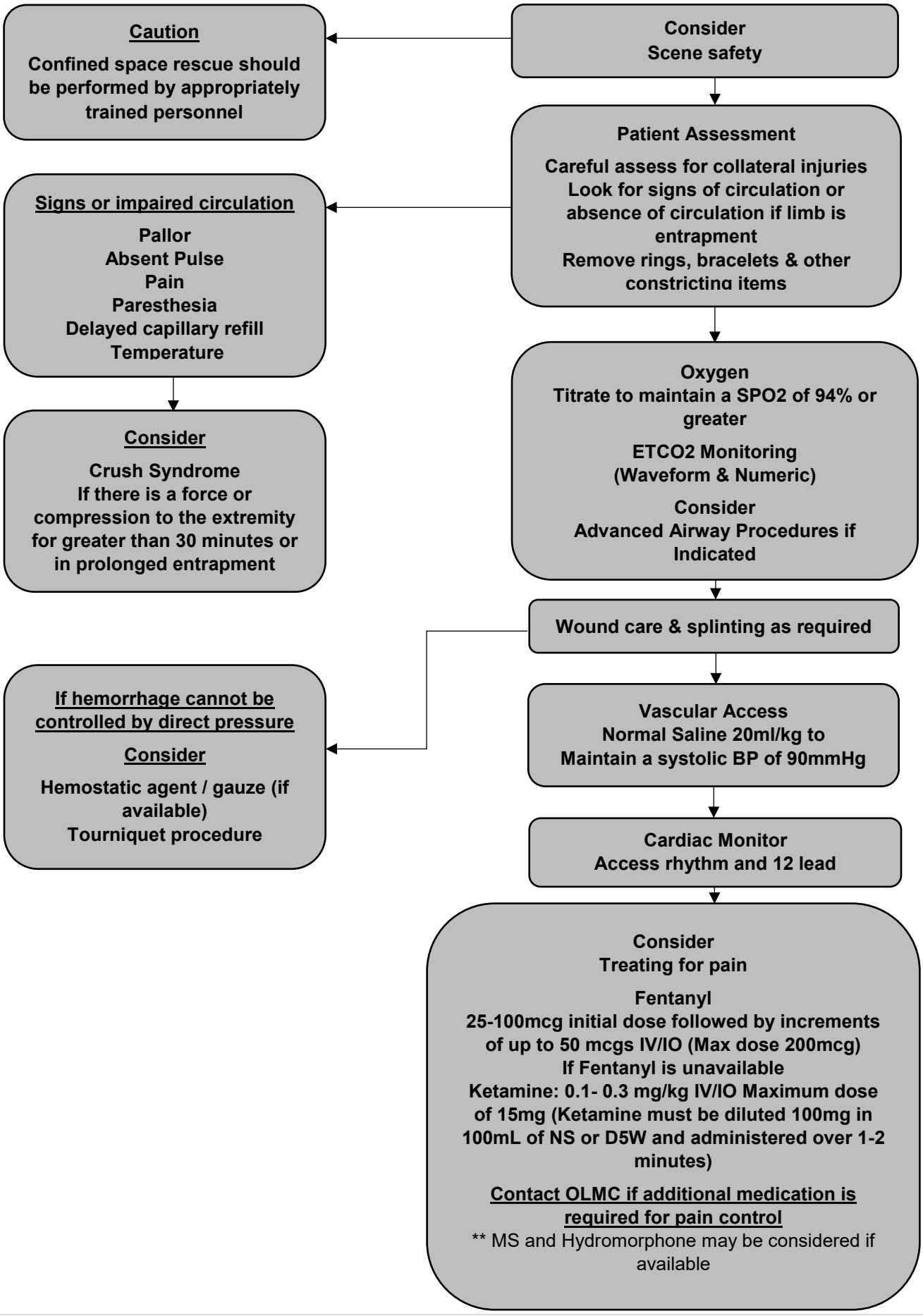
CAUTION

A. Use with extreme caution and consultation with OLMC for RSI or Succinylcholine in patient with Crush Syndrome

B. ECG changes with Hyperkalemia include those in protocol but may also present early with a bizarre, wide complex rhythm

C. Crush injury patients may become hypothermic even in warm environments

D. Elderly patients should be monitored closely for signs of volume overload.


Caution
Confined space rescue should be performed by appropriately trained personnel
Consider
Scene safety
Patient Assessment
Careful assess for collateral injuries
Look for signs of circulation or absence of circulation if limb is entrapment
Remove rings, bracelets & other constricting items
Signs or impaired circulation
Pallor
Absent Pulse
Pain
Paresthesia
Delayed capillary refill
Temperature
Consider
Crush Syndrome
If there is a force or compression to the extremity for greater than 30 minutes or in prolonged entrapment
Oxygen
Titrate to maintain a SPO2 of 94% or greater
ETCO2 Monitoring
(Waveform & Numeric)
Consider
Advanced Airway Procedures if Indicated
Wound care & splinting as required
If hemorrhage cannot be controlled by direct pressure
Consider
Hemostatic agent / gauze (if available)
Tourniquet procedure
Vascular Access
Normal Saline 20ml/kg to
Maintain a systolic BP of 90mmHg
Cardiac Monitor
Access rhythm and 12 lead
Consider
Treating for pain
Fentanyl
25-100mcg initial dose followed by increments of up to 50 mcgs IV/IO (Max dose 200mcg)
If Fentanyl is unavailable
Ketamine: 0.1- 0.3 mg/kg IV/IO Maximum dose of 15mg (Ketamine must be diluted 100mg in 100mL of NS or D5W and administered over 1-2 minutes)
Contact OLMC if additional medication is required for pain control
** MS and Hydromorphone may be considered if available

Extremity Trauma includes open and closed fractures to the extremities including amputations. Hip dislocations and knee and elbow fracture/dislocation have a high incidence of vascular compromise. Any injury with evidence of vascular compromise should be transported without delay. Blood loss may be concealed or not apparent with extremity injuries.

A. Check for pulses, movement and sensation (PMS) in the affected extremity.

B. If no PMS distal to injury, consider applying gentle traction and move limb into normal position of alignment. Recheck PMS and immobilize. If continued diminished PMS after one attempt, immobilize and rapid transport.

C. For amputations cover the stump with a moist pressure dressing.

D. Treatment of severed part:

- **a.** Wrap in sterile dressing, place in plastic bag and keep dry.
- **b.** Place bag in an ice-water bath, if available. (**Do not soak amputated part in water or saline solution**).
- **c.** If extrication will be prolonged, consider sending amputated part ahead to be surgically prepared for re-implantation.

Injuries involving the eyes can hamper assessment findings as well as increase patient anxiety and fear. Common causes of eye injury are blunt and penetrating trauma from motor vehicle crashes, sport and recreational activities, and violent altercations, chemical exposure from household and industrial accidents, foreign bodies, and animal bites and scratches. It is important to keep in mind that the patient may have normal visual acuity even with a severe injury.

Treatment

BLS

- **A.** Treat associated injuries as applicable
- **B.** Assess nature of the ophthalmologic emergency

Direct Trauma

- **A.** If the patient has contact lens they should be removed if possible.
- **B.** Patch both eyes gently without pressure to the globes.
- **C.** Maintain patient in a supine position to reduce leakage of fluids from the eye.
- **D.** If blood is noted in the anterior chamber (Hyphema), elevate the head of the patient's bed to 40 degrees. If spinal immobilization is indicated, elevate LSB as much as safely possible.
- **E.** Stabilize any impaled object **(Do Not Remove Object)** and cover both eyes with protective covering (e.g., paper cup),
- **F.** Dim lights for patient comfort.

Chemical Trauma / Thermal Burns

A. Consider Tetracaine for symptomatic pain relief.

1. Adult: 2 drops in the affected eye.
2. Pediatric: 1 drop in the affected eye.

***Caution*:** Any chemical or thermal burns to the face or eyes should raise concern for respiratory insult. The treatment of chemical exposures to the eyes should only be conducted once rescuer safety has been insured (see Hazardous Materials Medical Response Protocol)

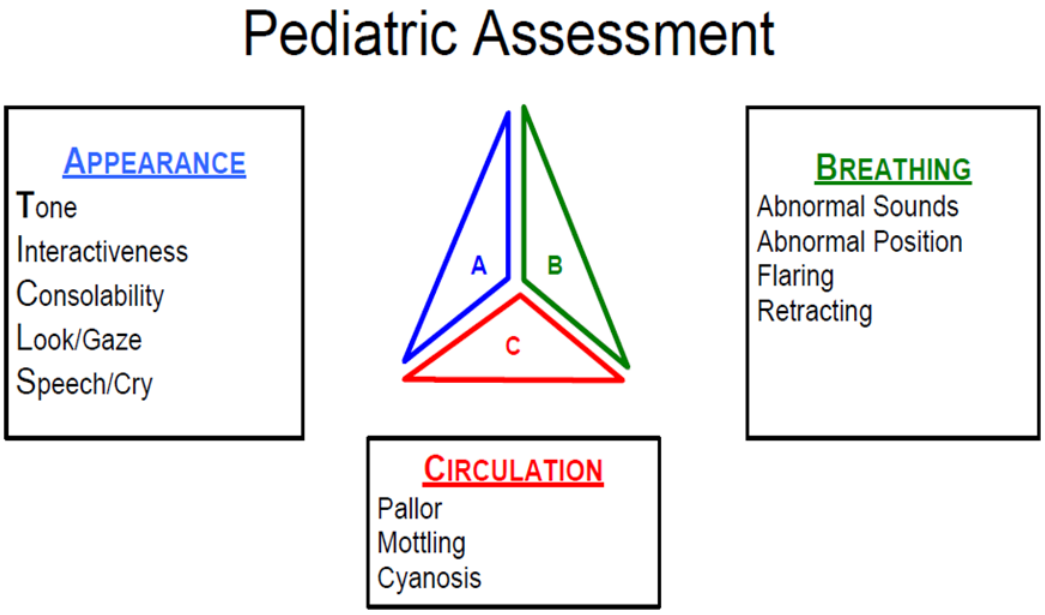
Pediatric Medical Protocols

PEDIATRIC MEDICAL PROTOCOLS

The goal of the pediatric patient assessment process is similar to that of the adult patient; however, children are not little adults. The causes of catastrophic events, such as cardiac arrest, are most often related to respiratory failure, shock or central nervous system injuries. Early recognition and treatment of the pediatric patient's injuries or illness are important to ensure the best outcome. Attention and awareness must be given to the pediatric patient's ability to compensate for respiratory failure and shock. Vital signs are valuable in the assessment of the pediatric patient. However, Vital Signs have limitations and can be dangerously misleading. Hypotension is a late and often sudden sign of cardiovascular decompensation. Tachycardia (which varies by age group) will persist until the cardiac reserve is depleted. Bradycardia is an ominous sign of an impending cardiac arrest. Infants and children can maintain their blood pressure by increasing peripheral vascular resistance (shunting) and heart rate. ***The pediatric patient can be in compensated shock and exhibit a normal blood pressure and skin condition***.

The initial assessment of the pediatric patient will vary with age. Establishing a general impression of the pediatric patient impression, should be done from the doorway of the room. Therefore, the pediatric patient will not be disturbed by a hands-on assessment. There are three key areas of importance of a general impression they are **appearance, work of breathing, and circulation to the skin.** The three components are known as the Pediatric Assessment Triangle (PAT).

Each component of the Pediatric Assessment Triangle is evaluated separately. If an abnormal physical finding is noted, the corresponding components can then be combined to form a general impression of the pediatric patient.



Appearance

The appearance of the pediatric patient should be assessed from the "doorway." The appearance is the most important aspect to consider when determining how sick or injured the child is. Appearance will give the EMS provider insight on oxygenation, neurological status, and ventilation. Remember, the sick child may be alert on the conventional AVPU scale, but still have an abnormal appearance. Children need a more subtle assessment tool; this way life-threatening injury can be identified earlier. A good Mnemonic to remember when assessing appearance is "tickles" (TICLS):

The TICLS Mnemonic Characteristic	Features to look for.
Tone	Is she moving or resisting examination vigorously? Does she have good muscle tone? Or is she limp, listless, or flaccid?
Interactiveness	How alert is the child? How readily does a person, object, or sound distract her or draw her attention? Will she reach for, grasp, and play with a toy or exam instrument, like a penlight or tongue blade? Or is she uninterested in playing or interacting with the caregiver or prehospital professional?
Consolability	Can she be consoled or comforted by the caregiver or by the prehospital professional? Or is her crying or agitation unrelieved by gentle assurance?
Look / Gaze	Does she fix her gaze on a face? Or is there a "nobody home," glassy-eyed stare?
Speech / Cry	Is her speech or cry strong and spontaneous? Or is it weak, muffled, or hoarse?

Work of Breathing

Assessing work of breathing must go beyond the rate and quality of respiration that is used for adult assessment. Work of breathing is an accurate indicator of the oxygenation and ventilation status of the pediatric patient. This is another "hands-off" evaluation method, so not to disturb the pediatric and cause more respiratory stress, than whatever is already present.

Characteristics of work of Breathing	Features to look for
Abnormal Airway sounds	Snoring muffled or hoarse speech, stridor, grunting, wheezing
Abnormal positioning	Sniffing position, tripoding, refusing to lie down
Retractions	Supraclavicular, ~~intercostals~~ intercostal, or substernal retractions of the chest wall; head bobbing in infants
Flaring	Nasal flaring

Circulation to Skin

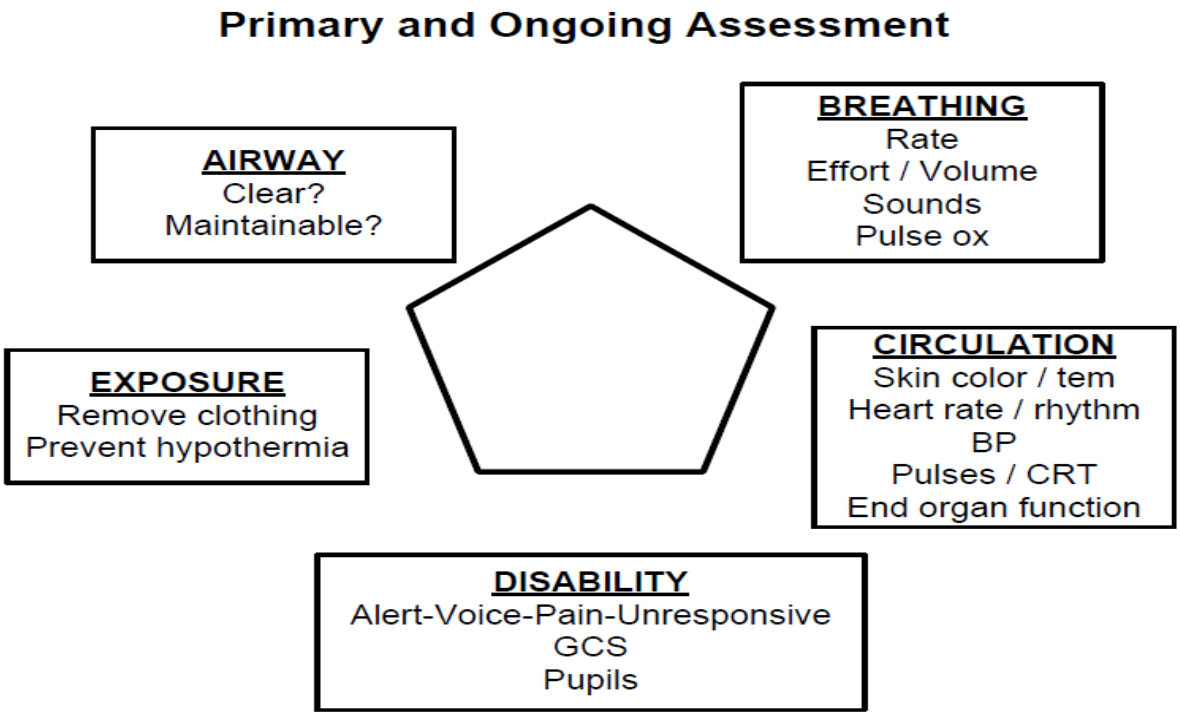
A rapid circulatory assessment is to determine the perfusion status of the pediatric patient. The key is to assess the core perfusion status of the child; assessing the skin and mucous membranes can do this. Circulation to this organ (skin) reflects the overall status of core circulation.

Characteristic	Features to look for
Pallor	White or pale skin or mucous membrane coloration from inadequate blood flow
Mottling	Patchy skin discoloration due to vasoconstriction
Cyanosis	Bluish discoloration of skin and mucous membranes

Pediatric Patient Age Definitions & Vital Signs

Normal Vital Sign Ranges, Pediatric			
	Heart Rate	**Respiratory Rate**	**Blood Pressure**
Infant (1 - 12 months)	100-160/ min	30-60/ min	>60
Toddler (1 - 2 years)	90-150/ min	24-40/ min	>70 + (2 X age)
Preschooler (3 - 5 years)	80-140/ min	22-34/ min	>70 + (2 X age)
School-aged (6 - 13 years)	70-120/ min	18-30/ min	>70 + (2 X age)
Adolescent (14 - 17 years)	60-100/ min	12-16/ min	>90

Neonate (0-1month): Utilization of APGAR scoring is helpful in assessing the neonate patient.



Treatment

BLS / ALS

A. Scene Size-Up

B. General Assessment (Pediatric Assessment Triangle)

1. Appearance

2. Work of Breathing

3. Circulation

C. Primary Assessment

1. ABCDE (airway, breathing, circulatory, disability and exposure)

2. Neurological Function, GCS

Pediatric GCS

Eyes	Verbal	Motor
4 - Spontaneous	5 - Smiles, Oriented to Sounds, Follows Objects	6 - Moves Spontaneously and Purposefully
3 - To Verbal	4 - Cries but Consolable, Inappropriate Interactions	5 - Withdraws from Touch
2 - To Pain	3 - Inconsistently Inconsolable, Moaning	4 - Withdraws from Pain
1 - No Response	2 - Inconsolable, agitated	3 - Flexion to Pain
	1 - No Response	2 - Extension to Pain
		1 - No Response

3. Vital Signs (Including BGL and Temperature)

4. For newborn patients and pediatric patients to approximately 10 years (4kg – 30kg) Color code using the Broselow-Luten Tape.

D. Secondary Assessment

a) Obtain a **(SAMPLE)** Medical History

S - Symptoms - Assessment of the Chief Complaint

O - Onset and Location

P - Provocation

Q - Quality

R - Radiation / Referred

S - Severity

T - Time

A - Allergies

M - Medications

P - Past Medical History (Should include Immunizations)

L - Last Oral Intake

E - Events leading to the illness or injury Head to Toe Survey

E. Ongoing Assessment / Treat Child as per Specific Protocol

F. Children should also be assessed for pain when indicated. Pains should only be treated as outline in specific protocols or by Physician order.

Use of the pediatric pain scale FLACC or FACES (see below)

	0	1	2
Face	No particular expression; Smile	Grimace or Frown; Withdrawn; Disinterested	Frequent quivering chin, Clinched Jaw
Legs	Normal Position; Moves Easily	Uneasy; Restless; Tense	Kicking; Legs Drawn Up
Activity	Lying Quietly: Moves Easily	Squirming; Shifting back and forth; Tense	Arched; Rigid or Jerking
Cry	No Cry	Moans / Whimpers; Occasional Complaint	Crying Steadily; Screams, Sobs: Frequent Complaint
Consolability	Content, Relaxed	Reassured by Touching, hugging or Talk; Distractible	Difficult to Console or Comfort

FACES pain rating is recommended for person's age 3 years and older

Explain to the person that each face is for a person who feels happy because he has no pain (no hurt) or sad because he has some or a lot of pain. Face 0 is very happy because he doesn't hurt at all. Face 1 hurts just a little bit. Face 2 hurts a little more. Face 3 hurts even more. Face 4 hurts a whole lot. Face 5 hurts as much as you can imagine, although you don't have to be crying to feel this bad. Ask the person to choose the face that best describes how he is feeling.

Transport of the Pediatric Patient:

It is important to provide safe transport for pediatric patients. Without special considerations children are at risk when transported by EMS. Appropriate stabilization and protection of our pediatric patients is essential and the following should be considered:

- **A.** ***All pediatric patients should be secured in an appropriate manner***. During emergency scene calls stabilization in a size appropriate child restraint may be difficult in every situations and the Paramedic may have to improvise, and appropriate documentation is required.
- **B.** If a size appropriate child restraint is unavailable for routine hospital transports the EMS Captain should be notified immediately. ***Do Not allow parents, caregivers or other passengers to hold the patient during transport***.
- **C.** All pediatric patients that weigh 45 lbs. or less shall be transported in an approved car seat unless immobilized on a LSB or other pediatric immobilization device.
- **D.** A child car seat that has been involved in an accident should not be used for transporting patients unless there are no other means available

Patients with altered mental status (AMS) are some of the most challenging EMS calls. Assessing mental status in infants and toddlers is more complex than adults because they generally can't tell the date, time, precise location, or preceding events. Kids under two might not even be able to report their name when healthy. Common signs of AMS include combative behavior, decreased responsiveness, lethargy, weak cry, moaning, hypotonia, ataxia and changes in personality.

Common Causes of AMS

• **Infection**	• **Hypoxia**	• **Ischemia**
• **Hypoglycemia**	• **Dehydration**	• **Medications**
• **Illicit Drugs / Alcohol**	• **Trauma**	• **Hyperglycemia**
• **Environmental Toxins**	• **Seizures**	• **Other**

These are tips for gauging the mental status of infants and children:

A. Ask available parents and/or caregivers. As they know the child, they can tell you if the child's mental status is normal or abnormal.

B. Know age-related norms. Infants are generally pretty comfortable being around and handled by strangers. Toddlers are more likely to exhibit stranger anxiety. An older toddler should know basic things like their own name, age, where they live, and/or their parent's names.

C. Recall of recent activities and favorite things. Toddlers can recall recent events like what they had for lunch or an activity they were just playing. Check longer term memory by asking a toddler about their favorite toy, game, or memory.

D. Ask the child to perform a simple task. Try things like touch your nose, cover your ears, close your eyes, or make a big mouth.

ALS

A. Cardiac Monitor / Access Rhythm: (Cardiac Monitor should remain on the patient until the patient transfer has been completed)

B. Vascular Access: (If indicated)

C. Consider Potential Causes

D. BGL: If BGL is less than 60mg/dl administer;

1. **D $_{10}$ 2 ml/kg:** IV or IO if the patient is less than 30 days old (Make D10 by removing 10 mL of D50 and dilute with 40 mL of NS
2. **D $_{25}$ 2 ml/kg:** IV or IO if the patient is less than 8 Years old (To make D25 by removing 25 mL of D50 and dilute with 25 mL of NS)
3. **D $_{50}$ 2 ml/kg:** IV or IO if the patient is greater than 8 Years old (Maximum dose 25gm per dose)
4. **Glucagon 0.1mg/kg IM:** If no IV access (Maximum dose 1mg)

E. Recheck BGL: (Patient /Parent may refuse transport without calling medical control if: An adult is present with the patient, Blood Sugar is greater than 100, Patient has the ability to eat a meal now and the Patient has a history of diabetes. If there is no history of Diabetes the patient should be transported).

F. Consider Narcan 0.1 mg/kg: IV or IO If the patient's mental status and respiratory status is depressed (administer in 0.4mg increments, maximum dose 2mg)

1. Fentanyl overdose may require higher doses of Narcan. If the patient has known narcotic usage and/or the patient is not responsive to the normal dose of Narcan, Fentanyl and/or Carfentanil toxicity should be suspected. Administer one dose of Narcan 2mg.IV or IO. (OLMC should be contacted if further dose is required).
2. If IV access cannot be established Narcan can be given via Mucosal Atomizer Device. Administer Narcan 2-4mg (OLMC should be contacted if further dose are required).

G. Consider Fluid Challenge: 10 ml/kg (If less than 30 days of age) and 20ml/kg (for all other children) IV or IO if the mental status is depressed and there are signs of dehydration.

Anaphylaxis is a severe and rapid multi-system allergic reaction. An anaphylactic reaction may present as a mild to severe response and management is based upon severity. Common triggers include preservatives in food and drugs, medications (antibiotics), hymenoptera (insects, bees, wasps etc.), and bioactive substances (e.g., blood, blood products) and environmental allergens.

Signs & Symptoms

• **Itching**	• **Urticaria / Hives**	• **Swelling**
• **Cyanosis**	• **Tachypnea**	• **Stridor**
• **Wheezing**	• **Tachycardia**	• **Hypotension**
• **Nausea & Vomiting**	• **Abdominal Cramping**	• **Other**

ALS Treatment

A. Cardiac Monitor / Access Rhythm: (Cardiac Monitor should remain on the patient until the patient transfer has been completed)

B. Vascular Access: (If indicated)

C. Diphenhydramine (Benadryl): for mild to moderate allergic reaction deep IM or IVP, 1 mg/kg to a maximum of 50 mg.

D. Nebulized Albuterol: 2.5 mg, repeat as needed. If second and/or third dose of Albuterol is needed, add one-unit dose of Ipratropium 0.5 mg (if no history of peanut allergy) to the Albuterol in the nebulizer and administer the combined medications.

E. If child unable to benefit from (or cooperate with) inhalation: Epinephrine 0.01 mg/kg of 1:1,000 IM or 1:10,000 IV. Max single dose 0.3 mg.

F. Solumedrol: If the patient required 2 or more nebulizer treatments 2mg / kg to a maximum of 125mg by **Physician order only**

For newborn patients and pediatric patients to approximately 10 years (4kg – 30kg) Color code using the Length-Weight Based Measurement Tape.

Weight	4kg Gray	6kg Pink	8kg Red	10kg Purple	12kg Yellow	15kg White	19kg Blue	24kg Orange	30kg Green
Fluid Bolus	80 ml	120 ml	160 ml	200 ml	240 ml	300 ml	380 ml	480 ml	600 ml
Diphenhydramine	4 mg	6 mg	8 mg	10 mg	12 mg	15 mg	19 mg	24 mg	30 mg
Solumedrol (OLMC)	8 mg	12 mg	16 mg	20 mg	24 mg	30 mg	38 mg	48 mg	60 mg
Epinephrine	0.04 mg	0.06 mg	0.08 mg	0.1 mg	0.12 mg	0.15 mg	0.19 mg	0.24 mg	0.3 mg

Sudden cardiac arrest from a heart dysrhythmia is uncommon in children; it is typically the end result of deterioration in respiratory function or shock, and the terminal rhythm is typically bradycardia with progression to pulseless electrical activity or asystole. Ventricular tachycardia and fibrillation have been reported in 15% or less of a subset of pediatric and adolescent victims of prehospital cardiac arrest.

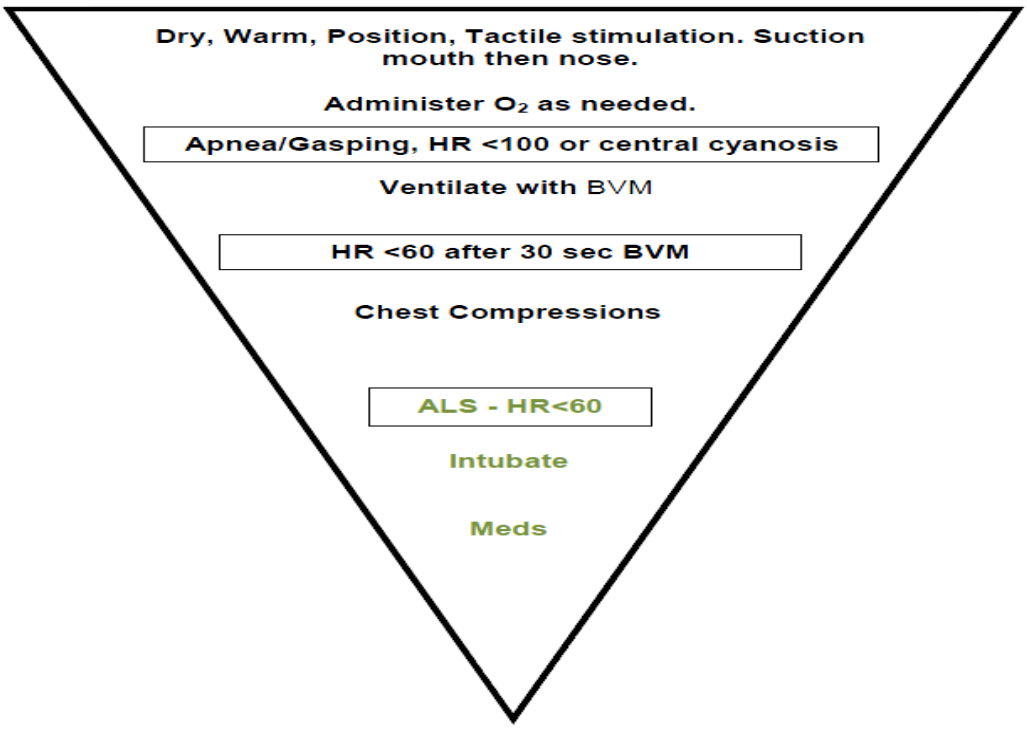
Common Etiologies of Cardiopulmonary Arrest in Children

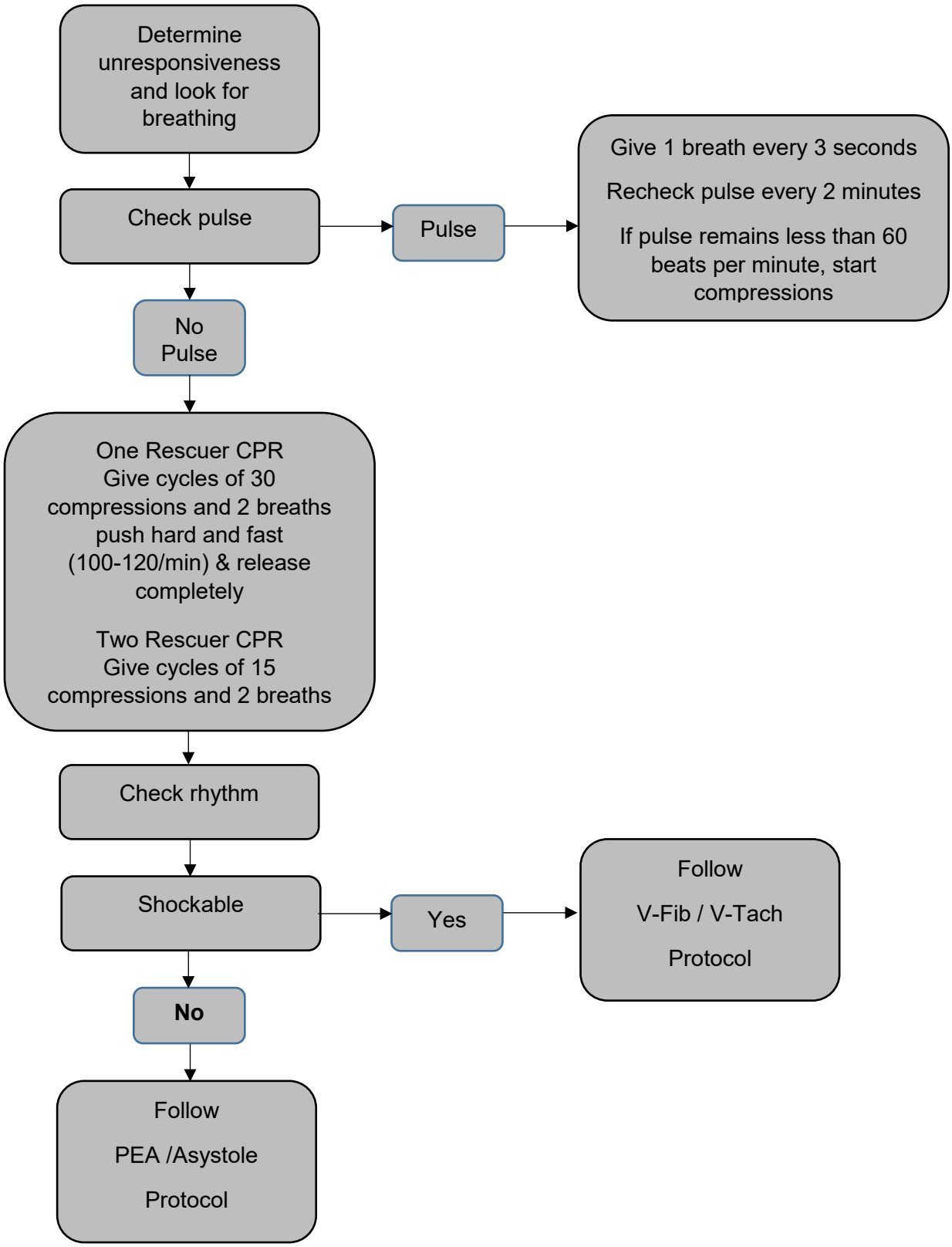
• **Bronchospasm**	• **Burns**	• **Trauma**
• **Congenital Cardiac Abnormalities**	• **Upper & Lower Respiratory Infections**	• **FBAO**
• **Dysrhythmias**	• **Sepsis**	• **Seizures**
• **Gastroenteritis**	• **Drowning**	• **Toxins / Medications**
• **Hypothermia**	• **Electrolyte Abnormalities**	• **Other**

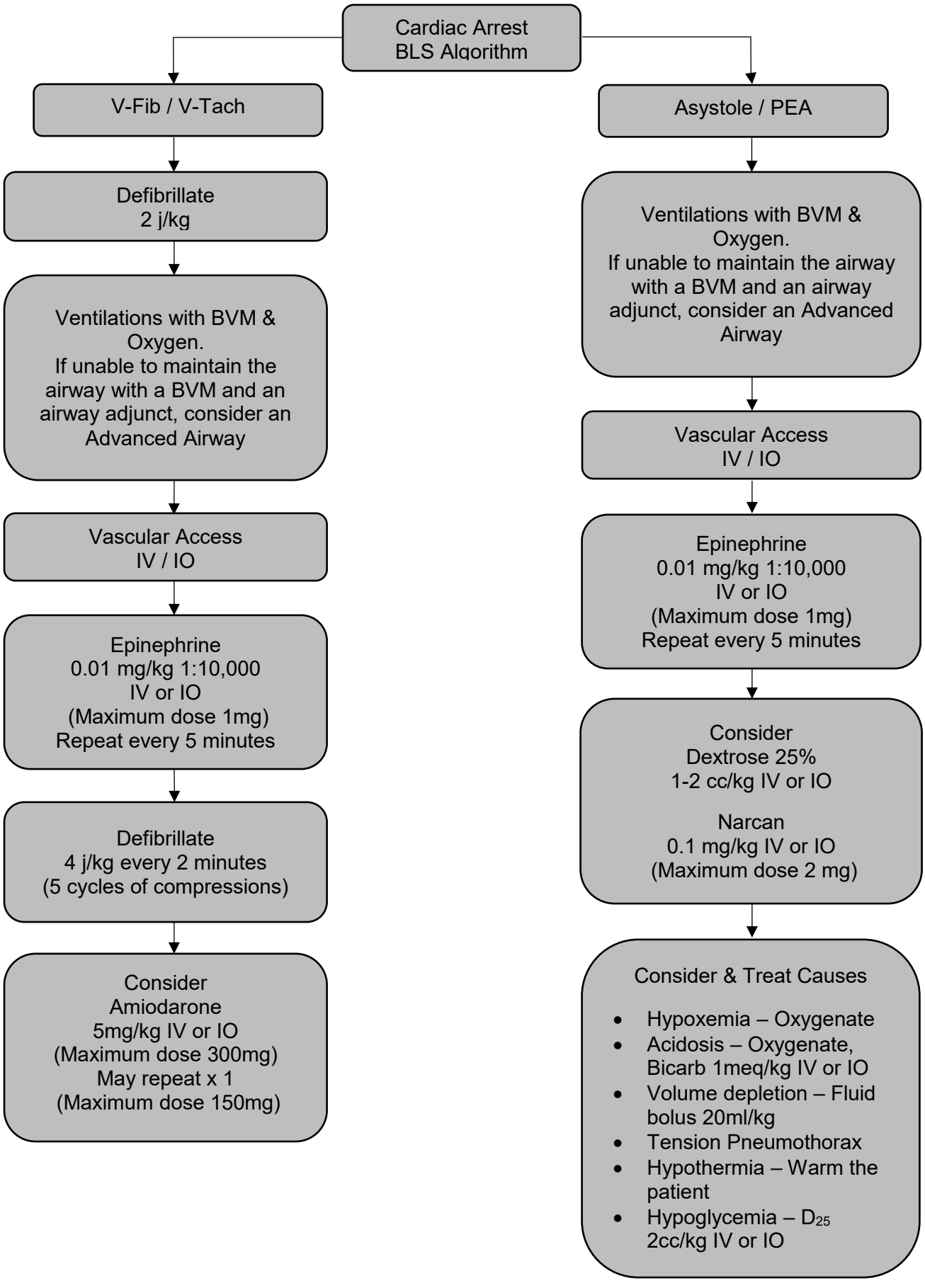
Newborn Resuscitation

Approximately 10 % of newborns will require some assistance to begin breathing at birth and Less than 1 % will require extensive resuscitation. Initial assessment should include is this a Term Gestation, is the newborn Crying or Breathing and does the newborn have good Muscle Tone? Initial steps to stabilize the newborn will include: Warm, dry, stimulate and clear airway if necessary; BVM ventilations, oxygen; Chest Compressions and Medication Administration (See Inverted Triangle below). ***Most newborns requiring resuscitation will respond to ventilations, compressions and/or epinephrine. If the newborn is not responding consider hypovolemia, pneumothorax and/or hypoglycemia (Blood sugar less than 40.)***

Inverted Triangle

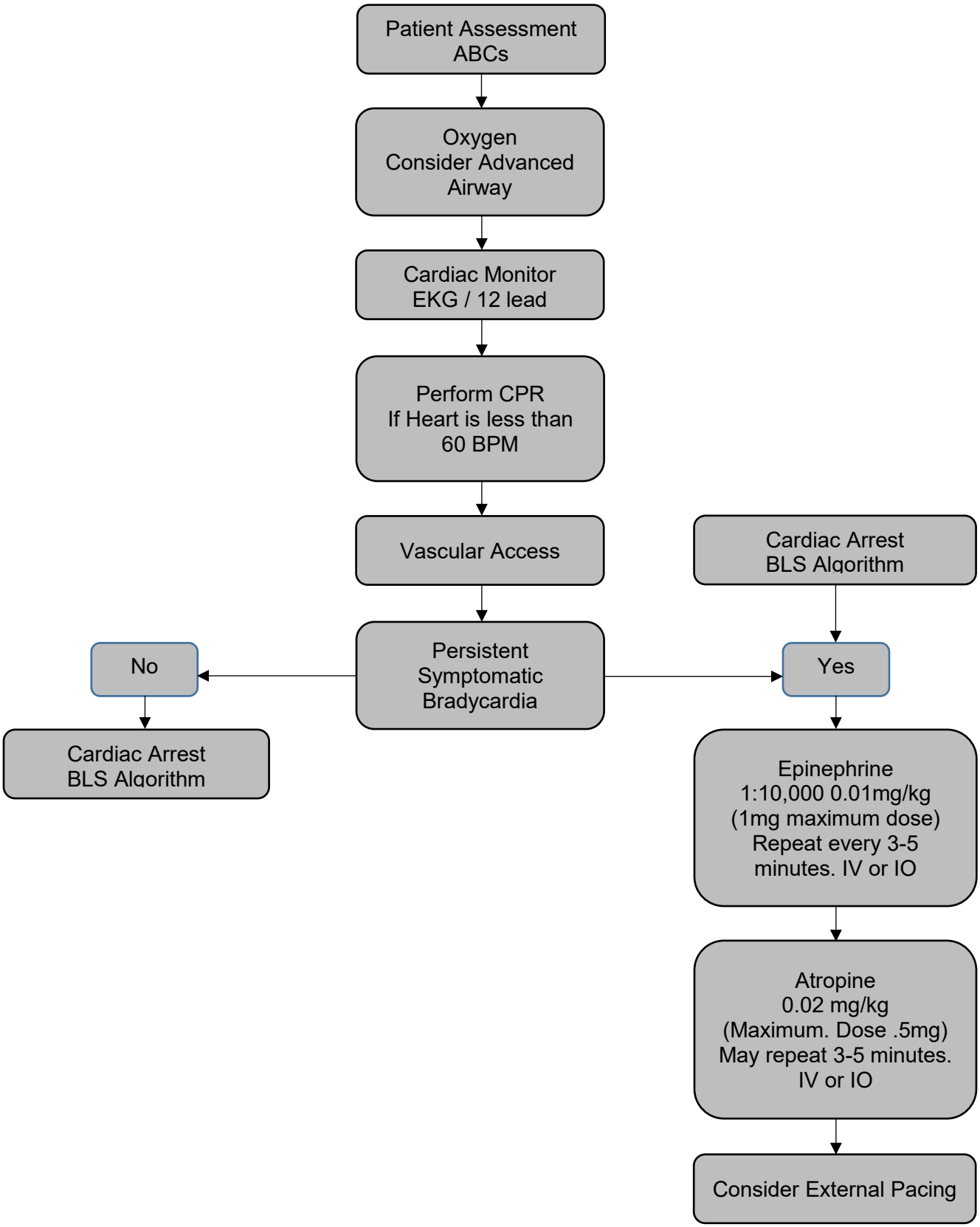



Determine unresponsiveness and look for breathing
Check pulse
Pulse
Give 1 breath every 3 seconds
Recheck pulse every 2 minutes
If pulse remains less than 60 beats per minute, start compressions
No Pulse
One Rescuer CPR
Give cycles of 30 compressions and 2 breaths push hard and fast (100-120/min) & release completely
Two Rescuer CPR
Give cycles of 15 compressions and 2 breaths
Check rhythm
Shockable
Yes
Follow
V-Fib / V-Tach
Protocol
No
Follow
PEA /Asystole
Protocol


Cardiac Arrest
BLS Algorithm
V-Fib / V-Tach
Defibrillate
2 j/kg
Ventilations with BVM & Oxygen.
If unable to maintain the airway with a BVM and an airway adjunct, consider an Advanced Airway
Vascular Access
IV / IO
Epinephrine
0.01 mg/kg 1:10,000
IV or IO
(Maximum dose 1mg)
Repeat every 5 minutes
Defibrillate
4 j/kg every 2 minutes
(5 cycles of compressions)
Consider
Amiodarone
5mg/kg IV or IO
(Maximum dose 300mg)
May repeat x 1
(Maximum dose 150mg)
Asystole / PEA
Ventilations with BVM & Oxygen.
If unable to maintain the airway with a BVM and an airway adjunct, consider an Advanced Airway
Vascular Access
IV / IO
Epinephrine
0.01 mg/kg 1:10,000
IV or IO
(Maximum dose 1mg)
Repeat every 5 minutes
Consider
Dextrose 25%
1-2 cc/kg IV or IO
Narcan
0.1 mg/kg IV or IO
(Maximum dose 2 mg)
Consider & Treat Causes
• Hypoxemia – Oxygenate
• Acidosis – Oxygenate, Bicarb 1meq/kg IV or IO
• Volume depletion – Fluid bolus 20ml/kg
• Tension Pneumothorax
• Hypothermia – Warm the patient
• Hypoglycemia – D25 2cc/kg IV or IO

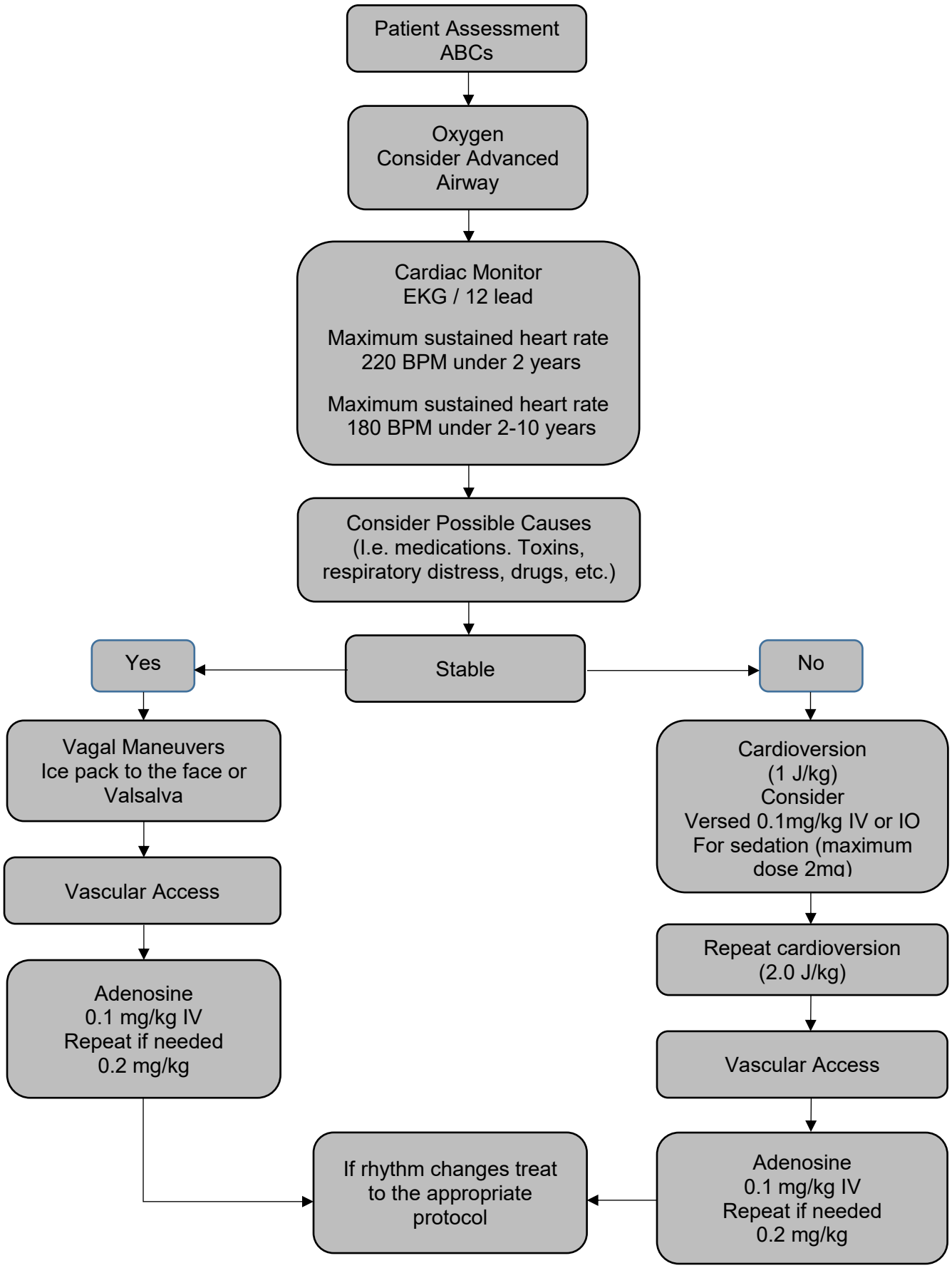
For newborn patients and pediatric patients to approximately 10 years (4kg – 30kg) Color code using the Length-Weight Based Measurement Tape. For patients less than 4 kg, utilize the Length-Weight Based Measurement Tape

Weight	4kg Gray	6kg Pink	8kg Red	10kg Purple	12kg Yellow	15kg White	19kg Blue	24kg Orange	30kg Green
Fluid Bolus	80 ml	120 ml	160 ml	200 ml	240 ml	300 ml	380 ml	480 ml	600 ml
Epinephrine 1:10,000	0.04mg	0.06mg	0.08mg	0.1mg	0.12mg	0.15mg	0.19mg	0.24mg	0.3mg
Atropine	0.1mg	0.12mg	0.16mg	0.2mg	0.24mg	0.3mg	0.38mg	0.48mg	0.5mg
D25 (D10 if less than 30 days)	8ml	12ml	16ml	20ml	24ml	30ml	36ml	48ml	60ml
Amiodarone	20mg	30mg	40mg	50mg	60mg	75mg	95mg	120mg	150mg


Patient Assessment
ABCs
Oxygen
Consider Advanced
Airway
Cardiac Monitor
EKG / 12 lead
Perform CPR
If Heart is less than
60 BPM
Vascular Access
Persistent
Symptomatic
Bradycardia
No
Cardiac Arrest
BLS Algorithm
Cardiac Arrest
BLS Algorithm
Yes
Epinephrine
1:10,000 0.01mg/kg
(1mg maximum dose)
Repeat every 3-5
minutes. IV or IO
Atropine
0.02 mg/kg
(Maximum. Dose .5mg)
May repeat 3-5 minutes.
IV or IO
Consider External Pacing

For newborn patients and pediatric patients to approximately 10 years (4kg – 30kg) Color code using the Length-Weight Based Measurement Tape. For patients less than 4 kg, utilize the Length-Weight Based Measurement Tape

Weight	4kg Gray	6kg Pink	8kg Red	10kg Purple	12kg Yellow	15kg White	19kg Blue	24kg Orange	30kg Green
Fluid Bolus	80 ml	120 ml	160 ml	200 ml	240 ml	300 ml	380 ml	480 ml	600 ml
Epinephrine 1:10,000	0.04mg	0.06mg	0.08mg	0.1mg	0.12mg	0.15mg	0.19mg	0.24mg	0.3mg
Atropine	0.1mg	0.12mg	0.16mg	0.2mg	0.24mg	0.3mg	0.38mg	0.48mg	0.5mg


Patient Assessment
ABCs
Oxygen
Consider Advanced
Airway
Cardiac Monitor
EKG / 12 lead
Maximum sustained heart rate
220 BPM under 2 years
Maximum sustained heart rate
180 BPM under 2-10 years
Consider Possible Causes
(I.e. medications. Toxins,
respiratory distress, drugs, etc.)
Stable
Yes
No
Vagal Maneuvers
Ice pack to the face or
Valsalva
Vascular Access
Adenosine
0.1 mg/kg IV
Repeat if needed
0.2 mg/kg
Cardioversion
(1 J/kg)
Consider
Versed 0.1mg/kg IV or IO
For sedation (maximum
dose 2mg)
Repeat cardioversion
(2.0 J/kg)
Vascular Access
Adenosine
0.1 mg/kg IV
Repeat if needed
0.2 mg/kg
If rhythm changes treat
to the appropriate
protocol

For newborn patients and pediatric patients to approximately 10 years (4kg – 30kg) Color code using the Length-Weight Based Measurement Tape. For patients less than 4 kg, utilize the Length-Weight Based Measurement Tape

Weight	4kg Gray	6kg Pink	8kg Red	10kg Purple	12kg Yellow	15kg White	19kg Blue	24kg Orange	30kg Green
Fluid Bolus	80 ml	120 ml	160 ml	200 ml	240 ml	300 ml	380 ml	480 ml	600 ml
Adenosine 0.1mg/kg 1st dose	0.04mg	0.06mg	0.08mg	1mg	1.2mg	1.5mg	1.9mg	2.4mg	3mg
Adenosine 0.1mg/kg 2nd dose	0.8mg	1.2mg	1.6mg	2mg	2.4mg	3mg	3.8mg	4.8mg	6mg
Midazolam	0.4mg	0.6mg	0.8mg	1mg	1.2mg	1.5mg	1.9mg	2mg	2mg

Vomiting is common in children. In most cases, it is due to a viral gastrointestinal infection. Most of the time, nausea and vomiting do not require urgent medical attention. However, if the symptoms are severe, or if the child cannot keep down any food or fluids, it may indicate a more serious condition. Dehydration is the main concern with most vomiting. How fast the child becomes dehydrated depends on their size, frequency of vomiting, and whether it is associated with diarrhea.

Common Causes

• Viral Infections	• Medications	• Motion Sickness
• Food Poisoning	• Bulimia	• Peptic Ulcer
• Food Allergies	• Intestinal Obstruction	• Gastroenteritis
• Accidental Ingestion of Poisons or Medication	• Chemotherapy	• Other

Treatment

BLS

A. General Assessment (Pediatric Assessment Triangle)
1. Appearance
2. Work of Breathing
3. Circulation

B. Primary Assessment
1. ABCDE (airway, breathing, circulatory, disability and exposure)
2. Neurological Function, GCS
3. Vital Signs (Including BGL and Temperature)

C. SAMPLE

D. Supplemental Oxygen

E. SPO2 Monitoring & ETCO2 Monitoring

ALS

A. Cardiac Monitor / Access Rhythm if indicated. Cardiac Monitor should remain on the patient until the patient transfer has been completed.

B. Vascular Access: (If indicated)

C. Normal Saline Bolus 20 ml/kg (10ml/kg if under 30 days of age) if the patient is hypotensive of or has signs/indications of dehydration.

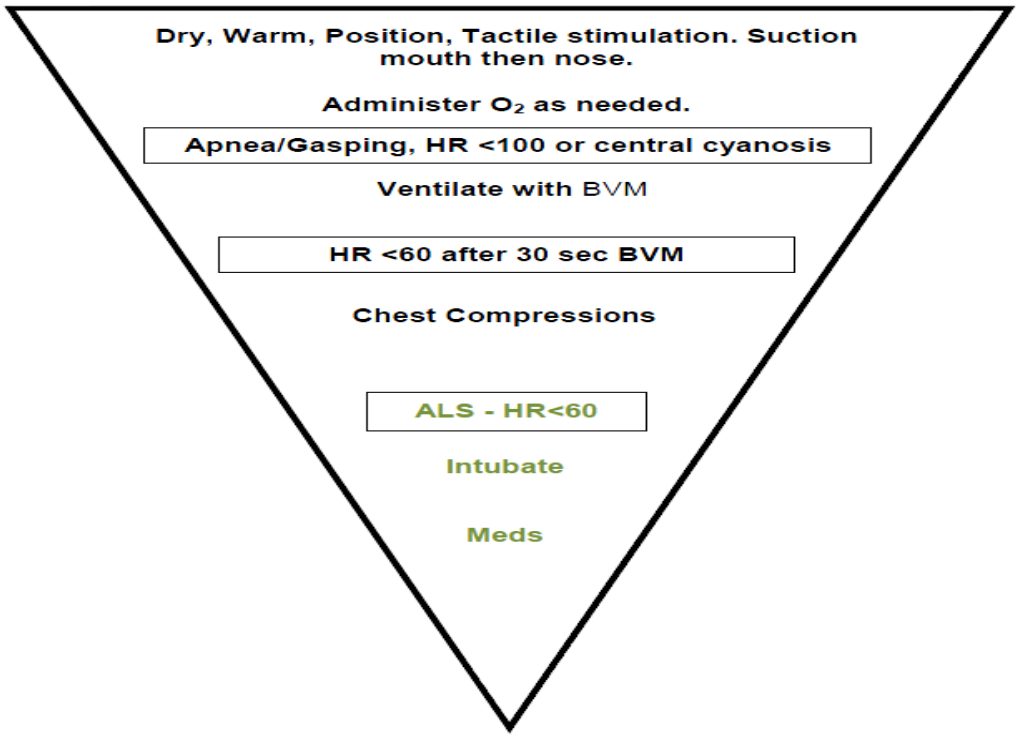
Do not delay vascular access or Normal Saline if the child has significant signs and symptoms.

Ondansetron (Zofran): 0.2 mg/kg up to 4 mg for active and persistent vomiting

Weight	4kg Gray	6kg Pink	8kg Red	10kg Purple	12kg Yellow	15kg White	19kg Blue	24kg Orange	30kg Green
Ondansetron 0.2mg IV/IM	N/A	N/A	N/A	2mg	2.4mgl	3mg	3.8mg	4mg	4mg

Approximately 10 % of newborns will require some assistance to begin breathing at birth and Less than 1 % will require extensive resuscitation. Initial assessment should include is this a Term Gestation, is the newborn Crying or Breathing and does the newborn have good Muscle Tone? Initial steps to stabilize the newborn will include: Warm, dry, stimulate and clear airway if necessary; BVM ventilations, oxygen; Chest Compressions and Medication Administration (See Inverted Triangle below). ***Most newborns requiring resuscitation will respond to ventilations, compressions and/or epinephrine. If the newborn is not responding consider hypovolemia, pneumothorax and/or hypoglycemia (Blood sugar less than 40.)***

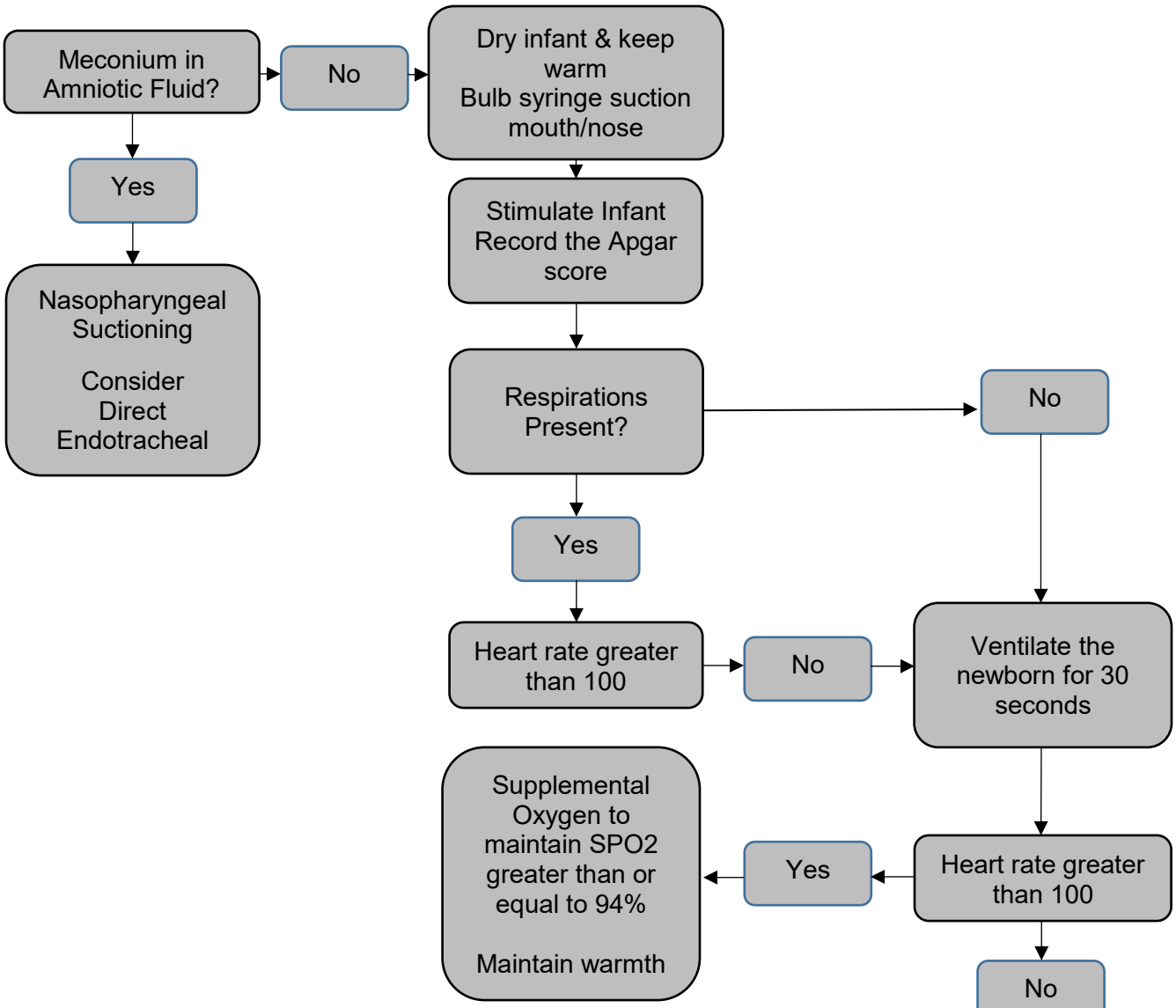
Inverted Triangle



Apgar score

The APGAR score is measured at one and five minutes after birth. The Scores values are for all indicators are: 7-10 is considered normal; 4-7 may require resuscitative measures, 3 and below require immediate resuscitation

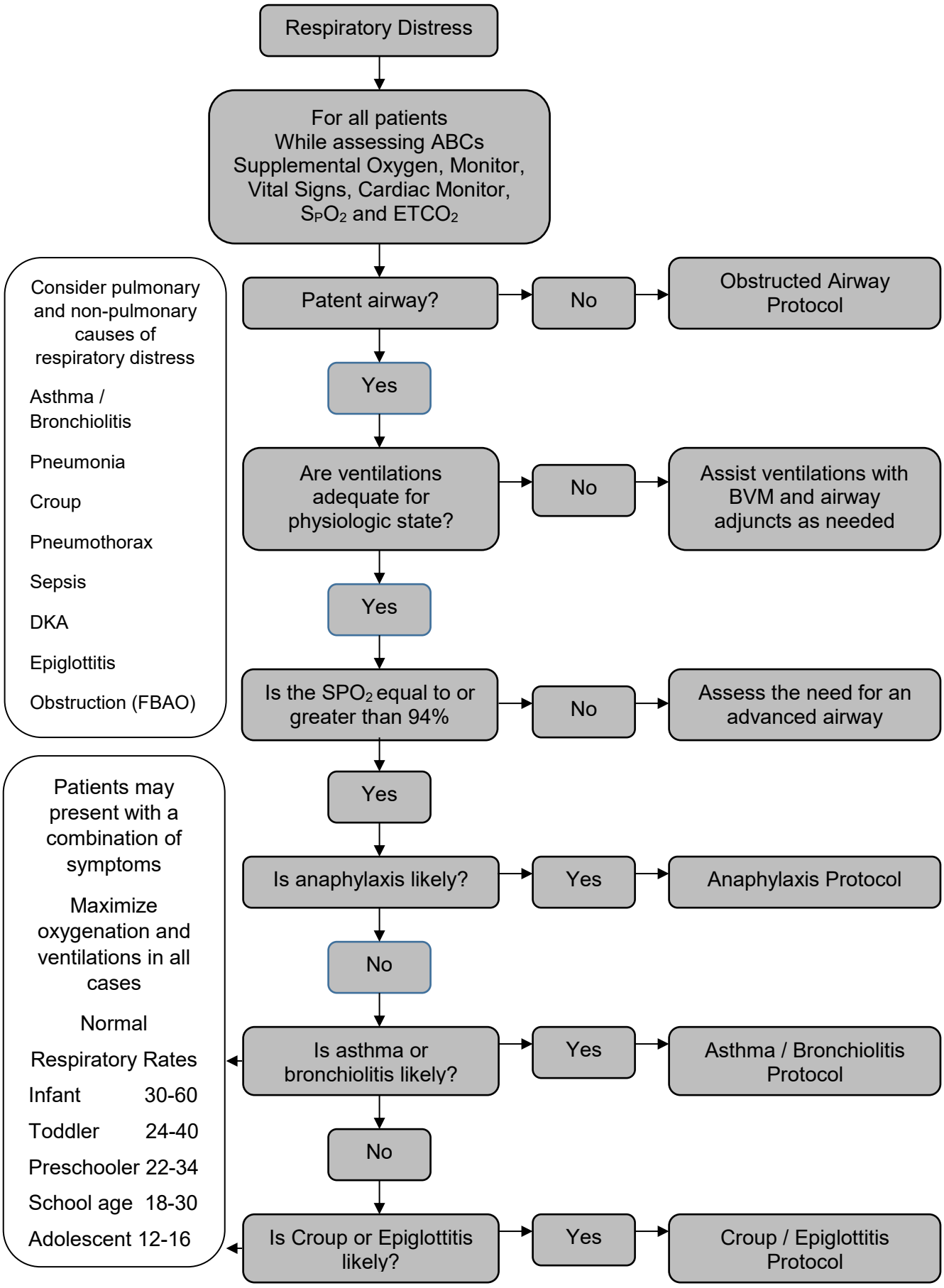
Indicator	Score 0	Score 1	Score 2
Activity (Muscle Tone)	Absent	Arms and Legs Flexed	Active Movement
Pulse	Absent	Below 100 bpm	Above 100 bpm
Grimace (Reflex Irritability)	No Response	Grimace	Sneeze, cough, pulls away
Appearance (Skin Color)	Blue-gray, pale all over	Normal, except for extremities	Normal over entire body
Respiration	Absent	Slow, irregular	Good, crying



Most Newborns Requiring Resuscitation will respond to Ventilations / BVM, Compressions and/or Epinephrine.

Consider Hypovolemia, Pneumothorax and/or Hypoglycemia if the infants not responding

Weight	4kg Gray	6kg Pink	8kg Red
Fluid Bolus	40ml	60ml	80ml
Epinephrine 1:10,000	0.04mg	0.06mg	0.08 mg
D10W	8ml	12ml	16ml


Respiratory Distress
For all patients
While assessing ABCs
Supplemental Oxygen, Monitor,
Vital Signs, Cardiac Monitor,
SpO2 and ETCO2
Consider pulmonary and non-pulmonary causes of respiratory distress
Asthma / Bronchiolitis
Pneumonia
Croup
Pneumothorax
Sepsis
DKA
Epiglottitis
Obstruction (FBAO)
Patent airway?
No
Obstructed Airway Protocol
Yes
Are ventilations adequate for physiologic state?
No
Assist ventilations with BVM and airway adjuncts as needed
Yes
Is the SPO2 equal to or greater than 94%
No
Assess the need for an advanced airway
Yes
Patients may present with a combination of symptoms
Maximize oxygenation and ventilations in all cases
Normal Respiratory Rates
Infant 30-60
Toddler 24-40
Preschooler 22-34
School age 18-30
Adolescent 12-16
Is anaphylaxis likely?
Yes
Anaphylaxis Protocol
No
Is asthma or bronchiolitis likely?
Yes
Asthma / Bronchiolitis Protocol
No
Is Croup or Epiglottitis likely?
Yes
Croup / Epiglottitis Protocol

Management of the infant and pediatric airway can pose unique challenges. Anatomic features of a child's head neck, and airway, as well as physiologic differences between children and adults, must be considered. Small children have a relatively large occiput causes varying degrees of neck flexion in the supine position. This can result in anatomic airway obstruction or interfere with attempts to visualize the glottis opening during laryngoscopy. Placing a towel roll under the shoulders can improve airway alignment. Infants and young children have large tongues relative to the size of the oral cavity. This a common source of upper airway obstruction, particularly in patients with depressed mental status.

Asthma / Bronchiolitis

Wheezing is a whistling breath sound associated with narrowing or spasm of small airways. It is usually heard in expiration but may also be heard on inspiration. Wheezing in children less than 1 year of age is usually the result of Bronchiolitis, a viral infection of the bronchioles. Asthma is a chronic inflammatory disease that is triggered by many various factors (i.e. allergies, cold air, exercise, foods, irritants etc.).

Signs & Symptoms

• Wheezing	• Nasal flaring	• Retractions
• Anxiety	• Cyanosis	• Increased heart rate
• Shortness of breath	• Bouts of coughing	• Tachypnea
• Tightness of the chest	• Cold or flu symptoms	• Other

ALS Treatment

A. Cardiac Monitor / Access Rhythm: (Cardiac Monitor should remain on the patient until the patient transfer has been completed).

B. Vascular Access: (if indicated).

C. Nebulized Albuterol: 2.5 mg, repeat as needed. If second and/or third dose of Albuterol is needed, add one unit dose of Ipratropium 0.5 mg to the Albuterol in the nebulizer and administer the combined medications.

D. Epinephrine 0.01 mg/kg of 1:1000 IM or 1:10,000 IV to a maximum of 0.3 mg.

E. Solumedrol: If the patient required 2 or more nebulizer treatments 2mg / kg to a maximum of 125mg by Physician order only.

Stridor is a high-pitched crowing sound caused by restriction of the upper airway and is usually heard on inspiration. In addition to FBAO stridor can be caused by Croup and Epiglottitis.

Croup: is a common respiratory problem in young children. It tends to occur in the fall and winter. Its main symptom is a harsh, barking cough. Croup is a viral infection which causes edema/inflammation below the larynx and glottis which results in a narrowing of the airway. Croup usually occurs a few days after the start of a cold and is usually caused by the same viruses that cause the common cold. Croup is contagious. The viral infection that causes croup can be passed from one person to another through coughing and sneezing and through close contact. Symptoms of croup often improve during the day and get worse at night. Sometimes children have croup attacks that wake them up in the middle of the night for a couple of nights in a row. Croup most often occurs in children from 6 months to 4 years of age.

Signs & Symptoms

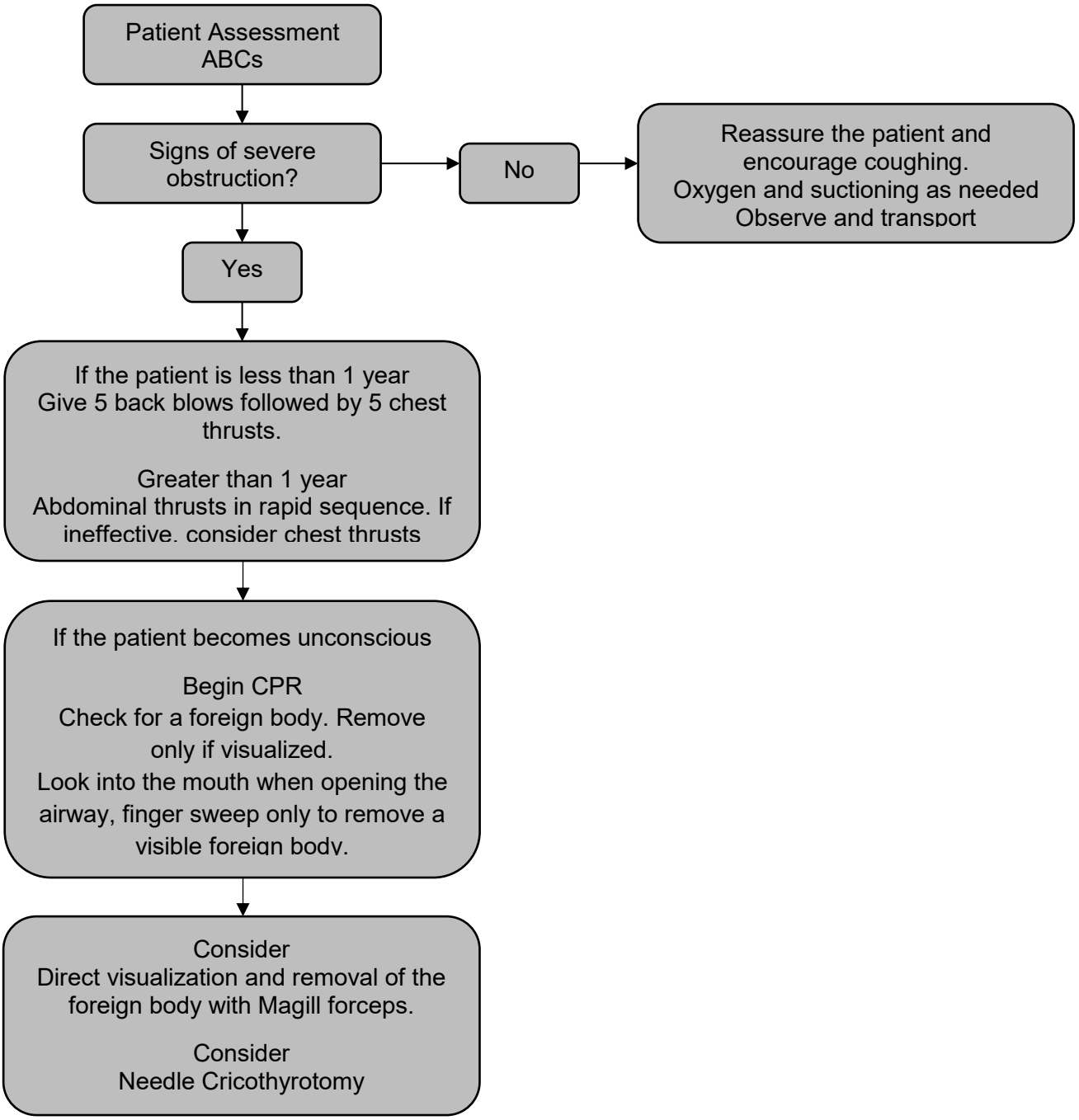
• Low-grade fever	• Cold symptoms	• Barking cough
• Raspy/hoarse voice	• Tachypnea	• Gradual onset
• Breathing improves with moist air or cool night air	• Positioning to breath	• Other

Epiglottitis: is an acute infection and inflammation of the epiglottis that is potentially life-threatening. Diagnosis is often presumptively based on history and observation of the child at a distance***. Physical examination should be done quickly and with careful attention so as not to increase the child's anxiet***y. Increased anxiety may lead to reflex laryngospasm, acute airway obstruction, and respiratory arrest. ***Do not attempt direct visualization*** of the epiglottis this may also cause reflex laryngospasm and obstruction, which may lead to respiratory arrest. Epiglottitis often begins with a high fever and sore throat.

Signs & Symptoms

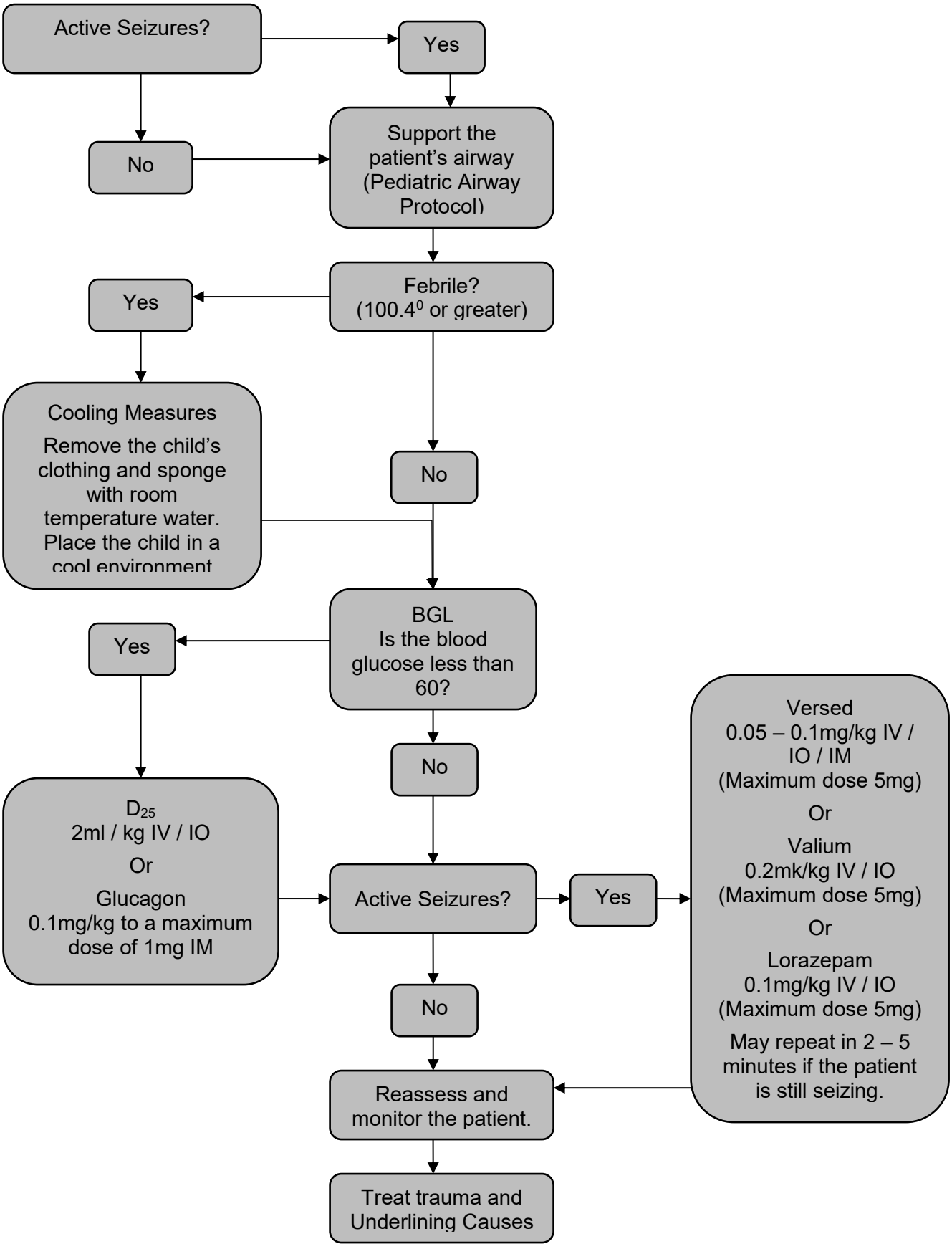
• Fever (102-104^{0}F)	• Cold symptoms	• Stridor
• Raspy/hoarse voice	• Tachypnea	• Difficulty swallowing
• Patient may need to sit upright and lean slightly forward to breath	• Drooling	• Other

Supportive Care is indicated for Croup and Epiglottitis. ALS treatment is only indicated in the acute setting



Foreign-Body Airway Obstruction (Choking) More than 90% of childhood deaths from foreign-body aspiration occur in children less than 5 years of age; 65% of the victims are infants. The most common cause of choking in small children is balloons, small objects, and foods (e.g., hot dogs, round candies, nuts, and grapes) are the most causes of foreign-body airway obstruction in children.

A. ***Infants 0-12 months DO NOT receive abdominal thrusts. Use chest compressions as would be used for CPR.***
B. ***NEVER perform blind finger sweeps in infants or children***


Active Seizures?
Yes
No
Support the patient's airway (Pediatric Airway Protocol)
Febrile? (100.4^0 or greater)
Yes
Cooling Measures
Remove the child's clothing and sponge with room temperature water. Place the child in a cool environment
No
BGL
Is the blood glucose less than 60?
Yes
D_{25}
2ml / kg IV / IO
Or
Glucagon
0.1mg/kg to a maximum dose of 1mg IM
No
Active Seizures?
Yes
Versed
0.05 – 0.1mg/kg IV / IO / IM
(Maximum dose 5mg)
Or
Valium
0.2mk/kg IV / IO
(Maximum dose 5mg)
Or
Lorazepam
0.1mg/kg IV / IO
(Maximum dose 5mg)
May repeat in 2 – 5 minutes if the patient is still seizing.
No
Reassess and monitor the patient.
Treat trauma and Underlining Causes

Many children who experience a first seizure may never experience a second seizure. However, a seizure may be the initial presentation of a more serious medical condition or subsequent epilepsy. Seizures are caused by abnormal brain function and can start at any age. Epilepsy is a condition in which a child has 2 or more seizures without a proximal cause for the seizures. Many disorders can mimic seizures in children and should be considered in the differential diagnosis of first seizure in a child.

Potential Causes for Seizures

• Anoxic brain injury during birth	• Maternal drug use	• Infection (encephalitis etc.)
• Febrile seizure	• Trauma	• Stroke
• Brain tumor	• Metabolic disorders	• Other

Shock is defined as the inadequate perfusion of tissues and organs by oxygenated blood and the inadequate removal of metabolic wastes from the body resulting in cellular destruction and organ failure. This definition is the same for adults and children. Early recognition and timely intervention are critical for successful treatment of pediatric shock. ***Children can often maintain their blood pressure for some time until they quickly present in profound shock. Compensatory vasoconstriction is often so pronounced that systemic blood pressure can be maintained within the normal range despite significant circulatory compromise. Hypotension is typically a late finding among children in shock.***

Signs & Symptoms

• Tachycardia	• Pale, cool and clammy skin	• Decreased BP (late sign)
• Delayed capillary refill	• Weakness	• Diarrhea
• Vomiting	• Altered mental status	• Trauma
• Fever	• Tachypnea	• Other

Treatment

BLS

A. General Assessment (Pediatric Assessment Triangle)
  1. Appearance
  2. Work of Breathing
  3. Circulation

B. Primary Assessment
  1. ABCDE (airway, breathing, circulatory, disability and exposure)
  2. Neurological Function, GCS
  3. Vital Signs (Including BGL and Temperature)

C. SAMPLE

D. Supplemental Oxygen

E. Maintain Patient's Airway BVM with (if indicated)

F. Maintain the patient body heat (Trauma Patients may become hypothermic even in warm environments).

G. SPO2 Monitoring & ETCO2 Monitoring

ALS

A. Cardiac Monitor / Access Rhythm if indicated. Cardiac Monitor should remain on the patient until the patient transfer has been completed.

B. Vascular Access.

C. Normal Saline Bolus 20 ml/kg (10ml/kg if under 30 days of age) if the patient is hypotensive of or has signs/indications of dehydration**.**

D. Treat to Specific Protocols (i.e. Vomiting, Trauma etc.).

Do not delay vascular access or Normal Saline if the child has significant signs and symptoms.
For newborns, consult the Length-Weight Based Measurement Tape.

Weight	4kg Gray	6kg Pink	8kg Red	10kg Purple	12kg Yellow	15kg White	19kg Blue	24kg Orange	30kg Green
Fluid Bolus	80 ml	120 ml	160 ml	200 ml	240 ml	300 ml	380 ml	480 ml	600 ml

Trauma is the most common cause of mortality and morbidity in the US pediatric population. Injury results in more deaths in children and adolescents than all other causes combined. Deaths caused by injuries, intentional or unintentional, account for more years of potential life lost under the age of 16 years than do deaths attributable to sudden infant death syndrome, cancer, and infectious diseases combined. The initial assessment of the trauma patient should include determination of Trauma Alert criteria. If the patient meets Trauma Alert criteria the patient should be transported to a trauma center. If the patient does not meet Trauma Alert criteria and the in the paramedic's judgment or in consolation with OLMC, the injuries sustained or mechanism of injury (MOI) indicates a high potential for serious injury transport to a trauma center should also be considered. Scene time should be limited to ten (10) minutes whenever possible if the patient that meet the criteria of a Trauma Alert or have the high suspicion of serious injury. Transport should not be delayed to establish vascular access, bandaging every wound, or splinting every injury.

Situations Where Transport to a hospital other Trauma Center may be considered:

- **A.** Critical condition of a patient requiring immediate intervention of a physician such as an airway control or tension pneumothorax in which the patient would benefit from stabilization at a closer receiving hospital.
- **B.** A mass casualty incident in which trauma centers are overwhelmed.
- **C.** Patient does not meet Trauma Alert criteria.

Pediatric Trauma Alert Criteria

Pediatric patients are those age 15 or younger) Pediatric Trauma Alert patients will be transported to the nearest appropriate Pediatric Trauma Center.

Red Criteria

If any of the following conditions are identified, the patient shall be considered a pediatric trauma alert patient:

- **A. Airway:** Active ventilation assistance required due to injury/injuries causing ineffective or labored breathing beyond the administration of oxygen.
- **B. Consciousness:** Patient exhibits an altered mental status that includes drowsiness; lethargy; inability to follow commands; unresponsiveness to voice or painful stimuli; or suspicion of a spinal cord injury with/without the presence of paralysis or loss of sensation.
- **C. Circulation:** Faint or non-palpable carotid or femoral pulse or the patient has a systolic blood pressure of less than 50 mmHg.
- **D. Fracture:** Evidence of an open long bone (humerus, radius/ulna, femur, or tibia/fibula) fracture or there are multiple fracture sites or multiple dislocations (except for isolated wrist or ankle fractures or dislocations).
- **E. Cutaneous:** Major soft tissue disruption, including major degloving injury; or major flap avulsions; 2nd or 3rd degree burns to 10 percent or more of the total body surface area; electrical burns (high voltage/direct lightening) regardless of surface area calculations; or amputation proximal to the wrist or ankle; or any penetrating injury to the head, neck or torso (excluding superficial wounds where the depth of the wound can be determined).

Blue Criteria

A Trauma Alert shall be issued when any two (2) blue criteria listed below are identified:

- **A. Consciousness:** Exhibits symptoms of amnesia, or there is loss of consciousness.
- **B. Circulation:** Carotid or femoral pulse is palpable, but the radial or pedal pulses are not palpable or the systolic blood pressure is less than 90 mmHg.
- **C. Fracture:** Reveals signs or symptoms of a single closed long bone fracture. (*Long bone fractures do not include isolated wrist or ankle fractures).*
- **D.** ***Size:*** Pediatric trauma patients weighing 11 kilograms or less, or the body length is equivalent to this weight on a pediatric length and weight emergency tape *(the equivalent of 33 inches in measurement or less).*
- **E.** In the event none of the above criteria is identified in the assessment of the pediatric patient, the paramedic can call a Trauma Alert if, in his or her judgment, the trauma patient's condition warrants such action.

Injuries / MOI That May Indicate Serious injury but May not Meet Trauma Alert Criteria

• Pelvic instability, pain or tenderness	• Multiple rib and/or sternal fractures	• Significant abdominal pain, chest pain or tenderness

BLS

A. Scene Safety

B. Rapid Trauma Assessment (Focused assessment should be performed enroute to the hospital or if the patient is stable and does not meet Trauma Alert criteria or the injuries sustained or mechanism of injury (MOI) does not indicate a high potential for serious injury).

C. Determine Baseline Vital Signs (Pulse, BP, Resp., BGL)

Normal Pediatric Vital Sign Ranges

	Heart Rate	Respiratory Rate	Blood Pressure
Infant (1-12 months)	100-160 / min	30-60 / min	>60
Toddler (1-2 years)	90-150 / min	24-40 / min	>70 + (2xage)
Preschooler (3-5 years)	80-140 / min	22-34 / min	>70 + (2xage
School age (6-13 years)	70-120 /min	18-30 / min	>70 + (2xage
Adolescent (14-17 years)	60-100 / min	12-16 / min	>90

D. Trauma Alert Should be issued and the receiving facility notified as soon as possible (If Applicable) if prolonged extrication of a patient or patients is required consideration should be given to the need for additional resources and early contact of OLMC. (Early consideration of potential needs i.e. air medical support /or a situation that may require a physician on the scene).

E. Administer Supplemental Oxygen to maintain SpO2 greater than or equal to 94%.

F. Maintain the patient's airway.

G. Control major bleeding.

H. The injured area should be exposed. In multi-trauma all the patient's clothing may need to be removed. (If conditions and personnel are available, an effort should be made to protect the patient's modesty).

I. Maintain the patient's body heat (trauma patients may become hypothermic even in warm environments).

J. Remove any constricting items (rings, bracelets etc.).

K. Spinal immobilization (if indicated).

L. **A child car seat that has been involved in an accident should not be used for transporting patients, unless there is no other means available.**

ALS

A. Cardiac Monitor (Cardiac Monitor should remain on the patient until Patient is transfer has been completed).

B. **Advanced Airway procedures if indicated** (i.e. RSI, Surgical Airway, Chest decompression, etc.).

C. Establish Vascular Access (20ml/kg to maintain a BP 90).

1. Hydration should begin prior to extrication whenever possible.

2. Monitored the patient closely for volume overload but do not withhold fluids unless sign / symptoms of volume overload.

D. Trauma injuries can be painful, isolated injuries may be treated for pain as outlined in specific protocols. Ondansetron hydrochloride (Zofran) should be considered with administration of pain medication.

Pediatric burns differ from adult burns in many aspects. Their skin is more sensitive and less resistant to heat and because it is harder for them to escape from the burning object, this may lead to longer exposure which may increase the burn severity. Pediatrics have a smaller body size than adults with a greater body surface area in relation to their weight. Fluid loss is proportionally greater in young children when compared to the same percentage of burn in adults because of their smaller circulating volume and different distribution of body fluids leading to a more rapid onset of fluid and electrolyte disturbance and imbalance. Therefore, pediatrics especially develop hypovolemic shock faster and fluid replacement should be started as soon as possible. Small children are at a greater risk to have a decrease in body temperature (hypothermia) due to the insufficiency of their thermoregulatory system, they are less tolerant to changes in temperature.

When assessing a burn patient, we need to be especially mindful of how the burn occurred. In many cases, such as explosions or enclosed space fires, if the patient is burned especially if there are burns to the face, it is likely that there may be upper airway involvement. Edema from the heat injuries or from chemical burns can quickly lead to a life-threatening airway emergency.

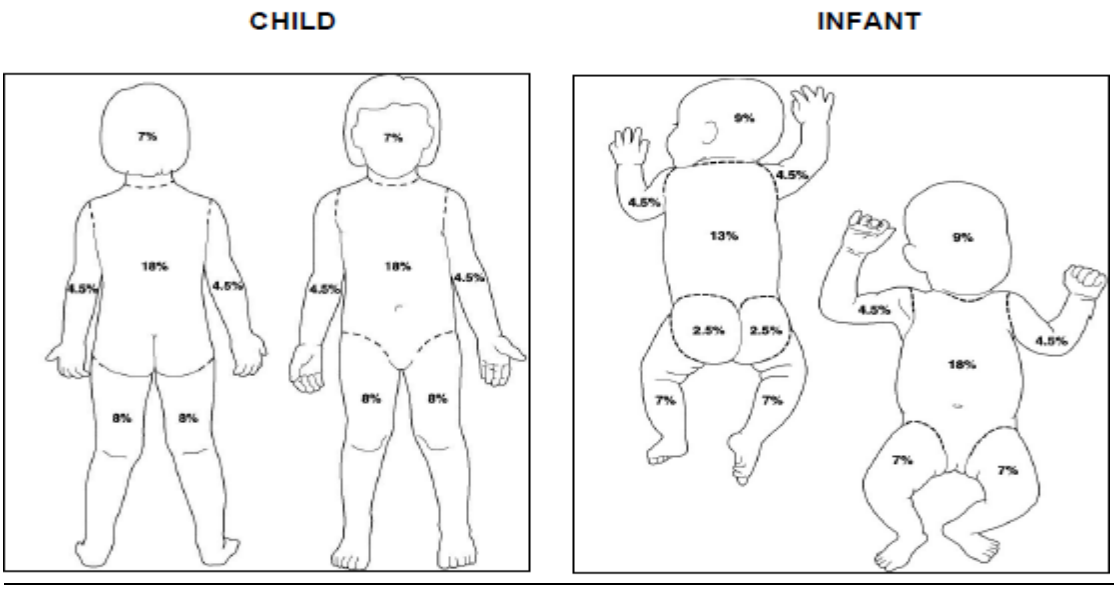
Signs and symptoms of an inhalation injury

• Blacked sputum	• Abnormal breath sounds	• Respiratory distress
• Nasal and oropharyngeal burns	• Charring of the tongue and teeth	• Singed nasal and facial hair

Critical burns in children are burns are

• Greater than 20% 2nd and 3rd degree burns TBSA in children over 10 years	• Greater than 10% 2nd and 3rd degree burns TBSA in children under 10 years	• 2nd and 3rd degree burns to the face, eyes, hands, feet or genitalia
• 3rd degree burns greater than 5% TBSA	• Electrical burns, respiratory burns and deep chemical burns	• Other

Pediatric Rule of 9s



To Calculate the TBSA

A. Estimate the burned surface area of a child quick by using a modified Rule of Nines. For infants up to one year of age, assume the head is 18%, twice the area of an adult. The difference is taken from the legs, 4.5% from each, giving each leg a total of 14.0%.

B. Estimate the surface areas of burns that cover less than an entire region by using the child's palm as about 1% of the total body surface area. You can then compare the palm size to the burned area for a quick area estimate.

Treatment

BLS

A. Scene safety.

B. Rapid trauma assessment.

C. Determine baseline vital signs (pulse, BP, Respirations and BGL).

D. Trauma alert should be issued, and the receiving facility should be notified as soon as possible (if applicable).

E. Administer supplemental oxygen to maintain a S_PO_2 greater than 94%.

F. Maintain the patient's airway.

G. Control major bleeding. The Injured area should be exposed. In Multi-trauma all of the patient's clothing may need to be removed. (if conditions and personnel are available an effort should be made to protect the patient's modesty)

H. Maintain the patient body heat (Trauma Patients may become hypothermic even in warm environments).

I. Remove any constriction items (rings bracelets etc.).

J. Spinal Immobilization (if Indicated).

ALS

A. Cardiac Monitor (Cardiac Monitor should remain on the patient until Patient is transfer has been completed).

B. **Advanced Airway procedures if indicated** (i.e. RSI, Surgical Airway, Chest decompression etc.)

RSI Medication/Dosing

Weight	4kg Gray	6kg Pink	8kg Red	10kg Purple	12kg Yellow	15kg White	19kg Blue	24kg Orange	30kg Green
Atropine	0.1mg	0.12mg	0.16mg	0.2mg	0.24mg	0.30mg	0.38mg	0.48mg	0.5mg
Lidocaine	4mg	6mg	8mg	10mg	12mg	15mg	19mg	24mg	30mg
Versed	0.4mg	0.6mg	0.8mg	1mg	1.2mg	1.5mg	1.9mg	2mg	2mg
Succinylcholine	8mg	12mg	16mg	20mg	24mg	30mg	36mg	48mg	60mg
Vecuronium	0.4mg	0.6mg	0.8mg	1mg	1.2mg	1.5mg	1.9mg	2.4mg	3mg

C. Establish vascular access.

D. Fluid therapy for the patient with critical burns administer normal Saline 250 cc/hr., for a child, and 100 cc/hr. for an infant.

E. Monitored the patient closely for volume overload but do not withhold fluids unless sign/symptoms of volume overload.

G. Normal Saline or Sterile Water: If the TBSA is greater than 10% cool the burn and cover the burn with a dry sheet or sterile dressing. Trauma injuries can be painful, isolated injuries may be treated for pain. Pain should be treated according to length-based dosing or as directed by OLMC. Ondansetron hydrochloride (Zofran) should be considered with the administration of pain medication.

Weight	4kg Gray	6kg Pink	8kg Red	10kg Purple	12kg Yellow	15kg White	19kg Blue	24kg Orange	30kg Green
Fentanyl	4mcg	6mcg	8mcg	10mcg	12mcg	15mcg	19mcg	24mcg	30mcg
Morphine	.04mg	.06mg	.05mg	1mg	1.2mg	1.5mg	1.9mg	2.4mg	3mg
Ondansetron IV / IM	N/A	N/A	N/A	2mg	2.4mg	3mg	3.8mg	4mg	4mg

Fractures in children are very common. Children's bones are anatomically, biomechanically, and physiologically different from adults. Several orthopedic injuries require emergent treatment and surgical intervention. Compartment syndrome with and without fracture, open fractures, fractures associated with vascular or nerve injuries, and irreducible joint dislocations are surgical emergencies. Delay in treatment can result in loss of limb function and infections such as osteomyelitis.

Treatment

BLS

- **A.** Initial and secondary assessment.
- **B.** Assess the patient's airway and breathing.
- **C.** Supplemental oxygen.
- **D.** SPO_2 Monitoring.
- **E.** Check for pulses, movement and sensation (PMS) in the affected extremity.
  1. If no PMS distal to injury, consider applying gentle traction and move limb into normal position of alignment. Recheck PMS and immobilize.
- **F.** Splint the fracture or dislocation.
  1. For femur fractures (open or closed), use a traction splint (if equipped MCFR Sager splint for children and may be used if the patient is over 3 foot tall).
  2. For other extremity fractures, if a bone is protruding, cover with a moist dressing. Splint in place unless total ischemia (no PMS) is present distal to the fracture.
  3. For pelvic fractures, consider snugly wrapping pelvic region with a T-Pod/sheet or blanket and securing the patient to a backboard to minimize movement and internal blood loss.
- **G.** Control external bleeding (consider the use of Combat Application Tourniquet for uncontrolled bleeding).
- **H.** For amputations cover the stump with a moist pressure dressing.
- **I.** Treatment of the severed part.
  1. Wrap in sterile dressing, place in plastic bag and keep dry.
  2. Place bag in ice-water bath, if available. (**Do not soak amputated part in water or saline solution**).

ALS

- **A.** Cardiac Monitor (Cardiac Monitor should remain on the patient until the patient is transfer has been completed).
- **B.** Advanced Airway procedures if indicated.
- **C.** Establish Vascular Access (if applicable).
- **D.** Consider Treating for Pain: Trauma injuries can be painful isolated injuries may be treated for pain as outlined in specific protocols. Ondansetron hydrochloride (Zofran) should be considered with the administration of pain medication.

Weight	4kg Gray	6kg Pink	8kg Red	10kg Purple	12kg Yellow	15kg White	19kg Blue	24kg Orange	30kg Green
Fentanyl	4mcg	6mcg	8mcg	10mcg	12mcg	15mcg	19mcg	24mcg	30mcg
Morphine	.04mg	.06mg	.05mg	1mg	1.2mg	1.5mg	1.9mg	2.4mg	3mg
Ondansetron IV / IM	N/A	N/A	N/A	2mg	2.4mg	3mg	3.8mg	4mg	4mg

Head injuries are a leading cause of morbidity and mortality in childhood. More than 1.5 million head injuries occur annually in the United States. Falls are the most common type of injury, followed by motor-vehicle-related accidents and football is the most common cause of sports-related head injury. Child abuse is also a major cause of head trauma in children under 2 years of age. Head trauma injuries include scalp hematoma and laceration, skull fracture, intracranial hemorrhage, cerebral contusion, and diffuse axonal injury. Most children sustaining blunt head trauma have a minor traumatic brain injury. Concussions are periods of confusion or LOC associated with trauma which may have resolved by the time EMS arrives. ***Any prolonged confusion or mental status abnormality which does not return to normal within 15 minutes or any documented loss of consciousness should be evaluated by a physician.***

Signs & Symptoms

• Changes in mental status	• Vomiting	• Seizures
• Unconscious	• Deformity	• Evidence of trauma (MOI)
• Decorticate/Decerebrate posturing	• Respiratory distress or failure	• Hypertension and bradycardia (Cushing's reflex)
• Pain	• Unequal pupils	• Other

Treatment

BLS

A. Initial and secondary assessment
B. Assess the Patients airway and breathing and maintain neutral cervical alignment
C. Supplemental Oxygen
D. Ventilations with BVM and OPA / NPA (if applicable)
E. SPO2 Monitoring
F. Spinal Immobilization
G. Control external bleeding
H. In Multi-system trauma all of the patient's clothing needs to be removed. (an effort should be made to protect the patient's modesty)
I. Maintain the patient's body heat (Trauma Patients may become hypothermic even in warm environments).
J. ***A child car seat that has been involved in an accident should not be used for transporting patients or as an immobilization device*. Unless there are no other means available.**

ALS

A. Cardiac Monitor (Cardiac Monitor should remain on the patient until the patient is transfer has been completed).
B. Advanced Airway procedures if indicated (i.e. RSI, Surgical Airway, Needle Cric, Chest decompression etc.).

RSI Medication / Dosing

Weight	4kg Gray	6kg Pink	8kg Red	10kg Purple	12kg Yellow	15kg White	19kg Blue	24kg Orange	30kg Green
Atropine	0.1mg	0.12mg	0.16mg	0.2mg	0.24mg	0.30mg	0.38mg	0.48mg	0.5mg
Lidocaine	4mg	6mg	8mg	10mg	12mg	15mg	19mg	24mg	30mg
Versed	0.4mg	0.6mg	0.8mg	1mg	1.2mg	1.5mg	1.9mg	2mg	2mg
Succinylcholine	8mg	12mg	16mg	20mg	24mg	30mg	36mg	48mg	60mg
Vecuronium	0.4mg	0.6mg	0.8mg	1mg	1.2mg	1.5mg	1.9mg	2.4mg	3mg

C. Establish Vascular Access (20ml/kg of Normal Saline to maintain a BP)
D. SPO2 Monitoring & ETCO2 Monitoring
E. If patient has seizure activity (refer to the Pediatric Seizure Protocol)

Medical Procedures

Clinical Indications

Proper airway management is the first priority in patient care. Oxygen therapy shall be used where SPO2 is below 94% on an otherwise normal patient. Nearly all patients encountered in the field can benefit from the administration of oxygen. The amount delivered will differ based on the patient's needs. The following guidelines can be used for oxygen therapy. Disease processes, which limit the amount of oxygen delivered to the tissues, (e.g.: MI, CO poisoning, shock, etc.) require higher flow rates and systems that deliver greater concentrations of oxygen.

Methods of Assessment:

Observation of the patients inspiratory to expiratory ratio, use of accessory muscles, pulse rate, EKG changes such as bradycardia or ectopy, and changes in the respiratory rate are also valuable assessment parameters. Pulse oximetry and end-tidal CO2 monitoring should be used to evaluate patients with respiratory distress, and end-tidal CO2 monitoring shall always be used to evaluate the intubated patient. Mentation changes and agitation are some of the early signs of hypoxia.

Procedure: Oxygen Delivery

- **A.** Nasal Cannula
  - **1.** Provide 1-6 LPM.
  - **2.** Consider primary for CVA and COPD (i.e. SPO_2 below 94% or other physiological indications require additional oxygenation delivery).
- **B.** Non-Rebreather (NRB) Mask
  - **1.** NRB masks are recommended when higher flows and concentrations need to be delivered.
  - **2.** Consider primary for all severe trauma and medical patients.

Maintenance Devices:

- **A.** Nasopharyngeal Airway (NPA).
  - **1.** Should not be used if a basilar or frontal skull fracture is suspected.
  - **2.** Lubricate the airway before insertion.
  - **3.** Insert with bevel toward septum.
- **B.** Oropharyngeal Airway (OPA).
  - **1.** Insert with device at an angle and rotate into position after the end passes the base of the tongue

Clinical Indications:

A. Interfacility transfers (settings MUST be provided by transferring Physician or Respiratory Therapist)
B. Adult cardiac arrest patients with an advanced airway.
C. To provide CPAP function if the Flow-Safe CPAP device fails. *The Autovent 4000 will use significantly more oxygen!*

Contraindications:

A. Patients less than 44 lbs. (20 kg).
B. Patients 14 years of age and younger in cardiac arrest.
C. Patients with a pneumothorax or pulmonary over-pressurization syndrome (blast injury, water ascent injury, etc.)

Procedure (vent mode):

A. Set mode selector to "AUTO/VENTILATION"
B. Obtain settings from transferring facility.
  1. Adult settings are in white, pediatric settings are in orange.
  2. The inspiratory time selects adult or pediatric mode.
  3. Select proper inspiration time.
  4. Select desired breaths per minute (BPM).
  5. Select desired Tidal Volume.
  6. Verify Pressure Relief setting.
    a. Block the end of the ventilator circuit and observe the reading, this will be the maximum airway pressure.
C. If the patient is in cardiac arrest:
  a) Oxygen percentage toggle switch – 100%.
  b) 10 breaths per minute.
  c) Tidal volume 8 ml/kg.
    a. Increase tidal volume until chest rise and/or lung sounds are adequate OR tidal volume reaches 10 ml/kg.
D. Attach the hose to an oxygen source.
E. Attach the tubing to Autovent **THEN** attach the tubing to airway.
F. Monitor and reassess every 5 minutes for:
  1. End-tidal CO2.
  2. Heart rate.
  3. Pulse oximetry.
  4. Lung sounds.
  5. Physical patient changes.
G. Document according to Documentation protocol.

Procedure (CPAP mode):

A. Set mode selector to "CPAP".
B. Attach hose to an oxygen source. Attach circuit tubing to Autovent. Place the mask on the patient before adjusting the oxygen flow Adjust the CPAP knob and watch the manometer gauge and stop increasing the flow when the gauge reaches 7.5 cmH20 (the bottom of the green section).
C. Reassess patient every 5 minutes for:
  1. End-tidal CO2.
  2. Heart rate.
  3. Pulse oximetry.
  4. Lung sounds.
  5. Physical patient changes.
D. Document according to Documentation protocol.


AUTO VENTILATION \ CPAP
CPAP Flow
Patient Circuit
Airway Pressure Relief Valve
Mode Select
Life Support Products
Manometer Gauge
Tidal Volume
Inspiratory Time
Breaths per Minute
O2 Selector
O2 inlet
Low Gas Supply
Manual Breath Button
MANUAL BREATH
PRESS AND RELEASE
LOW GAS SUPPLY
AIRWAY PRESSURE RELIEF
BPM
INSPIRATORY TIME
TIDAL VOLUME

Purpose

The endotracheal tube introducer or gum elastic bougie is a device used in difficult airways. The bougie endotracheal tube introducer is used to assist in cannulating the trachea and acts like the wire in central vein access.

Indications:

- **A.** Patient meets the clinical indications for oral intubation
- **B.** Initial intubation attempts are unsuccessful
- **C.** When orotracheal intubation is considered difficult due to:
  - **1.** Unfavorable anatomy
  - **2.** Known or suspected neck trauma limiting neck mobility

Contraindications:

- **A.** Adult bougie for ETT less than 6.0
- **B.** Should not be used for nasal intubations

Equipment:

- **A.** Appropriate personal protective equipment
- **B.** Stethoscope and vital sign monitoring device (including EKG and SPO2)
- **C.** Waveform capnography detector
- **D.** Bougie device
- **E.** Water-soluble lubricant
- **F.** Appropriate sized ETT
- **G.** 10 mL syringe
- **H.** Sedatives and/or paralytics as appropriate
- **I.** Equipment to perform endotracheal intubation

Procedure:

- **A.** Assess airway and need for a Bougie.
- **B.** Prepare equipment needed for endotracheal intubation.
- **C.** Lubricate a Bougie with a water-soluble lubricant.
- **D.** Perform direct laryngoscopy and when anatomy is identified, pass the Bougie into the trachea or anteriorly toward the presumed opening of the trachea. Tracheal placement of the Bougie is noted by a clicking feel/sound as the flexed tip of the Bougie passes over the tracheal rings.
- **E.** Advance the Bougie until the thick black line on the Bougie is at the patient's mouth or until the device is well inside the tracheal lumen (adults, 30 cm).
- **F.** Pass the new endotracheal tube over the Bougie.
- **G.** While using a laryngoscope for direct visualization, advance the tracheal tube over the Bougie until the Bougie exits the proximal opening of the tracheal tube. It may be helpful to continue laryngoscopy during this to assist ready passage of the endotracheal tube. If resistance is encountered at the vocal cords, withdraw the tracheal tube 1-2 cm, rotate it 90 degrees counterclockwise and then re-advance the tracheal tube.
- **H.** When the tracheal tube is clearly in the trachea, remove the Bougie and inflate the cuff.

J. Confirm proper endotracheal tube placement by waveform capnography as indicated in the endotracheal intubation procedure.

K. Ventilate the patient with 100% oxygen.

L. Secure the ETT with commercial device

Purpose:

To optimize oxygenation and to prevent or reverse hypoxia in cases of tension pneumothorax. To relieve intrathoracic pressure that is being placed on the mediastinum causing a hemodynamic compromise in cases of tension pneumothorax.

Clinical Indication:

- **A.** high index of suspicion for blunt chest trauma with signs of tension pneumothorax to include:
  - **1.** Increased heart rate
  - **2.** Increased respiratory rate and work of breathing
  - **3.** Decreased SPO2
  - **4.** Increased PIP and MAP in intubated patients undergoing positive pressure ventilation
  - **5.** Decreased lung sounds to the affected side(s)
  - **6.** Decreased chest rise on affected side(s)
  - **7.** JVD
  - **8.** Subcutaneous emphysema
  - **9.** Hypotension
  - **10.** Tracheal deviation
  - **11.** Hyper-resonance upon percussion
- **B.** Pneumothorax, hyperresonance on affected side (>20% confirmed by X-Ray with clinical significance or symptoms, high altitude flights, intubated or not).
- **C.** The intubated patient who is being mechanically ventilated and becomes suddenly cyanotic difficult to ventilate, extremely dyspneic, develops chest wall crepitus or develops tracheal deviation.

Contraindications:

None in the presence of a tension pneumothorax. Do not delay transport of a critically injured patient unless the potential benefit clearly outweighs risks of transport delay and the thoracostomy cannot physically be performed enroute. Chest tube placement should be avoided during any air phase of flight should be made prior to lifting off.

Procedure:

- **A.** Administer high concentration oxygen.
- **B.** Monitor the patient's vital signs to include: HR, EKG, RR, Sp02, BP, and ETCO2
- **C.** Locate the insertion site
  - **1.** Second intercostal space at the mid-clavicular line on affected side
  - **2.** Alternate site-fourth intercostal space at the axillary line on affected side
- **D.** Consider sedation and pain management
- **E.** Prepare skin/puncture site with betadine/alcohol swabs
- **F.** Puncture skin with needle and listen for rush of air
- **G.** Introduce guide wire through needle
- **H.** Remove needle, leaving guide wire
- **I.** Enlarge puncture site with scalpel/dilator around guide wire
- **J.** Introduce Pig Tail Catheter over guide wire to desired depth
- **K.** Remove guide wire
- **L.** Place stop-cock and/or Heimlich valve with suction (suction to low/intermittent suction) to Pig Tail
- **M.** Catheter
- **N.** Secure Pig Tail Catheter to Chest with appropriate dressing
- **O.** Reassess the patient

Clinical Indications:

- **A.** Some of the following signs of simple pneumothorax as well as some of the signs of tension pneumothorax must be present before decompression is undertaken:
- **B.** Consistent history, i.e., chest trauma, COPD, patient on positive pressure ventilation.
- **C.** Shock, low BP or rapidly decreasing BP.
- **D.** Progressive respiratory distress.
- **E.** Tracheal shift away from the affected side (late sign).
- **F.** Distended neck veins.
- **G.** Asymmetrical movement on inspiration.
- **H.** Hyper-expanded chest on the affected side.
- **I.** Drum-like percussion on affected side.
- **J.** Increased resistance to positive pressure ventilation, especially if intubated.
- **K.** Simple or non-tension pneumothorax is relatively common, is not immediately life-threatening, and should not be decompressed in the field.

Procedure:

- **A.** Expose the entire chest.
- **B.** Clean chest vigorously with alcohol or Betadine in the area of the mid-clavicular line at the second/third intercostal space.
- **C.** On affected side, locate the site and insert 14ga 3 ¼ (or larger) needle/angiocath over the superior margin of the appropriate rib until the chest is entered. **A one-way valve is not needed**. A "pop" should be felt and air may be heard escaping from the needle.
- **D.** After the air has escaped, monitor breath sounds. Leave the catheter in place and secure with sterile 4X4's and tape.
- **A.** Reassess and continually monitor, including end tidal CO2 and pulse oximetry.
- **B. Pain may be treated with the following medications if available:**
    - **a. Fentanyl:** 25 – 100 mcg IV/IO initial dose followed by 50 mcg increments titrated to pain relief, up to a total of 200 mcg for an adult. If administering more than 50 mcg Fentanyl, consider administering Ondansetron Hydrochloride (Zofran) 4 mg undiluted IV over 2 to 5 minutes (contraindicated in pregnancy). Contact OLMC if more than 200 mcg of Fentanyl is needed. Repeat V/S after each dose and maintain BP equal to 90 mmHg or greater. Fentanyl may be given IM **only if, IV access cannot be achieved**, and the BP is over 100 mmHg.

If Fentanyl is unavailable

    - **a. Ketamine:** 0.1- 0.3 mg/kg IV/IO Maximum dose of 15mg (Ketamine must be diluted 100mg in 100mL of NS or D5W and then draw up the appropriate dose up to 15cc (Maximum dose 15mg) and administered over (1-2 minutes) and titrated to pain. Consider administering Ondansetron Hydrochloride (Zofran) 4 mg undiluted IV over 2 to 5 minutes (contraindicated in pregnancy).

Or

    - **b. Morphine Sulfate** may be given slow IVP in 2mg increments every 3-5 minutes titrated to pain relief, up to a maximum of 10mg. Maintain BP equal to 90 mmHg or greater. Consider administering Ondansetron Hydrochloride (Zofran) 4 mg undiluted IV over 2 to 5 minutes (contraindicated in pregnancy).

Or

    - **c. Dilaudid (Hydromorphone)** Administer 1 mg increments IV/IM over 2-5 minutes, titrated to pain relief, with a maximum dose of 2 mg. Systolic blood pressure must be greater than 90 mmHg. Consider administering Ondansetron Hydrochloride (Zofran) 4 mg undiluted IV over 2 to 5 minutes (contraindicated in pregnancy).
- **E.** Document procedure as per Documentation protocol.

Clinical Indications:

A. Treatment of moderate to severe respiratory distress.

1. ***Note: The use of this procedure SHOULD NOT delay transportation of the patient.***

Contraindications:

A. Cardiac/Respiratory arrest or impending arrest.
B. Systolic BP less than 90mm.
C. Inability to maintain a patent airway.
D. Severely depressed level of consciousness.
E. Vomiting.
F. Pneumothorax or major trauma to face, head, or chest.

Procedure:

A. Place patient in semi-fowlers or fowlers position with an EtCO2 cannula in place.
B. Assemble Flow-Safe CPAP device.
C. Connect tubing to an oxygen source.
D. Set flow rate to 10-12 LPM (7.5 PEEP).

1. Flow can be increased to 13 -14 LPM (10 PEEP) if needed.

E. Tighten all straps.
F. Reassess the patient every 3-5 minutes for:

1. PEEP level.
2. Vital signs.
3. Patient reaction to treatment.
4. SAO2.
5. EtCO2 (Waveform and numerical values).

G. If patient deteriorates, then advanced airway placement should be considered.
H. Document according to documentation protocol.

Clinical Indication:

A. This procedure MAY ONLY be used on pediatric patients where no other airway can be achieved, and the patient cannot be ventilated. Extended inhalation and exhalation times will occur due to the size of the airway.

Contraindication:

A. Ability to ventilate a patient using ANY other means, including Bag-Valve Mask.

Procedure (Needle Cricothyrotomy):

A. Hyperextend the patient's neck (unless cervical spine injury is suspected).

B. Locate the cricothyroid membrane between the cricoid and thyroid cartilages by palpating the depression caudal (toward the feet) to the midline Adam's apple.

C. Clean the area well with Betadine or alcohol swab.

D. Prepare the necessary equipment:

1. 14-gauge angiocatheter.

2. 6cc or 12cc syringe.

3. 15-mm adaptor from a 3.0mm intubation tube.

E. Insert the IV angiocath through the skin and cricothyroid membrane into the trachea. Direct the needle at a 45-degree angle caudally (toward the feet). When the needle penetrates the trachea, a "pop" will be felt.

F. Aspirate with the syringe. If air is returned easily, the needle is in the trachea.

G. Withdraw the needle while gently advancing the catheter downward into the position.

H. Attach the 15-mm adaptor to the catheter needle hub.

I. Ventilate the patient with a bag-valve device using the 15-mm adaptor provide high-flow oxygen.

J. Confirm placement:

1. Negative epigastric sounds.

2. Positive bilateral breath sounds.

K. Continuously monitor the patient's:

1. Vital signs.

2. Lung sounds.

3. EtCO2.

L. Document procedure as per Documentation protocol.

Clinical Indications:

A. This procedure is to be used **ONLY** when other attempts to establish an airway have been unsuccessful and an airway is needed. Such conditions are likely to be found with foreign-body obstruction, facial trauma and/or trauma to the upper airway.

Contraindications:

A. Ability to secure airway using any other means.
B. Inability to identify the cricothyroid membrane.
C. Children under 8 (unless the membrane is clearly identifiable).
D. Direct trauma that prevents identification of the landmarks.

Procedure:

A. Place patient in supine position with support under the shoulders and mild hyperextension of the neck.
B. Identify cricothyroid membrane and clean area with Betadine or alcohol swabs.
C. While stabilizing the cartilage make a midline vertical incision approximately 1 inch long in the skin and subcutaneous tissue only.
D. Insert the splitting needle into the cricothyroid membrane. While advancing the splitting needle perpendicular to the skin lightly pull back on the plunger of the syringe. When you feel a break in resistance, stop advancing the splitting needle. (**Caution:** If the splitting needle is inserted too deep, perpendicular to the skin, it could puncture the posterior wall of the trachea).
E. Advance the needle through the membrane. While advancing the splitting needle attached to a 6cc or 12cc syringe, advance needle through the membrane at a 45-degree angle toward the feet. When air is aspirated, secure needle and remove the syringe.
    1. When advancing the needle forward, aspiration on the syringe resulting in free air return will confirm entrance into the airway.
    2. Drawing 2-3 ml of sterile IV solution into the syringe will further assist the confirmation of needle into the trachea due to presence of bubbles during aspiration.
F. Insert the tip of the dilator into the hub of the splitting needle. Squeeze the wings of the splitting needle together, and then open them out to completely split the needle. Remove the needle, continuing to pull it apart in opposite directions, while leaving the dilator in the trachea. (**Caution:** retraction of the dilator back through an unsplit needle could result in damage to the dilator).
G. Place your thumb on the dilator knob while first and second fingers are curved under the flange of the trachea tube. While exerting pressure, advance dilator and tracheostomy tube into position until flange is against the skin
H. Remove dilator and inflate cuff using a syringe with 5ml of air.
I. Secure tracheostomy tube around the patient's neck with twill tape.
J. Attach EtCO2 to the tube and attach BVM to EtCO2.
K. Verify tube placement. Every 5 minutes reassess patient's:
    1. Vital signs.
    2. Lung sounds.
    3. EtCO2.
L. Contact OLMC if unsuccessful for alternative procedures.
M. Document procedure as per documentation protocol.

Clinical Indications:

- **A.** For use in all patients that have a respiratory-related complaint or require oxygen therapy per treatment protocols.
- **B.** All patients who have an advanced airway in place or are receiving assisted ventilations.
- **C.** All patients receiving medication for pain or sedation.

Procedure:

- **A.** Apply the monitor (cannula or tube adaptor) to the patient and connect to monitor.
  - **1.** Normal reading should be between 35-45 mmHg.
  - **2.** Readings above 45 mmHg can indicate hypoventilation or hypoxia (this is also common in COPD patients).
  - **3.** Readings below 35 mmHg can indicate hyperventilation or metabolic acidosis.
  - **4.** Readings consistently below 10 mmHg in an intubated patient can indicate esophageal intubation.
  - **5.** Intubations require up to 6 breaths before the device will accurately verify placement.
- **B.** Document procedure as per Documentation protocol.

Clinical Indications:

- **A.** Patient's age is 16 or older.
- **B.** Respiratory failure or arrest.
- **C.** Airway obstruction.
- **D.** Altered mental status or unconsciousness with airway compromise.
- **E.** Patient cannot maintain their own airway.
- **F.** Situations that require positive pressure ventilation.

Procedure:

- **A.** Prepare equipment.
- **B.** Pre-oxygenate patient.
- **C.** Intubate in a controlled, but rapid manner.
  - **1.** If unsuccessful, hyper-oxygenate the patient and reattempt.
  - **2.** If the second attempt is not successful, attempt King Airway (see King Airway protocol) continue BVM.
- **D.** Verify placement using chest rise, positive lung sounds, and negative epigastric sounds, SPO2, and EtCO2.
- **E.** Secure the tube using ETT securing device.
- **F.** Reassess placement every 5 minutes and any time the patient is moved. Document the following:
  - **1.** Tube depth.
  - **2.** Lung sounds.
  - **3.** Vital signs.
  - **4.** EtCO2 (Waveform and numeric values).
- **G.** Administer Midazolam, in 2-4 mg increments every 1-2 minutes, IVP, up to a maximum of 10 mg for agitation.
- **H.** Consider Rocuronium 1mg/kg IV/IO (only after the patient is intubated) as needed for combativeness and long transport. DO NOT forget to consider consciousness and provide Midazolam. Contact OLMC for additional doses if needed. If available Vecuronium 0.05 - 0.1 mg/kg may be used.
- **I.** Document procedure as per Documentation protocol.

Purpose: The I-gel is indicated for use in securing and maintaining a patent airway during spontaneous breathing, intermittent positive pressure ventilation or resuscitation of the unconscious patient.

Indications:

A. Difficult airways.
B. Routine airways.
C. First-use intubations, replacing direct laryngoscopy.
D. Normal or restricted oropharyngeal views / visualization and assessment of the oropharynx.
E. Trauma airways.
F. Airway management in morbidly obese patients.
G. Patients requiring cervical spine immobilization.

Contraindications:

A. Ability to maintain oxygenation and ventilation by less invasive methods, such as bag-valve- mask ventilation.
B. Intact gag reflex.
C. Known esophageal disease.
D. Ingestion of caustic substance (e.g. lye, acids) or extensive airway burns.
E. Tracheotomy or laryngectomy.
F. Suspected foreign body airway obstruction.

Procedure:

A. Open the package and take out the protective cradle containing the device. Remove the accessory pack containing the lubricant and airway support strap from the protective cradle and place the support strap aside.
B. Open the lubricant and place in cradle.
C. Grasp the I-gel™ along the integrated bite block and lubricate the back, sides and front of the cuff with a thin layer of lubricant. When lubricant is applied take care to avoid the introduction of lubricant in or near the ventilation portal in the airway.
D. Grasp the lubricated I-gel™ firmly along the integrated bite block (tube portion of the device). Position the device so that the I-gel™ cuff outlet is facing toward the chin of the patient.
E. The patient should be in the “sniffing” position, with head extended and neck slightly flexed forward. If cervical injury is suspected, use modified “jaw thrust” instead of any flexion at the neck. The chin should be gently pressed down/inferior before proceeding to insert the I-gel™.
F. Introduce the leading soft tip into the mouth of the patient in a direction toward the hard palate. Glide the device downwards and backwards along the hard palate with a continuous, but gentile push until a definitive resistance is felt.

**** Do not apply excessive force on the device during insertion. It is not necessary to insert your fingers or thumbs into the oral cavity during insertion of the device. If there is resistance during is resistance during insertion, a ‘jaw thrust’ and slight rotation of the device is recommended.**

G. The tip of the device should be located into the upper esophageal opening and the cuff should be located against the laryngeal framework. The incisors should be resting on the integrated bite block.
H. Confirm proper position by auscultation of epigastrium and chest and observing physiologic changes. Waveform capnography is required for ongoing ventilation and perfusion assessment.
I. Lubricate and preload NG tube in the side port after I-gel is in place, advance to appropriate position, apply suction to decompress the stomach if needed.
J. Secure the tube with strap provided.

Clinical Indications:

- **A.** Immediate intubation is not available or cannot be performed.
- **B.** Access to the patient's head is inhibited due to entrapment.
- **C.** Direct visualization of the larynx is inhibited.

Contraindications:

- **A.** A patient who has an intact gag reflex.
- **B.** A patient with known esophageal disease.
- **C.** A patient who has ingested a caustic substance.
- **D.** Oropharynx or facial trauma.
- **E.** A patient under 35 inches in height.

Procedure:

- **A.** Assemble and check all equipment.
- **B.** Choose the correct King LT-DTM /LTS-DTM size based on patient height:
  - **1.** Size 2 for patients 35 – 45 inches
  - **2.** Size 2.5 for patients 41 – 48 inches
  - **3.** Size 3 for patients 4 – 5 feet
  - **4.** Size 4 for patients 5 – 6 feet
  - **5.** Size 5 for patients greater than 6 feet
- **C.** Open airway and pre-oxygenate while applying cricoid pressure.
- **D.** Apply lubricant to the beveled distal tip and posterior aspect of the tube, taking care to avoid introduction of lubricant in or near the ventilatory openings.
- **E.** Have a spare King LTS-DTM ready and prepared for immediate use.
- **F.** Pre-oxygenate, if possible.
- **G.** Position the head. The ideal head position for insertion of the King LT-DTM/LTS-DTM 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.
- **H.** Hold the King LT-DTM/LTS-DTM at the connector with the dominant hand. With non-dominant hand, hold mouth open and apply chin lift.
- **I.** With the King LT-DTM/LTS-DTM rotated laterally 45 – 90 degrees such that the blue orientation line is touching the corner of the mouth, introduce tip into mouth and advance behind base of tongue.
- **J.** As the tube passes under the tongue, rotate tube back to midline (blue orientation line faces chin).
- **K.** Without exerting excessive force, advance tube until base of connector is aligned with teeth or gums
- **L.** Using the syringe provided, inflate the cuffs of the King LT-DTM /LTS-DTM with the appropriate volume (size 2 – 35 ml, size 2.5 – 40 ml, size 3 – 60 ml, size 4 – 70 ml, size 5 – 80 ml)
- **M.** Attach resuscitator bag to the 15 mm connector of the King LT-DTM/LTS-DTM. While gently bagging the patient to assess ventilation, simultaneously withdraw the King LT-DTM /LTS-DTM until ventilation is easy and free flowing (large tidal volume with minimal airway pressure).
- **N.** Confirm proper position by auscultation, chest movement and verification of CO2.Secure King LTS-D/LT-D Airway using a commercial device.
- **O.** If needed suction catheter can be inserted in the suction port of the King LTS-D Airway to allow for access to the stomach.
  - **1.** The King LT-D does not have this port and stomach access is not possible.
- **P.** Administer Midazolam in 2-4 mg increments, IVP, up to a maximum of 10 mg for agitation.
- **Q.** Consider Vecuronium 0.05 - 0.1 mg/kg (only after patient is intubated) as needed for combativeness and long transport.
- **R.** Reassess placement every 5 minutes and any time patient is moved:
  - **1.** Tube depth.
  - **2.** Lung sounds.
  - **3.** Vital signs.
  - **4.** EtCO2 (Waveform and numerical values).

S. Document procedure as per Documentation protocol.

Note: ***No medications can be given through the King Airways.***

Clinical Indications:

A. Patient's age is 16 or older.
B. A breathing patient in whom oral intubation is difficult.
C. A patient who may have a spinal injury.
D. A patient who is conscious and needs a definitive airway.
E. A patient whose mouth cannot be opened due to clenched teeth and RSI is not an available option.
F. A patient with a fractured jaw.
G. A patient with oral or maxillofacial injuries.
H. A patient who has recently undergone oral surgery.
I. Severely obese patient in whom oral intubation is difficult.
J. A patient with neck arthritis that prevents placing ~~into~~ them in the sniffing position.
K. A patient who cannot be adequately ventilated by another means.

Contraindications:

A. Any patient who is in cardiac/respiratory arrest. Unconscious patients are a relative contraindication for this procedure.
B. Nasal fractures.
C. A patient with cerebral spinal fluid leakage or evidence of a basilar skull fracture.
D. A significantly deviated nasal septum.
E. Nasal obstruction.
F. A patient receiving anticoagulants such as Coumadin (warfarin).
G. A patient with airway hemorrhage, significant mid-facial trauma, or laryngeal trauma.
H. A patient less than 14 years-of-age.
I. Uncontrolled hypertension (greater than or equal to 220/120).

Procedure:

A. Open airway and pre-oxygenate while applying cricoid pressure.
B. Assemble and check all equipment. Select the largest and least obstructed nostril.
C. Lubricate the distal end of a proper-sized tube. Remove the nasal pharyngeal airway and gently insert the tube, keeping the bevel of the tube towards the septum.
D. Continue to pass the tube, listening for air movement and looking for vapor condensation in the tube.
E. Gently trigger the proximal ring (if Endotrol tube is used) and evenly advance the tube through the Glottic opening on inspiration. This may cause some patients to cough, buck, strain or gag, which is a normal reflex. You should be prepared to maintain cervical spine alignment and the potential need to suction due to vomiting.
F. Verify placement with a careful five-point check. Watch for chest expansion and use EtCO2 and SPO2.
G. Secure the tube.
H. Ventilate and monitor the patient's vital signs including EtCO2 and SPO2.
I. Administer Midazolam in 2-4 mg increments, IVP up to a maximum of 10 mg for agitation.
J. Consider Rocuronium 1mg/kg IV/IO (only after the patient is intubated) as needed for combativeness and long transport. Remember to address sedation in patients and provide Midazolam as needed. Contact OLMC as needed for additional Midazolam if required. If available Vecuronium 0.05 - 0.1 mg/kg may be used.
K. Reassess placement every 5 minutes and any time patient are moved:
  1. Tube depth.
  2. Lung sounds.
  3. Vital signs.
  4. EtCO2 (Waveform and numerical values)
L. Document procedure as per Documentation protocol.

Clinical Indications:

A. Providing inhaled medication to patients suffering from constricted airways.

Contraindications:

A. Known allergy to medications.

B. Suspected pulmonary edema.

Procedure:

A. Place patient sitting upright.

B. Ensure patient is being monitored with SPO2, EtCO2, and cardiac monitoring.

C. Assemble nebulizer and medications.

D. Squeeze the medications into nebulizer and give to the patient.

1. Patient should be able to hold and use the nebulizer.

2. As an alternative, the nebulizer can be attached by removing the “T-Piece” and connecting it to a Non-Rebreather mask after removing the rebreathing valves from the mask. ***Patients that are not physically able to hold the nebulizer due to impending respiratory failure should be intubated.***

3. If the patient is on CPAP, the nebulizer can be connected by inserting it between the device and the mask using the “T-Piece” (position so that the nebulizer is hanging straight down).

E. Attach to oxygen supply and supply oxygen at 6-8 LPM (Medication should be seen misting at the end of the reservoir tubing).

F. Reassess the patient every 3-5 minutes for:

1. Vital signs.

2. EtCO2 (Waveform and numerical values).

3. Lung sounds.

4. Patient response to treatments.

G. Document per Documentation protocol.

Pediatric Patients: (Child age less than 6)

A. Use above guidelines except:

1. Use the nebulizer to “blow-by” the patient’s face. This can be accomplished by taping off the mouthpiece and directing the hose end toward the child’s face.

Clinical Indications:

A. Any patient requiring placement of an artificial airway to support ventilation and/or oxygenation

B. To provide adequate support of ventilation and oxygenation to intubated patients during transport

Contraindications:

None

Patient Utilization:

The Revel is pre-set with settings for Adult, Pediatric, and Infant populations in the start-up mode:

A. Infant: 5-10 kg Pressure Control Mode

B. Pediatric / Adult: >10 kg Volume Control Mode

Interfacility Transfers:

Continue the current settings that the patient is on at the hospital. You may advise the sending physician of transport Patient Care Guidelines for ventilator settings. If the sending physician has a preference, obtain specific settings as requested.

Scene Calls: The ventilator is to be used whenever the patient is intubated.

The ventilator will help meet specific ventilatory requirements – i.e., patients with decreased lung compliance secondary to lung disease or other restrictive processes, head injury patients or patients presenting with "resuscitative" needs.

Initial Ventilator Settings	
FiO2: Adequate to maintain SaO2 > 93% **PEEP:** 3-5 and adjust as needed **Mode:** A/C or SIMV **Pressure Support:** 5-10 if in SIMV (if available)	
5 - 10 Kg **Pressure Control** Initial PIP 15-20 above PEEP (maint ExhTv 6-8 mL/kg) I-Time: **Infant** 0.5 / **Child** 0.7-0.9 Rate: **Infant** 20-30 / **Child** 20	**> 10 Kg** **Volume Control** Vt 6-8 mL/kg (maint Pplat < 30 or PIP < 35) Rate: **Child** 16-20 **Adult** 12-14 I-Time: **Child** 0.7-0.8 / **Adult** 0.8-1.2

Procedure:

A. A ventilator "check-out" should be performed ***at the beginning of each shift***. It should include, but is not limited to the following:

1. Press and hold the "Select" button while turning ventilator on, hold until screen displays "remove patient".

2. Confirm systems checks by either pressing the select button or using the "Set knob" to access the appropriate systems for alarms, display, and functions. A leak check must be done, but realize that this will only confirm there is no leak at that time. Prior to placing a patient on the ventilator, another leak check must be done to ensure that there are no leaks with that circuit. Make sure both filters are clean.

Initiating Mechanical Volume Ventilation:

A. Verify artificial airway patency and position by use of EtCO2 detection and pulse oximetry equipment in order to verify artificial airway placement and to evaluate the effectiveness of current ventilation technique.

B. Prepare the BVM device for emergent use in case of a ventilator failure.

C. Attach ventilator to appropriate oxygen/air source.

D. Attach disposable ventilator circuit to the ventilator. Attach gas outlet, pressure transducer and exhalation valve tubes to corresponding connectors.
E. Turn the ventilator on and allow self-check to perform if required. Perform leak check after ventilator circuit is attached to LTV.
F. Select appropriate mode, as described above.
G. Set the trigger to Volume-cycled if required. (See Initiating Pressure Ventilation section, below, for instructions on providing pressure ventilation).
H. Select appropriate Respiratory Rate (RR).
  1. Adult: 12 – 14 / min
  2. Child: 16 – 20 / min
I. Select desired Tidal Volume (Vt).
  1. Patients should typically be ventilated with a Vt of 6 – 8 mL/kg.
  2. Use Vt of 10 – 12 mL/kg with lower RR (6-8/min) for hypotensive patients with SBP < 80 mmHg.
  3. Use lower volumes in patients at risk for barotraumas (e.g., ARDS, COPD, etc.).
J. Select desired Inspiratory Time (It). Adult patients should receive an It of 0.8-1.5 seconds. Pediatric patients should receive an It of 0.5-1.0 seconds. The clinical goal should be to maintain an I:E ratio of no less than 1:2.
  1. The ventilator may be equipped with a default 1:2 I:E ratio setting. This may be selected instead of setting an It. Caution should be used in patients with an obstructive lung component.
  2. When changing the RR, the I:E ratio should be manipulated to maintain an I:E ratio of 1:2 – 1:3. Obstructive lung disease such as COPD and Asthma ~~require~~ requires a longer expiratory phase, therefore an I:E ratio of at least 1:4 is indicated.
K. Select desired FiO2 if applicable. A FiO2 of 0.21-1.00 may be selected to maintain a SpO2 > 93%. Consider current ABG, SpO2 and anticipated altitude changes when selecting a FiO2 for transport.
L. Set high-pressure alarm at 50cm H2O and low-pressure alarm at 10cm H2O. Occlude patient end of ventilator circuit and test for leaks and correct function of "pop-off" device. Observe delivery of several breaths. Attach patient to the ventilator and observe peak inspiratory pressure (PIP). Reset ~~high pressure~~ high-pressure alarm to 10-15 cm H2O above the PIP. Reset low inspiratory pressure alarm to 10-15 cm H2O below the PIP.
M. Make note of mean airway pressure (Paw).
N. Set low min volume alarm if so equipped.
O. If Positive End Expiratory Pressure (PEEP) is required, select the desired amount and set via the ventilator's PEEP function. For PEEP greater than 10, contact Medical Direction. Observe delivery of several breaths. Evaluate patient for adequate chest rise, ETCO2, and SpO2. Adjust ventilator settings as necessary to improve clinical parameters.
P. Record all set parameters, PIP *(15–25 cmH2O),* paw *(5– 2 cmH2O)*, and Pplat *(<30)* trends in the patient transport record. Note in patient transport record that all alarms were set.
S. Observe for alarms and immediately view alarm message to assist in identifying the possible cause.
T. If at any time the ventilator should fail, or an alarm is received that cannot be corrected, the patient should be immediately ventilated with a Bag-valve device attached to a 100% oxygen source.
U. At the completion of the transport, dispose of ventilator circuit and clean ventilator as necessary.

Initiating Pressure Ventilation:

A. Follow all instructions as above except activate Pressure Ventilation in lieu of setting a Tidal Volume.
B. Select desired pressure control setting. The lowest possible pressure that provides adequate chest expansion, ETCO2 and SpO2 parameters should be utilized.
C. Record all set parameters, including min volume (VE) [VE=RR x TV] and exhaled tidal volume (TVE).

Caution: **When pressure ventilating, the volume of gas delivered with each breath will vary depending on any factors that affect lung compliance. The minute volume, therefore, remains variable.**

Clinical Indications:

A. Patient meets criteria described previously under "Airway Management: Orotracheal Intubation," and the patient has any of the following:
  1. Clenched jaw.
  2. Active gag reflex.
  3. Uncontrollable combative behavior.

Contraindications:

A. A hypersensitivity to the drug.
B. A family or personal history of malignant hyperthermia.
C. Major trauma or burn patients, 7 to 10 days post burn.
D. Known hyperkalemia.
E. Chronic paralysis of a limb or limbs (extremity or extremities).
F. Patients with acute exposures to organophosphate substances.
G. Patients who have been entrapped two hours or longer with crush injury.

Procedure:

A. Assemble and check all equipment.
B. Open airway and pre-oxygenate while maintaining cricoid pressure.
C. Pre-medicate with:
  1. Lidocaine 1- 1.5 mg/kg for patients with increased ICP, acute asthma, or suspected/known acute MI.
  2. Midazolam 2-4 mg increments every 1 – 2 minutes, IVP, with a maximum initial dose of 10.0 mg.
  3. If available, Etomidate 0.3 mg/kg IV/IO may be used in place of Midazolam
D. Apply cricoid pressure and maintain until ET tube is in place, verified, and secured.
E. Administer Succinylcholine 1-1.5 mg/kg IV. If Succinylcholine is repeated prior to intubation (same dose after four minutes) consider Atropine 0.5 mg for control of secretions or bradycardia.
F. Intubate in a controlled, but timely manner when the patient becomes relaxed.
  1. Do not allow more than 30 seconds without providing ventilations to the patient.
  2. If needed, oxygenate the patient before a second attempt.
    a. If the second attempt fails a King LTS-D or King LT-D Airway must be used.
G. Verify placement with a five-point check and chest expansion. Use EtCO2 and SPO2, monitor closely.
H. Secure the tube using ETT securing device. Record the ET tube depth at the teeth.
I. Ventilate and monitor patient's vital signs.
J. Confirm proper position by auscultation, chest movement, and verification of EtCO2 waveform.
K. Administer Midazolam in 2-4 mg/increments, IVP up to a maximum of 10 mg for agitation. Administer Vecuronium 0.05 - 0.1 mg/kg or Rocuronium 1mg / kg IV / IO if Vecuronium is unavailable (only after patient is intubated) as needed for combativeness and long transport. Consider the need for additional Midazolam for long transports using OLMC if needed.
L. Reassess placement every 5 minutes and any time the patient is moved for:
  1. Tube depth.
  2. Lung sounds.
  3. Vital signs.
  4. $EtCO_2$.
M. Document as per Documentation protocol.

Pediatric Patients:

A. Pre-medicate with:
  1. Lidocaine 1-1.5 mg/kg for patients with increased ICP or acute asthma.
  2. Atropine 0.02 mg/kg for patients 2 years and younger (minimum dose 0.1 mg, maximum dose 0.5 mg).
  3. Midazolam 0.1 mg/kg, IVP, with a maximum initial dose of 4.0 mg.
B. Apply cricoid pressure and maintain until ET tube is in place, verified, and secured.
C. Administer Succinylcholine 1-1.5 mg/kg. ***If Succinylcholine is repeated prior to intubation, DO NOT REPEAT ATROPINE DOSE.***

D. Intubate in a controlled, but rapid manner when the patient becomes relaxed.
E. Do not allow more than 15 seconds to pass without providing ventilations to the patient.
F. If a second attempt is needed, oxygenate patient before a second attempt.
G. If the second attempt fails a King LTS-D or King LT-D Airway must be used.

******WARNING*** Pediatric patients DO NOT tolerate hypoxia and can quickly progress into an irreversible cardiac arrest if hypoxia occurs!***

Clinical Indications:

A. When a patient is exhibiting respiratory difficulty secondary to secretions in the airway or the potential for aspiration exists.

Procedure:

A. Oral Suctioning

1. Pre-oxygenate patient with 100% oxygen.
2. Assemble equipment: Suction unit with Yankauer or other appropriate suction catheters, use personal protective equipment (gloves, goggles, and gown).
3. Attach required monitoring equipment.
4. Turn suction unit on and confirm mechanical suction is present.
5. Insert tip without suction.
6. Cover thumbhole to begin suction if applicable.
7. Apply suction for less than 15 seconds.
8. Monitor patient‘s oxygen saturation.
9. Re-oxygenate patient for at least 2 – 3 minutes between suction attempts.
10. Document procedure as per Documentation protocol.

B. Tracheal Suctioning

1. Pre-oxygenate patient with 100% oxygen.
2. Assemble equipment: Suction unit, correct size suction catheter, sterile rinse, and personal protective equipment (gloves, goggles, gown).
3. Attach required monitoring equipment.
4. If the patient is being ventilated with BVM prior to suctioning, have someone else remove the bag from the end of ET tube prior to the suction attempt.
5. Insert the catheter into the ET tube without applying suction.
6. Advance the catheter as far as possible. Withdraw slowly using intermittent suction while rotating catheter.
7. Do not suction more than 10 seconds.
8. Monitor patient’s oxygen saturation.
9. Rinse catheter in sterile saline.
10. Re-oxygenate patient for at least 2-3 minutes between suction attempts.
11. Document procedure as per Documentation protocol.

C. Suctioning with Meconium Aspirator

1. If meconium is lightly stained and newborn is vigorous do not suction the infant.
2. Assemble equipment: Suction unit, appropriate size ET tube, personal protective equipment (gloves, goggles, and gown).
3. Attach required monitoring equipment.
4. Turn suction unit on and confirm mechanical suction is present.
5. After the infant has been intubated, attach meconium aspirator to end of ET tube. Cover thumbhole to begin suctioning while slowly withdrawing the ET tube.
6. Do not suction for more than 10 seconds.
7. Monitor the patient’s oxygen saturation and heart rate and stop if patient becomes bradycardic.
8. Re-oxygenate patient for at least 2-3 minutes between suctioning attempts.
9. If the patient has not been intubated and meconium is thick, at the least, aggressive oropharyngeal suctioning should be carried out with the largest diameter suction device available.
10. Document procedure as per Documentation protocol

Purpose: Airtraq is a fiber-optic intubation device used for indirect tracheal intubation. It is designed to enable a view of the glottic opening without aligning the oral with the pharyngeal, and laryngeal axes as an advantage over direct endotracheal intubation and allows for intubation with minimal head manipulation and positioning.

Indications:

A. Patient's age is 16 or older.
B. Difficult airways.
C. Routine airways.
D. First-use intubations, replacing direct laryngoscopy.
E. Normal or restricted oropharyngeal views / visualization and assessment of the oropharynx.
F. Trauma airways.
G. Airway management in morbidly obese patients.
H. Patients requiring cervical spine immobilization.
I. Video-guided foreign body removal.

Contraindications:

None

Procedure:

A. Prepare and check all equipment, activate video assisted laryngoscope, and have suction ready.
B. Pre-oxygenate the patient.
C. If indicated medicate according to RSI Protocol.
D. Lubricate and install the endotracheal tube in the lateral channel.
E. Insert the Airtraq into the patient's mouth, sliding it along the midline around the tongue. While inserting the Airtraq identify the airway structures and place the tip of the Airtraq into the vallecula.
F. Gently lift and maneuver the Airtraq to center the vocal cords into view.
G. Advance the endotracheal tube slowly and watch the cuff pass through the vocal cords.
H. Before removing the Airtraq, check ETT insertion depth and inflate ETT cuff.
I. Detach ETT from the Airtraq channel by pulling the tube laterally, while holding the ETT in position to avoid accidental extubation.
J. Remove the Airtraq from the patient´s airway keeping to the midline.
K. Secure the tube and verify placement using continuous capnography (ECO2).

Clinical Indications:

Used in medical and trauma patients requiring invasive arterial blood pressure monitoring when vasoactive drips are being utilized.

Equipment:

- **A.** Arterial line insertion kit (sterile towels, Chlora-Prep, sterile gloves, arterial catheter, radial arterial catheterization set for radial artery pressure tubing with transducer).
- **B.** 500 Ml bag of Normal Saline
- **C.** Pressure infuser
- **D.** Wrist restraints
- **E.** 4x4's
- **F.** Transparent Dressing
- **G.** Local anesthetic (1% or 2% lidocaine)

Procedure:

- **A.** Perform Allen Test to confirm ulnar collateral circulation (Femoral arterial line placement may be considered when appropriate)
- **B.** Position patient's wrist/hand: dorsiflex wrist over towel pad or padded bedside table
- **C.** Prep entry site with Chlora-Prep solution and sterile drape entry site
- **D.** If available lidocaine 1-2% may be used as a local anesthetic agent to numb the site.
- **E.** Identify radial artery – start distally
- **F.** Using sterile technique, insert arterial needle into the skin just distal to palpated artery site at 30-60-degree angle
- **G.** Advance needle into artery until spontaneous pulsating bright red blood enters chamber
- **H.** Advance guide wire or advance catheter
- **I.** Advance plastic catheter over guide wire – modified Seldinger technique
- **J.** Connect to pressure tubing and transducer – level and zero, and verify arterial waveform, at the phlebostatic axis
- **K.** Secure arterial line and dress with transparent dressing

Clinical Indication:

To maximize coronary artery perfusion, therefore improving short and long-term outcomes for the patient requiring an intra-aortic balloon pump (IABP) during the transport from the referring hospital.

Indications:

- **A.** Hemodynamic support for the patient in cardiogenic shock
- **B.** Acute mitral regurgitation
- **C.** Acute MI with refractory dysrhythmias
- **D.** Ventral septal defect or ventricular aneurysm secondary to MI
- **E.** Unstable patient requiring emergency cardiac catheterization
- **F.** Before, during, or after open-heart surgery or cardiac catheterization
- **G.** Unstable angina
- **H.** Cardiac support as a bridge to revascularization

Contraindications:

- **A.** Aortic insufficiency (moderate to severe)
- **B.** Thoracic aortic aneurysm
- **C.** Irreversible brain damage
- **D.** Severe peripheral vascular disease (relative contraindication)

Required Equipment:

- **A.** IABP with transport support module
- **B.** Lead cable
- **C.** Skin electrodes
- **D.** Transducer
- **E.** Arterial pressure set-up
- **F.** Extender tubing
- **G.** Adapters – to adapt other brands of balloon catheters to a data
- **H.** Spare helium cylinder
- **I.** Operators manual
- **J.** Stopcocks
- **K.** 60 ml syringe

Procedure for transport and monitoring

- **A.** Obtain Pre-Transport report: site, insertion date, model of pump, catheter size, volume, settings (1:1, 1:2, 1:3)
- **B.** Determine need for additional staff members (e.g. RNs, Perfusionist)
- **C.** Set-up pump attach electrodes and arterial line transducer. Prepare to switch the patient to the transport pump. Determine most appropriate trigger. Assure adequate battery life to complete transport. Switch patient to transport pump.
- **D.** Perform PE evaluating color, pedal and radial pulses. Assess dressing and insertion site for bleeding and hematoma. Assess calf for hardness/swelling. Monitor urinary output.
- **E.** Document settings augmented and augmented pressures during transport every 15 minutes.
- **F.** Auto Fill mode should be used during air transport.

Purpose:

Non CCT units can transport patients currently receiving blood and blood products if the transfusion is initiated by the transferring facility.

Indications:

- **A.** Hypovolemia with acute blood loss.
- **B.** Restoration of clotting factors with FFP.

Contraindications:

- **A.** Patient's refusal of blood or blood products.
- **B.** The unavailability of type-specific or type O negative blood products.
  1. O+ for MALE
  2. WOMEN who are not of child bearing ages should receive O+ if possible for type-specific blood.

Procedure:

- **A.** Prior to transporting a patient receiving blood products the following must be verified to match the patient by at least 2 health care providers and confirm the following:
  1. Patient's name
  2. Patient's blood type
  3. Blood products type
  4. Blood product ABO type
  5. Unit number and expiration date
- **B.** If possible, the blood should be warmed during infusion. If not possible transfuse as is, pay close attention to the patient's core body temperature.
- **C.** Monitor all vital signs including patient's temperature every 5 minutes for the first 15 minutes, every 15 minutes following.
- **D.** Monitor the patient for signs of reaction or complications. If there is clinical suspicion of a transfusion reaction. Stop the transfusion immediately and:
  1. Start a normal saline infusion
  2. Assess the patient's vital signs
  3. Refer to the allergic reaction protocol if needed
  4. Save all transmission bags and tubing (ensure that all used and unused bags along with the used tubing are transferred to the receiving RN or appropriate medical staff)
- **E.** When the infusion is complete:
  1. Flush the IV with Normal Saline
  2. Record the time of completion
  3. Continue to monitor the patient for possible transfusion reaction.

Purpose:

To provide guidance in situations where the patient is receiving pack red blood cells and fresh frozen plasma or PRBC and FFP is at the bedside and is requested to be started or administered during transport

Indications:

- **A.** Hypovolemia with acute blood loss.
- **B.** Restoration of clotting factors with FFP.

Contraindications:

- **A.** Patient's refusal of blood or blood products.
- **B.** The unavailability of type specific or type O negative blood products.
  - **1.** O+ for MALE
  - **2.** WOMEN who are not child bearing ages should receive O+ if possible for type-specific blood.

Procedure:

- **A.** CCT team should be provided with the consent from the patient willing to receive a blood transfusion
- **B.** If completed obtain the patient's lab work, paying close attention to the patient's hemoglobin and hematocrit prior to transfusion.
- **C.** Blood products must be verified to match the patient by at least 2 health care providers and confirm the following:
  - **1.** Patient's name
  - **2.** Patient's blood type
  - **3.** Blood products type
  - **4.** Blood product ABO type
  - **5.** Unit number and expiration date
- **D.** If possible, the blood should be warmed during infusion. If not possible transfuse as is, pay close attention to the patient's core body temperature. The FFP might still be frozen in the cooler and must be given a chance to thaw.
- **E.** Start transfusion and monitor all vital signs including patient's temperature every 5 minutes for the first 15 minutes, every 15 minutes following.
- **F.** Monitor the patient for signs of reaction or complications. If there clinical suspicion of a transfusion reaction. Stop the transfusion immediately and:
  - **1.** Start a normal saline infusion
  - **2.** Assess the patient's vital signs
  - **3.** Refer to the allergic reaction protocol if needed
  - **4.** Save all transmission bags and tubing (ensure that all used and unused bags along with the used tubing are transferred to the receiving RN or appropriate medical staff)
- **G.** When the infusion is complete:
  - **1.** Flush the IV with Normal Saline
  - **2.** Record the time of completion
  - **3.** Continue to monitor the patient for possible transfusion reaction
- **F.** Consider Calcium Chloride 500mg IV infused ~~of~~ 30 min after 4 units of PRBC or FFO has been administered.

Clinical Indications:

The blood glucose level should be obtained on any of the following patients:

- **A.** All ALS patients.
- **B.** Any patient who has a history of diabetes, regardless of chief complaint.

Procedure:

- **A.** Clean finger to be used with an alcohol pad and allow to dry.
- **B.** Insert the test strip into the monitor and wait until the device is ready for a blood sample.
- **C.** Using a lancet, prick the side of the finger or acquire a blood sample from the angiocath used to start the IV.
- **D.** Sample the blood with the test end of the test strip.
- **E.** Record results as noted in Documentation protocol section.

Clinical Indications:

- **A.** Patients shall be placed on the cardiac monitor as outlined in the Fundamentals of Care.
- **B.** All patients greater than or equal to 35 years with any suspected cardiac etiology or ACS (Acute Coronary Syndrome) or risk factors
- **C.** Any other situation in which the paramedic feels it would assist in assessment and treatment of the patient.

Remember that many problems can be cardiac related!

Procedure:

- **A.** Apply the cardiac monitor leads as follows:
  1. White (RA) on the right upper deltoid.
  2. Black (LA) on the left upper deltoid.
  3. Red (LL) on the left lower leg.
  4. Green (RL) on the right lower leg.
  5. Brown (C) (on some engines) at the fifth intercostal space three finger breadths to the left of the sternum. (This lead is only present on engine monitors which do not have 12-Lead capability. This 5th lead is not on rescue monitors.)
- **B.** To avoid excessive artifact, avoid bony prominences and areas of excessive subcutaneous tissue.
- **C.** Document according to Documentation protocol.

Use your discretion and DO NOT delay treatment or transport of a critical or unstable patient to put the patient on the cardiac monitor.

Clinical Indications

Suspected cardiac patient, suspected tricyclic overdose, electrical injuries, syncope, altered mental status, and paramedic discretion in the best interest of the care of the patient.

Procedure:

A. Assess patient and monitor cardiac status. (***This should not delay transport***)

B. If the patient is unstable, definitive treatment is the priority. If the patient is stable or stabilized after treatment, perform a 12 Lead ECG.

C. Prepare ECG monitor and connect the patient cable with electrodes.

D. Enter the required patient information (patient name, etc.) into the Life Pak 12 / 15.

E. Expose chest and prep as necessary. The modesty of the patient should be respected.

F. Apply chest leads and extremity leads using the following landmarks:

1. V1 Fourth intercostal space to the right of the sternum.

2. V2 Fourth intercostal space to the left of the sternum.

3. V3 Directly between leads V2 and V4.

4. V4 Fifth intercostal space at mid-clavicular line.

5. V5 Level with V4 at the left anterior axillary line.

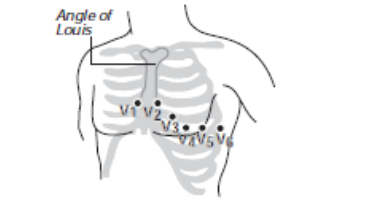
6. V6 Level with V5 at the left mid-axillary line (directly under the midpoint of the armpit).

7. Left arm electrode on the left deltoid

8. Right arm electrode on the right deltoid

9. Left leg electrode on the inner aspect of the left leg near the left ankle

10. Right leg electrode near the right ankle



Precordial lead electrode placement

G. Instruct patient to remain still.

H. Acquire the 12 Lead ECG.

I. 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.

J. Once acquired, transmit the ECG data to the receiving facility.

K. Contact the receiving hospital to notify them that a 12 Lead ECG has been sent.

L. Monitor the patient while continuing with the treatment protocol.

M. Repeat 12 lead ECG for continuing documentation and to determine if changes occur enroute.

N. Attach a copy of the 12 lead to the EPCR if equipped to do so.

Clinical Indications:

A. External pacing should be considered in bradycardia with evidence of inadequate perfusion, (e.g., hypotension, altered mental status).

Contraindications:

A. Patients that meet "death in the field" criteria.
B. Patients in traumatic cardiac arrest.
C. Patients suffering from hypothermia with a temperature < 86 degrees F.

Procedure:

A. Ensure ECG pads are attached, and monitor displays a rhythm.
B. Attach pacing electrodes to an anterior-lateral position. If there is difficulty in obtaining capture, try alternative anterior-posterior position.
C. Connect therapy electrodes to the therapy cable.
D. Press PACER. Confirm the LED illuminates, indicating that the pacemaker power is on. Observe the ECG rhythm. Confirm that a triangle sense marker appears near the middle of each QRS complex. If the sense markers do not appear or are displayed in the wrong location (e.g. on the T-wave), adjust ECG Size or select another lead. It is normal for the sense marker location to vary slightly on each QRS complex. Begin pacing at a heart rate of 80 beats per minute and 30mA current output.
E. Increase current by increments of 10mAs while observing monitor for evidence of electrical capture.
  1. There should be a pacer mark on each complex.
  2. The complex will change and appear as a PVC.
  3. The patient's pulse rate will be 80 and the pulses will correspond to the paced complexes.
F. If the patient is comfortable at this point, continue pacing. If patient is uncomfortable, administer Midazolam in 2 mg increments, or if no IV, 4.0 mg administered IM.
G. If the patient still complains of pain during pacing, repeat the dose of Midazolam and contact OLMC.
H. If the patient remains unconscious during pacing, assess capture by observing the monitor and evaluating pulse and blood pressure changes. In the event of electrical capture and no pulses, follow PEA protocol.
I. If there is no response to pacing and drugs, consult with OLMC. If a change in pacing rate is desired, contact OLMC.
J. Document according to Documentation protocol.

Pediatric Patients: (Child age less than 16)

A. Use above guidelines except:
  1. Use anterior/posterior pad placement first for patients less than 1 year.
  2. Begin pacing at 0 mA output at a rate of 80-100.
B. Increase current in increments of 10 mA's while observing monitor for evidence of electrical capture.
C. Confirm mechanical capture by checking pulses and BP. Contact OLMC for adjustments to rate based on age and response to pacing.

Clinical Indications:

Unstable, symptomatic tachycardia:

- **A.** PSVT
- **B.** A-Fib RVR
- **C.** A-Flutter RVR
- **D.** V-Tach with pulse

Contraindications:

- **A.** Stable tachycardia
- **B.** Sinus tachycardia
- **C.** Normal sinus rhythm
- **D.** Bradycardia
- **E.** Ventricular fibrillation/pulseless ventricular tachycardia

Procedure:

- **A.** Power **ON**. (Figure 1)
- **B.** Attach patient ECG cable and ECG electrodes. ECG electrodes and cable must be used to monitor the ECG when paddles are used for synchronized cardioversion.
- **C.** Select lead with the greatest QRS complex amplitude positive or negative deflection. (Figure 2)
- **D.** Press **SYNC**. The **SYNC MODE** message appears in the message area when **SYNC** is active. (Figure 3) a. **NOTE:** To deactivate **SYNC MODE** when not synchronized cardioverting, press **SYNC** again.
- **E.** Observe the ECG rhythm. Confirm that a triangle sense marker appears near the MIDDLE of each QRS complex. (Figure 4) a. If the sense markers **DO NOT** appear or are displayed in the wrong location **(for example on the T – wave)** adjust **ECG SIZE** or select another lead. It is normal for the sense marker location to vary *slightly* on each QRS.
- **F.** Connect the therapy electrodes to the therapy cable and confirm cable connection to the monitor/defibrillator. (Figure 5)
- **G.** Prepare the patient's skin and apply therapy electrodes to the patient in the anterior-lateral position. (Figure 6)
- **H.** Press **ENERGY SELECT** or rotate the **SPEED DIAL** to select the desired energy. (Figure 7) Per Protocol Tachycardia – Unstable, for adult synchronized cardioversion, narrow regular complexes begin at 50-100 joules, narrow irregular complexes begin at 120–200 joules, wide regular complexes begin at 100 joules, and wide irregular complexes begin at 200 joules energy and increase by 50 joules to a maximum of 360. If unstable tachydysrhythmia persists, repeat synchronized cardioversion at escalating energy settings of 200 joules, 300 joules, 360 joules.
- **I.** For pediatric synchronized cardioversion, consult on-line medical control for treatment plan and energy settings.
- **J.** Press CHARGE. While the monitor/defibrillator is charging a charging bar appears and a ramping tone sounds, indicating the charging energy level. When the monitor/defibrillator is fully charged, the screen displays available energy. (Figure 8)

Figure 1


Figure 2


Figure 3


Figure 4


Figure 5

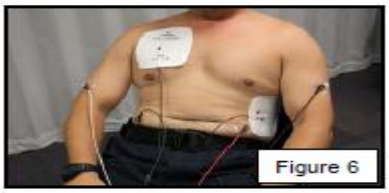


Figure 6


Figure 7


Figure 8

K. Make certain all personnel, including the operator, stand clear of the patient, bed, and any equipment connected to the patient.

L. Confirm ECG rhythm. Confirm available energy. *Prior to delivering synchronized cardioversion, it is paramount to ensure that the **SYNC MODE** message continues to appear. Failure to deliver a "synchronized" cardioversion in this setting could cause ventricular fibrillation cardiac arrest in the patient.* (Figure 9)

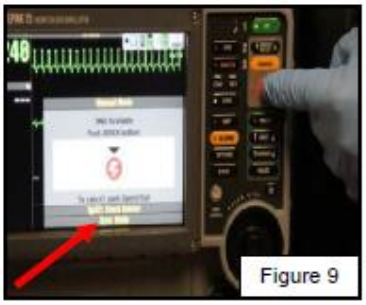


Figure 9

M. Press and hold the (shock) button on the monitor/defibrillator until the **ENERGY DELIVERED** message appears on the screen. (Figure 10)

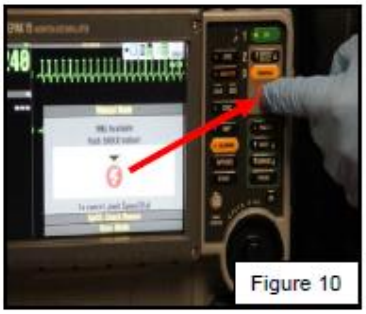


Figure 10

1. **NOTE:** To disarm (cancel the charge), press the SPEED DIAL. The energy disarms automatically if shock buttons are not pressed within 60 seconds, or if the energy selection after charging begins.

N. Observe patient and ECG rhythm. Repeat procedure starting from Step 4, if necessary.

Clinical Indications:

A. To stop bleeding when:
  1. Life-threatening limb hemorrhage is not controlled with direct pressure or other simple measures, as may occur with a mangled extremity.
  2. Traumatic amputation has occurred.

Procedure:

A. Placement
  1. Expose the extremity by removing clothing in proximity to the injury.
  2. Place directly over the exposed skin at least 2 inches (5 cm) proximal to the injury.
  3. Route the self-adhering band across the extremity.
  4. Pass the band through the buckle.
  5. Pull the self-adhering band tight.
  6. Twist the rod until bright red bleeding stops.
  7. Lock the rod in place with the clip.
  8. Record the date/time of application on the tourniquet and TK along with time on the forehead (may utilize a piece of tape).

A. Evaluation
  1. The tourniquet is effectively applied when there is no active bleeding from the extremity.
  2. Any preexisting distal pulse should be absent at that time as well.

B. Tourniquet time and removal
  1. **Tourniquets should be removed only by the receiving ED**.
  2. Tourniquet placement must be communicated in the Electronic Patient Care Report for all prehospital to hospital and inter-hospital transfers.
  3. Tourniquet time greater than 6 hours is associated with distal tissue loss.

C. Document according to Documentation protocol.

Clinical Indications:

Electronic external fetal heart rate monitoring is commonly used to assess fetal well-being during labor. It is used to detect early fetal distress resulting from fetal hypoxia and metabolic acidosis.

Indications:

A. Maternal Medical Complications
  1. Gestational diabetes
  2. Hypertension (SBP greater than 130mm HG)
  3. Asthma
  4. No prenatal care
  5. Tobacco and drug use

B. Obstetric Complications
  1. Multiple gestations
  2. Post-date gestation
  3. Previous cesarean section
  4. Intrauterine growth restriction
  5. Premature rupture of membranes
  6. Pre-term labor
  7. Congenital malformations
  8. Third trimester bleeding
  9. Oxytocin induction/augmentation of labor
  10. Pre-eclampsia

Fetal Heart Monitoring Definitions and Values:

A. ***Normal:*** 120-160 bpm

B. ***Bradycardia:*** Heart rate <120 bpm **(**Benign if rate >100 bpm with adequate variability)
  1. Primary causes: Fetal hypoxia (usually due to cord compression or prolapse), congenital heart disease, paracervical block.

C. Tachycardia: Heart rate >160 bpm
  1. Primary causes: Fetal hypoxia, fetal anemia, prematurity, tachyarrhythmia, maternal fever or infection, anticholinergic and sympathomimetic medications.

Reassuring fetal signs (“the good”)	**Non-reassuring fetal signs (“the bad”)**	**Ominous fetal signs (“the ugly”)**
Normal baseline heart rate **Moderate bradycardia** • (100-120 bpm), good variability **Mild accelerations:** • heart rate increases 15-25 bpm over baseline and persists for 15-25 seconds, then rapid descent to baseline and good recovery **Mild decelerations:** • 70-120 bpm <60 seconds; suggests fetal head or cord compression with contraction	**Fetal tachycardia** **Moderate fetal bradycardia** • (100-120 bpm), lost variability **Marked fetal bradycardia** • (90-100 bpm) **Moderate variable** • decelerations occur repeatedly during 20 min observation, fetal heart rate 70-120 bpm for >60 seconds **Early deceleration and slow recovery/return to baseline**	**Fetal tachycardia with loss of variability** Prolonged • (>60 seconds) marked bradycardia (<90 bpm) **Late decelerations** • Severe variable decelerations (<70 bpm >60 seconds) • Fetal deceleration > 60 seconds

Clinical Indications:

Gastric decompression in intubated patients or for gastric decompression.

Equipment:

- **A.** NG tube, appropriate size
  - **1.** Premature Infant (5 french)
  - **2.** Infant to Child (8-10 french)
  - **3.** Adolescents to Adult (12-18 french)
- **B.** Water soluble lubricant
- **C.** 60 mL catheter tip syringe
- **D.** Tape or other securing device
- **E.** Stethoscope

Procedure:

Nasogastric

- **A.** Explain the procedure to the patient.
- **B.** Measure the NG tube alongside the patient. The end of the tube should be placed at the tip of the nose, extended to the corner of the ear, and then to the xyphoid process. This is the depth the tube should be inserted.
- **C.** Lubricate the end of the tube and begin to insert it into one of the patient's nares. Pass the tube gently along the floor of the nasal passage and advance it as the patient swallows. Remove the tube if the patient coughs or experiences dyspnea.
- **D.** After the NG tube has been inserted, assess the tube for correct placement. A 60 mL syringe should be attached to the tube and gastric contents should be aspirated. 20 mL of air should be instilled into the abdomen while listening or feeling over the abdomen for an "air rush".
- **E.** Once gastric placement is confirmed, secure the NG tube in place with tape.
- **F.** The NG tube should not be clamped if the patient is to be transported by aircraft.

Orogastric (*Most often route performed in intubated patients.)*

- **A.** Measure the NG tube alongside the patient. The end of the tube should be placed at the corner of the mouth, to the tip of the ear, and extended to the xyphoid process. This is the depth the tube should be inserted.
- **B.** Insert the tube into the oral cavity and advance into the stomach.
- **C.** After the tube has been inserted, assess the tube for correct placement. A 60 mL syringe should be attached to the tube and gastric contents should be aspirated. 20 mL of air should be instilled into the abdomen while listening or feeling for an "air rush" over the patient's abdomen.
- **D.** Once gastric placement is confirmed, secure the tube in place with tape.
- **E.** The tube should not be clamped if the patient is to be transported by aircraft.

Clinical Indications:

A. For verified frequent and recurrent inappropriate ICD discharges, a doughnut magnet may be utilized to deactivate "runaway" devices. Inhibition of ICD devices should be considered when continuous ECG monitoring verifies malfunction and ACLS is readily available. Follow the appropriate medical protocol for additional treatment.

Procedure:

A. Transmit ECG and contact OLMC.
B. Monitor ECG and verify sinus rhythm AND inappropriate defibrillator discharge.
C. Place "pacing/defibrillator pads" on the patient and connect to LP-12 or LP-15 as indicated.
D. Locate the position of the ICD device.
E. Place doughnut magnet directly over the device.
F. After proper positioning and ICD deactivation, tape magnet securely in place and transport.
G. Closely monitor patient and cardiac monitor closely during transport.
H. Document procedure as per Documentation protocol.

Precautions:

A. It is very important to make the correct diagnosis before utilizing this protocol. Be sure that the ECG is showing a normal sinus rhythm without ectopy and indications of recurrent ICD discharge.
B. Be prepared to defibrillate/cardiovert or perform CPR on the patient as needed.
C. Some ICD devices will emit varying beeping or continuous tones when magnets are applied, others will not.
D. Disregard these tones.
E. If the magnet placement is successful in overriding the ICD, **DO NOT REMOVE THE MAGNET** because some ICD's will return to normal operation after removal of the magnetic field.
F. Magnets should be stored so as not to come into contact with magnetic sensitive materials, i.e., monitor screens, tapes, credit cards, magnetic door entry cards, and other electronic equipment.
G. A small percentage of ICD's are impervious to magnetic fields (ICD recipients who normally work around magnetic fields have these special units). These will not be deactivated with the doughnut magnet. In such cases, advise OLMC and transport.
H. Consider use of the ICD magnet in deactivating cardiac pacemaker malfunctions. Call OLMC.
I. Identification information of the ICD type, date implanted, and location of implantation should accompany the patient to the hospital. This information is typically found on a wallet card that the patient carries

Indications for Intra-Aortic Balloon Pump (IABP):

IABP counter-pulsation support is a recommended option for patients with cardiac failure, mainly due to coronary artery disease or congestive heart failure. Early IABP support is used to accompany acute percutaneous coronary intervention (PCI) or cardiac surgery. In addition, IABP support may function as a bridge prior to invasive procedures if these specialties are unavailable at the initial hospital of admission.

Prior to Transport:

- **A.** Together with a physician, nurse, or cardiovascular technical staff (as appropriate), ensure that intra-aortic balloon catheter is properly secured, check intra-aortic balloon insertion site for bleeding or drainage, confirm the adequacy of distal pulses and perfusion, and record pre-transport the intra-aortic balloon pump settings.
- **B.** Measure and record augmented systolic, mean, and diastolic blood pressure in addition to standard vital signs.
- **C.** If the transport is not accompanied by a physician or nurse, obtain written order for intra- aortic balloon pump settings to be used enroute.

DURING TRANSPORT:

- **A.** Continuously monitor augmented systolic, mean, and diastolic blood pressure in addition to standard vital signs.
- **B.** In the event of mechanical failure, and the patient **remains stable**, attempt to identify and correct the problem. If the problem cannot be identified and corrected within twenty (20) minutes, detach intra-aortic balloon catheter from the pump and manually operate intra-aortic balloon with a 60 ml syringe and a three-way stopcock.
- **C.** In the event of mechanical failure, and the patient **becomes unstable**, attempt to identify and correct the problem. If the problem cannot be immediately identified and corrected, detach intra-aortic balloon catheter from pump and manually operate intra-aortic balloon with 60 ml syringe and three-way stopcock. **Contact OLMC for assistance.**
- **D.** In the event of a clinical emergency, and cardiopulmonary resuscitation as indicated, CPR should be performed, and the appropriate cardiac arrest protocol should be followed.

****CPR and defibrillation can be performed while the patient is on the IAB pump**

Documentation

- **A.** Record type and model of intra-aortic balloon pump used, settings employed in-transport, and augmented systolic, mean and diastolic blood pressures obtained post-transport, as well as any changes in patient condition, modifications in intra-aortic balloon pump settings, and unusual incidents occurring enroute.

Clinical Indications:
Intranasal medication is indicated when IV access is unavailable or when a needleless delivery system is desired because of patient agitation, combativeness, or similar conditions that may pose a safety risk to personnel. Intranasal medication allows for rapid administration of medication through the nasal cavity allowing rapid, effective blood levels of the medication administered.

Indications:
Altered Mental Status with Suspected Opiate Overdose

Relative Contraindications:

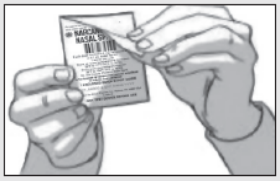
- **A.** Nasal trauma
- **B.** Epistaxis, nasal congestion, (significant) nasal discharge
- **C.** Known cocaine use is a relative contraindication

Approved Intranasal Medications

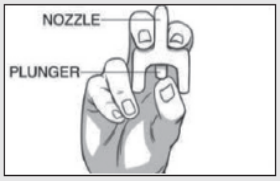
A. Narcan

Procedure:

REMOVE NARCAN Nasal Spray from the box.
Peel back the tab with the circle to open the NARCAN Nasal Spray.



Hold the NARCAN Nasal Spray with your thumb on the bottom of the plunger and your first and middle fingers on either side of the nozzle.

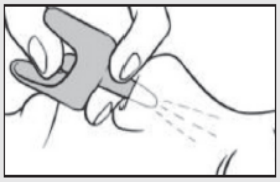


Gently insert the tip of the nozzle into either nostril.

- Tilt the person's head back and provide support under the neck with your hand. Gently insert the tip of the nozzle into **one nostril**, until your fingers on either side of the nozzle are against the bottom of the person's nose.

Press the plunger firmly to give the dose of NARCAN Nasal Spray.

- Remove the NARCAN Nasal Spray from the nostril after giving the dose.



Clinical Indications:

Patients are routinely transported between facilities with an infusion device delivering a drug. There are two primary indications for the use of infusion pumps:

- **A.** Administer a specific amount of a pharmacologic agent
- **B.** Prevention of fluid overload

Indications:

Patient, with an infusion pump running, who is being transported between facilities.

Contraindications:

None

Procedure:

- **A.** Prior to transport, the EMS personnel will confirm:
  - **1.** The physician's written and signed order for the infusion
  - **2.** The medication and concentration being infused
  - **3.** The infusion pump has enough medication for the expected transport time
  - **4.** The infusion tubing is properly connected to a three-way stopcock on the patient's intravenous line
  - **5.** The rate of infusion pump delivery
  - **6.** The infusion is in progress
  - **7.** The volume of infusion already administered
- **A.** If an alarm is displayed during transport the problem should be corrected. There are three (3) generic messages that could be by the infusion pump:
  1. No flow
  2. Tubing is clamped or occluded
  3. High-pressure occlusion
  4. Tubing clamped
  5. Device has occluded
  6. Device has infiltrated
  7. Volume infused
     a. Preset volume has been delivered to the patient
     b. Previous volume setting has not been deleted from programming

**Specific alarm information for the Alaris and Plum pumps is listed in the appendix

Clinical Indications:

A. Collection of a patient's blood for alcohol analysis is In accordance with Florida Statute 316.1932-316.1933, a law enforcement officer may request that a test for determining the weight of alcohol in the defendant‘s blood. Paramedics are authorized to withdraw blood at the request of a law enforcement officer. The person does not have to be under arrest for the request to be a lawful order.

Procedure:

A. This procedure must be done by a Paramedic at the request and observed by a law enforcement officer.

B. Patient being transported:

1. Initiate medical care.

2. Treat the patient per the appropriate medical protocol.

3. Determine if you can safely (without jeopardizing patient care) draw the blood and convey to the officer requesting the blood draw.

4. Draw blood, utilizing standard procedure for venipuncture, utilizing the blood draw kit provided by the law enforcement officer. **(Do not use an alcohol swab to prep the site.)**

5. Record needed information provided with blood draw kit.

6. Complete patient care and transport, include documentation of the blood alcohol draw in the narrative of the patient care report, describing the process utilized (refer to law enforcement kit instructions), and include the agency name requesting the blood draw.

C. Patient not being transported (refusing treatment and transport):

1. Assess the patient’s ability to refuse treatment and transport in accordance with the medical protocol. Contact Online Medical Control, as needed, per protocol.

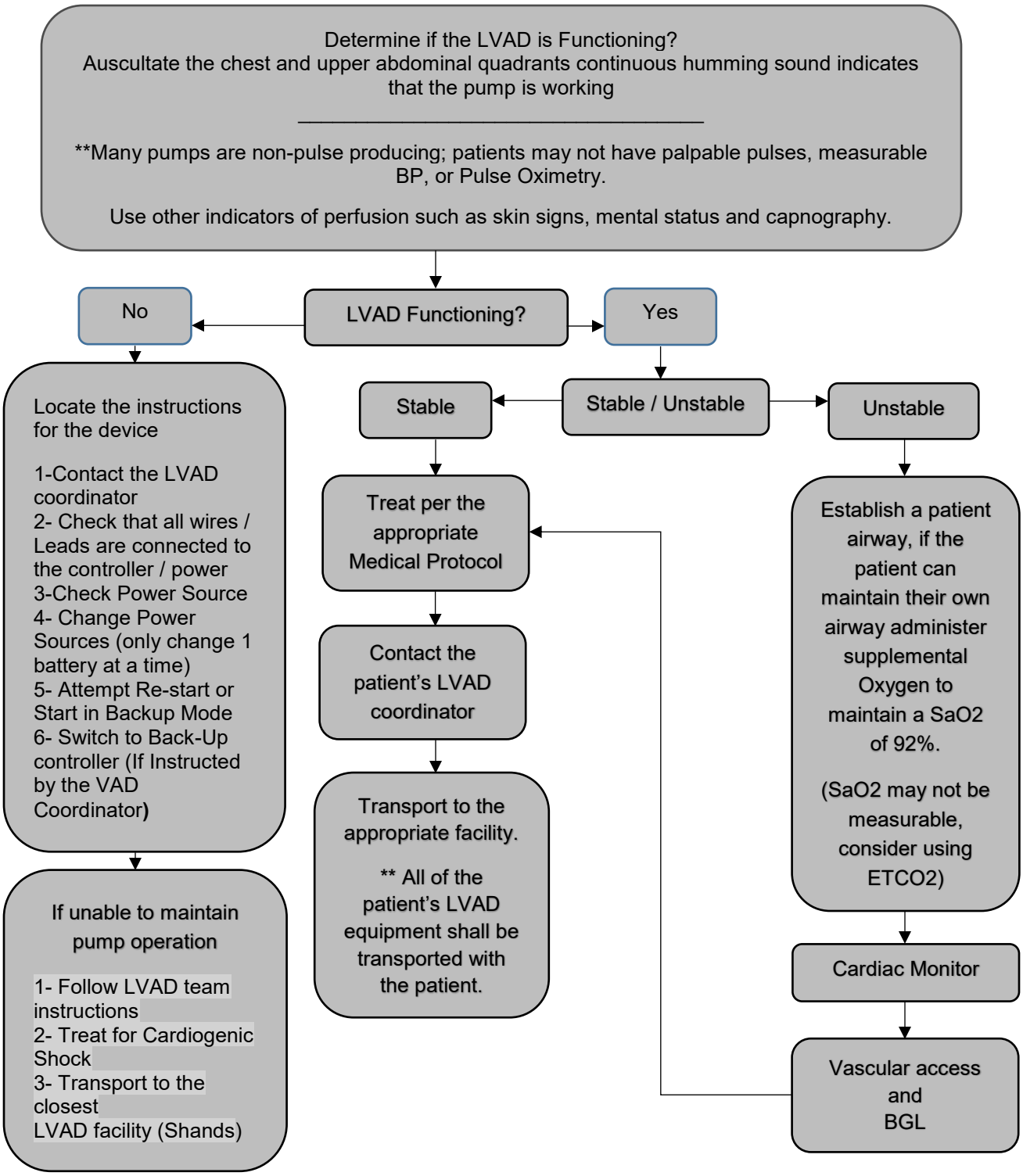
2. Draw blood, utilizing standard procedure for venipuncture, utilizing the blood draw kit provided by the law enforcement officer. **(Do not use an alcohol swab to prep the site.)**

3. Record needed information provided with blood draw kit.

4. Complete any needed patient care, include documentation of the blood alcohol draw in the narrative of the patient care report, describing the process utilized (refer to law enforcement kit instructions), and include the agency name requesting the blood draw.

5. Complete and have the patient sign a refusal, if applicable. The law enforcement officer may sign as a witness for the refusal.

6. Document the refusal as per Refusal of Care protocol.



** Chest compression should only be done as an Absolute Last Resort
If the patient is in cardiac arrest treat per ACLS Protocols

**LVAD patients should have a companion (family member, friend, caretaker, etc.) who is knowledgeable in the function of the VAD. They should be used as a resource regarding specifics of each type of system. Both the companion and all equipment should be transported with the patient (LVAD patients always carry a "backup bag" which contains two (2) extra fully charged batteries and a second controller).

An LVAD is a surgically implanted mechanical pump that is attached to the heart. An LVAD is different from an artificial heart. An artificial heart replaces the failing heart completely whereas an LVAD works with the heart to help it pump more blood with less work. It does this by continuously taking blood from the left ventricle and moving it to the aorta, which then delivers oxygen-rich blood throughout the body. The LVAD has both internal and external components. The actual pump sits on or next to your heart's left ventricle with a tube attached that routes the blood to your aorta. A cable called a drive line extends from the pump, out through the skin, and connects the pump to a controller and power sources worn outside the body. The drive line must be connected to the controller, and the controller must be connected to power at all times to keep the pump working properly. The pump is powered by batteries or electricity. Some LVADs have an adaptor that also allows them to run off the car battery. Each device has specific carrying cases to allow you to move about freely with your equipment. Since the devices are continuous flow the patients may present without palpable pulses, no blood pressure and extremely low pulse oximetry since it is measured by pulsatile flow.

When an LVAD is implanted in a patient waiting for a heart transplant, it's called *Bridge to Transplant*. The patient's LVAD may remain in place for several years until a heart donor becomes available for transplant. If a patient is not eligible for a heart transplant, an LVAD may be implanted as a permanent solution. This is called *Destination Therapy* and is becoming more and more common as LVAD technology—and the quality of life it offers—continues to improve. An LVAD that is implanted for temporary heart failure is called *Bridge to Recovery*. In rare circumstances, a heart may recover its strength after being given time to "rest" with the help of an LVAD. In the vast majority of cases, however, advanced heart failure is a permanent and irreversible condition.

Heartmate II LVAD: (The Color Coding System)

MOST patients have a tag located on the controller around their waist or a colored medical alert bracelet that says what type of device it is, what institution put it in and a number to call. Most importantly is the color of the tag – it matches the attached EMS Field Guide and allows you to quickly locate the type of device you are caring for. **Call\ the number on the device / color coded tag for advice.**

Interventions:

- **A.** Assess and manage airway, breathing and circulation.
- **B.** Provide supplemental oxygen to maintain SpO2 > 94%.
- **C.** Check all lead connections.
- **D.** Reconnect any loose or disconnected leads.
- **E.** Auscultate Heart Sounds to determine if the device is functioning and what type of device it is. If it is continuous flow device, you should hear a "humming sound". This indicates the device has power.
  - **1.** Assess for a green light on the controller. This indicates the device has power. If the device has a green light with no alarms and the "humming" sound- the device has no operational issues.
- **F.** Assess the device for any alarms.
- **G.** Look on controller usually found around the waist of the patient and to see what color tag and device it is OR look for the colored medical alert bracelet.
- **H.** Match the color on the device tag to the EMS Guide for VADS and review and follow those guidelines.
- **I.** Intervene appropriately based on the type of alarm (see below), tag (device) and EMS Guide for VADS.
- **J.** Establish IV access of NS/LR at KVO rate.
- **K.** Assess vital signs. Use Mean BP with Doppler – the first sound you hear is the Mean Arterial Pressure (MAP).
- **L.** If no Doppler, use the Mean on the non-invasive blood pressure monitor as a last resort.
- **M.** Transport to VAD center listed on the tag on the patients' Medical Alert Bracelet or the controller (located in the "fanny pack").
- **N.** You are encouraged to call the number on the tag or bracelet for guidance if needed. All orders given by the VAD coordinator if you call are supported by the Medical Director.
- **O.** Transport the significant other if space is available and the pilot/team approves.
- **P.** Please take the patients equipment (Travel Bag) it is vitally important for back up equipment while in transport.

Special Considerations:

- **A.** CPR is discourage but is not contraindicated. CPR can cause the inflow cannula to become dislodged.
- **B.** If the device has been inoperable for less than 5 min, restart the device. Retrograde flow should occur in patients with some cardiac function and this should prevent clots from forming.
- **C.** ACLS drug interventions will not harm the device.
- **D.** Defibrillate VT or VF only if the patient is symptomatic. Electrical function is unchanged in the native heart, but mechanical function is supported by the device. Defibrillation/Cardioversion does not harm device, provide shocks per AHA guidelines.
- **E.** There may be no pulse pressure due to continuous flow but if there is flow, a NIBP is NOT the preferred method of obtaining a blood pressure. Please use a Doppler or manual cuff and the first sound you hear will be the MAP. The goal is MAP > 80.
- **F.** The Heartmate II is preload driven. Assess for signs of decreased volume status. Provide volume rather than vasopressors in this situation.In situations of low flow alarms, give fluid boluses, if no response start Epinephrine infusion and titrate to flows of > 3.0 liters or improvement in clinical condition. If low flow alarms persist, perform a system controller exchange.
- **H.** The patient may be without a pulse or have a weak and thready pulse. It depends on the native function of the heart. Therefore, pulse oximetry also may not be available or inaccurate. Use basic perfusion assessment criteria such as skin temperature, dryness and color.
- **I.** External pacing maybe necessary to increase preload. There are NO limits on the amount of MA.
- **J.** For issues related to decrease of absence in power, please replace power source with AC or DC power.

Alarm Management:

Hazardous Events - These events are those that cause the pump to slow or stop and require minimum time checking for obvious problems. ***They are RED HEART OR RED BATTERY with STEADY TONE.***

Red Heart:

- **A.** Ensure system controller is connected to the driveline of the pump and power source.
- **B.** Switch power source – fresh set of batteries or the external battery pack. It maybe with the patient belongings.
- **C.** Immediately give isotonic IV fluids 30 mL/kg and repeat if necessary to fix alarm. It may be a "suction event" the walls of the ventricle are being sucked into the turbine due to hypovolemia and shrinking of the left ventricle.
- **D.** If one round of IV fluids does not fix alarm perform a controller exchange. The process is outlined below:
  1. Make sure patient is lying down.
  2. Rotate the perc lock on the replacement controller and have it within easy reach. You will hear the perc lock click.
  3. Rotate the perc lock on the original controller until perc lock clicks into fully-unlocked position.
  4. Attach one of the power leads on the replacement controller to the battery clips on the original controller.
  5. Please assure a charged battery is in the clip. This can be done by pressing the fuel gauge on the side of the battery.
  6. **PLEASE MAKE SURE THERE IS ONE LEAD ATTACHED TO POWER AT ALL TIMES WHILE ON THE PATIENT.**
  7. Disconnect the driveline from the original controller by pressing the metal release tab on the controller socket. The alarm will sound because driveline has been moved from the controller.
  8. Place the driveline into the new replacement controller by lining up the black mark on the metal tab with the one on the driveline. Make sure the driveline is fully engaged and in the socket. DO NOT PULL on the lead to test it, you may damage the driveline.
  9. Rotate the perc lock on the new replacement system to lock it.
  10. Switch the other power lead on the replacement controller from the old one.
  11. The alarms should go silent. Use caution when silencing alarms. The best practice is to work through the alarms to assure the alarm is fixed.

Red Battery:

- **A.** Replace the power with fully charged batteries or alternative power source. LVAD will default to power saving mode of 8000 rpms.
- **B.** The batteries all have a fuel gauge to measure the available power.
- **C.** Each green light indicates 20% of power. **DO NOT USE A BATTERY IF THE FUEL GAUGE IS RED. IT IS A DEAD BATTERY.** One fully charged battery is good for 6 hours.
- **D.** To replace a battery, make sure it is charged then line up the red arrows on the battery with the red arrows on the battery clip and push forward gently.
- **E.** To RELEASE the batteries, press the release button on the battery clip.

Continuous Alarm without a Hazard Light:

- **A.** This is due to complete loss of power. Confirm that all connections are intact. Replace power source. If the loss of power persists, try replacing the controller. Consult with VAD Implantation center for anticoagulant recommendations if the pump has stopped for more than 5 min.
- **B.** If the patient has any native heart function (weak or thread pulse), treat like severe heart failure (inotropes).

Non-Hazardous Alarms – **One beep every 4 seconds**.

Yellow Battery

- **A.** Replace the used batteries with fully charged batteries or alternative power source.

Yellow Circle with intermittent beep

- **A.** Replace the system controller battery module. This tiny battery replacement can be found in the patient's transport kit.

Flashing Green Light with intermittent beep

- **A.** Check and reconnect white and black power cables.

No Light Illumination with Double Beep

A. Replace the system controller

Documentation

A. Document if there is a green light on the system controller.
B. Document your auscultation findings just below the apex.
C. Document if any alarms are present.
D. Document the number of bars on each battery (fuel gauge).

Transport of Patient with Ventricular Support (VAD)

A. Reassess patient and check all lead connections
B. Reconnect any loose or disconnected leads.
C. Auscultate Heart Sounds to determine if the device is functioning and what type of device it is. If it is continuous flow device, you should hear a "humming sound". This indicates the device has power.
    1. **Assess for a green light on the controller. This indicates the device has power. If the device has a green light with no alarms and the "humming" sound- the device has no operational issues**.
D. Assess the device for any alarms.
E. Look on controller usually found around the waist of the patient and to see what color tag and device it is OR look for the colored medical alert bracelet.
F. Match the color on the device tag to the EMS Guide for VADS and review and follow those guidelines.
G. Intervene appropriately based on the type of alarm
H. Establish IV access of NS/LR at KVO rate.
I. Assess vital signs. Use Mean BP with Doppler – the first sound you hear is the Mean Arterial Pressure (MAP).
J. If no Doppler, use the Mean on the non-invasive blood pressure monitor as a last resort
    1. Be aware that the patient will have a narrow pulse pressure.
    2. Treatment of the patient's blood pressure should be based on the mean arterial pressure. In these patients, the normal range for mean arterial pressure is greater than 60 and less than 90 (1/3 of the systolic blood pressure + 2/3 of the diastolic blood pressure = MAP). Consult LVAD coordinator or OLMC for treatment options.
K. The interface of the HeartWare console has hemodynamic information--rpms, flow, watts, battery power gauge. Document these values.
L. Transport to VAD center listed on the tag on the patients' Medical Alert Bracelet or the controller (located in the "fanny pack").
M. You are encouraged to call the number on the tag or bracelet for guidance if needed. All orders given by the VAD coordinator if you call are supported by the Medical Director.
N. Transport the significant other if space is available and the pilot/team approves.
O. Please take the patients equipment (Travel Bag) it is vitally important for back up equipment while in transport.
P. Transport these patients to the closest LVAD center. Bring the significant other or caretaker if possible to act as an expert on the device, especially if the patient is unconscious or unreliable
Q. The LVAD coordinator should be contacted as soon as possible after arrival on scene and if requested, LVAD patients should be transported to the closest LVAD center (Tampa General and Shands Gainesville)
R. Air transport should be considered if rapid transport is determined to be needed

Clinical Indications:

A. Patient restraints should be utilized only when necessary and in those situations where the patient is exhibiting behavior that presents a danger to the patient and/or others.

Consideration:

A. Scene security and crew safety are paramount. **Do not allow yourself or your crew to be placed in a dangerous situation.**
  1. All violent patients shall be physically and/or chemically restrained.

B. Use only the minimum amount of physical force necessary to restrain the patient. Patients should be searched for weapons prior to transport.

C. Continuously monitor the patient for the following:
  1. Tightening of the strap around the limb.
  2. Changes in mental status.
  3. Changes in vital signs.
  4. ECG changes.
  5. Changes in respiratory effort.
  6. Vomiting.
  7. Signs of circulatory and/or neurological compromise at the site of the restraint.

D. Once a patient is restrained, the restraints will remain in place until the patient is in care of ED.
  1. Transfer of care must be signed before a patient can be removed from field applied restraints.

E. Immediately address any changes in patient status.

F. Do not assume that the presence of drugs or alcohol intoxication precludes a life-threatening emergency. Many emergencies (e.g. hypoglycemia, head injury, etc.) can produce a violent or resistant patient but also require treatment.

Procedure for Physical Restraint:

A. Assure more than sufficient manpower to safely restrain patient. Law enforcement **shall be required** if not already on scene.
  1. If the need for restraint occurs during transport, immediately stop transporting and have dispatch respond law enforcement to you.

B. Place the patient face up on a long backboard. ***Do not place a patient in the prone position*.**
  1. If law enforcement has placed the patient in hand cuffs, then law enforcement must be transported with the patient or alternative means of restraint should be used.
  2. This also applies to any prisoner or interfacility transports.

C. Secure ALL extremities to the backboard. Try to restrain lower extremities first using soft restraints around both ankles. Next, restrain the patient's arms at his/her sides.

D. If necessary, utilize cervical spine precautions (tape, etc.) to control violent head or body movements.

E. Secure the backboard onto a stretcher for transport using additional straps if necessary. Remember to secure additional straps to the upper part of the frame of the gurney to avoid restricting the wheeled carriage.

F. It is recommended that a minimum of 2 crew members must provide care during transport of a restrained patient as the situation requires.

G. **Evaluate the patient's respiratory and cardiac status every 2-3 minutes to ensure that no respiratory compromise exists, including monitoring SPO2 and ETCO2**. Evaluate distal pulses and circulation every 5 minutes to ensure that no circulatory compromise exists. Document reassessments per documentation protocol

H. **DO NOT tighten chest straps to the point that they restrict breathing**.

I. If combative or resistive activity continues, consider sedation (see below).

J. Once a patient is restrained, the restraints will remain in place until the patient is in care of ED.
  1. Never allow a patient to promise or persuade their way out of restraints.
  2. Appropriate transfer of care must be completed before patient restraints can be removed.

Procedure for Chemical Restraint:

A. Restrain patient using physical restraints procedure above.

B. Prepare for possible hypotensive side effects.
C. Be prepared to provide airway control and positive pressure ventilations.
D. Administer Midazolam 2-4 mg increments IVP every 1-2 minutes or 4 mg increments IM and titrate to effect to a maximum of 10 mg. Assess vital signs every 5 minutes. Contact OLMC for additional sedation.
E. Follow altered mental status protocol to address possible causes of combativeness.
F. Reassess patient every 5 minutes and document as per documentation protocol.

Clinical Indications:

To maintain the quality of care initiated by the transferring facility

Procedure:

- **A.** The transport team should evaluate the patient on arrival at the bedside to determine the recent, current, or anticipated use of IV medications. The team should evaluate the medications the patient is on, and determine the reasons the referring physician is utilizing the medication. Actual dose being administered and appropriateness for clinical presentation will be confirmed for all infusions continued from another agency. The team should identify any parameters that the physician has been utilizing in the use of these medications, i.e., pain, blood pressure, heart rate or sedation.
- **B.** An infusion pump must be used for all medicated infusions and concentrated electrolytes. Except for fluid resuscitation boluses, all infusions administered to pediatric patients will be placed on an infusion pump.
- **C.** The transport team may consider continuing the medication as per the referring physician's guidelines unless contraindicated by changes in the patient condition, the discovery of adverse reactions, or contraindications. The transport team should evaluate whether the medication is being given at the correct dose. Transport teams are required to verify concentration, infusion rates, and dosage of all previously mixed continuous medications prior to transport
- **D.** A Dose/Rate calculator will be used for all titratable infusions.
- **E.** Infusions prepared in glass containers should be changed to an alternative container, such as 60 mL syringe, and infused via infusion pump to avoid breakage during transport. The transport team is responsible to ensure that an adequate amount of the medication is available for the transport duration.
- **F.** The transport team may consider discontinuing the medication if they identity potential or actual problems as identified in the above section.
- **G.** The team shall contact Medical Control for consultation at any time to review the medication regimes in question.
- **H.** The transport team may continue IV drip narcotic or sedation if initiated or mixed by the referring facility. CCT transport crews are not allowed to mix. The transport crew shall document in the patient record the concentration and rate along with the referring RN's name. If the medication volume is depleted or discontinued IV boluses of the medication can be used. (Medications and supply for transport should be considered prior to transporting)

Indication:

QuikClot is indicated to control bleeding. It should only be used as an adjunct for injuries upon the determination that conventional methods have been inadequate to stop bleeding. The patient should be treated for shock and prepared for rapid transport. If all bleeding control methods fail or unable to use a tourniquet due to a trunk or head injury, quick clot may be used if available.

Contraindications:

Known Allergies to Quick Clot

Procedure:

- **A.** Remove clothing to expose the source of bleeding.
- **B.** Open the QuikClot package and apply QuikClot dressing directly to the site.
- **C.** Apply Direct Pressure over QuikClot while elevating site if possible.
- **D.** Apply additional dressing over QuikClot if needed
- **E.** Continuously reassess for hemorrhage control.
- **F.** Do not throw out the package of QuikClot; it must be given to the emergency room staff for removal instructions.

The benefit of spinal immobilization in most trauma patients is unproven. There is growing body of evidence that suggests the use of a long backboard can result in harm to patients including agitation, pain, pressure sores, tissue ischemia, aspiration and respiratory compromise. Spinal motion restriction (SMR) is defined as attempting to maintain the spine in anatomic alignment and minimizing gross movement irrespective of adjuncts or devices. SMR can be achieved with a scoop stretcher, vacuum splint, ambulance stretcher, or other similar device along with a cervical collar and head immobilization if indicated. The use of a long spine board has a role in facilitating the safe extrication and movement of unconscious or impaired patients.

Indications:

- **A.** Acutely altered level of consciousness (e.g., GCS <15, evidence of intoxication).
- **B.** Midline neck or back pain and/or tenderness.
- **C.** Focal neurologic signs and/or symptoms (e.g., numbness or motor weakness).
- **D.** Anatomic deformity of the spine.
- **E.** Distracting circumstances or injury (e.g., long bone fracture, degloving, or crush injuries, large burns, emotional distress, communication barrier, etc.) or any similar injury that impairs the patient's ability to contribute to a reliable examination.

SMR is not indicated if:

- **A.** The patient has a normal level of consciousness (Glasgow Coma Score of 15).
- **B.** No spine tenderness or anatomic abnormality.
- **C.** No neurologic findings or complaints (e.g., numbness or motor weakness).
- **D.** No distracting injury (e.g., long bone fractures, significant burns, etc.).
- **E.** No drug or alcohol intoxication.
- **F.** Reliable patients with penetrating trauma to the head, neck, or torso should not need spinal motion restriction provided:
    1. There is no evidence of spinal injury including absence of any neurological complaints.
    2. They have no secondary mechanisms of injury that may increase the risk of blunt spinal trauma.

Procedure

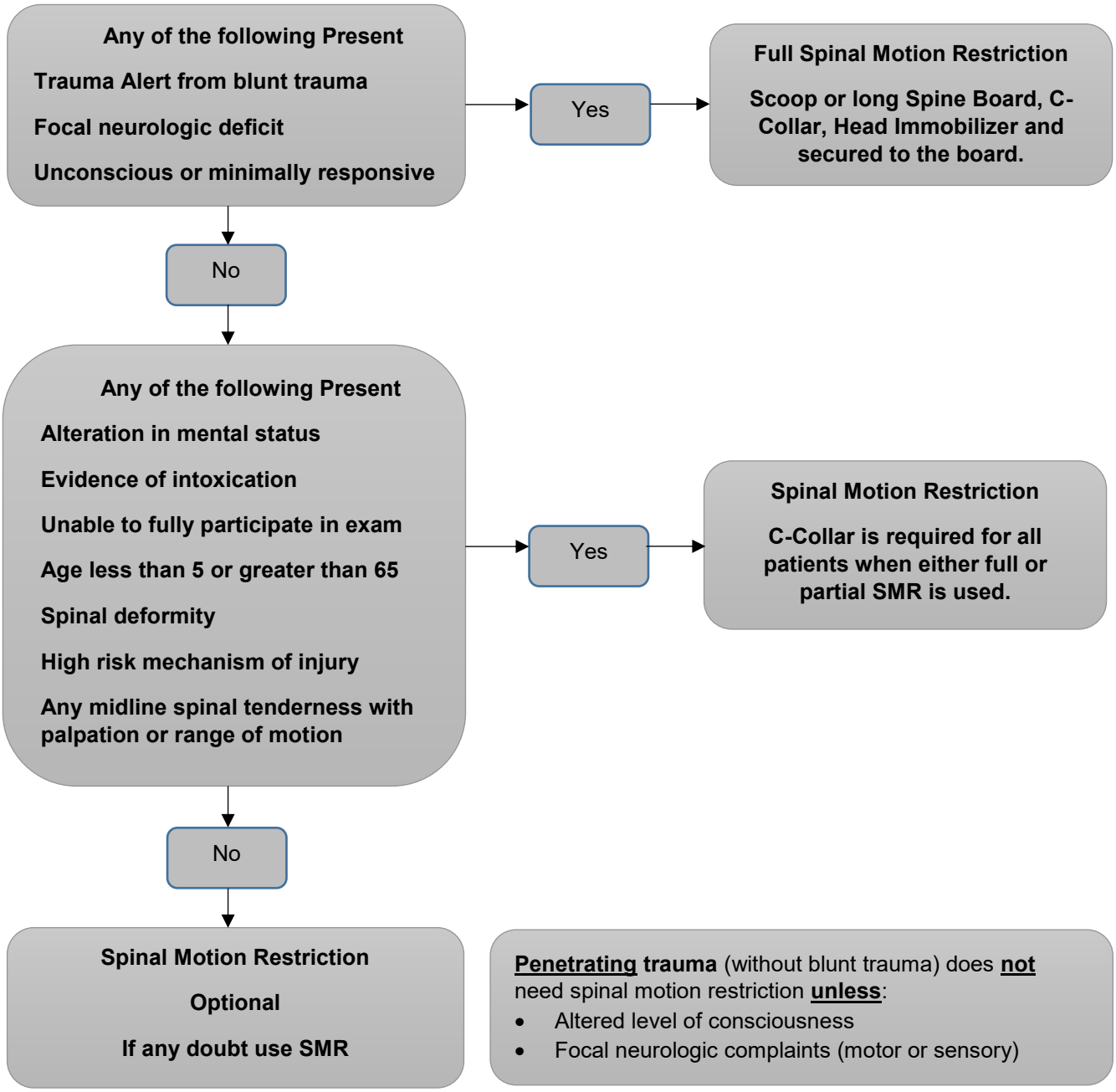
- **A.** Assess the patient for the clinical findings listed above (mechanism of injury should also be considered).
- **B.** Manually stabilize the head in a neutral, in-line position. Manual stabilization should be provided without interruption until complete patient spinal motion restriction is accomplished.
- **C.** The use of a long spine board should be limited to extrication, transfer of patients and patients with altered mental status Spinal motion restriction can be maintained by application of a rigid cervical collar and:
    1. Securing the head with a head bed, blanket roll or tape. DO NOT apply tape directly across the chin as this may create an airway obstruction. Tape may be placed across the forehead, and/or the surface of the semi-rigid cervical collar.
    2. Secure the patient to the stretcher and immobilize the upper torso to prevent upward sliding of patient's body. Additional straps should be used to prevent side-to-side movement and the patient's arms and legs should also be secured.
    3. The patient's head may be elevated 20º to 30º.

Full spinal Motion Restriction with long spine board/Scoop, C-collar and strapping is required for:

A. **Trauma Alert from blunt trauma**
B. **Focal neurologic deficit**
C. **Unconscious or minimally responsive**

Partial Spinal Motion Restriction May be considered for:

A. **Back or neck pain after trauma**
B. **Trauma to the head, neck, torso, or back (witnessed, reported, or suspected)**
C. **Significant trauma – including ejection, falls > 3x patient's height, axial loading injuries, high-speed motor vehicle collisions (MVCs), and other high-energy mechanisms**



T-POD® Pelvic Stabilization Device is indicated for treating a pelvic injury or significant pelvic pain. Untreated, pelvic injuries can result in extreme pain, significant internal bleeding and can be fatal. Traumatic injuries from pelvic fractures may occur with minimal external signs and have been associated with significant hemorrhage. When pelvic trauma has occurred, binding the hips quickly and effectively reduces the risk of complications, including internal bleeding.

For suspected hip fracture (indicated by pain, shortening and/or rotation of the affected extremity), splint with padding to protect the hip and comfort the patient. ***The use of a T-Pod is not indicated for patients with a suspected hip fracture.***

Application Procedure

- **A.** Slide Belt under supine patient and into position under the pelvis.
- **B.** Trim the Belt, leaving a 6-8" gap over the center of the pelvis.
- **C.** Apply Velcro-backed Mechanical Advantage Pulley System to each side of the trimmed Belt.
- **D.** Slowly draw tension on the Pull Tab, creating simultaneous, circumferential compression.
- **E.** Secure the Velcro-backed Pull Tab to the Belt.
- **F.** Record the date and time of application on the space provided. Re-evaluate distal pulse, motor, and sensation (PMS) of both extremities regularly and document in the PCR.

Special Considerations

- **A.** If an obese patient requires ***T-POD®***, two belts may be affixed together using one power unit as an extender and the other as the pulley
- **B.** Children less than 50 lbs. (23 Kg) may be too small to obtain the 6-inch gap needed for closure. If the ends of the ***T-POD®*** overlap, it will not be effective in stabilizing the pelvis.
- **C.** The ***T-POD®*** can be released to check for skin integrity and provide wound care, as necessary. For long transports, the ***T-POD®*** should be released every twelve (12) hours to check for skin integrity and re-applied as soon as possible.

Implantable Subcutaneous Ports (ISP) are a specialty vascular access used in patients with problematic access or requiring frequent infusion of medication or parenteral nutrition.

Indications:

- **A.** Inability to obtain peripheral IV access
- **B.** Administer maintenance IV fluids or blood products
- **C.** Administer medications
- **D.** Obtain specimens for laboratory tests

Contraindications:

- **A.** High suspicion of port sepsis
- **B.** Cellulitis

Equipment:

- **A.** Large sterile clear occlusive dressing
- **B.** Antiseptic solution (Clora-Prep)
- **C.** Sterile gloves
- **D.** Huber needle
- **E.** Saline solution
- **F.** 10 mL syringe
- **G.** Surgical mask

Procedure:

- **A.** Explain the procedure to the patient, prepare a sterile field, and apply sterile gloves. Don surgical mask.
- **B.** Clean the insertion site with Clor-Prep
- **C.** Attach a 10 mL syringe containing normal saline to the needle. Prime needle.
- **D.** Stabilize the port between the thumb and index finger of the non-dominant hand. With the dominant hand, insert the Huber needle perpendicular to the center of the port surface.
- **E.** Push the needle with control, firmly through the skin and septum until the needle touches the bottom of the port.
- **F.** Once the Huber needle is in place, withdraw the plunger of the syringe, aspirating for blood return. Aspirate about 5 mL of blood and heparin from the port and line to confirm that you are in the port and that the port is functioning properly. Discard the syringe and contents as biohazard waste.
- **G.** If blood return occurs, the needle is properly placed. Flush the port with 10 mL of saline flush solution. It may now be used for the same purposes as other IV access catheters. ***If blood is not aspirated, do not use the port.***
- **H.** Secure the needle in place and cover with a sterile clear occlusive dressing.

Clinical Indications:

A. Intraosseous (IO), if available, may be used as the first line for vascular access for patients with:

1. Confirmed cardiac arrest.
2. Severe burn injury with signs of shock.
3. Severe multiple trauma with signs of shock.

B. Intraosseous (IO), if available, should be considered for use in the following patients for whom IV access cannot be established in a timely manner (2 attempts).

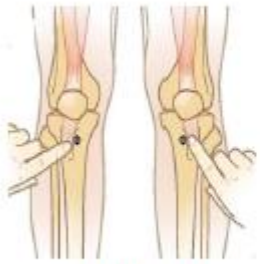
1. Any unstable medical or trauma patient (by Physician order only).

Contraindications:

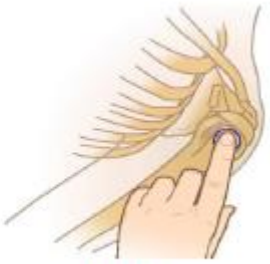
A. Inability to locate landmarks.
B. Previous IO attempt in the same leg.
C. Fracture or recent surgery (less than 30 days) in the extremity to be used.
D. Gunshot wound in the extremity to be used.
E. Sites near infection, burns, or recent surgeries (less than 30 days) should be avoided unless absolutely necessary.

Sites:

A. Proximal Tibia. This site is 2cm (about 1 inch) medially and 1cm (about ½ inch) proximal to the tibial tuberosity.
B. Proximal Humerus (For adult patients only). Place the patient's palm on the umbilicus with the elbow on the ground or stretcher. Use your thumb to identify the humeral shaft. Slide thumb towards the humeral head with firm pressure. Locate the tubercle by the prominent bulge. Use the opposite hand to pinch anterior and posterior humerus to assure midline position on the humerus.



Proximal Tibia



Humerus

Procedure: EZ-IO:

A. Prepare equipment.
1. EZ-IO PE – (Pink) patients 3-39 kg.
2. EZ-IO AD – (Blue) patients greater than 39 kg.
3. EZ-IO LD – (Yellow) patients greater than 39 kg with excessive tissue at the insertion site.
B. Prep the site with Betadine or Alcohol.
C. Prepare infusion system.
D. Ensure that the driver and needle set are securely seated.
E. Remove and discard the needle set safety cap from the IO needle set installed on the EZ-IO power driver.
F. Position driver at insertion site with needle set at a 90-degree angle to the bone. Press needle set until needle set tip touches bone.
G. Ensure at least 5 mm of the catheter is visible
H. Penetrate bone cortex by squeezing the driver's trigger and applying gentle, steady downward pressure
I. Release driver's trigger and stop insertion process when:
1. A sudden "give" or "pop" is felt upon entry into the medullary space.
2. A desired depth is obtained.
3. **IMPORTANT:** use gentle-steady pressure. Do not use excessive force. Allow the catheter tip rotation and gentle downward pressure to provide the penetrating action.

4. **Note:** If the driver stalls and will not penetrate the bone you may be applying too much downward pressure.

J. Remove power driver and stylet.
K. Confirm catheter stability.
L. Attach primed EZ-Connect® extension set to catheter hub's Luer lock. ***DO NOT ATTACH A SYRINGE DIRECTLY TO THE EZ-IO CATHETER HUB.***
M. Flush the EZ-IO AD catheter with 10 ml of normal saline.
1. Prior to flush consider the aspiration of a small amount of blood to confirm placement.
2. Consider IO Lidocaine 20 mg for conscious patients prior to flush. If pain persists, provide an additional 20 mg for a maximum of 40 mg.
3. No Flush = No Flow. Failure to appropriately flush the IO catheter may result in limited or no flow.

N. Apply dressing.
O. Administer fluids as medications as indicated.
P. Frequently monitor the insertion site for extravasation.
Q. Document procedure as per Documentation protocol.

Procedure: Manual Pediatric IO

A. Assemble equipment:
1. Proper size IO needle with short extension tubing, 3-way stopcock, 10-12 cc syringe, 35-60 cc syringe for fluid bolus, Betadine, roll gauze, Tegaderm dressing.

B. Site Preparation:
1. Prep the surface with Betadine and dry with a sterile gauze pad.

C. If the patient is particularly small, it may be helpful to pre-adjust the length of the exposed needle prior to insertion to prevent insertion too deeply. Insert Needle:
1. Insert at the proximal tibial site at a 90-degree angle, perpendicular to the axis of the bone. The needle should penetrate the skin and subcutaneous tissue and be pushed through the cortex of the bone using a gentle back and forth or "drilling" motion (avoid rocking the needle!), until a "pop" or loss of resistance is felt. Placement in the marrow should then be confirmed by firm fixation of the needle, and either:
2. Removal of the stylet with free aspiration of marrow or blood.
3. Infusion of 2-3cc of NS, palpating for extravasation or noting significant resistance. If extravasation should occur, remove IO and secure site with sterile gauze and tape.

D. Consider IO Lidocaine (0.5 mg/kg of 2% solution, not to exceed 20 mg) for conscious patients prior to flush.
E. Start Infusion:
1. Pressurized infusions may be needed during resuscitation.

F. Secure IO and monitor for signs of extravasation.
G. Document procedure as per Documentation protocol.

Clinical Indications:

Any patient where intravenous access is indicated (significant trauma or mechanism, emergent or potentially emergent medical condition).

Procedure:

- **A.** Saline locks may be used as an alternative to an IV tubing and IV fluid in every protocol at the discretion of the ALS provider.
- **B.** Paramedics can use intraosseous access where a threat to life exists as provided for in the Venous Access-Intraosseous procedure.
- **C.** Use the largest catheter bore necessary based on the patient's condition and size of veins.
- **D.** Inspect the IV solution for the expiration date, cloudiness, discoloration, leaks, or the presence of particles.
- **E.** Connect IV tubing to the solution in a sterile manner. Fill the drip chamber half full and then flush the tubing bleeding all air bubbles from the line.
- **F.** Place a tourniquet around the patient's extremity to restrict venous flow only.
- **G.** Select a vein and an appropriate gauge catheter for the vein and the patient's condition.
- **H.** Prep the skin with an antiseptic solution.
- **I.** Insert the needle with the bevel up into the skin in a steady, deliberate motion until the bloody flashback is visualized in the catheter.
- **J.** Advance the catheter into the vein. **Never** reinsert the needle through the catheter. Dispose of the needle into the proper container without recapping.
- **K.** Remove the tourniquet and connect the IV tubing or saline lock.
- **L.** Open the IV to assure the free flow of the fluid and then adjust the flow rate as per protocol or as clinically indicated.
- **M.** Cover the site with a sterile dressing and secure the IV and tubing.
- **N.** Label the IV with date and time, catheter gauge, and name/ID of the person starting the IV.
- **O.** Document the procedure, time and result in the patient care report (PCR).

Purpose:

To provide guidelines for the management of patients undergoing external CSF drainage via Ventriculostomy. Ventriculostomies are used for the temporary treatment of obstructive or non-obstructive hydrocephalus.

The Ventriculostomy drainage system CANNOT have drainage disabled (Ventriculostomy turned off). Unless ordered by the Neurosurgery Service.

Procedure:

- **A.** Prior to transport, ensure that the catheter is secure
- **B.** Determine the patient position (e.g., supine, head of the bed elevated 30 degrees, etc.)
- **C.** Hang the external drainage system on stationary IV pole so that the white "0" is level with the middle of the patient's ear when the patient is supine with the head in the neutral position.
- **D.** Consult Neurosurgery for Ventriculostomy settings.
- **E.** Maintain the HOB elevation 30 degrees and with the neck in a midline and neutral position in order to facilitate venous drainage unless otherwise ordered. THE SYSTEM WORKS BY GRAVITY.

****Notify the Physician immediately of questionable patency. Only the neurosurgery team may authorize attempts to flush the Ventriculostomy system.**

Troubleshooting

- **A.** If unable to verify patency, remove the device from the IV pole momentarily and position it below the bed; observe for CSF drainage
- **B.** Assess that the atmospheric vent at the top of the volutrol has not become wet by accidental INVERSION of the unit. If the atmospheric vent at the top of the volutrol becomes wet, drainage of the CSF can become obstructed.

ICP monitoring:

- **A.** If ICP is to be monitored, prepare the transducing tubing with non-heparinized preservative-free saline. Heparin is contraindicated due to the risk of bleeding.
- **B.** Place and maintain transducer set-up level with the patient's external auditory canal. Unless otherwise ordered, maintain stopcock in Ventriculostomy DRAIN position when not obtaining ICP reading.
- **C.** Assess the patient closely for a decrease or change in LOC or a new onset of a headache, if this occurs notify the physician immediately and use supportive measures as indicated.

OPERATIONS

Purpose

Ocala/Marion County EMS believes in respect for patient autonomy. The patient with decision-making capacity has the right to accept or refuse medical intervention. This includes the right to specify, in advance, their wishes when they are no longer able to communicate wishes.

Procedure (Advanced Directives)

A. Patients may have established a Health Care Proxy to make medical decisions for their care. If one exists:
  1. The legal document that establishes the Health Care Proxy must be present.
  2. The Health Care Proxy speaks as if the patient is speaking. Their requests shall be honored.
  3. If any question exists, contact OLMC.

B. Patients who have a DNR or advanced directive and are in cardiac or respiratory arrest shall be treated according to protocol.
  1. If cardiac or airway management is or may be needed, begin BLS procedures and consult OLMC for further patient management.
  2. The patient can verbally withdraw the DNR or advanced directive. If this happens, treat the patient according to the appropriate protocol.
  3. When treating a patient with a DNR or advanced directive, give extra attention to and provide comfort care measures as needed. Contact OLMC for guidance.

Procedure (Cardiopulmonary arrest)

A. The EMS system shall honor a valid DNR (Do Not Resuscitate) order that the Paramedic sees in writing under the following circumstances:
  1. Any patient that is in cardiac arrest with a valid DNR shall have their request honored.

B. BLS procedures will be followed until one of the following occurs:
  1. The EMT-P sees a written DNR order, which shall be honored and resuscitation stopped.
  2. If a family member is present and advising of a DNR but is unable to produce the document, contact OLMC for direction.
  3. OLMC directs the crew not to continue resuscitation.

C. OLMC should be contacted for guidance if the patient has a living will, advance directive, or chart notes indicating that needed care should be withheld.

D. ***If any question exists about the existence or validity of DNR, perform BLS care and contact OLMC.***

Definitions

A. Do Not Resuscitation order (DNR): An order written by a physician stating that in the event of cardiopulmonary arrest, cardiopulmonary resuscitation shall not be administered. DNR orders apply only if the patient is pulseless and apneic. The properly completed form will be signed by the patient, or patient's representative and the physician. If the DNR is not on the state yellow form, or is questionable as to completeness or validity, contact OLMC. Health Care Instruction: A document executed by a person to indicate the person's instructions regarding health care decisions.

B. Advance Directive: A document that contains a health care instruction or a power of attorney for health care.

C. Living Will: A document that may confirm an Advance Directive or Directive to Physician informing her/him that if the patient has a terminal illness and death is imminent, the patient would not wish to be placed on artificial life support that will only prolong the process of dying. In general, the traditional Living Will document alone is not helpful in the out-of-hospital setting because of its multiple restrictions and lack of clarity on when it should take effect.

D. Health Care Proxy: An adult appointed to make health care decisions for a person. When a Health Care Proxy speaks, it is as if the patient is expressing their wishes.

E. Durable Power of Attorney for Health Care (DPOAHC): A power of attorney executed and still in effect that authorizes a Health Care Proxy to make health care decisions for a person when the person is incapable.

F. Power of Attorney for Health Care (POAHC): Power of attorney document executed that authorizes a Health Care Proxy to make health care decisions for a person when the person is incapable.

The purpose of this protocol is to describe the transfer of an individual patient on the scene of medical emergencies between various EMS care providers and how to resolve disputes that may arise over the transfer of patient care.

Procedure

A. EMT's/Paramedics/Other Pre-hospital Providers On-Scene: The first arriving, highest certified EMS provider available to perform patient care on the scene will be the Medical Person-In-Charge (MPIC) of his/her particular patient and will assume responsibility for directing that patient's overall care. A team approach to patient care, assessment, and treatment shall be utilized by all medical providers on scene, regardless of agency.

B. When a higher-level EMS provider arrives, in an EMS role, that individual shall assume the role of MPIC, after receiving a verbal report from the initial MPIC.

1. If the initial care provider is a physician, RN, or off duty-paramedic, they shall be thanked for their care.

C. Where a non-transporting EMT or Paramedic is MPIC at an incident involving multi-function response (e.g., automobile extrication, fire, technical rescue scene, etc.), that MPIC shall relinquish MPIC responsibilities as early as practical, in his or her discretion, and follow accepted Incident Management System (IMS) procedures and directives of the on-scene Incident Commander (IC).

D. The responsibilities of the MPIC directing a specific patient's care include:

1. Assuring that treatment, operations, and communications follow protocols and standard operating guidelines.

2. Coordinating patient care activities. This MPIC must watch over the scope of a specific patient's care and be sure that the patient care activities are being accomplished in a rapid, efficient, and appropriate manner.

3. Directing other EMS personnel to perform appropriate EMS interventions.

4. Establishing the appropriate time to be spent at the scene for doing patient care.

5. Determining when transportation of the patient is to occur.

6. Performing medical coordination with all agencies and personnel with respect to that specific patient.

E. The MPIC directing a patient's overall care will be held responsible and accountable for patient care activities performed at the scene and be identified on all patient care reports.

F. If a patient requires transport and the first arriving MPIC is from a non-transporting agency, provision of patient care will be turned over to the transporting Paramedic or aeromedical provider personnel when:

1. At a time agreed upon by the initial MPIC and the transport Paramedic prior to the patient being placed on the transport unit's gurney, OR

2. The patient is placed on the transport unit's gurney.

G. Paramedics from non-transport agencies may ride with the transport unit to continue patient care and increase their knowledge and experience through additional patient care with the consent of the lead paramedic on that transport. Assisting that transport unit, they may continue to perform any needed procedures and assessments.

1. NOTE: The transport paramedic is the MPIC and shall retain all final decision-making authority. Any conflict arising in patient care decisions shall be governed under the section below in reference to disputes between providers.

2. Proper documentation of all care provided by the non-transport paramedic while in the transport unit shall be included in the transport paramedic report. The non-transport paramedic shall complete appropriate documentation as specified in these Guidelines through whatever method their agency requires.

H. For patients transported to a receiving facility, the Paramedic will provide a complete verbal report to the appropriate staff at the time of patient transfer. They will also provide the receiving facility with written documentation in accordance with requirements by the Florida Department of Health and local policy (see Documentation protocol).

1. For patients transported to a trauma center, the verbal report will be provided AFTER the patient has been transferred to the facility's gurney per their policy.

Disputes On-Scene between EMS Providers or Other Medical Professionals

A. Disagreements about care should be handled in a professional manner and shall not detract from patient care. Where there is a disagreement concerning the assessment of a patient's condition or the treatment to be provided, *the decision of the person then serving as MPIC shall govern and all personnel shall implement the MPIC's directions.* Disputes or disagreements shall not take place in the presence of patients, family, bystanders, etc. This paragraph does not prohibit individuals other than the MPIC from making suggestions or recommendations in a collegial, respectful, and professional manner.

1. If the direction from the MPIC puts a patient at risk for injury, then the direction shall not be performed until OLMC is consulted.

B. To the extent possible, the patient care protocols shall be followed and provide the basis for resolving disputes. After the call is completed, the dispute shall be documented and presented, via the chain of command, to the Medical Director for resolution.

C. If an unresolved dispute regarding appropriate patient medical care continues between Paramedics or other medical professionals concerning the care of a patient, OLMC shall be contacted by the MPIC.

D. If a dispute arises during a call in which the MPIC responsibility changes, or which results in the transfer of patient care from one MPIC to another, the approximate time of the transfer shall be included on the patient care report. Documentation should include a comment or line in the flow chart (e.g., "1430 hrs. Paramedic Smith assumed MPIC of this patient from EMT Jones.").

E. ***DISPUTES SHALL NOT APPEAR ON PATIENT CARE REPORTS.*** Separate written documentation will be completed and forwarded through the chain of command of each involved organization.

Physician On-Scene Policy (Within Office)

A. When EMS is called to a physician's office, the EMT's and paramedics should receive information from the physician in an attempt to provide the patient care requested by the physician.

B. While in the physician's office, the physician shall remain in charge of the patient. The EMT's and paramedics shall follow the direction of the physician as long as it is within the Scope of Practice and protocols of Marion County Fire Rescue. Anytime there is a conflict between a physician's orders and the protocols, OLMC shall be contacted.

C. Once the patient is in the ambulance, unless the physician accompanies the patient, paramedics shall follow the protocols.

Physician On-Scene Policy (Outside Office)

A. Any physician (MD or DO) at the scene of an emergency may be qualified to provide assistance to EMT's and paramedics and shall be treated with professional courtesy.

B. A licensed physician requesting control of patient care at the scene shall be:

1. Thanked for the offer by the MPIC and/or IC.

2. Advised that the EMT's and paramedics work under established medical protocols and on-line medical control.

3. Advised that we are not permitted to relinquish medical control to a physician on the scene without authorization from OLMC.

C. EMT's and Paramedics shall be authorized to proceed under the direction of the physician ***ONLY IF ALL THREE OF THE FOLLOWING PROVISIONS ARE MET***:

1. OLMC is contacted and authorized transfer of patient care.

2. The physician agrees to accompany the patient to the hospital in the ambulance.

3. The physician agrees to complete and sign the appropriate patient care report.

D. If communication with OLMC cannot be established, care may be provided only according to approved ALS protocols. No direction from an on-scene physician may be accepted.

Purpose

Law enforcement agencies stress that their first priority on any crime scene is the preservation of life with the reconstruction of the crime scene second. EMS personnel can be of assistance by adhering to the following guidelines regarding crime scene response. When possible avoid potentially spoiling or destroying items that may be evidence.

Procedure

A. Response and Arrival
   1. Be conscious of physical and weather conditions around the site. Tire tracks of suspect vehicles are often located in or adjacent to a driveway.
   2. Limit the number of personnel allowed onto the scene. Consult with police on the scene to direct placement of vehicles and route of personnel onto the scene.

B. Access and Treatment
   1. Select a single route to the victim. Maintaining a single route decreases the chance of altering or destroying evidence or tracking blood over a suspect's footprints.
   2. Note the location of furniture, weapons, and other articles, and avoid disturbing them. If they need to be moved, someone should note the location the article was moved from, by whom it was moved, and where it was placed.
   3. Remove from the scene all EMS generated debris that is contaminated with blood or body fluid and dispose the debris through established channels.
   4. Be conscious of any statements made by the victim or other persons at the crime scene. Write down what these statements were and report to the investigating officers.

C. Statements made by the patient shall be recorded in the ePCR using direct quotes.
   1. Note the specific garments worn by the patient at the time of treatment. It is also important not to tear the clothing off or cut through any holes, whether made by a knife, bullet, or another object. Have law enforcement provide guidance on how to preserve any physical evidence.
   2. The victim should be placed on a clean sheet when ready for transport.
   3. Provide the hospital with verbal report indicating a crime has occurred and what agency is involved so that they can act to preserve evidence.

D. Treatment and transport destination decisions are made by the transport unit, not law enforcement, unless the patient is in custody of law enforcement. If the person is in custody, transport to the appropriate facility as requested by law enforcement. Law enforcement must travel with the patient if the patient is to be restrained with devices that cannot be immediately released without law enforcement assistance.

E. Documentation
   1. A detailed report is important in case you are later called to testify in court. An incident report should be completed and should cover your observations, conversations with family or witnesses, the location of response vehicles and equipment, furniture, weapons, clothing that has been moved, items that were handled and your route to the victim.
   2. Do not offer your opinions or evaluations about the crime scene.

Reminder

Any location can be, or may become, a crime scene. When responding, and upon arrival, if something does not appear to be right, notify police. If you suspect crime scene and police are not present, secure area and document what you see. Ultimately, law enforcement has decision making authority in regard to scene preservation and security.

Purpose

The purpose of the Death in the Field Protocol is to define under what conditions medical care can be withheld or stopped once it has been started. Death in the Field only applies to those patients who have not been loaded into a transport unit for transport to a receiving facility.

Procedure

Resuscitation efforts may be withheld if:

- **A.** The patient qualifies as a "DNR". (See DNR Protocol)
- **B.** The patient is pulseless and apneic in a mass casualty incident or multiple patient scenes where the resources of the system are required for the stabilization of living patients.
- **C.** The patient in cardiac arrest who has injuries incompatible with life (e.g. decapitation, incineration, complete transaction of thorax/abdomen, etc.)
- **D.** The patient has rigor mortis in a warm environment.
- **E.** The patient is in the stages of decomposition.
- **F.** The patient has skin discoloration in dependent body parts (dependent lividity).

Specific Guidelines for

- **A.** Traumatic Arrest:
  - **1.** A victim of trauma (blunt or penetrating) who has no vital signs in the field may be declared dead on the scene. A cardiac monitor may be beneficial in determining death in the field when you suspect a medical cause or hypovolemia (a narrow complex rhythm with a QRS less than .10 seconds suggests profound hypovolemia, which may respond to fluid resuscitation).
  - **2.** At a trauma scene, the paramedic should consider the circumstances surrounding the incident, including the possibility that a medical event (cardiac arrhythmia, seizure, and hypoglycemia) preceded the accident. When a medical event is suspected, treat as a medical cardiac event. VF should raise your index of suspicion for a medical event.
- **B.** Medical Arrest:
  - **1.** Consider termination of resuscitation on scene when:
    - **a.** The patient's age is greater than 18 and monitor shows asystole, PEA or, a dying heart rhythm upon initial monitoring in at least two leads.
    - **b.** The patient is not hypothermic (hypothermic patients must be transported).
    - **c.** The patient is not in V-Fib or V-Tach (these patients must be transported).
    - **d.** No defibrillation has been performed prior to your arrival and there has been no return of spontaneous circulation (ROSC).
  - **2.** If all of the above criteria have been met and CPR has been provided by EMS for greater than 20 minutes resuscitation can be terminated when:
    - **a.** At least four doses of Epinephrine have been administered (given every 3-5 min).
    - **b.** The patient remains in asystole or PEA.
    - **c.** A patent airway (BVM with ETCO2 or King Airway with ETCO2 or ET Intubation with ETCO2).
    - **d.** Quantitative ETCO2 value is less than 10 mmHg with effective CPR, after 20 minutes of ACLS.

****After termination of resuscitation efforts refer to the grieving people protocol, this will provide some direction following the death of family member or friend.**

Purpose

To provide guidelines that specify the minimum documentation required after any patient contact.

Procedure

An Electronic Patient Care Report (ePCR), if available, shall be completed for each patient encountered, evaluated, treated, and/or transported. The MPIC shall provide the receiving caregiver with a verbal report and a copy of the 4-lead and or 12-lead documentation upon patient transfer. Except where required by operational readiness (e.g. requested by an officer to be available to respond to a call), the transport ePCR should be completed prior to leaving the receiving facility. In those cases where the report cannot be completed immediately, the report shall be completed as soon as possible before the end of that shift. State law requires that a report ~~be~~ is received by the receiving facility within 24 hours of the patient's arrival at the facility. ***Local protocols require that reports for transported critical patients shall be completed prior to leaving the receiving facility!Electronic Patient Care Form (ePCR)***

A. At a minimum, ePCR documentation shall include:

1. The patient's name, address, date of birth, and Social Security number if known.

2. Patient's whose name is not known are to be referred to as John or Jane (as appropriate) Doe.

3. Unknown Social Security numbers should be left blank.

4. Patients who are living in a facility (nursing facility, jail, rehabilitation center, etc.) have the address of the facility.

5. Unknown addresses can be listed as "Unknown Address" with the city and zip code being the scene's city and zip code (unless the patient's city and zip code are known)

6. Allergies.

7. Patient history and all patient medications shall be listed in the report and provided to the hospital.

a. Specific medical problems shall be listed with as much detail possible.

b. All current patient medications shall be listed, if provided, as completely as possible.

c. Surgical history, especially if it relates to the current problem.

8. Chief Complaint.

a. Chief complaint should be in the patient's words whenever possible. It is recommended that profanity or other vulgar terminology not be documented in the chief complaint, however, this may be documented in the patient narrative.

b. Correct medical terminology should be used wherever possible.

c. The nature of call from dispatch cannot always be used as a chief complaint.

d. Mechanisms of injury are not a chief complaint (i.e. MVA, Fall, Trauma, Transport, etc.).

e. The injuries diagnose or symptoms should be documented in the narrative.

f. Hospital to hospital transfers should have an admitting / discharge diagnosis documented as the chief complaint.

9. Provider impression & protocol being used:

a. If treatment indicates a change in the protocol (e.g. respiratory emergency becomes as symptom of a cardiac emergency), then both protocols shall be documented.

10. Narrative:

a. Subjective information (history of present injury/illness)

i. OPQRST/SAMPLE

b. Scene Survey.

c. Patient mental status.

i. If the patient is not Awake, Alert, and Oriented to person, place, time, and situation (A+Ox4), then describe orientation.

d. Patient's physician, if known.

i. If none, document that the patient has no physician.

ii. If unknown, document that the physician is not known.

e. Objective findings.

f. A complete head-to-toe assessment

g. A plan of action including treatment rendered. Treatments that are fully recorded in the flowchart should mirror treatments documented in the narrative. This requires consistent review of documentation in the flowchart and complete documentation in the narrative.

11. Vital signs.
- **a.** Blood pressure.
- **b.** Pulse.
- **c.** Respiratory rate & quality.
- **d.** SPO2
- **e.** ETCO2 (as outlined by protocol).
- **f.** "Monitor for Vital Signs Only" should only be used when cardiac monitoring was not performed (BLS)

12. OLMC contacts.

13. All medications, routes, dosages, times of administration, and patient response to treatment All procedures, invasive or otherwise, including times and outcome.

14. Documentation of application, and result (or failure of result), and interpretation of ECG and 12-Lead ECG.

15. Documentation of application and result (or failure of result) of CPAP.

16. Documentation of application and result (or failure of result) of capnography.

17. Documentation of intubation (Endotracheal Tube, King Airway, or Endotrol) shall include.
- **a.** Type and size of the airway.
- **b.** Visualize passing through vocal cords (except Endotrol).
- **c.** Record airway depth at the teeth or gum line for ET intubation and at the nare line for NT intubation.
- **d.** How the airway was secured to the patient
- **e.** Lung sounds shall be recorded before and after endotracheal intubation. Lung sounds and absence of epigastric sounds must be recorded regularly and any time the patient is moved and should correspond with patient information from SPO2 and ETCO2.

18. Application of a splint requires documentation of pulse, motor, and sensation before and after application.

19. Application of spinal precautions requires documentation of pulse, motor, and sensation before and after application. Documentation of manual cervical spine control must be documented until patient's head is secured to the backboard.

20. Name of person to who care was transferred and time of transfer.
- **f.** The person who accepts care of the patient must sign the patient care report.
- **g.** If a signature cannot be obtained, the reason must be documented.

21. Any unusual circumstance or situation that arises.

22. Any issue or situation which creates a delay or complication in patient care or the transfer of care.

23. Alert criteria (if alert was issued).
- **a.** Alerts and criteria for issuing them shall be entered into the flow chart.

24. Patient's signatures for privacy information and permission to treat & transport.
- **a.** If the patient cannot sign, document reason.
- **b.** ***Do NOT delay treatment, transport, and transfer of care, or ED patient care to obtain a signature!***

25. Electronically attach the monitor file to ePCR, if equipped.
- **a.** Vital signs that are imported and not accurate should be deleted with a notation in the narrative (e.g. "BP at 00:30 hrs. Removed as it did not match patient presentation. Manual BP was taken".
- **b.** If due to equipment failure attachment of the monitor cannot be done, then the strips will be mounted to the white scan forms and forwarded as indicated.
- **c.** A report of the failure must be made as per SOG.
- **d.** IT/QA will make arrangements to have the monitor downloaded and will attach to monitor to the ePCR.Special situations occur where intensive diligence and thoroughness is needed when writing an ePCR:

i. Refusals.
- **a.** Determination of competency to refuse must be clearly recorded.
- **b.** Attempts to educate and convince a patient to seek care must be recorded in detail. Direct quotes of provider and patient statements are strongly encouraged.
- **c.** Names and location of who the patient is left with needs to be documented.

ii. Transportations where the patient is transported with "implied consent" or under "Baker Act".
- **a.** Documentation on attempts to locate or contact guardian or reason for not doing so must be clearly recorded.
- **b.** Any case of suspected abuse. Death in the Field protocol is used.
- **c.** Patient is restrained.

a. In the event of technology failure which prevents completion of an ePCR, at the discretion of an EMS officer, a written report can be completed.The written report shall contain all items required for an ePCR. This written report will be submitted appropriately.

i. Due to state statute, all written reports must be completed at the ED with a copy left with the facility.

ii. An ePCR will be created by the paramedic as soon as possible from the written report.

iii. A report of the failure shall be sent to Information Technologies (IT) and Quality Assurance (QA).

Incident Reports, Operational and Clinical Errors

A. Emergency Medical Service accepts that EMS is performed in a stressful environment with time-critical decisions, and these decisions often have to be made without the benefit of a careful risk-benefit analysis. Given these situations, it is expected that we as individuals will make mistakes. The QI process shall be non-punitive, and clinical or operational problems that are reported in a timely, honest, and complete manner will be evaluated according to the following criteria:
1. System problems (protocols, procedures, equipment, etc.).
2. Education or Training problems.
3. Circumstances led to unusual operational decision.
4. Negligent behavior.

B. Quality improvement staff has the obligation to identify system and educational problems and plan effective changes, ensuring that the results are measured through the QI process so that the desired improvement is achieved. Circumstances that lead to difficult scenes will be evaluated for their educational value, the case will be redacted to remove identifying information, and the information shared with other medics. Negligent behavior will be carefully evaluated as to its context (intentional or non-intentional), and appropriate improvement plans will be developed.

C. An Incident Report and notification to an EMS officer or supervisor shall be completed any time one of the following situations occurs (there are NO exceptions):
1. Major operational errors or problems on scene.
2. Any equipment malfunction or failure during patient care.
3. Any time a clinical error is made, or there is a deviation from protocols or accepted practice.
4. Any on-scene conflict that is unresolved at the crew level.
5. Any repeated behavior problems with any agency.
6. Any situation where the medic believes a crime has occurred.
7. Any calls to incidents where abuse against the elderly or children is observed (see Suspected Abuse protocol).
8. Any other unusual event or occurrence.

D. All Incident Reports will be sent through the appropriate chain of command.

Purpose:

These guidelines are intended to provide EMS providers with some direction during the difficult emotional times immediately before and following the death of family member or friend.

It is important to understand that with diverse cultures come many cultural norms for behavior surrounding death. This coupled with the intense emotions that sometimes accompany death should be considered and planned for. When responding to calls where a deceased patient is likely, consider law enforcement response.

Resuscitation Phase:

- **A.** Depending upon the emotional state of family members, consider allowing them to watch and/or participate in a limited and appropriate way. If possible, do not allow vulnerable family members (i.e. Children) to witness the resuscitation efforts.
- **B.** If family or friends were doing CPR prior to your arrival, commend their efforts even though they may have been inadequate.
- **C.** If family or friends are disruptive, try assigning simple tasks, such as helping bring in the stretcher, holding doors open, calling the doctor or minister. Make requests. Don't give orders. If necessary request law enforcement to respond.
- **D.** As time allows give accurate and truthful updates about the patient's prognosis.
  - **1.** If the outcome is expected to be negative, give the family a chance to prepare for the news before the pronouncement.
    - **a.** Let them know that “we are doing everything that can be done”.
    - **b.** The patient’s condition is poor and they “may not survive”.

Death Pronouncement:

- **A.** After the decision to stop resuscitation efforts and communication with dispatch to declare the patient deceased, certain practices can be employed for telling loved ones that will help them understand and begin their grieving process.
- **B.** Tell the family of the death honestly. Avoid using past tense terms when speaking to survivors of the recently dead. Allow friends to express their emotions.
  - **1.** Be alert to scene safety issues that friends and extended family may cause and act accordingly.
  - **2.** Do not allow highly emotional or volatile extended family or friends to place additional stress on the immediate family.
- **C.** Give factual information. These details could include an explanation of resuscitation efforts or why resuscitation was not attempted or, if appropriate, why the terminal event happened.
  - **1.** If “Death in the Field” protocol is used or expected to be used, consider law enforcement (crisis intervention specialist), or chaplain responding before using the protocol.
  - **2.** Unless you are experienced in grief counseling, it may be beneficial to consider having the assistance of clergy on the scene to assist in the notification of some family members.
- **D.** Genuine warmth and compassion will be more helpful than almost anything else for survivors. Don't feel it necessary to say the "right" things. Listening often provides grieving people with the most comfort.
  - **1.** Avoid official sounding terms when speaking to family.
- **E.** Unless specifically directed by immediate family, cover the patient in a dignified manner. This is even more important if children are present and/or patient appearance is “bad” or “very graphic”.

Focusing on the Survivors:

- **A.** Family members may begin experiencing any of the stages of grief (or several stages at the same time) with varying levels of intensity. It is healthy for them to express these emotions unless they begin to take dangerous action on these emotions.
  - **1.** If the family does not have local support available, it may be beneficial to determine if the family would need the services of local clergy or the department chaplain.
  - **2.** Some family members may seek seclusion. While space may be needed, do not allow any member of the immediate family to be without supervision or left alone with an overly emotional person.
  - **3.** People of different cultures may have different customs in relation to the death of a family member. Consider these differences, and to the best of your ability, attempt to accommodate the family members.

4. In the event that the scene of a death may be considered to be a crime scene, it is important to maintain the security of the scene until law enforcement has arrived and to prohibit entry into the immediate location of the deceased.

Death of a Child:

When responding to a possible pediatric arrest, consider additional resources to assist with family and bystanders. Having law enforcement, chaplain, and/or district captain respond is needed.

A. Unless qualifying under "Death in the Field" protocol, children should be resuscitated to the best ability of the providers.

B. Do not accuse the parents of abuse or neglect, but take careful note of the patient surroundings and the general physical condition of the child. Do not be overtly silent, which may imply guilt to the parents.

C. Avoid allowing the parents to drive themselves to the hospital and if possible, arrange transportation for the parents to the receiving facility.

D. Listen carefully to their statements and answer only with accurate information. If there is a police investigation, inform the parents that this is "a standard procedure anytime a child passes". Successful management of a child's death requires supportive, compassionate, and tactful measures.

Remember that pediatric death can be traumatic for responders as well as the family. Use CISD per SOG.

Purpose:

It is likely that first responders will be the first to know that a scene involves hazardous materials. This protocol is intended to guide responders who do not normally function in hazardous materials scenes. This protocol is intended to be used with the SOGs regarding hazardous materials. If the scene you are responding to is a known or suspected (based on information from dispatch) hazardous materials situations stage and wait for the hazardous materials personnel. When you have arrived at the scene and find out during scene assessment that hazardous materials are involved, evacuate the area and wait for the hazardous materials personnel. All scenes (MVA, Industrial, etc.) should be considered as being a potential hazardous materials situation. The following approach procedure should be used:

Procedure:

- **A.** Be cautious at all times.
- **B.** Any vehicle that is involved in an incident that is leaking, on fire, or releasing a gas and is displaying a placard or UN number is considered hazardous materials incident.
- **C.** Sudden illness of multiple people at a single building or room should be considered hazardous until proven otherwise.
- **D.** Be aware that the reported location may be inaccurate, and a response into a contaminated area might occur.
- **E.** Verify proper location of an incident.
- **F.** Approach upwind and upgrade if possible.
- **G.** Position vehicle well away from the incident.
- **H.** Communicate your actions to the Dispatch Center.
- **I.** **Do not allow yourself to become a victim!** Remember: injured and/or exposed response personnel add to the overall problem.
- **J.** If at any time you suspect a hazardous materials situation:
  Confirm that fire and police have been notified. The agency responsible for hazardous materials responses may respond with various levels of personnel and equipment based on the information received. Do not always expect a hazardous materials team to respond.
- **K.** If you are a first-in responder, the first priority is scene isolation and keeping other people out of the scene.
- **L.** If you believe that you or your vehicle is contaminated, stage in an isolated area.
  - ***A. KEEP OTHERS AWAY! KEEP UNNECESSARY EQUIPMENT FROM BECOMING CONTAMINATED***.
  - **B.** Person in Charge of Patient Care
    - **a.** If the paramedic is the first medical person on the scene, he/she should assume the role of MPIC (medically) until a "hazardous materials trained paramedic" (HMP) or agency supervisor arrives. If possible, the Incident Command Structure should be implemented as soon as possible.
    - **b.** The HMP will direct all care.
    - **c.** The HMP will determine the method of transport of the exposed patient in coordination with IC. The HMP will determine who will provide care during transport (HMP may remain in that position during transport).

Patient Care for the Contaminated Patient:

- **A.** Types of incidents, which may require decontamination of the patient:
  1. Radiation
  2. Chemical
  3. Biological hazards
  4. Toxic substances
- **B.** Contamination can occur through:
  1. Smoke
  2. Vapor
  3. Direct contact
  4. Run off
- **C.** Ambulance Preparation:

1. The HMP shall determine the process needed for ambulance preparation.
2. Remove any supplies and equipment that will be needed for patient care
3. Seal cabinets and drape interior, including floor and squad bench, with plastic (available from hazardous materials team).

D. Transport and Arrival at the Hospital (if requested by "HMP")

1. If an ambulance has transported a patient from an incident that is subsequently determined to involve hazardous materials exposure, scene personnel must immediately relay all relevant information to the transporting unit(s) and/or receiving facility(s) involved (via dispatch).
2. Dispatch and the receiving hospital should be contacted as soon as possible. The paramedic should communicate the material involved, degree of exposure, decontamination procedures used, and patient condition.

M. The ambulance should park in an area away from the emergency room or go directly to a decontamination center or area.

N. Patient(s) should not be brought into the emergency department before paramedics receive permission from the hospital staff and the patient has been thoroughly decontaminated.

O. Once the patient(s) has/have been released to the hospital, follow the HMP direction and if necessary double bag the plastic sheeting used to cover the gurney and the floor. Double bag any equipment, which may have been contaminated.

P. After unloading the patient from the ambulance, check with the "HMP" to see where the ambulance can be safely decontaminated and whether or not there is equipment available for this purpose. Do not begin decontamination without direction from the "HMP". After consultation with the Hazardous Materials Team leader the HMP may recommend that the ambulance be decontaminated.

Q. Following decontamination recommendations from the "HMP", decontaminate the ambulance and personnel before returning to the incident scene. When returning to the incident scene, bring bags containing contaminated materials, equipment, clothing, etc., and turn them over to the "HMP".

R. Report any potential exposures to the immediate supervisor and follow department specific guidelines.

Purpose:

To early identification and notification of responding personnel and receiving hospitals to properly prepare for a potential HazMat patient or patients. The Hazmat Alert creates a standard method to improve care and reduce potential exposure. This standardized protocol encourages early involvement of the HazMat Team, Emergency Department, Poison Control Center, and Medical Control as needed.

Initiation of a HAZMAT ALERT:

HAZMAT Alert should be initiated for the following:

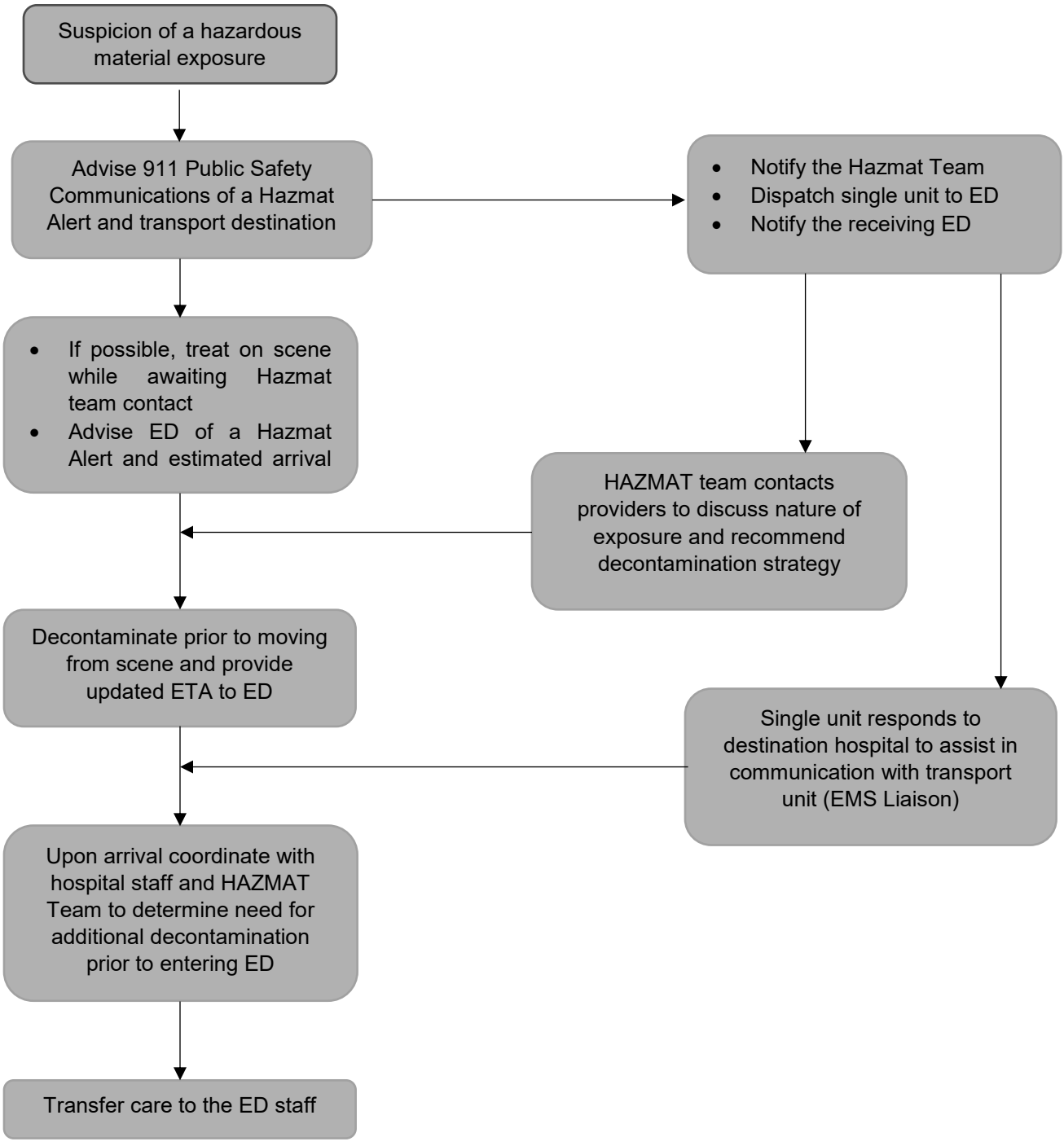
- **A.** At the time of dispatch, when a caller reports a medical emergency involving a chemical smell or hazardous material exposure
  - **1.** Do not otherwise interfere with the standard dispatch process
- **B.** When the first arriving crew suspects a hazardous material exposure due to odor, history or another source of information
- **C.** By Hospital Emergency Department staff in the event a hazardous material exposure is suspected in a walk-in patient and additional resources are needed.

Action Steps After a Hazardous Material Exposure is Recognized:

- **A.** Immediately contact the dispatch center and initiate a HAZMAT Alert
  - **1.** Advise the Public Safety Communications (PSC) of the EMS transport destination as soon as determined
  - **2.** Employ all agency standards to protect crew members from avoidable exposure
- **B.** After acknowledgement of the HAZMAT Alert, PSC will:
  - **1.** Notify the agency HazMat Team
  - **2.** Dispatch a single unit to the receiving hospital to assist in transfer of care (EMS Liaison)
  - **3.** Provide a “heads up” notification to the intended receiving hospital
    - **a.** ***If requested by the ED***, place the ED on Status Black (EMSystems) until it is determined safe to resume EMS transports
- **C.** Once notified of the HAZMAT Alert, the agency HazMat Team will contact the on-scene crew to accomplish the following (may or may not require a HazMat Team scene response):
  - **1.** Determine the nature of the exposure and advise on PPE level
  - **2.** Provide input on appropriate decontamination strategy
  - **3.** Advise on treatment in coordination with Medical Control or Poison Control
  - **4.** Determine when transport can be safely initiated
    - **a.** **Initial responding crews should await input from the HazMat Team prior to initiating transport**

Transfer of Care:

- **A.** Prior to ED arrival, transporting crews should contact the ED to convey pertinent (SOAP) information, and specifics of the decontamination strategy employed on scene
- **B.** Before entering ED, allow hospital staff to assess need for additional decontamination
  - **1.** Hospital staff will meet arriving crews outside the ED entry door
  - **2.** Once on hospital property, all further medical care is directed by the ED staff


Suspicion of a hazardous material exposure
Advise 911 Public Safety Communications of a Hazmat Alert and transport destination
Notify the Hazmat Team
Dispatch single unit to ED
Notify the receiving ED
If possible, treat on scene while awaiting Hazmat team contact
Advise ED of a Hazmat Alert and estimated arrival
HAZMAT team contacts providers to discuss nature of exposure and recommend decontamination strategy
Decontaminate prior to moving from scene and provide updated ETA to ED
Single unit responds to destination hospital to assist in communication with transport unit (EMS Liaison)
Upon arrival coordinate with hospital staff and HAZMAT Team to determine need for additional decontamination prior to entering ED
Transfer care to the ED staff

Purpose:

The purpose of this protocol is to establish guidelines for medical responders who are responding to incidents involving violence or are anticipated to be violent or hazardous in nature. Emergency scenes are dynamic, and conditions can change rapidly. Crews must be observant to scene safety issues. **Safety of responders is the highest priority!**

Policy:

- **A.** Responding units shall stage on the following:
  - **1.** If at any time units, based upon dispatch information, knowledge of area, or any other relevant issue, any member of the crew believes a scene may be dangerous for responders. Units shall advise dispatch that they will stage and request law enforcement response.
  - **2.** Any time dispatch directs them to do so.
  - **3.** Any time a violent incident might expose responders to danger.
  - **4.** If the scene you are responding to is a known or suspected (based on information from dispatch) hazardous materials situation, stage and wait for the HazMat Team.
  - **5.** As directed by first unit on-scene or incident commander.
- **B.** On scene crews shall maintain situational awareness for safety issues.

Procedure

- **A.** Stage at least two blocks from the incident address and out of the line of sight.
  - **1.** If firearms are involved, units should stage at a distance that provides for safety of the crew but also allows an expedited response when the scene is cleared by law enforcement.
- **B.** Additional responding units will respond to the same staging location if possible.
  - **1.** Avoid traveling past incident address.
  - **2.** Avoid staging where the unit cannot turn around or on the only access road into an area. (E.g. long narrow roads leading to a scene).
- **C.** Unless traffic hazard, turn off headlights and warning lights. Turn on four-way flashers.
- **D.** Transmit your location when staged.
- **E.** Once staged, units will not enter the scene until it is declared secure by on-scene law enforcement, battalion chief, or designated incident commander.
  - **1.** **Note:** It shall not be assumed that the mere presence of law enforcement on scene means that medical responders may now proceed safely into the call location. If there is any question as to scene safety, have dispatch contact law enforcement units on the scene and verify scene safety.
- **F.** If at any time the scene safety becomes in question, **crews shall evacuate the scene immediately.**
  - **1.** Follow guidance provided in SOG.
- **G.** When on scene crews shall not allow themselves to be placed into a position where they cannot withdraw if necessary.
- **H.** Any patient who is being transported after being violent shall be restrained before transport.
  - **1.** Consider for any patents being transported under “Baker Act”.

Purpose:

The purpose of this protocol is to provide guidelines to assure that decisions regarding the withholding of resuscitative efforts or life-prolonging treatments and procedures for Hospice patients are made in a medically responsible and ethical framework that protects the rights and wishes of the patient. Hospice patients generally have a life expectancy of 6 months or less. The philosophy of Hospice care is to provide comprehensive compassionate care with the highest quality of life possible. The majority of Hospice patients are treated at home. As the patient becomes increasingly ill the family and/or the patient may be unsure of what to do and call EMS. The following guidelines will provide guidance to assure that Hospice patients are provided the care they need without incurring unnecessary ambulance transport to the hospital and allow care to continue in the place they call home. Always keep in mind that DNR ***DOES NOT*** mean do not treat.

Procedure:

The majority of Hospice patients do not require immediate transport and the following procedure should be followed:

- **A.** Assess the patient and provide supportive care for the patient.
- **B.** Contact Hospice as soon as possible if they are not on scene or already enroute.
  - **1.** Discuss the treatment options with the Hospice nurse or physician and the patient/family. If the patient has decision-making capacity his/her wishes should be followed.
  - **2.** If the patient is requesting transport, Hospice should be notified and informed of the patient's choice and destination.
- **C.** If the patient or healthcare surrogate is not requesting transport, EMS providers are authorized to treat the patient on scene, provide care and then leave the patient at home as long as the Hospice nurse is in attendance or immediately enroute.
  - **1.** The paramedic should discuss the situation with the Hospice nurse and/or physician. Hospice is the patient's primary care provider and shall decide on the appropriate course treatment. Treatment may include but is not limited to:
    - **a.** Assisting the patient with their own medication
    - **b.** Fluid therapy
    - **c.** Splinting
    - **d.** Respiratory assistance (oxygen and suctioning)
    - **e.** Comfort care
- **D.** The EMS Supervisor shall be notified of any non-disposable equipment that was used to treat the patient and left on scene (i.e. splints etc.).
- **E.** If the patient requires medication that is not available on scene but is carried on the Rescue, the paramedic may administer the medication as directed by OLMC.
- **F.** If Hospice is unavailable or if the paramedic needs additional assistance or direction, OLMC shall be contacted. The Paramedic must advise the OLMC physician of the following;
  - **1.** That the patient is a Hospice patient
  - **2.** That the patient is requesting not to be transported
  - **3.** Patient assessment and situation Treatment provided and request for treatment (i.e. pain relief Fentanyl or Morphine)
  - **4.** Whether Hospice was contacted and if so what orders or information was received
  - **5.** If Hospice or a caregiver is on scene or enroute
- **G.** If the patient is treated but does not wish to be transported and a caregiver and/or Hospice is not on scene but enroute, the Rescue shall contact the EMS supervisor and remain on scene until Hospice or the EMS Supervisor arrives on the scene.
- **H.** Do not get in the middle of arguments with family and patient about treatment. Use the Hospice nurse to discuss the treatment options. If the patient has decision-making ability, then he/she determines the care, not the family. If needed contact OLMC and/or the EMS supervisor for assistance.

Do Not Resuscitate (DNR) and Advanced Directives

Hospice patients are nearing the end of life and have agreed to treatment by in-home or in-facility nursing. They may or may not have a signed DNR order. The intent of this protocol is to avoid unwarranted resuscitation by emergency care providers. Resuscitation may be withheld from, or terminated for, the patient that meets the criteria for the Death in the Field Protocol, a patient who has a valid Do Not Resuscitate Order (DNR), or other advance medical directive when:

- **A.** Presented with a completed State of Florida DO NOT RESUSCITATE **(**DNR) order (Form 1896).
- **B.** In the event that there is no DNR order and if family members are present and asking that resuscitative efforts be withheld in the absence of an advanced directive, determine their relationship to the patient and the patient's history. If the patient has an obvious life-limiting illness (terminal cancer, advanced neurological disease, etc.), resuscitative efforts may be withheld.
- **C.** In situations where it is unclear if the patient meets the above criteria and the patient's health care surrogate is not available or present the following procedure should be followed;
  - **A.** Start BLS CPR
  - **B.** Contact OLMC or the Hospice physician on call for direction
- **D.** There may be times in which the prehospital provider feels compelled to perform or continue resuscitation, such as hostile scene environment, family members adamant that "everything be done", or other highly emotional or volatile situations. In these circumstances, BLS CPR should be started and OLMC contacted as soon as possible. The lead paramedic must use his or her best judgment in deciding what is reasonable and appropriate, including transport, based on the clinical and environmental conditions.
- **E.** There may be times when a Hospice patient requires transport and expires during the transport. In the event that this occurs the paramedic shall:
  1. Notify the Communication Center that the patient has expired and document the time of death, notify
  2. Hospice
  3. Continue to the transport destination. This includes patients being transported home that are Hospice patients
  4. Prior to unloading the expired patient contact the Hospice nurse for assistance and direction
     - **a.** Family members / caregivers may be present on arrival, the paramedic should speak with the family prior to bringing the patient inside
     - **b.** If the family does not want the expired patient brought inside, wait for the arrival of Hospice and contact the EMS supervisor
  5. Contact the EMS Supervisor

Documentation:

Treating and documenting the care of the Hospice patient must be completed as outlined in the documentation protocol. These patients should not be considered as a refusal of care even though transport was not required. The report shall document the following:

- **A.** Patient demographics
- **B.** The Hospice agency and the Hospice nurse or physician directing the patient care
- **C.** Orders received
- **D.** Chief complaint and a detailed HPI
- **E.** A detailed physical exam
- **F.** Treatment rendered
- **G.** Who the patient was left with and whether Hospice is on scene or enroute
- **H.** Patient and/or care givers signatures

A Multi-Casualty Incident (MCI) is considered any incident that requires more than five (5) patients be transferred to a receiving facility. An MCI shall be classified depending on the number of victims, based on the initial size up of the Incident Commander. All responding units will report to the appropriate staging area.

A. MCI Level I: 5 to 10 victims; will require an additional response of 4 ALS units. Dispatch is to notify the two closest receiving facilities and Trauma Center.
B. MCI Level II: 11 to 20 victims; will require an additional response of 6 ALS units
C. MCI Level III: More than 21 Victims, will require minimum additional response of 8 ALS units

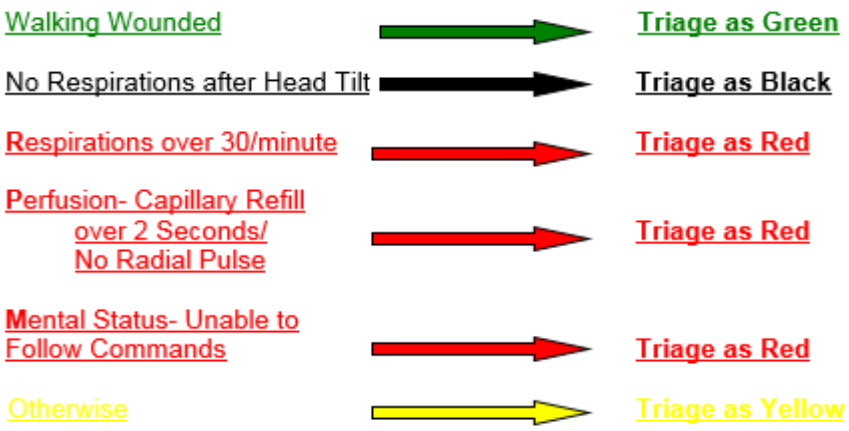
Procedure:

A. The first unit on scene of an MCI shall designate themselves as command until relieved by another arriving unit. It is the responsibility of the incident commander to initiate the IMS system, designate a triage officer(s), and request additional resources as needed. The incident commander shall notify dispatch of the following immediately.
   1. Establish an MCI Level (see MCI LEVELS)
   2. Estimated number of patients
   3. Hazards (fire, traffic, Haz-Mat, extreme environmental conditions)
   4. Number of transport resources estimated to transport patients.
   5. Transport rescue and Fire staging areas
   6. Incident Command Location
   7. Consider other means of transportation (Buses, Vans, etc.)
B. The incident commander should also be designating areas for triaged patients, including treatment areas and transportation areas for the patients.
C. The most experienced EMS provider on scene should perform triage; however, this provider does not have to be a paramedic if ALS resources are limited. Triage is a BLS skill. Paramedics may be better utilized in the stabilization and emergency treatment of patients before, during, and after the triage process is in progress/complete.

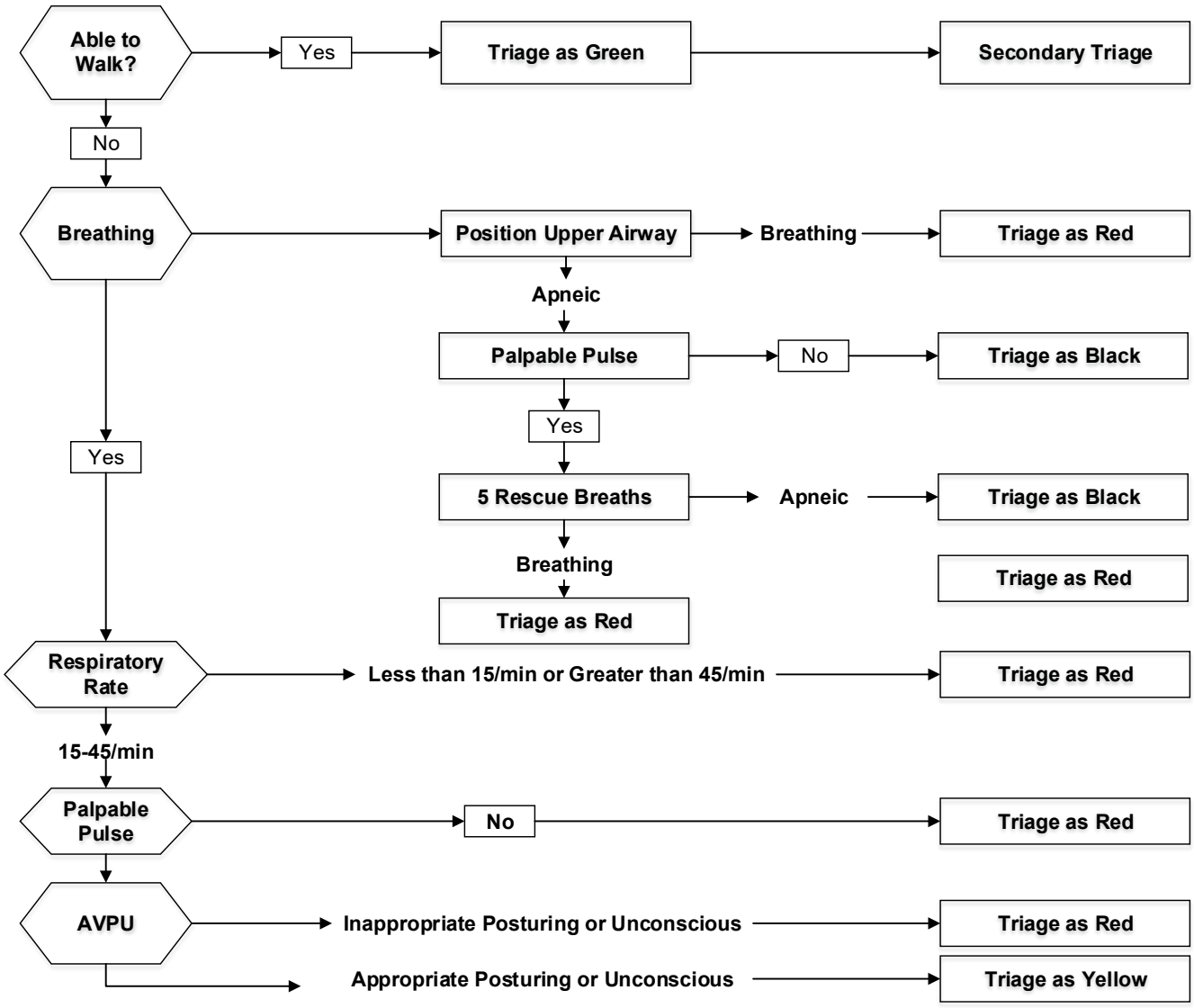
START/JumpStart Triage:

START and JumpStart Triage are rapid assessments to determine the severity of a patient. These triage procedures take less than 60 seconds per patient. START Triage is based on the Acronym "RPM" for Respirations, Perfusion, and Mental Status. If ANY "RPM" meet the attached criteria during the **initial triage** of the patient at an MCI, the patient should be triaged as "RED". The only exception to this in the adult patient is the absence of respiration after a head tilt. In this case the patient would be triaged as "BLACK". ***Only correction of life threatening (airway obstruction or severe hemorrhage) should be managed by triage personnel.*** The first assessment that produces a "RED" tag stops further assessment for the patient.

Triage Criteria



Jumpstart: For patients less than nine (9) years of age:



Purpose

While the pre-hospital treatment protocols are designed to provide guidance that covers many situations, it is not possible to plan for everything that can happen. In these circumstances the guidance of a physician is needed.

Procedure

A. The pre-hospital guidelines are to be the primary guidelines for patient care. A "Physician's Orders Request" may be utilized should a situation fall outside the pre-hospital guidelines.
   1. OLMC must be contacted when treatments or procedures require OLMC authorization.
   2. Primary method by radio. Secondary method call communications by phone and request a phone patch on a recorded line to OLMC.

B. On-scene paramedics are to contact the physician, or designee, at the receiving facility when requesting physician's orders.

C. For those patients who are not being transported, the MPIC shall contact the on-duty physician for physician's orders. This will be rotated monthly between the emergency departments at ORMC and AdventHealth-Ocala. The rotation schedule will be as follows:
   1. Odd months (January, March, May, July, September, and November) AdventHealth-Ocala will be the designated facility.
   2. Even months (February, April, June, August, October, and December) ORMC will be the designated facility.

D. The instructions from OLMC are based on information provided by the MPIC and shall be carried out to the best of their ability.
   1. If there is any question or confusion about the physician's order, request that the physician's order be repeated and/or clarified.
   2. If the order is repeated and cannot be carried out due to equipment or supplies not being available, notify the receiving facility and transport the patient to the receiving facility.

E. ***CCT should obtain orders/ direction for either the transferring or accepting physician. In the event the transferring or accepting physician are unavailable Ocala Regional should be contacted for orders (CCT only all others shall follow the procedures A-D).***

Purpose

Ocala/Marion County EMS serves a large area that is supported by several hospitals. The agencies providing care under these protocols believe in patient autonomy. Whenever possible and appropriate, a patient shall have the right to determine which hospital they are transported to.

Procedure

A. In general:

1. Patients shall be transported to the hospital of their choice.

2. If patient has a Health Care Directive making a Proxy the decision maker for health care, then the Proxy shall designate the destination if the patient meets the requirements of the Health Care Directive. Documentation of this is required.

3. Patients in cardiac arrest shall be taken to the closest appropriate receiving facility.

a) All medical arrests should be transported to closest receiving facility.

b) All trauma arrests should be transported to the closest trauma center unless directed by OLMC (i.e. critical condition of a patient requiring immediate intervention of a physician).

4. Patients in custody of law enforcement and "under arrest" will be taken to the most appropriate facility chosen by the law enforcement agency.

5. If the patient has no hospital preference, then dispatch shall be contacted for "ED rotation" as described in SOG.

6. If a patient requests transportation to a facility that does not have the services required, they shall be advised that the services that they need are not provided by that facility.

1) If the patient or family insist to be transported to an inappropriate facility after being advised that services many not be available, then the request shall be documented in the report. The patient shall sign a waiver if available. The paramedic shall document this in the patient care report.

7. If the patient is being transported from a medical facility (e.g. doctor's office, clinic, or nursing home) then the transferring physician shall determine the destination.

B. If any doubt or question exists about the destination of a patient, contact OLMC.

Hospital Abilities and Limitations

A. AdventHealth-Ocala will not accept the following patients:

1. Ambulance diverted because a service is temporarily not available at AdventHealth-Ocala.

2. Trauma Alert patients, as classified by Unified Trauma Transport Protocols (UTTP), shall be transported to a State Approved Trauma Center (SATC) or to a State Approved Pediatric Trauma Referral Center (SAPTRC). Refer to Ocala/Marion County Prehospital Guidelines Trauma Transport Protocol for classifications and exceptions.

3. Patients sustaining burn injuries, in accordance with Trauma Transport Protocols, that can be transported to a State-Approved Burn Center.

B. Ocala Regional Medical Center (ORMC) will not accept the following patients:

1. Ambulance diverted because a service is temporarily not available at ORMC.

2. Patients sustaining burn injuries, in accordance with Trauma Transport Protocols, that be transported to a State-Approved Burn Center.

3. Isolated pediatric trauma case should be transported directly to the Trauma Center at Shands, unless the situation is so dire that the patient is unlikely to survive the transport to Gainesville. Consideration should be made to transport children and parents/guardians to the same facility when possible.

4. Women greater than 20 weeks gestation with obstetrical complaints, and not in imminent delivery status may be best served at AdventHealth-Ocala. ***Exception: Pregnant females greater than 20 weeks gestation involved in a MVC, involving speeds greater than 35 MPH, a rollover accident, ejection from any motor vehicle, steering wheel deformity is present or significant traumatic mechanism of injury with a high index of suspicion may be transported to ORMC.***

C. Putnam Community Medical Center will not accept the following patients:

1. Ambulance diverted because a service is temporarily not available at Putnam Community.

2. Patients sustaining burn injuries, in accordance with Trauma Transport Protocols, that be transported to a State-Approved Burn Center.

3. Isolated pediatric trauma case should be transported directly to the Trauma Center at Shands, unless the situation is so dire that the patient is unlikely to survive the transport to Gainesville. Consideration should be made to transport children and parents/guardians to the same facility when possible.

4. Stroke Alert patients, based on EMS protocols. These should be transported to the nearest state approved stroke center, unless patient/family member signs waiver of recommended hospital destination.

D. Summerfield ER <u>will not</u> accept the following patients:

1. Ambulance diverted because a service is temporarily not available at Summerfield ER.

2. Patients sustaining burn injuries, in accordance with Trauma Transport Protocols, that can safely be transported to State-Approved Burn Center.

3. STEMI Alerts, as indicated per EMS protocols that may be best served by immediate cardiac catheterization at either MRMC, ORMC or WMCH. Trauma Alert patients, as classified by Unified Trauma Transport Protocols (UTTP), shall be transported to a State Approved Trauma Center (SATC) or to a State Approved Pediatric Trauma Referral Center (SAPTRC). Refer to Ocala/Marion County Prehospital Guidelines Trauma Transport Protocol for classifications and exceptions.

4. Stroke Alert patients based on EMS protocols. These should be transported to the nearest state approved stroke center, unless patient/family member signs waiver of recommended hospital destination.

5. Women greater than 20 weeks gestation with obstetrical complaints, and not in imminent delivery status may be best served at MRMC, LRMC or Florida Hospital Waterman. Contact Summerfield ER if questions arise.

6. Violent patients, including Baker Acted patients, requiring considerable security personnel intervention, as the staff at Summerfield ER may be at risk without adequate assistance.

7. Patients with ROSC being treated under Therapeutic Hypothermia protocol.

E. Timber Ridge Emergency Center (ECTR) <u>will not</u> accept the following patients:

1. Ambulance diverted because a service is temporarily not available at ECTR.

2. Patients sustaining burn injuries, in accordance with Trauma Transport Protocols, that can safely be transported to State-Approved Burn Center.

3. STEMI Alerts, as indicated per EMS protocols that may be best served by immediate cardiac catheterization at either AdventHealth-Ocala or ORMC.

4. Trauma Alert patients, as classified by Unified Trauma Transport Protocols (UTTP), shall be transported to a State Approved Trauma Center (SATC) or to a State Approved Pediatric Trauma Referral Center (SAPTRC). Refer to Ocala/Marion County Prehospital Guidelines Trauma Transport Protocol for classifications and exceptions.

5. Stroke Alert patients based on EMS protocols. These should be transported to nearest state approved stroke center, unless patient/family member signs waiver of recommended hospital destination.

6. Women greater than 20 weeks gestation with obstetrical complaints, and not in imminent delivery status may be best served at AdventHealth-Ocala. <u>Contact ECTR if questions arise</u>

7. Violent patients, including Baker Acted patients, requiring considerable security personnel intervention, as the staff at ECTR may be at risk without adequate assistance.

8. Patients with ROSC being treated under Therapeutic Hypothermia protocol.

F. Villages Regional Hospital <u>will not</u> accept the following patients:

1. Patients sustaining burn injuries, in accordance with Trauma Transport Protocols, that can safely be transported to State-Approved Burn Center.

2. Trauma Alert patients, as classified by Unified Trauma Transport Protocols (UTTP), shall be transported to a State Approved Trauma Center (SATC) or to a State Approved Pediatric Trauma Referral Center (SAPTRC). Refer to Ocala/Marion County Prehospital Guidelines Trauma Transport Protocol for classifications and exceptions.

3. Women greater than 20 weeks gestation with obstetrical complaints, and not in imminent delivery status may be best served at AdventHealth-Ocala. <u>Contact VRH if questions arise</u>

G. West Marion Community Hospital (WMCH) <u>will not</u> accept the following patients:

1. Ambulance diverted because a service is temporarily not available at WCMH.
2. Patients sustaining burn injuries, in accordance with Trauma Transport Protocols, that can safely be transported to a State-approved Burn Center.
3. Trauma Alert patients, as classified by Unified Trauma Transport Protocols (UTTP), shall be transported to a State Approved Trauma Center (SATC) or to a State Approved Pediatric Trauma Referral Center (SAPTRC). Refer to Ocala/Marion County Prehospital Guidelines Trauma Transport Protocol for classifications and exceptions.
4. Women greater than 20 weeks gestation with obstetrical complaints, and not in imminent delivery status may be best served at AdventHealth-Ocala. <u>Contact WMCH if questions arise</u>
5. Patients with ROSC being treated under Therapeutic Hypothermia protocol.

<u>Other Facilities</u>

It is understood that extenuating circumstances may arise in EMS in which the patient, patient advocate, physician, or health care staff may request to be transported to a facility that patients are not normally transported to. In the event that such a situation arises, it is imperative that the MPIC make contact with OLMC and the Transporting agency supervisor for guidance on the appropriate destination for the patient.

Policy:

The refusal of care procedure shall be utilized in situations in which a patient refuses evaluation, treatment and/or transportation by prehospital personnel. Persons should be presumed competent to make decisions affecting their medical care. All pre-hospital health care providers present at any EMS event shall be responsible for making sure that this Protocol, in its entirety, is adhered to each and every time a patient refuses evaluation, treatment, or transport.

Each and every time an Ocala/Marion County EMS unit informs Dispatch that they have arrived at the scene of an incident where any individual has a stated medical complaint or traumatic injury, a patient signature on a Patient Refusal form shall be obtained.

The first MCFR/OFR unit/personnel to arrive at the scene and make patient contact shall be responsible for obtaining a patient signature on a refusal form and shall also be responsible for completing a full patient care report with a narrative.

A **Patient** is defined as, but not limited to:

A. A person with an acute illness or suspected injury based on appearance or mechanism of injury (MOI); has a complaint resulting in a call for help or a 3rd party caller indicates individual is ill, injured, or gravely disabled.

A M**inor** is any individual under the age of 18 and are unable to consent or refuse consent for medical care. Such permission can only be provided by the minor's parent or legal guardian.

A. Treatment and transport of real or potential life-threatening emergencies shall not be delayed by attempts to contact the parent or guardian.

Documentation

A patient care report is required for all patient encounters as outlined in the documentation protocol. Each patient must be documented on their own report. The fact that a transport is not necessary and the patient is refusing care and or transport does not absolve the EMT and/or Paramedic from their responsibility of attempting to perform a patient survey and document their findings which includes, but is not limited to:

A. Patient demographics (Name, address, DOB. etc.)
B. Physical findings
C. Visual observation
D. Orientation to time, person, place and situation
E. The ability to comprehend the EMT and/or Paramedic

Decision–Making Capacity:

A person has decision-making capacity when they are able to understand the risks and benefits of both proposed treatment and non-treatment. For a person to have "Decision –Making Capacity" they must be:

A. Oriented to date, time, place and situation
B. Does not exhibit or have a history of any mental disorders such as Alzheimer's disease, senile dementia, organic brain syndrome, etc.
C. Does not exhibit any temporary medical conditions such as hypovolemia, low blood sugar, hypoxia, head trauma, pain, shock, fear, hysteria, intoxication by alcohol and/or illegal drugs or medications which can render a patient incompetent during the refusal decision making process.

Any Adult patient with Decision–Making Capacity may refuse care and / or treatment against medical advice. In order to refuse treatment and/or transport, the patient ***MUST meet all of the following***:

A. In the EMT/PM's judgment the patient has Decision–Making Capacity.
B. A patient assessment was performed to assure that all signs and/or symptoms are identified, so that the patient can be informed of all possible consequences of his/her refusal.
C. All attempts have been made to persuade the patient/guardian to allow and/or seek medical assistance.
D. All alternative options were explained to the patient/guardian.
E. The risks of refusing treatment/transport/transport to nearest hospital explained to the patient/guardian

OLMC shall be contacted for the following:

A. When in the EMT and/or Paramedic's judgment, the patient has been deemed not competent to refuse treatment/transport to an emergency department and the EMT and/or Paramedic is uncertain about the patient's ability, or lack thereof, to understand the consequences of the refusal.

B. When the medical assessment reveals significant physiologic signs and symptoms (i.e.: altered mental status, respiratory distress, shock, potentially life-threatening arrhythmia, distracting injuries etc.), and patient continues to refuse treatment/transport.

C. When patients are suspected of being under the influence of alcohol or drugs, and who have complaints and/or history suggestive of a potential life-threatening injury (i.e.: major mechanisms of injury such as high-speed auto accident, gunshot wound, stabbing, chest pains or other complaints suggestive of a major medical emergency etc.) and they continue to refuse treatment/transport.

D. When the patient is a minor, and no parent or legal guardian is available to take responsibility.

E. A patient that refuses transport post-seizure and/or post-administration of any medication (also consider calling law enforcement for assistance).

F. When the EMT and/or Paramedic desires further medical consultation to determine if the patient should be allowed to refuse treatment/transport.

Refusal of transport or transport destination

A. Patients that refuse to be transported to the closest appropriate facility and, moreover, are adamant on being transported to a different facility should sign waiver of recommended hospital destination.

Procedure

Patients with life threatening medical problems (despite their psychiatric condition) should be taken to the closest appropriate hospital.

Procedure

A. Law enforcement response should be verified before approaching scene.

1. Strongly consider staging as stated in the "High Risk Responses" section.

2. Any threat by patient is to be considered imminent against responders.

a) It is not the responsibility of Ocala/Marion County EMS to determine if the patient "means it" or not. Threats are to be taken seriously and handled according to SOG.

B. After a thorough history and physical exam of a psychiatric patient is completed, and the patient is deemed not to have a life threatening medical condition, the patient will be transported to The Centers by appropriate law enforcement agency whenever the paramedic can ascertain that the following conditions are met:

1. Patient has a primary psychiatric problem without acute medical needs.

2. Patient has not apparently taken any substance, which would require medical management (including, but not limited to: excess alcohol, stimulants, CNS depressants, aspirin, Tylenol).

3. Patient is able to cooperate for an exam **(It is not the paramedic's responsibility or right to decide a patient is "faking" a decreased or altered mental status)**.

4. Patient is not under the age of twelve or over the age of fifty with a first-time psychosis.

5. Patient is not complaining of a medical problem that in and of itself warrants a doctor's assessment (e.g. chest or abdominal pain).

6. Patient does not require chemical restraint in order to be safely managed by staff at the receiving facility. (See physical and chemical restraint protocol).

C. If the above conditions are not met, patient should be transported to the Hospital or discussed as needed with OLMC.

D. If transport method is not mutually agreed upon by law enforcement agency and transporting agency, consult OLMC.

E. Be prepared for the occasional episode where the crisis worker wants to speak with the patient over the phone. They may be able to obtain further information, help calm the patient and facilitate an alternative option to transport.

Precautions:

A. If the patient or family insists on transport to a preferred hospital, despite a thorough explanation of the normal process, then the patient should be transported to that facility after contact with OLMC. This protocol only applies for patients with stable, non-life threatening medical conditions.

1. OLMC shall make the destination choice in this case.

B. Patients with a life-threatening emergency shall be transported to the closest appropriate facility.

C. Drug and alcohol intoxication is not considered an acute psychiatric problem and for patients suffering from these conditions, ensure that the patient's behavior isn't due to hypoxia, hypoglycemia or a head injury.

Purpose

The purpose of this protocol is to provide a standard approach for information transfer during patient transfers. SBAR (situation, background, assessment and recap) is an evidenced-based communication model developed in the military and is widely used in health care to make sure the right information gets to the right people in the shortest timeframe. SBAR allows for urgent concerns be brought to the forefront and empowers the EMS provider to advocate for the patient.

Procedure

SBAR communication shall be used on all patient transfers whether the transfer is from one unit to another or when transferring a patient to a medical facility. This method shall be used for both medical and trauma patients.

The following information shall be given during Patient transfers:

- **A. S**ituation.
  - **1.** Patient's name, gender and age
  - **2.** Chief complaint
    - **a.** Admission diagnosis
    - **b.** Mechanism of injury
  - **3.** Alert Issued?
  - **4.** Urgent concerns / needs
- **B. B**ackground
  - **1.** Date and time of the incident / admission
  - **2.** Allergies
  - **3.** Presenting complaint or injuries and symptoms
  - **4.** Pertinent past medical / surgical history
  - **5.** Events leading up to the injury / illness
- **C. A**ssessment
  - **1.** Current / recent vital signs, LOC and pain level
  - **2.** System review-pertinent issues
  - **3.** Pertinent tests / lab results
  - **4.** Last oral intake
- **D. R**x / Recap
  - **1.** Brief synopsis of treatment
    - **a.** Treatment and medications provided
    - **b.** Response to treatment and/or medications
  - **2.** Delivery of medical records
  - **3.** Restate concerns

The above information shall also be documented in the care record.

Purpose:

To provide guidance to EMS personnel who encounter individuals who are assisted by service animals, including guide dogs for the visually impaired and other types of service animals. However, because of the nature of the services we provide it can sometimes be difficult to accommodate a patient and a service animal in an ambulance.

Definition of a Service Animal:

Florida Statue defines a "Service animal" as an animal that is trained to perform tasks for an individual with a disability. The tasks may include, but are not limited to, guiding a person who is visually impaired or blind, alerting a person who is deaf or hard of hearing, pulling a wheelchair, assisting with mobility or balance, alerting and protecting a person who is having a seizure, retrieving objects, or performing other special tasks. ***A service animal is not a pet.***

Procedure

- **A.** When patients are encountered with service animals, every effort should be made to transport the animal with the patient.
- **B.** When patients are encountered with service animals, EMS may ask the following questions:
  - **1.** Is this a service animal? Or "Does your animal have legal allowances?"
  - **2.** Is the service animal required because of a disability?
- **C.** All other questions about the nature or extent of the patient's disability should only related to patient care.
- **D.** When transporting a patient with a service animal, every effort should be made to do so in a safe manner.
- **E.** If possible, the animal should be secured in some manner in order to prevent injury to either the animal or the crew during transport. The following should be considered if available:
  - **1.** Crates, cages, specialty carriers.
  - **2.** Seatbelts or passenger restraints using a specialized harness or seat belt attachments.
- **F.** Notify the receiving facility as soon as possible of the presence of a service animal accompanying the patient, either in the ambulance, or by alternate transportation.
- **G.** It may not be possible for the animal to be transported with the patient. If the animal is a potential threat to health or safety of anyone involved in response or if the animal cannot be safely transported. The following actions should be taken:
  - **1.** If the patient does not have family or a care giver who can transport the service animal, Com-Center shall be notified and advised that there is a service animal on scene and to contact Animal Control.
  - **2.** Animal Control should also be contacted if the patient's service animal is injured and needs care. An injured Service animal should not be transported to the hospital.

Purpose:

It is the policy of the State of Florida and all Marion County EMS Agencies to require mandatory reporting of suspected child or elder abuse.

Definitions:

A. Abuse: The non-accidental assault or physical injury to a child or elderly person. This may include but is not limited to:
  1. Neglect means the withholding of services necessary to maintain health and well-being. This includes the intentional self-neglect of the patient by the patient.
  2. Abandonment, including desertion or willful forsaking of a child or elderly person or withdrawal or neglect of duties and obligations owed a child or elderly person by a caregiver.
  3. Willful infliction of physical pain or injury.
  4. Illegal or improper use of the patient's financial resources for personal profit or gain.
  5. Sexual contacts by force, threat, duress or coercion.
  6. Use of derogatory names, phrases, harassment, intimidation, punishment or involuntary seclusion.

B. Child: An unmarried person under the age of 18.

C. Elderly person: Any person 65 years of age or older

D. Public or Private Officials: physicians, including residents and interns, firefighters or EMT's among others.

Procedure:

A. If presented with a case of suspected abuse:
  1. Do NOT confront the possible abuser!
  2. Treat patient as described in treatment protocols.
  3. Make every effort to transport patient to hospital.
  4. If care givers refuse transport, consider law enforcement response.
  5. Advise hospital of suspicions.
  6. Document as per protocol.
  7. Report incident to law enforcement Report to supervisor as per SOG.

B. Duty to report suspected abuse.

C. **All personnel working under these protocols are required to personally report suspected abuse.** Florida law requires public or private officials have a duty to report abuse. Such an official who has reasonable cause to believe that a child or elderly person has been abused, or who comes into contact with someone who has abused a child or elderly person, shall report the contact to the **Abuse Hotline (1-800-96ABUSE)** and law enforcement agency, i.e., any city or municipal police department, any county sheriff's office.

D. Content of report
  1. Reports must be made immediately to the Abuse Hotline. The MPIC must also file an Incident Report with their appropriate supervisor. The report must contain, if known, the following information:
    a. The names and addresses of the patient and parents/person responsible for the parent's care.
    b. The patient's age.
    c. The nature and extent of abuse (including any evidence of previous abuse)
    d. The explanation given for the abuse
    e. Any information the official believes may be helpful in establishing the cause of abuse or the perpetrator's identity.

Immunity of Person Making Report:

A. Persons participating in good faith in making a report of child or elder abuse and who have reasonable grounds for making it are immune from civil and criminal liability including participation in any judicial proceeding resulting from their report. Persons making such a report of abuse of a patient in a long-term care facility in addition have immunity from any criminal liability that might otherwise be incurred or imposed with respect to making such a report.

NORTH CENTRAL FLORIDA TRAUMA AGENCY

Uniform Trauma Transport Protocols

January 31, 2012 NCFTA submission to DOH for review

February 3, 2012 Revised version with changes suggested by DOH General Counsel Office

February 8, 2012 Revised version with changes suggested by DOH Bureau of EMS Deputy Chief of Operations

February 10, 2012 Revised version with changes suggested by DOH Bureau of EMS Deputy Chief of Operations

February 20, 2014 Revised version with changes suggested by DOH EMS Provider Licensure and Compliance

September 24, 2014 Revised version with changes suggested by DOH EMS Provider Licensure and Compliance

December 10, 2014 NCFTA Update of Flight Program list, Trauma Centers and Initial Receiving Hospital Lists, Receiving Hospital Attestation list and Receiving Hospital Attestation Form. Addition of Pregnant Patient recommendation.

The ground EMS agencies in NCFTA's Service Area are (County location is indicated if the county is not part of the agency name):

A. Gainesville Fire Rescue (Alachua County)
B. Alachua County Fire Rescue
C. Bradford County EMS
D. Nature Coast (Citrus County)
E. Lifeguard (Columbia County)
F. Dixie County EMS
G. Gilchrist County EMS
H. Hamilton County EMS
I. Lafayette County EMS
J. Levy County EMS
K. Marion County Fire Rescue
L. Putnam County EMS
M. Suwannee County Fire Rescue
N. Union County EMS
O. Century Ambulance (Multi-county)

The flight programs that provide service in the NCFTA trauma region are:

A. Trauma One Lake City
B. ShandsCair
C. Bayflite
D. AirLife Lake City
E. Aircare

PURPOSE: Uniform Trauma Transport Protocols (uTTPs) were developed by the North Central Florida Trauma Agency (NCFTA) to provide guidelines to member agencies for submission of protocols to the Department of Health (DOH). These guidelines attempt to simplify the process by defining the most appropriate destinations of trauma alert patients based on geographical location and proximity to the nearest trauma center. It is recognized that each agency residing within this region is unique.

The required form specifying the five hospital requirements (Rule 64I-2.002, F.A.C.) of initial receiving hospitals to receive trauma alert patients will be filed with the trauma agency and the DOH, pending completion by the initial receiving hospitals.

Table of Contents

Section I
Dispatch Procedures

A. Requirement for Soliciting Information

a) Describe the system that allows the public and other agencies to notify an EMS provider that EMS services are needed. (911, Enhanced 911, other)

- Enhanced, 911

b) Identify the agency responsible for operating the system. (EMS operated, County Sheriff, Cooperative Dispatch, other)

- Marion County Public Safety

c) Describe the information to be solicited from the individual requesting emergency medical assistance in order to determine number of patients, location of the incident, extent and severity of reported injuries. (Nature of problem, is this an emergency, criminal activity)

- Marion County Public Safety use Medical Priority's EMD and EFD and an in-house protocol for Law

B. Requirements for Dispatching Emergency Vehicle

a) Describe methods used to ensure that appropriately staffed and equipped EMS ground or air vehicle most readily available is identified.

- A dispatch matrix developed by MCFR is loaded into the TriTech CAD. This assures that the appropriate units are recommended and dispatched

b) Describe the system used to provide coverage to your county. (Number of staffed vehicles, first responders, other agencies, backup systems in place)

- Marion County Fire Recue currently Staffs
  - **i.** 24 ALS Engines
  - **ii.** 32 ALS Transport Rescues
- Ocala Fire Rescue
  - **i.** 6 ALS Engines
  - **ii.** 4 ALS Non-Transport Rescues

C. Requirement for Emergency Agency Assistance

a) Describe the criteria and process your agency uses to request additional EMS ground or air vehicles or other resources including LEA, fire, hazardous materials, water rescue, specialized rescue, emergency management or other.

- Mutual aid requests to appropriate agencies are made by MCFR to Marion County Public Safety Communications through the CAD system with a confirmation of receipt by local telephone Vesta© "hot line" system" for local and non-local allied agencies.
- Law enforcement response is requested to all vehicle accidents, violent or potential violent crimes
- Air support is requested by the Paramedic or on scene Fire Department personnel when the MCFR paramedic is not yet on scene. In addition, the Communications Supervisor or Field Supervisor can request air support prior to an EMS unit's arrival based on information received from the caller(s). The closest available helicopter will be dispatched to the scene in accordance with established dispatch protocols.
- OLMC of the EMS provider issuing the trauma alert, or the physician at the receiving SATC, SAPTC, or hospital, are the only people authorized to change the trauma alert status

D. Requirements for Transport Assistance

a) Describe your agency's criteria to differentiate between need for air or ground services. (Time, distance, proximity to IRHs, Trauma Centers, Medical Center)

- All trauma alert patients must be transported to a State Approved Trauma Center (SATC) or State Approved Pediatric Trauma Center (SAPTC) nearest the location of the incident if the incident is within 30 minutes by ground or air transport or within 50 miles by air transport.

E. List the agencies in your area that are available to provide transport assistance.

- Marion County Fire Rescue
- Shands Care I (Air)
- Shands Care II (Air)
- LifeNet (Air)
- Aeromed (Air)
- Aircare (Air)

F. Air support is requested by the Paramedic or on scene Fire Department personnel when the MCFR paramedic is not yet on scene. In addition, the Communications Supervisor or Field Supervisor can request air support prior to an EMS unit's arrival based on information received from the caller(s). The closest available helicopter will be dispatched to the scene in accordance with established dispatch protocols.

G. Describe under what conditions you would potentially need additional ground transport.

a) Marion County Fire Rescue would potentially request or need additional ground transport in areas that are adjacent to other counties. These resources may be considered due to their close proximity rather than additional resources from Marion County.

H. **To describe your requirements for the nearest Trauma Center, DOH's General Counsel asks that you simply state (and follow) the following sentence:** All trauma alert patients must be transported to a State Approved Trauma Center or State Approved Pediatric Trauma Referral Center nearest the location of the incident if the incident is within 30 minutes by ground or air transport or within 50 miles by air transport.

Section II

Trauma Patient Assessment for Adult and Pediatrics

Requirement for Adult Assessment

The adult and pediatric scorecard assessment shall be documented in accordance with the requirements of Rules 64J-2.004, F.A.C. and 64J-2.005, F.A.C.

Upon arrival at an accident scene the EMT, paramedic, flight paramedic or flight nurse/paramedic will assess the condition of each **adult** trauma patient using the adult trauma scorecard methodology to determine if the patient meets criteria to be a trauma alert. Evaluation of the following components will determine if the patient meets the requirements of a trauma alert utilizing the Adult Scorecard Methodology (Appendix E of the 2012-2017 Five-year Plan):

- Airway
- Circulation
- Best Motor Response
- Cutaneous
- Long Bone Fracture
- Patient's Age
- Mechanism of Injury

All adult patients that meet the requirement as a trauma alert will be transported to the trauma center nearest to the scene of the incident.

Requirement for Pediatric Assessment

Pediatric trauma patients are identified as those with the physical and anatomical characteristics of a person 15 years or less. All pediatric patients that meet the criteria of a pediatric trauma alert scorecard will be transported to the pediatric trauma referral center nearest to the scene of the incident.

Upon arrival at a scene the EMT, flight paramedic or flight nurse/paramedic shall assess the condition of each pediatric trauma victim using the pediatric trauma scorecard methodology to determine if the patient meets criteria to be a trauma alert. Evaluation of the following components will determine if the patient meets the requirements of a trauma alert utilizing the Pediatric Scorecard Methodology (Appendix E of the 2012-2017 Five-year Plan):

- Airway
- Consciousness
- Circulation
- Long Bone Fracture
- Cutaneous
- Patients Size

Section III

Trauma Destination Requirements

All trauma alert patients must be transported to a State Approved Trauma Center (SATC) or State Approved Pediatric Trauma Referral Center nearest the location of the incident if the incident is within 30 minutes by ground or air transport or within 50 miles by air transport.

Situations where the EMS providers or medical directors have determined it would be in the best medical interest of the trauma alert patient to be transported to a hospital other than those specified as trauma centers include the following situations:

A. A mass casualty incident in which trauma centers are overwhelmed.

B. Critical condition of a patient requiring immediate intervention of a physician such as airway control, tension pneumothorax or cardiac arrest in which the patient would benefit from stabilization at a closer receiving hospital.

C. Mechanical.

D. Distance to the nearest trauma center is so great that the extended time in the field is detrimental to the patients' outcome.

E. Weather.

Copies of these Uniform Trauma Transport Protocols are to be provided and are to be on file at the following Trauma Centers and Initial Receiving Hospitals.

A. Shands at the University of Florida – Level One Trauma Center

B. AdventHealth-Ocala – Initial Receiving Hospital

C. Ocala Regional Medical Center – Level Two Trauma Center

D. West Marion Community Hospital - Initial Receiving Hospital

E. The Villages Regional Hospital - Initial Receiving Hospital

F. The Emergency Center at Timber Ridge – Freestanding ER

G. Summerfield ER- Freestanding ER

North Central Florida Trauma Agency serves the following counties:

- Alachua
- Bradford
- Citrus (northern)
- Columbia
- Dixie
- Gilchrist
- Hamilton
- Lafayette
- Levy
- Marion
- Putnam
- Suwannee
- Union

The following are the Trauma Centers that serve one or more of the counties within the North Central Florida Trauma Agency service area:

- **A.** UF Health Jacksonville
- **B.** UF Health Shands Hospital (Gainesville, FL)
- **C.** Orlando Regional Medical Center
- **D.** Tampa General Hospital
- **E.** Ocala Regional Medical Center
- **F.** Regional Medical Center Bayonet Point

All trauma alert patients must be transported to a State Approved Trauma Center or State Approved Pediatric Trauma Referral Center nearest the location of the incident if the incident is within 30 minutes by ground or air transport or within 50 miles by air transport.

FOR PATIENTS WITH BURNS: UF Health (Gainesville, FL) is the Regional Burn Center serving the North Central Florida area. Other Regional Burn Centers are located at Orlando Regional Medical Center and Tampa General Hospital.

FOR PEDIATRIC PATIENTS (less than 16 years of age): UF Health (Gainesville, FL) and UF Health Jacksonville are the Pediatric Trauma Centers serving the North Central Florida area.

FOR PREGNANT PATIENTS: Woman who are pregnant greater than 20 weeks in accidents at speeds greater than 35 mph should be trauma alerted.

Section IV
Transfer of Patient Care Information

Transporting agencies participating in the NCFTA UTTPs adhere to the requirements as defined under Rules 64J-2.001(17), F.A.C. and 64J-2.014, F.A.C., and the trauma information as required under Rule 64J-2.002(5), F.A.C. Delivery of such information is made in writing with the trauma patient to the SATC, SAPTRC or hospital at the time the patient is presented for care.

Transporting vehicle personnel shall provide recorded information to the receiving hospital personnel at the time the patient is transferred with all known pertinent incident, patient identification, and patient care information.

A complete patient care record will be provided within 24 hours. ***Local protocol requires that reports for patients that are classified as a "Trauma Alert" shall be completed prior to leaving the receiving facility.***

Section V
Trauma Alert Procedures

For adult and pediatric trauma patients, a scorecard assessment is used to determine if the patient meets the trauma triage criteria (Appendix E of the 2012-2017 Five-year Plan).

Situations where the EMS providers and medical directors have determined it would be in the best medical interest of the trauma alert patient to be transported to a hospital other than those specified as trauma centers include the following situations:

- **A.** A mass casualty incident in which trauma centers are overwhelmed.

B. Critical condition of a patient requiring immediate intervention of a physician such as airway control, tension pneumothorax or cardiac arrest in which the patient would benefit from stabilization at a closer receiving hospital.

C. Mechanical.

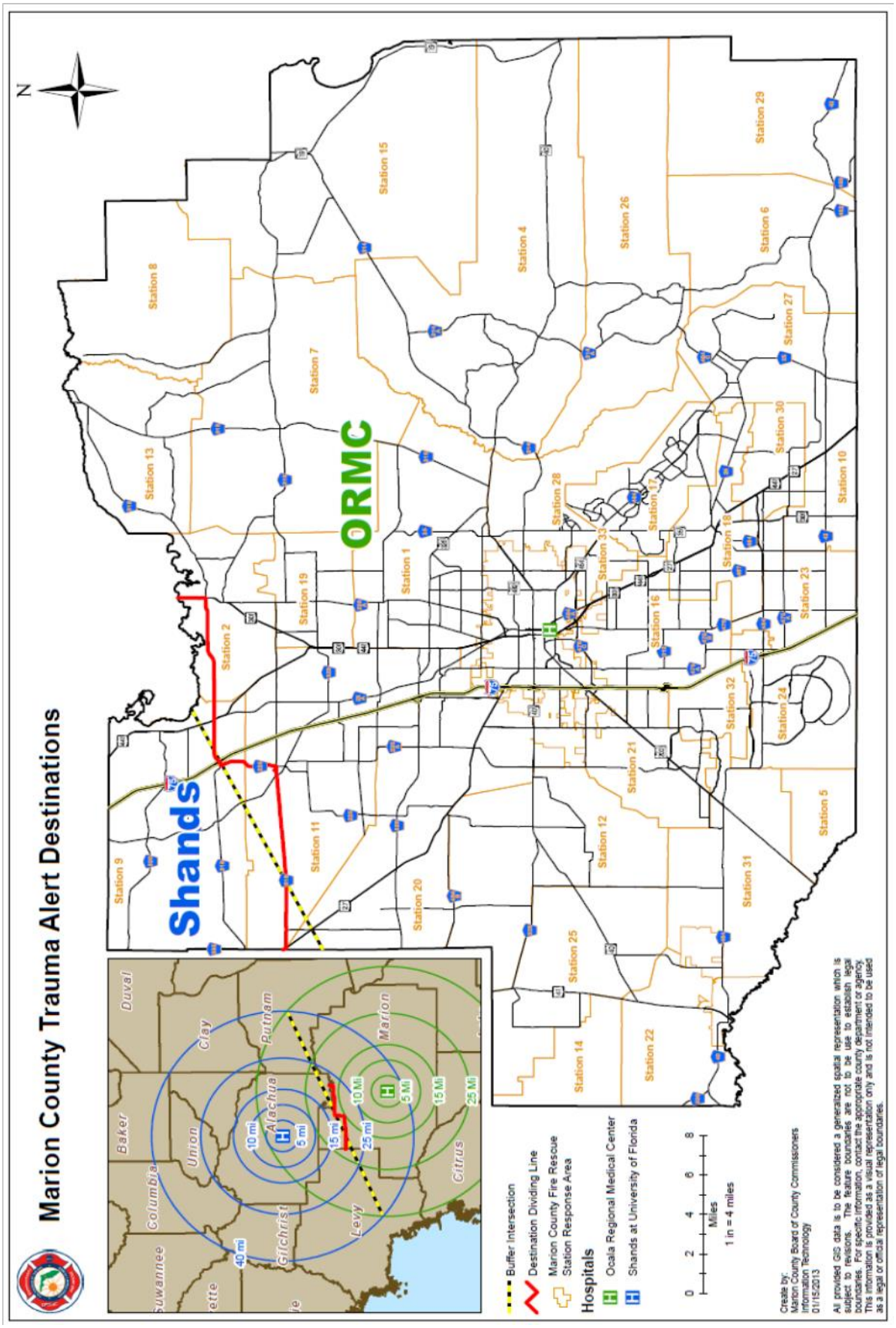
D. Distance to the nearest trauma center is so great that the extended time in the field is detrimental to the patients' outcome.

E. Weather.

Section VI

Emergency Inter-facility Transfers

Emergency Inter-facility Transfers will be through EMS providers who are available within 30 minutes of receiving a call from the requesting hospital to provide inter-facility emergency medical service transfer of a trauma alert patient.


Marion County Trauma Alert Destinations
N
ORMC
Shands
Station 1
Station 2
Station 4
Station 5
Station 6
Station 7
Station 8
Station 9
Station 10
Station 11
Station 12
Station 13
Station 14
Station 15
Station 16
Station 19
Station 20
Station 21
Station 22
Station 23
Station 24
Station 25
Station 26
Station 27
Station 28
Station 29
Station 30
Station 31
Station 32
Station 33
Duval
Clay
Baker
Union
Columbia
Suwannee
Putnam
Alachua
Gilchrist
Levy
Marion
Citrus
10 mi
5 mi
15 mi
25 mi
40 mi
10 Mi
5 Mi
15 Mi
25 Mi
Buffer Intersection
Destination Dividing Line
Marion County Fire Rescue Station Response Area
Hospitals
Ocala Regional Medical Center
Shands at University of Florida
0 2 4 6 8
Miles
1 in = 4 miles
Create by:
Marion County Board of County Commissioners
Information Technology
01/15/2013
All provided GIS data is to be considered a generalized spatial representation which is subject to revisions. The feature boundaries are not to be use to establish legal boundaries. For specific information, contact the appropriate county department or agency. This information is provided as a visual representation only and is not intended to be used as a legal or official representation of legal boundaries.

Criteria:

☐ Meets color-coded triage system (see below)
☐ GCS ≤ 12 (Patient must be evaluated via GCS if not identified as a trauma alert after application of criterion 1.)
☐ Meets local criteria (specify)
☐ Patient does not meet any of the trauma criteria listed above but, in the judgment of the EMT or paramedic, should be transported as a trauma alert (document)

COMPONENT		
AIRWAY	RESPIRATORY RATE OF 30 OR GREATER ☐ B	ACTIVE AIRWAY ASSISTANCE1 ☐ R
CIRCULATION	SUSTAINED HR OF 120 BEATS PER MINUTE OR GREATER ☐ B	LACK OF RADIAL PULSE WITH SUSTAINED HEART RATE (greater than120) OR BP less than90 mmHg ☐ R
BEST MOTOR RESPONSE	BMR=5 ☐ B	BMR=4 OR LESS OR PRESENCE OF PARALYSIS, OR SUSPICION OF SPINAL CORD INJURY OR LOSS OF SENSATION ☐ R
CUTANEOUS	SOFT TISSUE LOSS2 OR GSW TO THE EXTREMITIES ☐ B	2ND OR 3RDº BURNS TO 15% OR MORE TBSA OR AMPUTATION PROXIMAL TO THE WRIST OR ANKLE OR ANY PENETRATING INJURY TO HEAD, NECK OR TORSO ☐ R
LONGBONE FRACTURE4	SINGLE FX SITE DUE TO MVA OR FALL 10' OR MORE ☐ B	FRACTURE OF TWO OR MORE LONGBONES ☐ R
AGE	55 YEARS OR OLDER ☐ B	
MECHANISM OF INJURY	EJECTION FROM A VEHICLE OR DEFORMED STEERING WHEEL6 ☐ B	
	EJECTION FROM A NON-ENCLOSED VEHICLE with a significant rate of speed 20 MPH (i.e.. MOTOCYCLE, PICK UP TRUCK etc.)	
		Any pregnant female greater than 20 weeks gestation who has been involved in a MVC greater than 35mph, rollover, ejection, steering wheel deformity and or there is a significant traumatic mechanism with high index of suspicion

1) Pediatric Trauma Triage Checklist: The individual is assessed based on each of the six (6) physiologic components listed below (left column). The single, most appropriate criterion for each component is selected (along the row to the right). Refer to the color coding of each criteria and legend below to determine the transport destination:

COMPONENT			
SIZE	greater than 20 Kg (44+ LBS.) □ G	greater than11-20 Kg (24-44 LBS.) □ G	WEIGHT ≤ 11 Kg OR LENGTH ≤ 33 INCHES ON A PEDIATRIC LENGTH AND WEIGHT EMERGENCY TAPE □ B
AIRWAY	NORMAL □ G	SUPPLEMENTED O2 □ G	ASSISTED OR INTUBATED (1) □ R
CONSCIOUSNESS	AWAKE □ G	AMNESIA OR LOSS OF CONSCIOUSNESS □ B	ALTERED MENTAL STATUS (2) OR COMA OR PRESENCE OF PARALYSIS OR SUSPICION OF SPINAL CORD INJURY OR LOSS OF SENSATION □ R
CIRCULATION	GOOD PERIPHERAL PULSES: SBP greater than 90 mmHg □ G	CAROTID OR FEMORAL PULSES PALPABLE, BUT THE RADIAL OR PEDAL PULSE NOT PALPABLE OR SBP less than 90 mmHg □ B	FAINT OR NON-PALPABLE CAROTID OR FEMORAL PULSE OR SBP less than 50 mmHg □ R
FRACTURE	NONE SEEN OR SUSPECTED □ G	SINGLE CLOSED LONG BONE (3) FRACTURE (4) □ B	OPEN LONG BONE (3) FRACTURE (5) OR MULTIPLE FRACTURE SITES OR MULTIPLE DISLOCATIONS (5) □ R
CUTANEOUS	NO VISIBLE INJURY □ G	CONTUSION OR ABRASION □ G	MAJOR SOFT TISSUE DISRUPTION (6) OR MAJOR FLAP AVULSION OR 2º OR 3º BURNS TO ≥ 10% tbsa OR AMPUTATION (7) OR ANY PENETRATING INJURY TO HEAD, NECK, OR TORSO (8) □ R

■ R = RED, any one (1) – transport as a trauma alert ■ B = BLUE, any two (2) – transport as a trauma alert

■ G = GREEN, follow local protocols

2) Meets local criteria (specify):

3) Patient does not meet any of the trauma criteria listed above, but the EMT or Paramedic can call a "Trauma Alert" if, in his or her judgment, the trauma patient's condition warrants such action. Must be documented on run reports pursuant to 64E-2.013, (F.A.C.)

MEDICATION

Actions

Adenosine exerts its effects by decreasing conduction through the AV node. The half-life of Adenocard (Adenosine) is less than 10 seconds. Thus, its effects—both desired and undesired—are self-limited.

Indications

A. Adenocard is indicated for supraventricular tachycardia (SVT- regular, narrow complex tachycardia with a rate over 150 bpm) including that associated with accessory bypass tracts (Wolff-Parkinson-White syndrome -WPW).

B. When clinically advisable, appropriate vagal maneuvers should be attempted prior to Adenocard administration.

Contraindications

A. Adenocard is contraindicated in second- or third degree AV block and sick sinus syndrome (except in patients with a functioning artificial pacemaker).

B. Known hypersensitivity to adenosine.

Precautions

A. The effects of Adenosine are possibly reduced by Methylxanthines (Theophylline and Aminophylline). Thus larger doses may be required for adenosine to be effective in patients who have taken Methylxanthines.

B. Adenosine effects may be enhanced by Dipyridamole (Persantine™), resulting in prolonged asystole. Thus smaller doses of adenosine may be effective in those who have taken this drug.

C. Adenosine may produce bronchoconstriction in patients with asthma.

D. In the presence of carbamazepine (Tegretol®), high degree heart block may occur.

E. Adenosine is not effective in converting A-fib, A-flutter, or VT.

Adverse Reactions and Side Effects

A. Cardiovascular: Facial flushing, headache, and rarely: sweating, palpitations, chest pain, and hypotension.

B. Respiratory: Shortness of breath, chest pressure, and rarely: hyperventilating, metallic taste, tightness in throat, and head pressure.

C. CNS: Lightheadedness and rarely: dizziness, blurred vision, tingling and numbness in extremities, apprehension.

Warnings

Adenosine may produce a short-lasting first, second or third-degree heart block. In extreme cases, transient asystole may result. At the time of conversion to normal sinus rhythm, a variety of new rhythms may appear (PVCs, PACs, sinus bradycardia, sinus tachycardia, skipped beats, and varying degrees of AV block), though they generally last only a few seconds without the need for intervention.

Dosage

A. Adult: 6 mg rapid IVP immediately followed by 10 ml NS flush. Repeat in 2 minutes at 12 mg IVP, followed by 10 ml NS flush.

B. Pediatric: If a child has normal perfusion, attempt vagal maneuvers: less than 6 years, ice water to the face, valsalva in older children.

Dose.

0.1 mg/kg rapid IVP immediately followed by 10 ml NS flush. Repeat in 2 minutes at 0.2 mg/kg IVP, followed by 10 ml NS flush.

ActionsG

Albuterol is a potent, relatively selective beta2-adrenergic bronchodilator and is associated with relaxation of bronchial smooth muscle and inhibition of release of mediators of immediate hypersensitivity from cells, especially mast cells. The onset of improvement in pulmonary function is within 2 to 15 minutes, peak action occurs in 60-90 minutes and the duration of action is 4-6 hours. As a beta2 agonist, Albuterol induces bronchial dilation but has occasional beta1 overlap with significant cardiac effects. Arrhythmias may occur especially in patients with underlying cardiovascular disorders such as coronary insufficiency and hypertension.

Indications

A. **Bronchial asthma and reversible bronchial spasm that occurs with COPD.**
B. **Hyperkalemia and severe respiratory distress secondary to anaphylaxis.**

Contraindications

A. **Albuterol is contraindicated in patients with a history of hypersensitivity.**

Precautions

A. **The patient's rhythm should be observed for arrhythmias. Stop treatment if frequent PVCs develop or any tachyarrhythmia other than sinus tachycardia appear or if heart rate increases more than 20 bpm above the baseline determined on arrival.**
B. **Paradoxical bronchospasm may occur with excessive administration.**

Adverse Reactions and Side Effects

A. **CNS: Nervousness, tremor, headache, dizziness, and insomnia.**
B. **Cardiovascular: Tachycardia, hypertension and angina.**
C. **GI: Drying of the oropharynx, nausea, vomiting, and unusual taste.**

Warnings

A. **Use cautiously in patients with coronary artery disease, hypertension, hyperthyroidism, and diabetes.**
B. **Administer cautiously to patients on MAO inhibitors or tricyclic anti-depressants.**

Dosage/Technique

A. **Adult: Add 2.5 mg of Albuterol mixed in 3 ml of NS (0.083%) to the nebulizer and flow oxygen at 6-8 LPM. Treatment will be delivered over approximately 5-15 minutes. Patients should be instructed to breathe as follows during the treatment: inhale slowly, hold breath and exhale passively through the nose.**
B. **Pediatric: Same as the adult dosage. Do not reduce or dilute the adult dosage of albuterol for the pediatric patient.**

Actions

Antiarrhythmic, class III. Amiodarone blocks sodium channels at rapid pacing frequencies, causing an increase in the duration of the myocardial cell action potential and refractory period, as well as an alpha and beta adrenergic blockade. Amiodarone blocks potassium channels, which contributes to the slowing of conduction and prolongation of refractoriness. Its vasodilatory action can decrease cardiac workload and consequently myocardial oxygen consumption. The drug decreases sinus rate increases PR and QT intervals. Amiodarone relaxes the vascular smooth muscle, reduces peripheral vascular resistance (afterload) and increases cardiac index slightly

Indications

- **A.** Unstable V-tach with a pulse.
- **B.** V-Fib
- **C.** Pulseless V-tach.

Contraindications

- **A.** Amiodarone is contraindicated in patients with known hypersensitivity to Amiodarone.
- **B.** Patients in cardiogenic shock, marked sinus bradycardia, and second and third blocks.

Precautions

- **A.** Amiodarone may worsen existing or precipitate new dysrhythmias, including Torsades de Pointes and VF
- **B.** Use with beta-blocking agents could increase the patient's risk of hypotension and bradycardia.
- **C.** Amiodarone inhibits atrioventricular conduction and decreases myocardial contractility, increasing the risk of AV block with verapamil or Diltiazem, or of hypotension with any calcium channel blocker.
- **D.** Use with caution in pregnant patients and nursing mothers.
- **E.** In geriatric patients, especially in thyroid dysfunction and severe left ventricular dysfunction, the drug may be more sensitive.
- **F.** IV use may cause abnormal kidney function, Stevens-Johnson syndrome, respiratory syndrome, and hypotension.

Adverse Reactions and Side Effects

Adverse reactions include fever, bradycardia, CHF, cardiac arrest, hypotension, ventricular tachycardia, nausea, and abnormal liver function.

Dosage

Bolus administration in arrest
Dilute appropriate dose in 20-30 cc of normal saline
Adult 300mg IVP initial dose
Adult 150 mg IVP subsequent dose

Pediatric Bolus administration in arrest
Dilute appropriate dose in 20-30 cc of normal saline
5mg/kg IV/IO

Maintenance Drip V-fib/Pulseless V-Tach
150 mg in 100 cc D5W
10 gtts/ml set – 7 gtts/min = 1.0 mg/min .
60 gtts/ml set – 40 gtts/min = 1.0 mg/min

Bolus Administration (Pediatric with a pulse)
5 mg/kg in 100 cc D5W
10 gtts/ml set – 50 gtts/min = 5 mg/kg/20 min

Bolus administration (Adult with a pulse)
150 mg in 100 cc D5W
10 gtts/ml set - 100 gtts/min= 150 mg/10 min

Maintenance Drip for V-Tach
150 mg in 100 cc D5W
10 gtts/ml set – 3 gtts/min. = 0.5 mg/min
60 gtts/ml set – 20 gtts/min = 0.5mg/min

Actions

Aspirin is an analgesic, anti-inflammatory, and an anti-pyretic agent, which also appears to inhibit the synthesis and release of prostaglandins. Aspirin also blocks the formation of thromboxane A2 (thromboxane A2 causes platelets to aggregate and arteries to constrict). Use of aspirin can reduce the overall mortality from acute myocardial infarction.

Indications

Aspirin is indicated in the acute myocardial infarction (AMI) setting to prevent further clotting.

Contraindications

- **A.** Known allergy to aspirin (e.g., asthma).
- **B.** Active GI ulceration or bleeding.
- **C.** Hemophilia or other bleeding disorders.
- **D.** During pregnancy.
- **E.** Children younger than two years of age.
- **F.** Any patient with a suspected aortic dissection.

Adverse Reactions and Side Effects

- **A. GI:** Nausea, vomiting, heartburn, and stomach pain.
- **B. Tinnitus**: Ringing in the ears
- **C. Hypersensitivity:** Bronchospasm, tightness in chest, angioedema, urticaria, and anaphylaxis.

Dosage

- **A.** 324 mg. chewable (4 tablets) for AMI.
- **B.** A single adult Aspirin is equal to 325 mg and may be administered before arrival.

Actions

Atropine is a muscarinic-cholinergic blocking agent. As such it has the following effects:

- **A.** Increases heart rate (by blocking vagal influences).
- **B.** Increases conduction through the AV node.
- **C.** Reduces action and tone of the urinary bladder (may cause urinary retention).
- **D.** Dilates pupils.

This drug blocks cholinergic (vagal) influences already present. If there are cholinergic stimulation present, effects will be minimal.

Indications

- **A.** To improve conduction in second and third-degree heart blocks.
- **B.** As an antidote for some insecticide exposures (anti-cholinesterase, e.g., organophosphate) and nerve gases.
- **C.** To counteract excessive vagal influences causing some bradycardia rhythms.
- **D.** As a premedication for a patient less than 2 years of age prior to intubation using succinylcholine and for repeated dosing using succinylcholine for adult patients.

Contraindications

- **A.** Contraindicated in atrial fibrillation and atrial flutter because increased conduction may speed ventricular rate excessively.
- **B.** Bradycardia in the setting of an acute MI is common and probably beneficial. Do not treat them unless there are signs of poor circulation.

Adverse Reactions and Side Effects

- **A. CNS:** Restlessness, agitation, confusion, psychotic reaction, pupil dilation, blurred vision, and headache.
- **B. Cardiovascular:** Increased heart rate, may worsen ischemia or increase area of infarction, ventricular fibrillation, ventricular tachycardia, angina, flushing of the skin.
- **C. GI:** Dry mouth, difficulty swallowing.
- **D. Other:** Urinary retention may worsen preexisting glaucoma.

Warnings

- **A.** If a too-small dose (less than 0.5 mg) is given or if atropine is pushed too slowly, it may initially cause the heart rate to decrease. For patients with a heart rate less than 40, this could be undesirable.
- **B.** Antihistamines and antidepressants potentiate the effects of atropine.
- **C.** A maximum dose of 0.04 mg/kg should not be exceeded or a total of 3mg total administered.
- **D.** Second and third-degree block may be chronic and without symptoms. Symptoms occur mainly with acute change. Treat the patient, not the arrhythmia.

Adult Dosage

Bradycardias: 0.5-1 mg IV, or 1-2 mg ET; may repeat every 3-5 minutes until improved or total of 0.04 mg/kg or 3 mg is reached

Organophosphate poisoning: 1-2 mg every 3 minutes until Duo-Dotes™ are available or SLUDGE symptoms stop.

Pediatric Dosage

Bradycardias: Most pediatric bradycardia is due to hypoxia. Oxygenate and ventilate. If there is IV/IO access, 0.02 mg/kg IVP, (minimum single dose of 0.1 mg in infant, 0.5 mg up to 14 years old). May repeat once.

Actions

Atropine is the primary drug for treatment of nerve agent exposure and acts by blocking the effects of over-stimulation of the central nervous system. Pralidoxime chloride (2-Pam CL) is the companion drug to Atropine that is used to restore normal function of the nerve endings by removing the agent and the resulting toxicity.

Purpose

The DuoDoteTM is used for the treatment of patients involved in instances of exposure nerve agents and organophosphate insecticide poisoning ONLY. A DuoDoteTM is one auto-injector containing atropine (2.1 mg) and pralidoxime chloride (600mg) and is to be used with OLMC AUTHORIZATION ONLY.

Treatment

- **A.** OLMC AUTHORIZATION ONLY
- **B.** Personnel should use appropriate personal protective equipment to protect themselves.

Caution

- **A.** DO NOT intubate using neuromuscular blocking agents (RSI) in these patients.
- **B.** DO NOT administer more than three (3) DuoDote™.
- **C.** DO NOT administer DuoDote™ if patient is asymptomatic.

Precautions and Side Effects

- **A.** Every exposed patient must be evaluated at a medical facility.
- **B.** Delayed effects may occur at any time after exposure.
- **C.** Auto-injectors should not be administered to children less than fourteen (14) years of age.
- **D.** Auto-injectors will not protect responders from potential exposure.
- **E.** DuoDote™ auto-injectors should be kept at room temperature and should be kept from freezing.

Actions

Bumetetanide is a loop diuretic with a rapid onset and short duration of action. Pharmacological and clinical studies have shown that 1 mg of Bumetanide has a diuretic potency equivalent to approximately 40 mg furosemide. The major site of bumetanide action is the ascending limb of the loop of Henle.

Indications

Bumetanide is indicated for the treatment of edema associated with congestive heart failure, hepatic and renal disease, including nephritic syndrome.

Contraindications

- **A.** Anuria
- **B.** Hepatic coma
- **C.** Severe electrolyte depletion
- **D.** Hypersensitivity to bumetanide.

Precautions

- **A.** Should be avoided in patients taking aminoglycoside antibiotics (e.g., streptomycin, gentamicin) except life-threatening conditions.
- **B.** Bumetanide may potentiate the effect of various antihypertensive medications.

Adverse Reactions and Side Effects

The most frequent clinical adverse reactions considered probably or possibly related to bumetanide are muscle cramps, dizziness, hypotension, headache, nausea, and encephalopathy.

Dosage

- **A.** For patients weighing less than 70 kgs, administer 1.0 mg bumetanide IVP.
- **B.** For patients weighing more than 70 kgs, administer 2.0 mg bumetanide IVP.

Actions

Calcium is the most common cation in the human body and the majority of the body's calcium is located in bone. It plays an important role in many physiologic functions and is essential for proper nerve and muscle (skeletal, smooth and cardiac) functioning. It also has a regulatory role in the release and storage of neurotransmitters and hormones, in the uptake and binding of amino acids and in Vitamin B12 absorption and gastric secretion. Calcium chloride increases the force of myocardial contraction; it may either increase or decrease systemic vascular resistance. In normal hearts, calcium's positive inotropic and vasoconstricting effects produce a predictable rise in systemic arterial pressure.

Indications

- **A.** Calcium chloride is indicated during resuscitation for the treatment of hypocalcemia and calcium channel blocker toxicity (e.g., Verapamil or Cardizem overdose) and magnesium sulfate overdose.
- **B.** Suspected Hyperkalemia with wide-complex bradycardias and history of renal failure.

Contraindications

- **A.** Hypercalcemia and hypercaliuria (hyperthyroidism, Vitamin D overdose, bone metastases)
- **B.** Ventricular fibrillation.

Precautions/Warnings

- **A.** Extravasation of Calcium salts will cause necrosis of tissue. IV should be secured and free return of blood into the syringe or tubing should be checked 2-3 times during administration. If extravasation does occur, immediately stop administration.
- **B.** Administer slowly (no faster than 2ml/min) and stop if the patient complains of distress. Make sure that the patient remains recumbent after administration. Inject using a small needle in a large vein.
- **C.** Calcium Chloride will precipitate if mixed with sodium bicarbonate. Do not mix with sodium bicarbonate preparations. Slowly flush remaining calcium chloride from the catheter prior to administering sodium bicarbonate. (If second IV access is available, Calcium Chloride and Sodium Bicarbonate should be administered separately.)
- **D.** Avoid use with patients who are on Digoxin since calcium can augment the positive and inotropic effects of digitalis preparations. ***CALL OLMC PRIOR TO ADMINISTERING CALCIUM CHLORIDE TO THESE PATIENTS.***

Adverse Reactions and Side Effects

Rapid administration of Calcium Chloride may cause vasodilation, decreased blood pressure, bradycardia, cardiac arrhythmias, syncope and cardiac arrest.

Dosage

- **A.** If Hyperkalemia is suspected, contact OLMC and prepare to administer 1 g (10cc) of Calcium Chloride 10% solution slow IVP over 5-10 minutes in a proximal port.

Actions

Dexamethasone is a corticosteroid that prevents the release of substances in the body that cause inflammation. It possibly decreases cerebral edema, anti-inflammatory, suppresses the immune response (especially in allergic reactions).

Indications

Cerebral edema, anaphylaxis (after Epinephrine and diphenhydramine), asthma, COPD.

Onset / Duration

Onset is 4 - 8 hours; duration is 24 – 72 hours.

Contraindications

Dexamethasone is contraindicated in known hypersensitivity, neonates, and patients with systemic fungal infections as it may exacerbate them.

Warnings

Risks to the fetus if used in pregnancy are unknown. Large doses of dexamethasone may result in blood pressure increases, salt and water retention, and increases in potassium and calcium excretion. Dexamethasone suppresses the immune system and may result in masking of infection or increased susceptibility to infection. Use of dexamethasone in patients with recent MI may result in myocardial rupture.

Dexamethasone may be less effective in the presence of phenytoin (Dilantin), phenobarbital, ephedrine, and rifampin. Hypokalemia may result if dexamethasone is administered in conjunction with potassium-depleting diuretics.

Adverse Reactions and Side Effects

Adverse reactions may include anaphylaxis, hypertension, weakness, seizures, headache, and nausea.

Dosage

- **A.** Adult 4-24 mg IV
- **B.** Pediatric 0.2-0.5 mg/kg

Actions

Glucose is the body's basic fuel. It produces most of the body's quick energy. Its use is regulated by insulin, which stimulates storage of excess glucose outside the bloodstream, and glucagon, which mobilizes stored glucose into the bloodstream. Glucose is a monosaccharide that provides calories for metabolic needs, thereby sparing body proteins and preventing loss of electrolytes. It is readily excreted by the kidneys, producing diuresis. Dextrose is a hypertonic solution.

Indications

Hypoglycemia documented by a glucose meter.

Contraindications

None

Precautions

- **A.** Recent research suggests that hyperglycemia may complicate or worsen several medical conditions (e.g., myocardial infarction and stroke).
- **B.** Extravasation of 50% dextrose will cause necrosis of tissue. IV should be secured and free return of blood into the syringe or tubing should be checked 2-3 times during administration of dextrose. If extravasation does occur, immediately stop administration.

Adverse Reactions and Side Effects

- **A. Local:** Tissue irritation and necrosis if infiltration occurs.
- **B. Other:** Acidosis, alkalosis, hyperglycemia, and hypokalemia.

Warnings

May cause Wernicke-Korsakoff Encephalopathy in patients who are malnourished (e.g., acute alcohol intoxication, those on chemotherapy or significant diets). Usually, this outcome is prevented by administration of thiamine prior to D50 administration.

Dosage

- **A. Adult:** 50cc of a 50% solution (25 g) IV.
- **B. Pediatric:**
  1. To mix D25%...expel half (25cc) of the D50% syringe…clean injection port on IV bag, insert the needle and withdraw the same amount of fluid (25cc) back into syringe…mix well.
  2. To mix D10%...expel 40cc of D50%...clean injection port on IV bag, insert needle and withdraw the same amount of fluid (40cc) back into syringe…mix well.

Actions

Diazepam depresses the limbic system, thalamus, and hypothalamus, resulting in calming effects. Diazepam produces an amnesic effect and is also a muscle relaxant.

Indications

- **A.** Status epilepticus
- **B.** Combative or severely agitated patients
- **C.** Sympathomimetic overdose (e.g. cocaine, methamphetamine)
- **D.** Severe musculoskeletal back spasms
- **E.** Sedation for cardioversion or transcutaneous pacing (TCP)

Contraindications

- **A.** Acute alcohol intoxication
- **B.** Pregnancy (except for control of seizures associated with status epilepticus or eclampsia)
- **C.** Neonates

Adverse Reactions

- **A. CNS:** Confusion, muscular weakness, blurred vision, drowsiness, respiratory depression, respiratory arrest, slurred speech.
- **B. Cardiovascular:** Bradycardia, hypotension, and cardiovascular collapse.
- **C. GI:** Nausea, vomiting, abdominal discomfort, hiccups.
- **D. Other:** Diazepam Hydrochloride (Valium®) potentiates MAOs, barbiturates, tricyclic antidepressants and phenothiazines, ETOH and other CNS depressants.

Caution

Do not mix Diazepam Hydrochloride (Valium®) with any other drug, as it precipitates with most all medications.

Dosage

- **A. Adult:** 2 mg increments IV/IM, to a maximum of 10 mg. used for patient comfort during cardioversion and pacing.
- **B. Pediatric:** 0.2 mg IV/IO/IM (max dose 5mg)

Actions

Diltiazem inhibits the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle. The therapeutic benefits of Diltiazem in supraventricular tachycardias are related to its ability to slow AV nodal conduction time and prolong AV nodal refractoriness. Diltiazem slows ventricular rates and interrupts the reentry circuit in AV nodal reentrant tachycardia and reciprocating tachycardia (e.g., Wolff-Parkinson-White syndrome). It also prolongs the sinus cycle length and decreases peripheral vascular resistance. *It should be noted that Diltiazem does not convert the rhythm but limits the rate.*

Indications

- **A.** Atrial fibrillation or atrial flutter with rapid ventricular response (RVR).
- **B.** Paroxysmal supraventricular tachycardia refractory to Adenosine. Unless contraindicated, vagal maneuvers should be attempted prior to administration of Diltiazem.

Contraindications

- **A.** Sick sinus syndrome, except in the presence of a functioning ventricular pacemaker.
- **B.** Second or third-degree AV block, except in the presence of a functioning ventricular pacemaker.
- **C.** Severe hypotension or cardiogenic shock.
- **D.** Demonstrated hypersensitivity to Diltiazem.
- **E.** Intravenous Diltiazem and intravenous beta blockers should not be administered together or in close proximity (within a few hours).
- **F.** Wolff-Parkinson-White syndrome or short PR syndrome.
- **G.** Ventricular tachycardia.

Precautions

Diltiazem should be used with caution in patients with impaired liver or renal function. Caution should be used when administering Diltiazem and anesthetics. Use with caution if administered in the presence of CHF. Caution should also be used in pregnant females and mothers who are nursing.

Adverse Reactions and Side Effects

Hypotension, itching or burning at the injection site, flushing of skin, or junctional rhythms. Other side effects are less frequently encountered (e.g., AV blocks, atrial flutter, chest pain). May cause bradycardia, AV block, and/or depression of contractility, hypotension, syncope, palpitations, tachycardia, nausea and vomiting, diarrhea, weakness, tinnitus, double vision, photosensitivity, flushing, dyspnea, or shortness of breathing. Half-life may be increased in geriatric patients.

Dosage

- **A. Adult:** Cardizem10 mg IV over 2 minutes. May repeat in 15 minutes at 15 mg over 2 minutes.

Actions

Diphenhydramine is an antihistamine with anticholinergic (drying) and sedative side effects. Antihistamines appear to compete with histamine for cell receptor sites on effector cells. Diphenhydramine prevents but does not reverse, histamine-mediated responses-particularly histamine effects on the smooth muscle of the bronchial airways, gastrointestinal tract, uterus, and blood vessels.

Indications

- **A.** Allergy symptoms, anaphylaxis (as an adjunct to epinephrine).
- **B.** Dystonic reactions from phenothiazine overdose (e.g., Haldol®, Compazine®, Thorazine®, and Inapsine®). These include oculogyric crisis, acute torticollis, and facial grimacing.

Contraindications

- **A.** Diphenhydramine is not to be used in newborn or premature infants or in nursing mothers.
- **B.** It is also not to be used in patients with lower respiratory tract symptoms, including asthma

Precautions

- **A.** May have an additive effect with alcohol or other CNS depressants
- **B.** Although useful is acute dystonic reactions, it is not an antidote to phenothiazine toxicity or overdose,
- **C.** May cause hypotension when given IV.

Adverse Reactions and Side Effects

- **A. CNS:** Drowsiness, confusion, insomnia, headache, vertigo (all especially in the elderly)
- **B. Cardiovascular:** Palpitations, tachycardia, PVCs, and hypotension.
- **C. GI:** Nausea and vomiting, constipation, diarrhea and dry mouth.
- **D. Respiratory:** Thickening of bronchial secretions, tightness of the chest, wheezing, and nasal stuffiness.
- **E. GU:** Dysuria, urinary retention.

Warnings

- **A.** In infants and children especially, antihistamines in overdose may cause hallucinations, convulsions, or death.
- **B.** As in adults, antihistamines may diminish mental alertness in children. In young children, they may cause excitation.
- **C.** Diphenhydramine has addictive effects with alcohol and other CNS depressants (e.g., hypnotics, sedatives, tranquilizers). Antihistamines are more likely to cause dizziness, sedation, and hypotension in elderly patients (60 years or older).
- **D.** Diphenhydramine is rarely necessary in the field. It is not the first-line drug for allergic reactions but may be useful for long transports. It may also be useful for acute dystonic reactions, but these, while emotionally and physically trying, are not life-threatening and don't require treatment.

Dosage

- **A. Adult:** 1 mg/kg deep IM or IVP, to a maximum of 50 mg.
- **B. Pediatric:** if itching is severe, 1 mg/kg deep IM/IVP, to a maximum of 50 mg.

Actions:

Dobutamine is a sympathomimetic drug used in the treatment of heart failure and cardiogenic shock. Its primary mechanism is the direct stimulation of beta 1 (myocardial) adrenergic receptors of the sympathetic nervous system. Dobutamine has a minor effect on heart rate or peripheral blood vessels and increases cardiac output without a significant increase in heart rate. In addition, the stimulation of beta receptors Dobutamine also causes a mild vasodilatory response. This vasodilatation tends to decrease systemic vascular resistance and decrease preload Dobutamine increases blood flow to the kidneys and gut by increasing cardiac output. Beneficial effects of Dobutamine are that it tends to improve the balance between myocardial oxygen demand and supply by increasing coronary blood flow and tends not to increase infarct size or precipitate arrhythmias when it's titrated to avoid significant increases in heart rate. The duration of action of Dobutamine is relatively short with a half-life of about 2 minutes

Indications:

- **A.** Congestive heart failure and low cardiac output
- **B.** Right ventricular infarcts (to be used along with fluid challenges)
- **C.** Dobutamine may also be useful to improve cardiac output in patients with septic shock.

Contraindications:

- **A.** Hypersensitivity
- **B.** Idiopathic hypertrophic subaortic stenosis

Caution:

- **A.** Dobutamine should not be used in hypovolemic shock prior to fluid resuscitation
- **B.** Dobutamine should not be used to increase blood pressure in patients with congestive heart failure and severe hypotension, i.e., BP < 70-80 systolic, dopamine may be the preferred agent.
- **C.** An increase in heart rate of > 10 % may induce or exacerbate myocardial ischemia
- **D.** Dobutamine should be used cautiously in pregnant women and in children (Contact OLMC)
- **E.** As with the use of all sympathomimetic drugs the patient should be monitored for potential arrhythmias
- **F.** Dobutamine may not be effective when administered to patients already on beta blockers such as Inderal®, which block the beta receptors on which Dobutamine acts.
- **G.** Do not mix with sodium bicarbonate or push bicarb through a line running Dobutamine.

Dosage

Dobutamine is supplied in 20ml ampules containing 250mg. Dobutamine is only administered as a drip and **NEVER** administered as a bolus. Dobutamine may be effective at low doses (e.g., 0.5 micrograms/kg/ minute). The usual dosage range for Dobutamine is:

- **A.** Adults 2-20mcg/kg/min
- **B.** Peds, 5-20mcg/kg/min

Actions

Dopamine stimulates dopaminergic beta-adrenergic and alpha-adrenergic receptors of the sympathetic nervous system. It exerts an inotropic effect on the myocardium, resulting in an increased cardiac output. Dopamine produces less increase in myocardial oxygen consumption than isoproterenol, and its use is rarely associated with tachyarrhythmia. Dopamine dilates renal and mesenteric blood vessels at low doses that may not increase heart rate or blood pressure. Therapeutic doses have predominant beta-adrenergic receptor stimulating actions that result in increases in cardiac output without marked increases in pulmonary occlusive pressure. At high doses, dopamine has alpha-receptor stimulating actions that result in peripheral vasoconstriction and marked increases in pulmonary occlusive pressure. Dopamine is a chemical precursor of norepinephrine which occurs naturally in humans and which has both alpha and beta receptor stimulating actions. Its actions differ with dosage given:

A. 1-2 mcg/kg/min - dilates renal/mesenteric blood vessels (no effect on heart rate or blood pressure).
B. 2-10 mcg/kg/min – beta effects on the heart which usually increase cardiac output without increasing heart rate or blood pressure.
C. 10-20 mcg/kg/min – peripheral alpha effects cause peripheral vasoconstriction and increased blood pressure.
D. 20-40 mcg/kg/min – alpha effects reverse dilation of renal and mesenteric vessels with the resultant decreased flow.

Indications

A. Primary indication is cardiogenic shock.
B. May be useful for other forms of shock, except hypovolemia.

Contraindications

A. Dopamine should not be used in patients with hypovolemia or pheochromocytoma (a rare tumor of the adrenal gland tissue that results in the release of too much epinephrine and norepinephrine).

Precautions

A. May induce tachyarrhythmia, in which case, the infusion should be decreased or stopped.
B. High doses may cause extreme peripheral vasoconstriction. Conversely, low doses may cause a decreased blood pressure due to peripheral dilation.
C. Should not be added to sodium bicarbonate or other alkaline solutions since dopamine will be inactivated in alkaline solutions
D. Consider hypovolemia and treat this with appropriate fluids before the administration of dopamine.
E. Dopamine is contraindicated for hypovolemic shock.

Adverse Reactions and Side Effects

A. CNS: Headache.
B. Cardiovascular: Ectopic beats, tachycardia, angina pain, palpitations, hypotension.
C. GI: Nausea and vomiting.
D. Local: Necrosis and tissue sloughing with extravasation.
E. Other: Piloerection, dyspnea

Warnings

Can precipitate a hypertensive crisis in susceptible individuals, ie. Patients on MAO inhibitors. These patients will require substantially reduced dosage. MAO inhibitors include the following agents:

- Furazolidone (Furoxone®)
- Isocarboxazid (Marplan®)
- Pargyline hydrochloride (Eutonyl®)
- Phenelzine sulfate (Nardil®)
- Tranylcypromine sulfate (Parnate®)
- Procarbazine hydrochloride (Matuline®)
- Pargyline hydrochloride with methyclothiazide (Eutron®)

Dosage

A. Adult: In cardiogenic shock, Dopamine in D5W to yield a concentration of 1600 mcg/ml. Begin the infusion at 5 mcg/kg/min and titrate to effect (maximum dosage of 20 mcg/kg/min).
B. Adult: in Bradycardia: Begin infusion at 5 mcg/kg/min not to exceed 10mcg/kg/min**.**

Actions

A. Epinephrine is a sympathomimetic agent that stimulates both alpha and beta–adrenergic receptors. Because of its effects, myocardial and cerebral blood flows are increased during ventilation and chest compression. Epinephrine increases systemic vascular resistance and, therefore, may enhance defibrillation.

B. Epinephrine causes immediate bronchodilation, increase in heart rate and increase in the force of cardiac contraction. The effects of a subcutaneous dose last 5-15 minutes.

C. In general, the following cardiovascular responses can be expected:

1. Increased heart rate
2. Increased myocardial contractile force
3. Increased systemic vascular resistance
4. Increased arterial blood pressure
5. Increased myocardial O2 consumption
6. Increased automaticity

Indications

A. Cardiac Arrest
B. Other pediatric indications: hypotension in patients with circulatory instability, and bradycardia (before use of atropine).
C. Asthma in patients under 40 years of age.
D. Anaphylaxis
E. Angioneurotic edema
F. Bradycardia (Adult unresponsive to Dopamine)

Contraindications

A. None in the cardiac arrest situation
B. None in the setting of anaphylaxis

Adverse reactions and Side Effects

A. **CNS:** Anxiety, headache, cerebral hemorrhage, tremor.
B. **Cardiovascular:** Tachycardia, ventricular dysrhythmias, hypertension, angina, palpitations, PVCs
C. **GI:** Nausea and vomiting. **Warnings**
D. Epinephrine increases cardiac work and can precipitate angina, MI or major dysrhythmias in an individual with ischemic heart disease.
E. Consider wheezing in an elderly person as pulmonary edema in addition to COPD with bronchospasm.
F. Epinephrine is inactivated by alkaline solutions—never mix it with sodium bicarbonate,
G. The action of catecholamines is depressed by acidosis, attention to ventilation and circulation is essential
H. Antidepressants potentiate the effects of epinephrine.

Dosage

Cardiac Arrest:

A. **Adult**: **IVP (1:10,000):** I mg (10 ml): repeat every 3-5 minutes.
B. **Pediatric: IVP/IO (1:10,000):** 0.01 mg/kg (0.1 mL/kg); repeat every 3-5 minutes

Drip for Bradycardia:

A. Inject 1 mg of epinephrine into 500 ml of normal saline. This provides a concentration of 2mcg/mL. Administer at a starting dose of 2mcg /min and titrate to effect (maximum dose of 10mcg/min).
B. Alternate concentration of 16mcg/ml (4mg in 250 of normal saline) may be used with the Alaris or Plum IV infusion pumps.

Anaphylaxis (Severe):

A. **Adult: if shock syndrome is present: IM (1:1000):** 0.3 mg…. or **IVP (1:10,000):** 0.3 mg
B. **Pediatric: severe respiratory distress**

1. If the child is unable to benefit from (or cooperate with) nebulizer, administer Epinephrine **0.01 mg/kg of 1:1000 IM** with a maximum single dose of 0.3 mg.
2. If the child is in severe respiratory distress, administer Epinephrine **0.01 mg/kg (1:10,000)** IVP or IO. Repeat every 5 minutes as needed.

Actions

Esmolol (Brevibloc) is a cardio-selective beta1 receptor blocker with rapid onset and has a very short duration of action. Esmolol decreases the force and rate of heart contractions by blocking beta-adrenergic receptors of the sympathetic nervous system. Esmolol prevents the action of two naturally occurring substances: epinephrine and norepinephrine. Esmolol decreases blood pressure and heart rate in a dose-dependent titratable manner.

Indications

- **A.** Short-term treatment in the control of heart rate for patients with MI.
- **B.** Control ventricular rate in a-fib and a-flutter
- **C.** Stable, narrow complex tachycardia if rhythm remains uncontrolled or unconverted by adenosine or vagal maneuvers or if SVT is recurrent

Contraindications

- **A.** Hypersensitivity to Esmolol
- **B.** Heart block greater than first degree
- **C.** Sinus bradycardia
- **D.** Cardiogenic shock
- **E.** Decompensated CHF
- **F.** Acute bronchospasm (asthma and COPD)

Adverse Effects

- **A.** Bradycardia
- **B.** Hypotension
- **C.** Dizziness
- **D.** Chest pain
- **E.** Headache
- **F.** Bronchospasm

Dose and Administration

ADULT ADMINISTRATION:

- **A.** 250-500 mcg/kg loading dose give over 1 minute. Followed by 25-50 mcg/kg/min x 4minutes
- **B.** Titrate the dose at 4-minute intervals by repeating the loading dose for 1 minute and increasing the maintenance dose by 25-50mcg/kg/min at 4-minute intervals until the desired effect is obtained or the Maximum dose 300 mcg/kg/min is reached.

Pediatric:

- **A.** Bolus with 500 mcg/kg/min over 1 min then begin infusion at 200 mcg/kg/min. Titrate every 5 min by repeating bolus and increasing infusion by 50-100 mcg/kg/min. Usual max dose 1000 mcg/kg/min.

Actions

Etomidate is a hypnotic drug without analgesic activity. Etomidate produces hypnosis characterized by a rapid onset of action, usually within one minute. Duration is dose dependent but relatively brief, usually three to five minutes.

Indications

Sedation for RSI and Synchronized Cardioversion

Contraindications

Known hypersensitivity to Etomidate

Adverse Effects

- **A.** Seizure-like activity
- **B.** Injection site pain
- **C.** May cause a brief period of apnea
- **D.** Hypotension/hypertension
- **E.** Involuntary muscle movement
- **F.** Tachycardia/bradycardia/nausea/vomiting

Dosing and Administration

Adult

- **A.** 0.3 mg/kg IVP/IO over 30-60 seconds may be repeated once

Pediatric

- **A.** Same as adult dose
- **B.** ****Caution** should be used when administering Etomidate to pediatric patients below the age of 10 and to pregnant or nursing mothers.

Actions

Fentanyl is like Morphine and Meperidine (Demerol) in its respiratory effects except that respiration of healthy individuals returns to normal more quickly after Fentanyl. This agent exhibits little hypnotic activity and histamine release rarely occurs. It is a synthetic narcotic that has an analgesic effect approximately 50-100 times greater than that of morphine. Peak analgesic effects last 30-60 min.

Indications

- **A.** For the relief of moderate to severe pain.
- **B.** Chest pain ischemia unresponsive to nitroglycerin.

Contraindications

- **A.** Patients with known hypersensitivity to Hydromorphone and/or Fentanyl.
- **B.** Intracranial lesions associated with increased ICP, undiagnosed head or abdominal pain or trauma.
- **C.** Hypotension.

Precautions

- **A.** Muscular rigidity may occur which prevents adequate chest wall excursion and results in hypoventilation. Use caution when administering Fentanyl to patients with a depressed respiratory function (e.g., COPD, corpulmonale, emphysema, kyphoscoliosis.
- **B.** Use caution when administering Fentanyl to patients with hepatic and/or renal impairment.
- **C.** Not recommended for patients taking MAO inhibitors

Adverse Reactions and Side Effects

- **A. CNS:** Sedation, drowsiness, mental clouding, lethargy, impairment of mental and physical performance, anxiety, fear, dysphoria, dizziness, psychic dependence, and mood changes.
- **B. Cardiovascular:** Circulatory depression, peripheral circulatory collapse, and cardiac arrest have occurred following rapid administration. Orthostatic hypotension and fainting may occur if the patient stands up following administration of Fentanyl. Hypotension is usually responsive to Narcan and the Trendelenburg position. Bradycardia is a rare side effect of Fentanyl administration.
- **C. GI:** Nausea and vomiting, constipation.
- **D. Respiratory:** Respiratory depression and apnea. A high level of attentiveness to the patient's respiratory status and prevention of hypoventilation/hypoxia are required.

Warnings

The concomitant use of other CNS depressants--including other opioids, sedatives or hypnotics, general anesthetics, phenolthiazides, potent inhibitors of P450 (e.g., erythromycin, ketoconazole, and certain protease inhibitors), and alcoholic beverages—may produce increased depressant effects. Hypoventilation, hypotension, and profound sedation may occur.

Dosage

Adult:

- **A. Fentanyl:** 25-100 mcg initial dose followed by 50 mcg increments titrated to pain relief, up to a total of 200 mcg for an adult. If administering more than 50 mcg Fentanyl, consider administering Ondansetron Hydrochloride (Zofran) 4 mg undiluted IV over 2 to 5 minutes (contraindicated in pregnancy). Contact OLMC if more than 200 mcg of Fentanyl is needed. Repeat V/S after each dose and maintain BP equal to 90 mmHg or greater.

Pediatric:

- **A.** Utilize Length-Weight Measurement to determine appropriate dosing. Fentanyl 1 mcg/kg increments, up to a total of 30 mcg. Contact OLMC if more than 30 mcg is needed. (Child age: less than or equal to 16 years of age).

Actions

Fosphenytoin is a prodrug of phenytoin and accordingly, its anticonvulsant effects are attributable to phenytoin. Fosphenytoin stabilizes the neuronal membranes and limits seizure activity by modulating voltage-dependent sodium channels of neurons, inhibiting calcium flux across neuronal membranes, modulating voltage-dependent calcium channels of neurons, and enhancing sodium-potassium adenosine triphosphatase activity of neurons and glial cells.

Indication

A. Status epilepticus

Contraindications

A. Hypersensitivity to Fosphenytoin or its ingredients, or to phenytoin
B. Sinus bradycardia
C. Second and third-degree A-V block
D. Adams-Stokes syndrome

Adverse Reactions

- Agitation
- Dizziness
- Headache
- Hypertension
- Somnolence
- Tachycardia
- Nystagmus
- Dry mouth
- Nausea and Vomiting
- Constipation
- Hypokalemia
- Back/pelvic pain
- Rash
- Pruritus

Dosage and Administration

Adult/Pediatric

A. 15-20 mg phenytoin equivalent (PE)/kg at 100-150 PE/min IV, or 15-20 mg PE IM
B. ****Caution** should be used during pregnancy, patients with Hypotension, severe myocardial insufficiency, impaired renal or hepatic function.

Actions

Glucagon is a hormone, which causes glucose mobilization in the body. It is produced naturally in the pancreas by the islets of Langerhans and causes an increase in blood glucose concentrations. It is effective in small doses, and no evidence of toxicity has been reported with its use. It works opposite to insulin, which causes glucose storage. It is released at times of insult or injury when glucose is needed and mobilizes glucose from body glycogen stores. Glucagon acts only on liver glycogen, converting it to glucose if the patient has adequate glycogen reserves. Glucagon also possesses positive inotropic and chronotropic properties. Return to consciousness should be with 20 minutes of IM dose if the patient is hypoglycemic.

Indications

- **A.** Known hypoglycemia (preferably by blood glucose determination) when an IV cannot be established and oral glucose is contraindicated.
- **B.** Possible Beta-blocker overdose (contact OLMC).

Contraindications

Because Glucagon is a protein, hypersensitivity is a possibility.

Precautions

IV glucose or dextrose is the treatment of choice for hypoglycemia. Use of Glucagon is restricted to patients, who are seizing, comatose, combative, or with collapsed veins and in whom an IV cannot be started. In these rare situations, it may be invaluable.

Adverse Reactions and Side Effects

- **A.** Nausea and vomiting may occur,
- **B.** Persons with no liver glycogen stores (malnutrition, alcoholism) may not be able to mobilize any glucose in response to Glucagon.

Warnings

Glucagon should be administered with caution in patients with a history of insulinoma and/or pheochromocytoma.

Dosage

Adult:

- **A.** If no IV can be established, administer 1.0 mg Glucagon IM

Pediatric:

- **A.** If no IV is established and airway protective reflexes are not intact:
  1. Patients less than 20 kg, 0.5 mg of Glucagon IM.
  2. Patients greater than 20 kg, 1.0 mg of Glucagon IM

Actions

Heparin Sodium Prevents conversion of fibrinogen to fibrin and affects clotting factors: IX, XI, XII, plasmin. Does not lyse existing clots.

Indications

- **A.** Adjunct therapy of coronary occlusion in Acute Coronary Syndrome
- **B.** Disseminated intravascular coagulation (DIC)
- **C.** Prevention of deep venous thrombosis
- **D.** Treatment of DVT / PE
- **E.** The propensity to develop a blood clot

Contraindications

- **A.** Heparin is ***NOT*** to be used on scene
- **B.** Hypersensitivity to Heparin or its components
- **C.** Active bleeding (except DIC)
- **D.** Neonates or premature infants
- **E.** Third Trimester pregnancy
- **F.** Porcine or bovine protein allergy

Adverse Reactions and Side Effects

- **A.** Increased potential for bleeding
- **B.** Thrombocytopenia
- **C.** Allergic reactions

Dosage and Administration

*****Must be regulated by a mechanical pump***

Adult:

- **A. Adult: Loading dose:** 60-80 units / kg IV
- **B. Adult maintenance dose:** 15-18 units / kg / hour IV.

Pediatric:

- **A. Pediatric Loading dose**: 50 u / kg IV;
- **B. Pediatric Maintenance dose:** 7.5 units / kg / hour IV.

Actions

Hydralazine is a direct-acting smooth muscle relaxant used to treat hypertension by acting as a vasodilator primarily in arteries and arterioles. By relaxing vascular smooth muscle, vasodilators act to decrease peripheral resistance, thereby lowering blood pressure and decreasing afterload.

Indications

A. Moderate to Severe hypertension
B. Pregnancy- induced hypertension or preeclampsia.

Contraindications

A. Hypersensitivity to Hydralazine or its components
B. Compromised renal function (relative contraindication)
C. Mitral valvular rheumatic heart disease

Caution should be used in

A. Cardiovascular or cerebrovascular disease
B. Severe renal and hepatic disease
C. Pregnancy or in women who are lactating
D. Children

Adverse Effects

- Headache
- Dizziness
- Drowsiness
- Tachycardia
- Angina
- Arrhythmias
- Orthostatic hypotension
- Nausea, Vomiting and Diarrhea

Dosage and Administration

Adult

A. Hypertension
1. 20-40mg IV (Dose can be repeated with OLMC)

A. Pregnancy Pre-Eclampsia / Eclampsia
1. 5-10mg IV every 20 minutes (if no response after 20 minutes consider an alternative agent).

Actions

Hydromorphone (Dilaudid®) is a synthetic narcotic that is approximately 5-10 times more potent than morphine. Hydromorphone is otherwise similar to morphine in its indications and side effects.

Indications

Hydromorphone (Dilaudid®) is indicated for pain if Fentanyl is unavailable.

Caution

Hydromorphone (Dilaudid®) may cause:

- **A.** Respiratory depression. This occurs most frequently in elderly patients.
- **B.** Hypotension
- **C.** CNS effects
- **D.** Nausea and Vomiting

Contraindications

- **A.** Patients with known hypersensitivity to Hydromorphone (Dilaudid®)
- **B.** For use in obstetrical analgesia
- **C.** Patients with respiratory depression

Dose

Adults:

- **A.** Administer 1-2 mg IV/IM over 2-5 min., titrated to pain relief, with a maximum dose of 2 mg. Systolic blood pressure must be greater than 90 mmHg. Consider administering Ondansetron Hydrochloride

Pediatrics:

- **A. By Physician order only**

Actions

The action of the Cyanokit® in the treatment of cyanide poisoning is based on its ability to bind cyanide ions. Each hydroxocobalamin molecule can bind one cyanide ion by substituting it for the hydroxo ligand linked to the trivalent cobalt ion, to form cyanocobalamin, which is then excreted in the urine.

Indications

- **A. Good patient history**
- **B. Known cyanide poisoning**:
  1. Exposure to hydrogen cyanide and its salts, cyanogenic plants, aliphatic nitriles and prolonged exposure to sodium nitroprusside.
  2. Signs and symptoms
  3. Signs…. Altered mental status, seizures or coma, mydriasis, tachypnea/hyperpnea (early), bradypnea/apnea (late), hypertension (early)/hypotension (late, cardiovascular collapse, vomiting.
  4. Symptoms…Headache, confusion, dyspnea, chest tightness, nausea.
- **C. Air monitoring.**
- **D. *Administration authorized by OLMC***

Contraindications

None.

Adverse Reactions and Side Effects

- **A.** Serious adverse reactions include allergic reactions and increases in blood pressure.
- **B.** Other side effects include: red-colored urine, red-colored skin and mucous membranes, acne-like rash, nausea, vomiting, diarrhea, bloody stools, throat tightness, difficulty swallowing, headache, dizziness, memory problems, restlessness, infusion site reaction, eye swelling/irritation/redness, swelling of the feet and ankles, irregular heartbeat, increased heart rate, fluid in lungs

Warnings

- **A.** In addition to hydroxocobalamin, treatment of cyanide poisoning must include immediate attention to airway patency, adequacy of oxygenation and hydration, cardiovascular support and management of any seizure activity.
- **B.** Consideration should be given to decontamination measures based on the route of exposure.
- **C.** Many patients with cyanide poisoning will be hypotensive, however, elevations in blood pressure have been observed in known or suspected cyanide poisoning victims.

Administration

- **A.** Add 100 mL of D5W to vial using transfer spike. Fill to line with vial in the upright position.
- **B.** Rock or rotate the vial for 30 seconds to mix the solution. **DO NOT SHAKE.**
- **C.** Using the supplied vented IV tubing to piggyback onto established IV, infuse over 7.5 minutes (266 gtts/min- approximately 4 gtts/second.
- **D.** Repeat first two steps with second vial.

Actions

Ipratropium is an atropine derivative used for inhalation therapy. Recent studies have shown that for severe asthma, ipratropium taken in addition to a short-acting beta agonist (such as Albuterol) can provide greater bronchodilation and clinical benefit than the beta agonist alone.

Indications

Ipratropium bromide is indicated for the relief of bronchospasms associated with asthma and chronic obstructive pulmonary disease, including chronic bronchitis and emphysema that is unresponsive to treatment with albuterol alone.

Contraindications

- **A.** Hypersensitivity to atropine or its derivatives
- **B.** Patients with severe glaucoma

Adverse Reactions and Side Effects

- **A. Respiratory:** Cough, exacerbation of symptoms
- **B. CNS:** Nervousness, dizziness, headache
- **C. Cardiovascular:** Palpitations
- **D. GI:** Nausea, vomiting, GI distress
- **E. Other:** Tremor, dry mouth, blurred vision, pharyngeal irritation, increased intra-ocular pressure in glaucoma patients

Warnings

Ipratropium bromide is not indicated for the initial treatment of acute episodes of bronchospasms where rapid response is required.

Dosage

Adult:

- **A.** Add 0.5 mg (0.5 mL) of Atrovent to the nebulizer (in addition to the standard dose of albuterol) and flow oxygen at 6-8 LPM.

Pediatric:

- **B.** Same dose as adult dosage.

Actions

Ketamine is a rapid-acting general anesthetic producing an anesthetic state characterized by profound analgesia, normal pharyngeal-laryngeal reflexes, normal or slightly enhanced skeletal muscle tone, cardiovascular and respiratory stimulation, and occasionally a transient and minimal respiratory depression Ketamine has a rapid onset, IV within 30 seconds and IM 3-4 minutes.

Indications

- **A.** As the sole anesthetic agent for diagnostic and surgical procedures that do not require skeletal muscle relaxation.
- **B.** As induction agent to facilitate endotracheal intubation prior to the administration of other general anesthetic agents.

Contraindications

Ketamine hydrochloride is contraindicated in those in whom a significant elevation of blood pressure would constitute a serious hazard and in those who have shown hypersensitivity to the drug.

Precautions

- **A.** IV dose should be administered over a period of 60 seconds.
- **B.** Not recommended for use in pregnancy.
- **C.** Resuscitative equipment should be available for use.
- **D.** Use with extreme caution in patients with pre-anesthetic elevated cerebrospinal fluid pressure.

Adverse Reactions and Side Effects

- **A.** Cardiovascular - blood pressure and pulse rate are frequently elevated following administration of Ketamine alone. However, hypotension and bradycardia have been observed. Arrhythmia has also occurred.
- **B.** Respiration - Although respiration is frequently stimulated, severe depression of respiration or apnea may occur following rapid intravenous administration of high doses of Ketamine. Laryngospasms and other forms of airway obstruction have occurred during Ketamine anesthesia.
- **C.** Eye – Diplopia, and nystagmus have been noted following Ketamine administration. It also may cause a slight elevation in intraocular pressure.
- **D.** Neurological - In some patients, enhanced skeletal muscle tone may be manifested by tonic and clonic movements sometimes resembling seizures.
- **E.** Gastrointestinal - Anorexia, nausea, and vomiting have been observed; however, this is not usually severe and allows the great majority of patients to take liquids by mouth shortly after regaining consciousness.
- **F.** General: Anaphylaxis, local pain and rash at the injection site have infrequently been reported. Transient erythema and/or morbilliform (a rash that looks like measles) have also been reported.

Dosage

Requires OLMC: By Physician Order only

As with general anesthetic agents, the individual's response to ketamine is somewhat varied depending on the dose, route of administration, and age of the patient, so that the dose cannot be absolutely fixed.

Adult

- **A.** IV - 1 mg/kg to 4.5 mg/kg IV over one (1) minute (The average amount required to produce five (5) to ten (10) min. of surgical anesthesia has been 2 mg/kg.)
- **B.** IM - 6.5 mg/kg to 13 mg/kg IM (A dose of 10 mg/kg will usually produce 12 to 25 min of surgical anesthesia.)

Pediatric

- **A.** IV – Greater than 3 months 1.5mg/kg over one minute
- **B.** IM – Greater than 3 months 2 - 4mg/kg

Special Considerations

- **A.** Elevation of blood pressure begins shortly after injection, reaches a maximum within a few minutes and usually returns to preanesthetic values within 15 minutes after injection.
- **B.** Because pharyngeal and laryngeal reflexes are usually active, Ketamine should not be used alone for advanced airway management such as intubation. Mechanical stimulation of the pharynx should be avoided, whenever possible, if Ketamine is used alone.

C. The incidence of emergence reactions may be reduced if verbal and tactile stimulation of the patient is minimized during the recovery period (i.e. turn the lights of or down, speak softly and calmly and reduce all external sounds). This does not preclude the monitoring of vital signs.

D. Rapid administration may result in respiratory depression or apnea and enhanced pressor response.

E. Use with caution in the chronic alcoholic and the acutely alcohol- intoxicated patient.

Actions

Ketamine is a rapid-acting general anesthetic producing an anesthetic state characterized by profound analgesia, normal pharyngeal-laryngeal reflexes, normal or slightly enhanced skeletal muscle tone, cardiovascular and respiratory stimulation, and occasionally a transient and minimal respiratory depression Ketamine has a rapid onset, IV within 30 seconds and IM 3-4 minutes.

Indications

- **A.** Violent Agitated Patient
- **B.** Failure to "talk patient down"
- **C.** Suspected "Excited Delirium" (confusion, agitation, drug abuse)
- **D.** Resisting restraints putting self or crew in danger

Contraindications

- **A.** A significant elevation of blood pressure
- **B.** Significant Head Trauma
- **C.** Increased intracranial pressure
- **D.** Known hypersensitivity to Ketamine.

Warnings/Special Precautions

Respiratory depression/apnea may occur with over dosage or too rapid rate of use; employ supportive ventilation and respiration. Caution with chronic alcoholics and acutely alcohol intoxicated and in elderly patients. Use in pregnancy is not recommended.

Adverse Reactions

- **A.** Hypertension and tachycardia, generally self-limited
- **B.** Laryngospasm: may produce mild stridor, oxygen and BVM prn
- **C.** Hypersalivation
- **D.** Nausea and vomiting
- **E.** Tonic and clonic muscle movements
- **F.** Transient respiratory depression occasionally occurs
- **G.** Roving eye movements and nystagmus

Psychological Adverse Reactions

- **A.** Visual Hallucinations
- **B.** Emergence Delirium
- **C.** Sensation of detachment from the body

Dosage

Requires OLMC: By Physician Order only of the receiving hospital

Adult

4 mg/kg IM (max dose 400 mg) to the lateral thigh or deltoid

Actions

Ketamine is a rapid-acting general anesthetic producing an anesthetic state characterized by profound analgesia, normal pharyngeal-laryngeal reflexes, normal or slightly enhanced skeletal muscle tone, cardiovascular and respiratory stimulation, and occasionally a transient and minimal respiratory depression Ketamine has a rapid onset, IV within 30 seconds and IM 3-4 minutes. Ketamine It is unique among sedative agents in that it provides analgesia along with its amnestic and sedative effects.

Indications:

- **A.** Pain Management (Ideal for painful EMS procedure, patients with hypotension or at risk for hypoventilation; PRN alternative to opioids).

Precautions:

- **A.** Rapid IV administration of Ketamine will often cause respiratory arrest. Ketamine must be given slowly over 1-2 minutes.
- **B.** OLMC should be contacted prior to use with pregnant patients.
- **C.** Prolonged recovery times may occur if barbiturates and/or narcotics are used concurrently with Ketamine.

Contraindications:

- **A.** A significant elevation of blood pressure
- **B.** Significant Head Trauma
- **C.** Increased intracranial pressure
- **D.** Known hypersensitivity to Ketamine.
- **E.** History of schizophrenia (relative contraindication)

Adverse Reactions

- **A.** Hypertension and tachycardia, generally self-limited
- **B.** Laryngospasm: may produce mild stridor, oxygen and BVM prn
- **C.** Hypersalivation
- **D.** Nausea and vomiting
- **E.** Tonic and clonic muscle movements
- **F.** Transient respiratory depression occasionally occurs
- **G.** Roving eye movements and nystagmus

Psychological Adverse Reactions

- **A.** Visual Hallucinations
- **B.** Emergence Delirium
- **C.** Sensation of detachment from the body

Dosage

Adult

Ketamine: IV/IO

0.1- 0.3 mg/kg IV/IO Maximum dose of 15mg (Ketamine must be diluted 100mg in 100mL of NS or D5W and administered over 1-2 minutes) and titrated to pain. May be repeated with OLMC approval.

Ketamine: IM (If IV/IO cannot be established)

0.5 mg/kg for IM (do not dilute; max dose 50mg) May be repeated with OLMC approval.

Actions

A. Decreases sympathetic mediated pressor response during intubation.

B. Localized anesthetic post IO insertion.

Indications

A. As a premedication prior to intubation with Succinylcholine in patients with suspected increased intracranial pressure, acute asthma, or suspected/known acute MI.

B. Administered to conscious patients who receive an IO.

Contraindications

None in these situations

Adverse Reactions and Side Effects

- Sleepiness
- Dizziness
- Disorientation
- Confusion
- Convulsions
- Hypotension

Dosage

Intubation with Succinylcholine

Adult:

A. Pre-medicate with 1 to1.5 mg/kg for patients with suspected increased ICP, acute asthma, or suspected/known acute MI.

Pediatric:

A. Pre-medicate with 1.5 mg/kg for patients with suspected increased ICP or asthma.

Localized anesthetic post IO insertion

Adult:

A. Consider IO Lidocaine (20 mg of 2 % solution) for conscious patients prior to flush. If pain persists, provide an additional 20 mg for a maximum of 40 mg.

Pediatric:

A. Consider IO Lidocaine (0.5 mg/kg of 2% solution) for conscious patients prior to flush. If pain persists, contact OLMC for direction.

Description

A benzodiazepine used as an anti-anxiety agent with few side effects. It also has hypnotic, anticonvulsant, and considerable sedative properties and has been proposed as a preanesthetic agent.

Indication

Lorazepam (Ativan®) is indicated when Midazolam (Versed) is unavailable and is indicated for seizures, conscious sedation and as a chemical restraint

Caution

Benzodiazepines may have the following side effects:

- **A.** Respiratory depression
- **B.** Hypotension
- **C.** Paradoxical agitation in pediatric patients

Contraindications

Hypersensitivity to lorazepam, severe hypotension

Dosage

Adult

- **A. Sedation:** 1 mg increments IV/IM, to a maximum of 2 mg. used for patient comfort during cardioversion and pacing
- **B. Seizures:** 1 mg increments IV/IM

Pediatric

- **A. Lorazepam 0.1 mg/kg (Max Dosed 5mg)**

Actions

Magnesium is an important cofactor for enzymatic reactions and plays a key role in neurochemical transmission and muscular excitability. Magnesium is a cation, which is present in human cells and intercellular fluids. It prevents or controls convulsions by blocking neuromuscular transmission and decreasing the amount of acetylcholine liberated at the end-plate by the motor nerve impulse. It is said to have a depressant on the central nervous system, but does not affect the mother, fetus or neonate when used as directed in eclampsia and pre-eclampsia. Magnesium acts peripherally to produce vasodilation. It acts as an antiarrhythmic agent and may convert ventricular fibrillation and tachycardia.

Magnesium Sulfate acts as a calcium antagonist and may therefore alter myometrial contractility. Magnesium Sulfate also is also a tocolytic and is indicated in pre-term labor. Tocolytics are medications used to suppress premature labor in order to minimize the threat of maternal or fetal complications arising from pre-term delivery or delivery outside of a neonatal center. Suppression of pre-term labor without maternal or fetal complications resulting from tocolysis treatment. Patients requiring tocolytic therapy will exhibit the signs and symptoms associated with pre-term labor. ***Dehydration is the primary cause of pre-term contractions***

Indications

- **A.** In cardiac arrest, after defibrillation, epinephrine, and Amiodarone/Lidocaine in the treatment of ventricular fibrillation and ventricular tachycardia.
- **B.** Magnesium sulfate is also used to treat and prevent seizures in women with pre-eclampsia/eclampsia. You may encounter a woman who is on a magnesium drip during and inter-hospital transfer.
- **C.** Pre-term Labor
- **D.** Torsades de Pointes.

Relative Contraindications to tocolysis include

- **A.** Fetal demise or anomalies incompatible with life.
- **B.** Fetal distress
- **C.** Preterm premature rupture of membranes (PPROM)
- **D.** Preeclampsia/HTN
- **E.** Severe bleeding or abruption placentae
- **F.** Severe intrauterine growth retardation (IUGR)
- **G.** Chorioamnionitis (bacterial **infection** of the fetal amnion and chorion membranes)
- **H.** Cervical dilation greater than 5-6 cm
- **I.** Heart disease/tachycardia
- **J.** Hypersensitivity to medications used
- **K.** Trauma

Precautions

- **A.** In the non-arrest patient, magnesium may cause hypotension, bradycardia or decreased reflexes and respiratory depression.
- **B.** It is important to infuse this medication at a slow rate in order to decrease the chance of side effects.
- **C.** Because magnesium is removed from the body solely by the kidneys, this drug should be used in caution with patients with renal impairment.
- **D.** Monitoring magnesium serum levels and the patient's clinical status is essential to avoid the consequences of overdose and toxemia. Clinical indications that it is safe to give magnesium to the patient include the presence of a patellar reflex (knee jerk) and the absence of respiratory depression.

Adverse Reactions and Side Effects

- **A.** Adverse reactions of magnesium sulfate IV are usually the result of magnesium intoxication,
- **B.** Signs of hypermagnesemia include flushing, sweating, hypotension, depression of reflexes, flaccid paralysis, hypothermia, and circulatory collapse, depression of cardiac function and central nervous depression.
- **C.** These symptoms can precede fatal paralysis.

Warnings

- **A.** Magnesium sulfate should not be given intravenously to mothers with toxemia of pregnancy during the 2 hours immediately preceding delivery.
- **B.** Magnesium sulfate injection USP, 50%, must be diluted to a concentration of 20% or less prior to IV infusion.

Dosage

Asthma (for Acute Asthma exacerbation)

A. 1-2g IV over 5-10 minutes mix (1-2g in 100cc D5W) 100 drops /min on a 10 drop/cc set = 10min
67 drops /min on a 10 drop/cc set = 15min

Eclampsia/Pre-eclampsia

- **A.** 4 grams / 5-10min in 100 cc D5W.
- **B.** 4gm/5 min = 200 drops/min on a 10 drops/cc set
- **C.** 4gm/10 min = 100 drops/min on a 10 drops/cc set

Eclampsia/Pre-eclampsia Drip

- **A.** 5 grams in 100 cc D%W. Use10 gtts/ml set at 7 gtts/min = 2 grams/hour

Pre-term Labor

- **A.** Mix Magnesium Sulfate in D5W or NS to obtain a concentration of 4 g/100 mL. (40 g in 1000 mL, 20 g in 500 mL, or 10 g in 250 mL)
- **B. Bolus:** Infuse 4 g bolus over 20-30 min.
- **C. Maintenance infusion:** 2-4 g/hr
- **D. ***Patients receiving magnesium sulfate infusion must be closely monitored for the signs and symptoms of toxicity. Throbbing at the infusion site is a common and normal side effect.**

Cardiac Arrest (Torsades de Pointes)

- **A.** Torsades Without a pulse 2gm in 10cc D5W IVP
- **B.** Torsades with a pulse 2gm in 100cc D5W over 5-10 min

Actions

Mannitol is an osmotic diuretic that promotes the movement of fluid from the intracellular space to the extracellular space. It decreases cerebral edema and intracranial pressure and promotes urinary excretion of toxins.

Indications

A. Cerebral edema
B. Reduce intracranial pressure for certain cause (space-occupying lesions)
C. Rhabdomyolysis (myoglobinuria)
D. Blood transfusion reactions

Contraindications

A. Hypotension
B. Renal failure
C. Electrolyte depletion
D. Dehydration
E. Intracranial bleeding
F. CHF with pulmonary edema

Adverse Reactions

- CHF
- Pulmonary edema
- Hypertension
- Nausea and Vomiting
- Headache
- Seizures
- Chest pain
- Tachycardia
- Electrolyte depletion
- Dehydration
- Hypotension

Dosage and Administration

Adult

A. 0.25-0.50g/kg IV infusion over 10-30 minutes; may repeat after 15 minutes if no effect.

Pediatric

B. 0.5 - 1g / kg / dose IV, IO infusion over 30-60 minutes; may repeat after 30 minutes if no effect.

****Caution: Mannitol may precipitate digitalis toxicity when given concurrently**

Classification

Glucocorticord, Corticosterid

Description

Methylprednisolone is a synthetic steroid that suppresses acute and chronic inflammation. In addition, it potentiates vascular smooth muscle relaxation by beta-adrenergic agonists and may alter airway hyperactivity.

Indications

- **A.** Severe Asthma
- **B.** COPD
- **C.** Anaphylaxis

(Solu-Medrol should be given to only acute patients that are in moderate to severe distress or as directed by Online Medical Control).

Adult Dosage

- **A. 125mg IVP.** Solu-Medrol should be administered as a slow IV push

Contraindications:

- **A.** Contraindicated for patients that are allergic to Solu-Medrol.
- **B.** In the non-emergent setting caution should be given to patients with GI bleeding,
- **C.** Diabetics (relative)
- **D.** Patients with systematic fungal infections.

Adverse Reactions:

Most of Solu-Medrol's are from long-term use. In the EMS setting Paramedics should look for euphoria, behavioral alterations, hypertension, and hyperglycemia.

Pediatric Dose

- **A.** 2mg/kg IV/IO with OLMC Approval.

Actions

Selective inhibitor of beta1-adrenergic receptors; completely blocks beta1 receptors, with little or no effect on beta 2 receptors at doses less than 100 mg

Indications

A. Hypertension and angina pectoris
B. Acute coronary syndrome – second-line agent in the acute setting.
C. Symptomatic Atrial fibrillation
D. Symptomatic Flutter
E. Hypertension

Contraindications

A. Hypersensitivity to Metoprolol
B. Sinus bradycardia
C. Heart block greater than first degree
D. Cardiogenic shock / uncompensated cardiac failure
E. Pregnancy (2nd and 3rd trimesters)

Adverse Reactions and Side Effects

- Bronchospasm
- Bradycardia
- Palpitations
- Edema
- Congestive heart failure
- Reduced peripheral
- Drowsiness
- Insomnia

Dosage and Administration

Adult

A. Hypertension: 1.25-5 mg every 6-12 hours in patients unable to take oral medications
B. Myocardial infarction (acute): I.V. 5 mg every 5-10 minutes up to 3 doses in the early treatment of myocardial infarction.

Pediatrics

A. Not Recommended for Pediatric patients

Actions

Midazolam is a benzodiazepine with a potent sedative, aniolytic and anti-convulsant properties. Midazolam also causes significant antegrade amnesia when administered IV and it is well absorbed IM.

Indications

- **A.** Status Seizures. For the purpose of these protocols, this would be any seizure which has lasted longer than 2 minutes or two consecutive seizures without regaining consciousness. Do not give unless the patient is actively seizing.
- **B.** To control pain and discomfort during cardioversion or pacing.
- **C.** As a pre-induction agent prior to using paralytics.

Contraindications

- **A.** Known hypersensitivity
- **B.** Narrow-angle glaucoma

Precautions

- **A.** Midazolam causes respiratory depression and/or hypotension especially if administered rapidly. This occurs more commonly than with other benzodiazepines.
- **B.** Midazolam does not protect against the increase in intracranial pressure and bradycardia associated with multiple intubation attempts.

Adverse Reactions and Side Effects

- **A. Respiratory:** Respiratory depression, laryngospasm, bronchospasm, dyspnea.
- **B. Cardiovascular:** PVCs, bradycardia, tachycardia, nodal rhythms, hypotension.
- **C. CNS:** Retrograde amnesia, altered mental status, dizziness, prolonged emergence from anesthesia.
- **D. GI:** Nausea/vomiting, hiccoughs, coughing.
- **E. Local:** Pain, redness, swelling, burning at injection site.

Warnings

- **A.** Side effects include drowsiness, hypotension, respiratory depression, and apnea. These are more likely to occur in the very young and in the elderly. Rarely, patients may experience paradoxical agitation.
- **B.** More likely to cause respiratory depression in patients who have also ingested other CNS depressant drugs such as opioids, alcohol and, barbiturates.
- **C.** Midazolam is metabolized in the liver and excreted by the kidney. Doses should be adjusted accordingly in patients with underlying hepatic or renal diseases and low flow states such as CHF.
- **D.** When used for pacing and cardioversion, the drug should be given by slow IV push and the drug titrated for effect.

Dosage

Pacing/Cardioversion

Adult:

- **A.** If the patient is uncomfortable and has a systolic blood pressure greater than 90 mmHg, give Midazolam 2-4 mg, slow IVP (repeat x1 if needed, to a maximum of 4.0 mg) or if no there is no IV, administer 4.0 mg IM.

Pediatric:

- **A.** 0.025 mg/kg to a max of 2 mg IVP, or if there is no IV, 0.2 mg/kg IM to a max of 5 mg. Refer to the Length Weight Based Measurement Tape.

Intubation Prior to Use of Paralytics

Adult:

- **A.** 2-4 mg increments, IVP with a maximum initial dose of 10.0 mg.

Pediatric:

- **A.** 0.05 - 0.1mg/kg, or 2 mg. increments at a time, IVP with a maximum initial dose of 5 mg. Refer to the Length Weight Based Measurement Tape.

Seizures (Status)

Adult:

- **A.** 2-4 mg IVP. If there is no IV access, give Midazolam 4.0 mg IM. If the patient continues to exhibit seizure activity for more than 5 minutes, repeat Midazolam 2 mg IVP or 4.0 IM. If further doses are required, contact OLMC.

Pediatric:

A. 0.05 – 0.1mg/kg IVP, to a maximum initial dose of 2 mg. May repeat in 5 minutes if the patient is still seizing. If no IV access, administer Midazolam 0.2 mg/kg IM, to a maximum of 5 mg. May repeat once (for a maximum of 10 mg total) if the patient is still seizing. For repeat doses, contact OLMC. Refer to Length Weight Based Measurement Tape.

Chemical Sedation:

A. Administer Midazolam 2-4 mg increments IV every 1-2 minutes or 4 mg increments IM and titrate to affect to a maximum of 10 mg. Assess vital signs every 5 minutes. Contact OLMC for additional sedation.

Actions

A. Morphine is a narcotic with analgesic and hemodynamic properties. It exerts its analgesic effects on the central nervous system, simultaneously inducing drowsiness, mental clouding, and mood changes.

B. Morphine has several hemodynamic actions, including increasing venous capacity, pools blood peripherally and decreases its return. This relieves pulmonary congestion and left ventricular end diastolic dimensions/myocardial wall stress. These all result in decreased myocardial oxygen demand.

C. Reduces systemic vascular resistance at the arteriolar level (reduced after-load), decrease myocardial oxygen requirements. The onset of action is in 2-3 minutes, peaks at 7-10 minutes, and lasts 3-5 hours.

Indications

A. Pulmonary edema

B. Pain from acute myocardial infarction (if the patient is allergic to Fentanyl).

C. Pain associated with isolated extremity fracture or burn (if the patient is allergic to Fentanyl)

Contraindications

A. Known allergy/hypersensitivity to morphine.

B. Volume depletion or hypotension.

C. Undiagnosed head or abdominal pain or trauma…or suspected trauma to the abdomen or head.

Precautions

A. Morphine causes respiratory depression. This is reversible with Narcan®. Respiratory depression is more likely in patients with pre-existing respiratory insufficiency (e.g. COPD).

B. Narcan® and respiratory support should always be at hand when administering Morphine

Adverse Reactions and Side Effects

A. CNS: Euphoria, drowsiness, papillary constriction, respiratory arrest.

B. Cardiovascular: Bradycardia, hypotension.

C. GI: Decreased gastric motility, nausea, and vomiting.

D. GU: Urinary retention.

E. Respiratory: Bronchoconstriction, decreased cough reflex.

Warnings

A. Nausea and vomiting are common side effects.

B. The analgesic effect of Morphine should not be gauged solely by the total elimination of pain. Morphine reduces the perception of pain while the patient may still recognize the painful stimulus.

C. Hypotension may develop, especially in older patients, volume-depleted patients, or patients requiring elevated systemic vascular resistance for the maintenance of their blood pressure. Hypotension is usually responsive to Narcan® and the Trendelenburg position.

D. Morphine has a high tendency for addiction and abuse and is classified as a Schedule II drug under the Controlled Substances Act of 1970. Follow your Controlled Substance protocol or procedure for documentation, wasting and replacement.

E. Morphine is detoxified by the liver. It is potentiated by alcohol, antihistamines, barbiturates, sedatives and beta blockers.

Dosage

Pulmonary Edema

Adults:

A. Morphine (if available) 2 mg IVP increments to a total of 10 mg for patients who are awake and have a systolic blood pressure greater than 90 mmHg after Nitroglycerine and Bumex have been administered.

Pain Management

Morphine may be used for pain management in the event that the patient is allergic to or has a hypersensitivity to Fentanyl.

Adult:

A. 2.0 mg increments IVP slowly, up to a maximum dose of 10 mg.

Pediatric:

A. 0.1mg/kg IVP slowly

The mechanism of action for naloxone hydrochloride is not fully understood. It does appear that this agent antagonizes the effects of opiates by competing for the same receptor sites. It exhibits almost no pharmacologic activity of its own. When given IV, the action is apparent within 2 minutes. Effects appear slightly more slowly with IM administration. Duration of action: 1-4 hrs.

Indications

A. Naloxone is indicated for the complete or partial reversal of opiate narcotic depression and respiratory depression secondary to opiate narcotics or related drugs:
   1. Heroin
   2. Meperidine (Demerol®)
   3. Codeine
   4. Morphine
   5. Methadone
   6. Lomotil®
   7. Hydromorphone (Dilaudud®)
   8. Pentazocine (Talwin®)
   9. Propoxyphene (Darvon®)
   10. Percodan®
   11. Fentanyl®

B. Naloxone is also indicated diagnostically in a coma of unknown etiology.

Adverse Reactions and Side Effects

A. This drug is safe and free from side effects. Do not hesitate to use it if indicated.

B. The duration of some narcotics is longer than naloxone and the patient must be monitored closely. Repeated doses of naloxone may be required. Patients who have received this drug should be transported to the hospital because coma may reoccur.

C. May need large doses to reverse propoxyphene (Darvon®) overdose.

Warnings

A. In patients physically dependent on narcotics, violent withdrawal symptoms may occur.

B. Be prepared to restrain the patient if violent withdrawal is expected.

C. **Narcan administered to chronic narcotic abusers may cause uncontrollable seizure activity. In low doses (0.4 mg/min or less/min) administered to these patients is relatively safe, but should be titrated to the patient's respiratory efforts.**

Dosage

Adult:

A. 0.4 mg increments every 2-3 minutes until the reversal of respiratory depression or to a maximum of 2 mg IV/IO/, (**Narcan should be administered cautiously to persons suspected to be physically dependent on opioids. Complete reversal may precipitate an acute withdrawal syndrome.)**

B. If IV access cannot be established Narcan can be given via Mucosal Atomizer Administer Narcan 4mg every 1-2 minutes to a maximum of 12mg (OLMC should be contacted if further doses are required).

C. Fentanyl overdoses may require higher doses of Narcan. If the patient has known narcotic usage and/or the patient is not responsive to the normal dose of Narcan, Fentanyl and/or Carfentanil toxicity should be suspected. Administer Narcan 2mg IV every 1-2 minutes to a maximum of 10mg (OLMC should be contacted if further dose is required).

Pediatric:

A. 0.1mg/kg IVP/IO if mental status and respirations are depressed. Repeat every 5 minutes if opiate OD strongly suspected (Maximum Dose 2mg).

B. If IV access cannot be established Narcan can be given via Mucosal Atomizer Administer Narcan 2mg (OLMC should be contacted if further doses are required).

C. Fentanyl overdose may require higher doses of Narcan. If the patient has known narcotic usage and/or the patient is not responsive to the normal dose of Narcan, Fentanyl and/or Carfentanil toxicity should be suspected. **Administer one dose of Narcan 2mg IV or IO**. (OLMC should be contacted if further dose are required

**** Narcan should be administered cautiously to persons including newborns of mothers who are known or suspected to be physically dependent on opioids. In such cases, an abrupt and complete reversal of opioid effects may precipitate an acute withdrawal syndrome.**

Actions

- **A.** Nitroglycerin is a direct vasodilator that acts principally on the venous system, although it also produces direct coronary artery vasodilation (if not already dilated to the maximum)
- **B.** Its use decreases venous return (reduced pre-load) which also decreases the workload in the heart.
- **C.** Decreased peripheral resistance (reduced after-load).
- **D.** General smooth muscle relaxation.

Indications

- **A.** Chest pain or discomfort associated with suspected AMI or angina pectoris.
- **B.** Pulmonary edema with hypertension.

Contraindications

- **A.** Patients with increased intracranial pressure
- **B.** Patients with systolic blood pressure less than 90 mmHg.
- **C.** Children younger than 12 years.
- **D.** If the patient has taken erectile dysfunction medications within the past 24 to 48 hours (Viagra, Levitra, Cialis, etc.).

Precautions

- **A.** Generalized vasodilation may cause profound hypotension and reflex tachycardia.
- **B.** NTG should be stored in a cool place.
- **C.** Use with caution in hypotensive patients
- **D.** Do not shake the canister prior to administration.

Adverse Reactions and Side Effects

- **A. CNS:** Headache, dizziness, flushing, nausea, and vomiting.
- **B. Cardiovascular:** Hypotension, reflex tachycardia.
- **C.** The therapeutic effect is enhanced, but adverse effects are increased when a patient is upright.
- **D.** Because nitroglycerin causes generalized smooth muscle relaxation, it may be effective in relieving chest pain caused by esophageal spasm.

Dosage

Adult:

Chest Pain:

- **A. 0.4** mg (1 spray sublingual), may repeat in 3-5 minutes (3 EMS doses). Monitor blood pressure to maintain 90 mmHg.**Pulmonary Edema:**
- **B. Nitrolingual®Spray:** 1 spray (0.4 mg) every 5 minutes as long as blood pressure is greater than 90 mmHg.
- **C. Nitrobid® Paste:** 1 inch of 2% ointment topically for transdermal absorption if CPAP is being used.

Indications

A. Chest pain secondary to presumed cardiac ischemia, acute coronary syndrome or acute myocardial infarction. The nitroglycerin drip may be used after failure of SL nitroglycerin and narcotic administration to relieve cardiac chest pain.

B. Acute pulmonary edema / CHF. The nitroglycerin drip may be used as a supplement to SL nitroglycerin treatment

C. Continued as a maintenance drip for patients during inter-facility transfers

Contraindications

A. Hypersensitivity to Nitroglycerin

B. Severe anemia

C. Pericardial tamponade

D. Constrictive pericarditis

E. Head trauma or cerebral hemorrhage

F. Hypotension or uncorrected hypovolemia

Adverse Effects

- Hypotension
- Bradycardia
- Methemoglobinemia
- Headache
- Dizziness
- Flushing
- Postural hypotension
- Tachycardia, burning

Dosing and Administration

Adult

A. Titrate the nitroglycerin drip at 5 mcg/min and increase by 5 mcg/min at 5-minute intervals if chest pain persists and systolic blood pressure remains above 100 mmHg. Dosage range is 5-200 mcg/min

Actions

Nicardipine is a calcium channel blocker resulting in coronary and peripheral vasodilatation, often with a compensatory elevation in heart rate. It increases the cardiac index and cardiac output while reducing the systemic vascular resistance. There are no antiarrhythmic effects. Nicardipine has a peak response in about 2 minutes and has a half-life of 44-107 minutes for a single IV dose.

Indications

A. Hypertension

Contraindications

A. Hypersensitivity to calcium channel antagonists

B. Advanced aortic stenosis

Adverse Effects

- Dizziness
- Headache
- Angina
- Tachycardia
- Syncope
- Dyspnea
- Rash
- GI distress

Precautions

A. CHF

B. Exacerbation of angina during initial therapy

C. Pregnancy class C

D. Hepatic or renal impairment

E. Pheochromocytoma

F. Portal hypertension

G. Symptomatic hypotension

Dosing and Administration

Adult

A. 50 mL/hr (5 mg/hr). If desired blood pressure reduction is not achieved at this dose, the infusion rate may be increased by 25 mL/hr (2.5 mg/hr) every 5-15 minutes up to a maximum of 150 mL/hr (15 mg/hr), until desired blood pressure reduction is achieved.

Actions

Nitroprusside is a vasodilator that works acts directly on vascular smooth muscle causing peripheral vasodilation. This results in a reduced left ventricular afterload. This, along with a reduced venous return to the heart, causes a slight increase in heart rate and a decrease in cardiac output in hypertensive patients. In patients with congestive heart failure, Nitroprusside improves left ventricular heart performance, increasing cardiac output, and stroke volume.

Indications

A. Management of hypertensive crisis
B. Treatment of cardiac pump failure or cardiogenic shock (alone or with dopamine)

Contraindications

A. Compensatory hypertension
B. Hypotension
C. Aortic stenosis
D. Recent use(within 24 hours) of Viagra, Cialis, Levitra

Adverse Effects

- Hypotension
- Tachycardia
- Thiocyanate toxicity (Tinnitus, blurred vision and delirium).
- Hypoxemia
- CO2 retention
- Headache
- Nausea and Vomiting

Dosing and Administration

A. Nitroprusside must be mixed in D5W and the solution bag should be wrapped in foil due to light sensitivity
B. Mix 50 mg Nitroprusside in 250 ml/D5W administer infusion at 0.5 to 10mcg/kg/min and titrate every 3-5 min to the desired effect.

****Caution should be used when administering Nitroprusside to the following patients with:**

- Renal disease
- Hepatic disease
- Geriatric patients
- Hypothyroidism
- Hyponatremia
- Pregnancy or lactation

Actions

Norepinephrine stimulates alpha-adrenergic receptors resulting in constriction of all vessels and an increase in peripheral vascular resistance, increase in systolic and diastolic blood pressure, decreased blood flow to vital organs, skin, and muscle. Norepinephrine directly stimulates beta-1 receptors with a positive inotropic effect.

Indications

Hypotension due to:

- **A.** Cardiogenic Shock
- **B.** Septic Shock
- **C.** Neurogenic Shock

Contraindications

- **A.** Hypovolemia (unless as a temporary measure until volume can be replaced)
- **B.** Mesenteric or peripheral vascular thrombosis
- **C.** Ischemic heart disease
- **D.** Hypertension

Adverse Effects

- Necrosis with extravasation
- Headache
- Weakness
- Dizziness
- Hypertension
- Severe peripheral and visceral vasoconstriction
- Arrhythmias
- Bradycardia
- GI distress
- Decreased urine output
- Dyspnea
- Apnea
- Pallor
- Cerebral hemorrhage
- SeizuresMetabolic acidosis
- Hyperglycemia
- Hyperthermia

Dosing and Administration

Norepinephrine should be given into a large, patent vein. The vein of choice for EMS use is the antecubital vein, as this will decrease the risk of overlying skin necrosis. Do not administer norepinephrine through an IV in the hand or leg. These veins are more likely to be affected by vaso-occlusive diseases and more prone to ischemic complications. Administration through IO in the leg is permitted.

Adults

- **A.** 0.5-30 mcg/min IV/IO - Mix 4mg **of** Norepinephrine in 250 cc of D5W or Normal Saline (16mcg/ml) and titrated to maintain a systolic BP of 100mmHg

Pediatric

- **A.** 0.5-1 mcg/kg/min IV/IO and titrate to effective blood pressure

Actions

Ondansetron Hydrochloride is an antiemetic. It blocks the actions of chemicals in the body that can trigger nausea and vomiting.

Indications

- **A.** Prevention and control of nausea and vomiting if vomiting is severe enough to interfere with exam and treatment.
- **B.** Consider administering Ondansetron Hydrochloride if administering more than 50 mcg of Fentanyl or 4 mg of Morphine.

Contraindications

- **A.** Known hypersensitivity to Ondansetron Hydrochloride or similar medications such as Anzemet or Kytril
- **B.** Pregnancy
- **C.** Decreased liver function.
- **D.** Intestinal obstruction.
- **E.** Cardiac arrhythmias.

Adverse Reactions and Side Effects

- **A. Cardiovascular:** Rarely transient EKG changes to include prolonged QT interval, hypotension.
- **B. CNS:** Dizziness, fatigue, headache.
- **C. GI:** Constipation, diarrhea

Adult Dosage

- **A.** 4 mg IV/IM May repeat with 4 mg IV after two minutes if the patient is still vomiting.
- **B.** 4mg SL if IV is not available

Pediatric Dosage

- **A.** 0.2 mg/kg up to 4mg total for active and persistent vomiting

Actions

Oral Glucose is a 40% glucose solution of complex carbohydrates that are useful in the management of hypoglycemic patients who are conscious.

Indications

Conscious patients with hypoglycemia.

Precautions

Patients must have an intact gag reflex and the ability to maintain their own airway.

Actions

Oxygen added to the inspired air raises the amount of oxygen in the blood and the amount delivered to the tissues. Breathing in most persons is regulated by small changes in acid/base balance and CO2 levels. It takes a large drop in oxygen concentration to stimulate respiration.

Indications

- **A.** Suspected hypoxemia or respiratory distress from any cause
- **B.** Acute chest pain in which cardiac ischemia or myocardial infarction is suspected.
- **C.** Shock (decreased oxygenation of tissues) from any cause.
- **D.** Carbon monoxide poisoning.

Precautions

- **A.** If the patient is not breathing adequately on his/her own, the treatment of choice is ventilation with oxygen.
- **B.** A small percentage of patients with COPD breathe because they are hypoxic. **DO NOT WITHHOLD OXYGEN BECAUSE OF THIS POSSIBILITY**

Adverse Reactions and Side Effects

- **A.** Restlessness may be an important sign of hypoxia.
- **B.** Oxygen supports combustion.
- **C.** Nasal prongs work equally well on nose and mouth breathers.

Actions

Phenergan (Promethazine) possesses antiemetic, anti-motion-sickness, anticholinergic, antihistamine and sedative effects. Its onset of action is within 20 minutes.

Indications

The treatment of nausea or vomiting and motion-sickness

Contraindications

A. Hypersensitivity to antihistamines or phenothiazine
B. Coma or severe CNS depression
C. Patient has consumed large amounts of depressants (alcohol, barbiturates, narcotics)
D. Children whose signs and symptoms may suggest Reye's syndrome or other hepatic diseases.
E. Promethazine HCl is contraindicated for use in pediatric patients less than two years of age.

Adverse Reactions / Side Effects

- Dizziness
- Drowsiness
- Anxiety
- Blurred vision
- Dry mouth
- Tardive dyskinesia
- Respiratory depression
- Weakness.

Precautions

Due to the anticholinergic properties, promethazine should be used with caution in patients with glaucoma, prostatic hypertrophy, stenosing peptic ulcer, bowel obstruction, and bladder obstruction.

Caution

Promethazine HCl Injection may increase, prolong, or intensify the sedative action of central-nervous-system depressants, such as alcohol, sedative/hypnotics (including barbiturates), general anesthetics, narcotics, narcotic analgesics, tricyclic antidepressants, and tranquilizers.

Dosage

Adult:

A. **Phenergan (Promethazine hydrochloride)** 12.5mg IV (only) over 1-2 minutes. May repeat with 12.5 mg IV (only) after two minutes if the patient is still vomiting.

Pediatric:

Contact OLMC for dosing

Action

Phenobarbital is a CNS depressant and anticonvulsant. It depresses sensory cortex, thalamus, and limbic systems through enhanced gamma aminobutyric acid action. Phenobarbital raises the seizure threshold, decreases motor activity, alters cerebellar function and causes drowsiness, sedation, and hypnosis.

Indications

A. Seizures

B. Status Epilepticus

Contraindications

A. Hypersensitivity to Phenobarbital

Adverse Reactions

- CNS depression
- Hypotension
- Bradycardia
- Miosis
- GI distress
- Respiratory depression
- Laryngospasm
- Bronchospasm
- Rash
- Stevens-Johnson syndrome

Dosing and Administration

Adult:

A. 10-20 mg/kg IV infusion (not faster than 60 mg/min).

Pediatric:

B. 5-20 mg/kg IV infusion (not faster than 50 mg/min)

**** Caution: Should be used in patients at risk for respiratory depression and pregnancy.**

Action

Phenylephrine (Neo-Synephrine) directly stimulates alpha-adrenergic receptors resulting in constriction of all vessels and an increase in peripheral vascular resistance, increase in systolic and diastolic blood pressure, decreased blood flow to vital organs, skin, and muscle. No action on beta-adrenergic receptors thus minimal increase in myocardial oxygen consumption.

Indications

A. Hypotension.
B. Cardiogenic shock.
C. Neurogenic and spinal shock.

Contraindications

A. Hypersensitivity to drug or components.
B. Patients with un-resuscitated hypovolemia.

Adverse Reactions

A. Hypertension.
B. Bradycardia.
C. Headache.
D. Dizziness.
E. Severe peripheral and visceral vasoconstriction.
F. Arrhythmias.

Precautions (caution should be used with the following)**

A. Pregnancy Category C.
B. Patients with sulfite allergies.
C. Patients with bradycardia, heart block, myocardial disease, atherosclerotic vascular disease, hyperthyroidism, or taking beta-blocker medication.

Dosing and Administration

Adults

A. 50 mcg IV (maximum of 2 doses) Infusion – 0.5 mcg/kg/min to max dose of 3 mcg/kg/min IV infusion.

Pediatric

A. Pediatric: 0.1-0.5 mcg/kg/min IV infusion

Action

Phenytoin (Dilantin) inhibits spread of seizure activity through the motor cortex. It depresses spontaneous depolarization of ventricular tissues and appears to improve atrioventricular conduction Phenytoin modulates neuronal voltage-dependent sodium and calcium channels. This stabilizes neuronal membranes and limits seizure activity. Phenytoin has an anti-dysrhythmic effect by normalizing sodium influx to cardiac fibers in patients with digitalis induced arrhythmias.

Indications

- **A.** Seizures
- **B.** Status epilepticus
- **C.** Arrhythmias caused by digitalis toxicity

Contraindications

- **A.** Bradycardia
- **B.** High degree heart blocks
- **C.** Patients who take Phenytoin (Dilantin) for seizures
- **D.** Hypotension
- **E.** Hypersensitivity

Adverse Reactions

- Hypotension
- Ventricular dysrhythmias
- Cardiovascular collapse
- AV conduction abnormalities
- Hypersensitivity syndrome
- Nausea and Vomiting
- Delirium
- Ataxia
- Slurred speech
- Dizziness
- Confusion
- Blurred vision
- Headache
- Constipation
- Itching/rash

Dosing and Administration

Phenytoin (Dilantin) should be diluted with Normal Saline. Dilution with D5W results in precipitation of drug

Adult and Children

- **A.** 15-20 mg/kg IV (max 1500 mg). Rate of administration not to exceed 50 mg/min

Phenytoin (Dilantin) should not be given IM

Actions

Propofol is a short-acting, intravenously administered hypnotic/amnestic agent. It creates a dose-dependent CNS depression similar to benzodiazepines and barbiturates. Propofol has a rapid onset and a short duration of action

Indications

A. Induction of general anesthesia
B. Sedation of intubated, mechanically ventilated patients in ICU settings

Contraindications

A. Known hypersensitivity
B. Obstetric patients
C. Known allergies to eggs or sulfites
D. Cardiac or Traumatic arrest
E. Increased ICP, impaired cerebral circulation
F. Lipid metabolism disorders
G. Respiratory, renal, circulatory, or hepatic disease
H. Children under 3 years of age

Adverse Effects

- Bradycardia / tachycardia
- Hypotension
- Hypoventilation to apnea
- Laryngospasm
- Nausea and vomiting
- Headache

Dosing and Administration

Adults

A. Anesthesia: 2-2.5mg/kg IV over 1 min until onset of anesthesia; maintenance 100-200mcg/kg/min (reduce dose for elderly, debilitated, or neurosurgical patients)
B. Sedation: 100-150mcg/kg/min for 3-5 min, followed by maintenance infusion of 25-75mcg/kg/min
C. ICU sedation in the intubated patient: 5 mcg/kg/min for at least 5 mins. May increase by5-10 mcg/kg/min. Maintenance infusion; 5-50mcg/kg/min may be required. Max dose150mcg/kg/min

Pediatric

A. 5mcg/kg/min titrate to the desired effect

Action

Nondepolarizing neuromuscular blocking agent. Muscular paralysis typically lasts between 20 to 60 minutes depending on dosage and patient.

Indications

To achieve temporary paralysis where endotracheal intubation is indicated and where muscle tone prevents it.

Contraindications

Hypersensitivity

Precautions

A. Personnel trained in endotracheal intubation must be present. Resuscitation equipment must be immediately available.

B. Must be accompanied by adequate anesthesia or sedation.

C. Rocuronium bromide is physically incompatible when mixed with the following drugs:

- amphotericin
- amoxicillin
- azathioprine
- cefazolin
- cloxacillin
- dexamethasone
- diazepam
- erythromycin
- famotidine
- furosemide
- hydrocortisone sodium succinate
- insulin
- intralipid
- ketorolac
- lorazepam
- methohexital
- methylprednisolone
- thiopental
- trimethoprim
- vancomycin

D. If Rocuronium bromide is administered via the same infusion line that is also used for other drugs, it is

E. Important that this infusion line is adequately flushed between the administration of Rocuronium and drugs for which incompatibility with Rocuronium has been demonstrated.

Side Effects

- Prolonged paralysis
- Hypotension
- Hypertension
- Tachycardia
- Histamine release with possible signs of asthma/bronchoconstriction
- Arrhythmias
- Nausea, vomiting
- hiccups

Dosage

Adults

A. For adults and large children: 1.0 mg/kg. IV /IO

B. Patients should be pre-medicated with Midazolam, as Rocuronium has no effect on patient's level of consciousness.

Pediatric

A. Pre-medicate with Atropine: 0.02 mg/kg.

B. For Infants and Small Children: 1.0 mg/kg.

Suspected Head Injury Use

C. Premedicate with Lidocaine: 1.0 to 1.5 mg/kg

NOTE: Shelf life of Rocuronium bromide is 60 days after being removed from refrigeration.

Actions

Sodium Bicarbonate is an alkalotic solution, which neutralizes acids found in the body. Acids are increased in the blood when body tissues become hypoxic due to cardiac or respiratory arrest. Acidosis depresses cardiac contractility, the cardiac response to catecholamines, and makes the heart more likely to fibrillate and less likely to be defibrillated. Unfortunately, in the non-perfusing patient, Sodium Bicarbonate has been shown to increase intercellular acidosis and thus worsen the acid/base balance.

Indications

- **A.** To control arrhythmias in tricyclic antidepressant overdose or hyperkalemia.
- **B.** Acidosis caused by cardiac arrest, entrapment with a crush injury, and other metabolic dysfunctions.

Contraindications

- **A.** Congestive heart failure
- **B.** Alkalotic states

Precautions/Warnings

- **A.** Administration of too much Sodium Bicarbonate may result in alkalosis, which is difficult to reverse and can cause as many problems in resuscitation as acidosis.
- **B.** May increase cerebral acidosis, especially in diabetics who are ketotic.
- **C.** Do not mix sodium bicarbonate with calcium preparations. Slowly flush remaining Calcium Gluconate from the catheter prior to administering Sodium Bicarbonate. It is recommended that these medications be administered in separate IV access locations, if possible.
- **D.** Excessive bicarbonate therapy inhibits the release of Oxygen.
- **E.** Bicarbonate does not improve the ability to defibrillate

Adverse Reactions and Side Effects

- **A.** Each amp of Bicarb contains 50 mEq of sodium. This may increase intravascular volume and hyperosmolarity conditions, resulting in cerebral impairment.
- **B.** Bicarbonate will probably be helpful and should be used early in the cardiac arrest of a known cyclic antidepressant overdose or renal failure with possible hyperkalemia.
- **C.** Sodium and H2O retention which can cause CHF.

Dosage

- **A.** 1 mEq/kg IV/IO up to 1-amp 50mEq unless directed by OLMC

Actions

Succinylcholine is a short-acting, motor nerve depolarizing, and skeletal muscle relaxant. It competes with acetylcholine to combine with cholinergic receptors in the motor end plate causing depolarization inhibiting neuromuscular transmission. After IV injection, paralysis is obtained within one or two minutes and persists for approximately 5 to 10 minutes. Effects then start to fade and return to normal. Muscle relaxation begins in the eyelids and jaw, then progresses to the limbs, abdomen, and finally the diaphragm and intercostal muscles. It has no effect on consciousness. Succinylcholine is hydrolyzed by plasma pseudocholinesterase and is excreted by the kidneys (10%)

Indications

To achieve temporary paralysis where endotracheal intubation is indicated.

Contraindications

- **A.** A hypersensitivity to the drug or other anesthetics.
- **B.** A family or personal history of malignant hyperthermia.
- **C.** Major trauma or burn patients, 7 to 10 days post burn.
- **D.** Known hyperkalemia.
- **E.** Chronic paralysis of a limb or limbs (extremity or extremities).
- **F.** Patients with acute exposures to organophosphate substances.
- **G.** Patients have been entrapped with crush injury for two hours or longer.
- **H.** Pre-existing neuromuscular disease (myasthenia gravis).

Precautions

- **A.** Oxygen, ventilation equipment, and resuscitation drugs should be readily available.
- **B.** Succinylcholine produces paralysis but does not alter the patient's level of consciousness. Paralysis in the conscious mind is very frightening, therefore sedation should be provided to the patient during the procedure---even if you do not think that the patient can hear you.
- **C.** In rare individuals, because of a deficiency in pseudocholinesterase, paralysis may persist for a prolonged period of time. Be prepared to continue assisting ventilations for the entire period.

Dosage

Adult:

- **A.** 1-1.5 mg/kg IV

Pediatric:

- **A.** 1-1.5 mg/kg IV

Actions

Terbutaline is administered subcutaneously to cause relaxation of the smooth muscles around the bronchioles in patients (12 years and older) with asthma, bronchitis, or COPD. It has similar effects and side effects of other **Sympathomimetics**: Terbutaline is primarily an injectable beta2 sympathomimetic. It produces fewer cardiovascular side effects and more prolonged bronchodilation than some other medications. Caution should be used in pregnant patients Terbutaline is a tocolytic (stops premature labor).

Tocolytics: are medications used to suppress premature labor in order to minimize the threat of maternal or fetal complications arising from pre-term delivery or delivery outside of a neonatal center. Suppression of pre-term labor without maternal or fetal complications resulting from tocolysis treatment. Patients requiring tocolytic therapy will exhibit the signs and symptoms associated with pre-term labor. ***Dehydration is the primary cause of pre-term contractions.***

Terbutaline Sulfate: Should be considered as the first-line tocolytic drug of choice if there is no cardiac history, maternal HR is less than 140, maternal BP is greater than 90/60, fetal heart rate is less than 160 and there are no signs of maternal pulmonary edema. If any of previous conditions exist, magnesium sulfate should be utilized as the first-line tocolytic.

Indications

- **A.** Bronchospasm secondary to COPD, asthma
- **B.** Pre-term Labor
- **C. Contraindications**
- **D.** Hypersensitivity
- **E.** Tachydysrhythmias
- **F.** Coronary insufficiency
- **G.** Patients under the age of 12 years

Relative Contraindications to tocolysis include

- **A.** Fetal demise or anomalies incompatible with life.
- **B.** Fetal distress
- **C.** Preterm premature rupture of membranes (PPROM)
- **D.** Preeclampsia/HTN
- **E.** Severe bleeding or abruption placentae
- **F.** Severe intrauterine growth retardation (IUGR)
- **G.** Chorioamnionitis (bacterial **infection** of the fetal amnion and chorion membranes)
- **H.** Cervical dilation greater than 5-6 cm
- **I.** Heart disease/tachycardia
- **J.** Hypersensitivity to medications used
- **K.** Trauma

Adverse Reactions

- **A.** Tachydysrhythmias
- **B.** Nausea and Vomiting
- **C.** Headache
- **D.** Anxiety

Dosing and Administration

Adults

- **A.** 0.25 mg SQ q 15-30 min up to a total of 3 doses as long as pulse remains under 140.
- **B.** CCT may also occasionally receive patients on a Terbutaline infusions initiated by transferring facilities. Infusion rates for Terbutaline Sulfate are 5 µg/min to a maximum of 80 µg/min

****Caution: Administration of more than 3 doses of Terbutaline Sulfate is likely to increase side effects rather than contribute to tocolysis.**

Actions

Tetracaine is an ophthalmic solution that anesthetizes the eyes. The onset of anesthesia usually begins within 20 seconds and lasts as long as 15 minutes.

Indications

- **A.** Tetracaine is intended for use in the patient who is unable to cooperate with the provider in adequately flushing the eye(s) due to discomfort or pain.
- **B.** If flushing can be accomplished easily, Tetracaine may not be needed.
- **C.** Effective in the management of patients who have had chemical exposures to the eyes.

Contraindications

- **A.** Hypersensitivity to Tetracaine/ester-type anesthetics.
- **B.** Severe hypersensitivity to sulfite.
- **C.** Allergy to any topical anesthetic.
- **D.** Traumatic injury to the eye such as impaled objects or suspected rupture

Precautions

- **A.** Do not use the solution if it contains crystals, or if it is cloudy or discolored.
- **B.** Tetracaine eye drops are for topical ophthalmic use only—not for injection.
- **C.** The patient should be advised not to touch or rub the eye(s) until the effect of the anesthesia has worn off.

Dosage

- **A. Adult:** 2 drops in the affected eye.
- **B. Pediatric:** 1 drop in the affected eye.

Actions

Thiamine is a B vitamin (B1) found in adequate amounts in the normal diet, but frequently deficient in alcoholics. In alcoholics the deficiency causes Wernicke's syndrome, an acute and reversible encephalopathy characterized by ataxia, eye muscle weakness (diplopia and nystagmus), and mental derangements. Of more serious concern is the memory disorder, Korsakoff's psychosis. Korsakoff's psychosis may be irreversible once it becomes established. For this reason, treatment with Thiamine is indicated if Wernicke's or Korsakoff's syndrome is recognized. Since Thiamine is utilized in carbohydrate metabolism, the syndromes may be precipitated by the administration of dextrose in the alcoholic, who often have depleted Thiamine stores. The onset of these syndromes is within hours after glucose administration if Thiamine is not given in the interim.

Indications

- **A.** In the severely malnourished patient prior to the administration of 50% dextrose.
- **B.** In suspected Wernicke's or Korsakoff's syndrome.

Contraindications

Patients with a history of sensitivity to IV administration of thiamine.

Adverse Reactions and Side Effects

- **A.** Allergic reactions occur but are extremely rare. Some reactions: feelings of warmth, weakness, urticaria, itching, sweating, nausea, restlessness, tightness of the throat, angioedema, cyanosis, pulmonary edema, cardiovascular collapse, anaphylaxis.
- **B.** Rapid IV administration has been associated with hypotension.

Dosage

- **A. Adult:** 100 mg IV or IM

Action

Tissue Plasminogen Activator binds to fibrin-bound plasminogen at the clot site, converting plasminogen to plasmin. Plasmin digests the fibrin strands of the clot restoring perfusion.

Indications

- **A.** Acute evolving myocardial infarction
- **B.** Massive pulmonary emboli
- **C.** Arterial thrombosis and embolism
- **D.** To clear arteriovenous cannulas

Contraindications

- **A.** Recent sugary (within three weeks)
- **B.** Active bleeding, recent CVA, prolonged CPR, intracranial or intraspinal surgery.
- **C.** Recent significant trauma, especially head trauma
- **D.** Uncontrolled hypertension
- **E.** Pregnancy

Adverse Reactions

- **A.** GI, GU intracranial and other site bleeding
- **B.** Hypotension
- **C.** Chest pain
- **D.** Abdominal pain
- **E.** CVA
- **F.** Reperfusion dysrhythmias
- **G.** Allergic reactions

Dosage and Administration

Adult

- **A.** 10 mg bolus IV over 2 minutes; then 50 mg over one hour, then 20 mg over the second hour and 20 mg over the third hour for a total dose of 100 mg. (other doses may be prescribed through Medical Direction).

Pediatric

Not Indicated for Pediatric patients

Actions

Trandate injection is an adrenergic receptor blocking agent that has both selective alpha-adrenergic and nonselective beta-adrenergic receptor blocking actions in a single substance,

Indications

Trandate injection is indicated for the control of blood pressure in severe hypertension.

Contraindications

- **A.** Bronchial asthma
- **B.** Overt cardiac failure
- **C.** First-degree heart block
- **D.** Cardiogenic shock
- **E.** Severe bradycardia

Adverse Reactions and Side Effects

Beta-blockers, even those with apparent cardio-selectivity, should not be used in patients with a history of obstructive airway disease, including asthma.

Warnings

Trandate should not be administered to a patient with an acute CVA as indicated by any of the following focal hard finings;

- **A.** Weakness
- **B.** Neglect
- **C.** Drift
- **D.** Aphasia in an alert patient

Dosage

- **A.** **By Physician Order Only:** For patients not in acute CHF, with a heart rate greater than or equal to 60 bpm, and with a systolic pressure greater than 220 and/or diastolic pressure greater than 120. Administer Trandate 10 mg IV, repeated Q 10 minutes x 3
- **B.** ****CCT Dosing and Administration**
  1. Initial Dose 0.2 mg /kg IV/IO
  2. Trandate may be repeated after 5 min 0.4 mg/kg IVP/IO if the desired effect is not obtained. **If additional dosing is required contact OLMC**

Actions

Tranexamic Acid is an anti-fibrinolytic that promotes clot formation in the setting of massive hemorrhage and should be administered within three hours (180 min) of the event, to maximize the benefits of TXA.

Indications

A. Adults in traumatic hemorrhagic shock with a suspected need for massive blood transfusion (clinical evidence of marked blood loss – internal or external, sustained tachycardia and hypotension

B. The time of initial injury is less than 180 min (3 hours). Prefer less than 60 min from initial traumatic insult.

C. Hemodynamic instability in the setting of hemorrhagic shock.

1. Systolic BP < 90 mmHg
2. Pulse rate > 110 beats per min
3. Tachypnea > 24 breaths per min
4. Evidence of peripheral vasoconstriction including cool, pale skin and delayed capillary refill of >2 seconds.

D. With consult with OLMC for patients if the paramedic thinks the patient benefit from this medication including impending hemodynamic instability.

Contraindications / Exclusion Criteria

A. Patients under the age of 18

B. Time from initial traumatic insult >180 min or unknown time of injury.

C. Patients who have a contraindication to antifibrinolytic therapy agents.

D. Non-hemorrhagic shock

E. Non-traumatic hemorrhagic shock

F. Hemorrhagic shock stabilized with other hemostatic agents/measures

Dosing and Administration (With OLMC Approval)

A. **Loading dose:** initial bolus 1 g/100 mL NS over 10 min IV.

B. **Maintenance dose**: 1 g/500 mL NS infusing at 60 mL/hr. for a total infusion of 8 hours.

Actions

Vasopressin is the naturally occurring antidiuretic hormone. In unnaturally high doses much higher than those needed for antidiuretic hormone effects vasopressin acts as a non-adrenergic peripheral vasoconstrictor. Vasopressin acts by direct stimulation of smooth muscle V1 receptors. In recent studies, after a short duration of ventricular fibrillation, vasopressin during CPR increased coronary perfusion pressure, vital organ blood flow, ventricular fibrillation median frequency, and cerebral oxygen delivery.

Indications

A. Cardiac Arrest

B. V-Fib

C. V-Tach without a pulse

D. Vasodilatory Shock

Contraindications

None known for use in VF/pulseless VT, asystole, PEA

Cautions

None applicable to EMS use

Adverse Effects

None in cardiac arrest

Dosing and Administration

Adults

A. 40 International Units IVP/IO. The dose may be repeated after 10 minutes in cardiac arrest

Pediatric

A. Vasopressin is not indicated for pediatric us at this time

Actions

Vecuronium is a long-acting non-depolarizing (competitive blocking) skeletal muscle relaxant. Vecuronium competes with acetylcholine at cholinergic receptor sites. Its maximal neuromuscular blockade occurs in five minutes and its duration of action is about 30-45 minutes. As with Succinylcholine, complete paralysis of all skeletal muscles occurs and there is no effect on consciousness at all.

Indications

Vecuronium is used to maintain prolonged paralysis in the intubated patient. Vecuronium can be used when the effects of Succinylcholine start to wear off after the patient has been intubated.

Contraindications

None

Precautions

Vecuronium bromide causes respiratory paralysis—supportive airway control must be continuous and under observation at all times.

Adverse Reactions and Side Effects

- **A.** Due to the prolonged duration of action, it is absolutely essential to constantly monitor endotracheal tube placement.
- **B.** Patients with renal or hepatic failure may experience prolonged paralysis.
- **C.** Myasthenia gravis and other neuromuscular diseases increase sensitivity to the drug.
- **D.** Vecuronium can be used to maintain paralysis even if intubation was performed without Succinylcholine.

Dosage

Adult:

- **A.** 0.05-0.1 mg/kg IVP. Contact OLMC if additional doses are necessary.