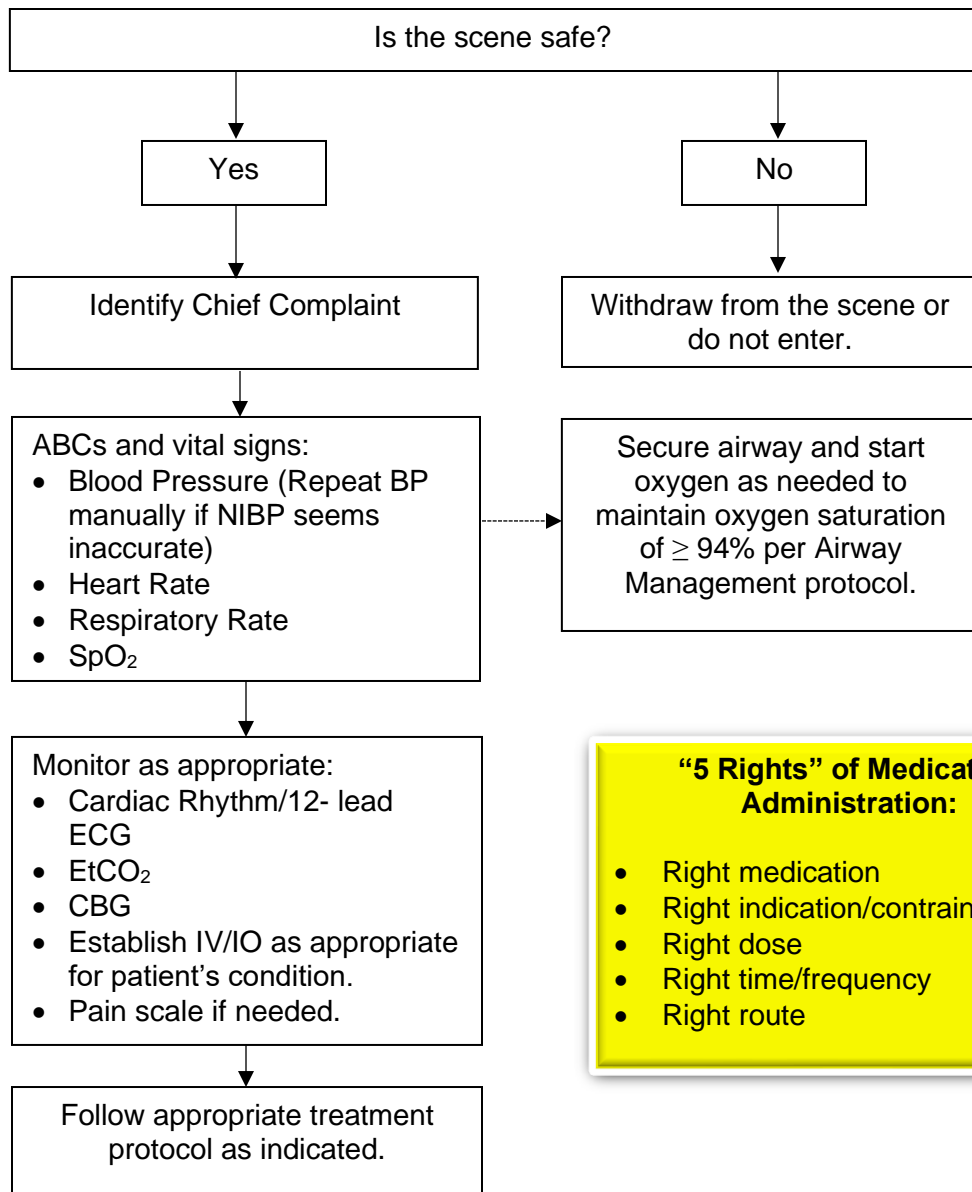


Treatment

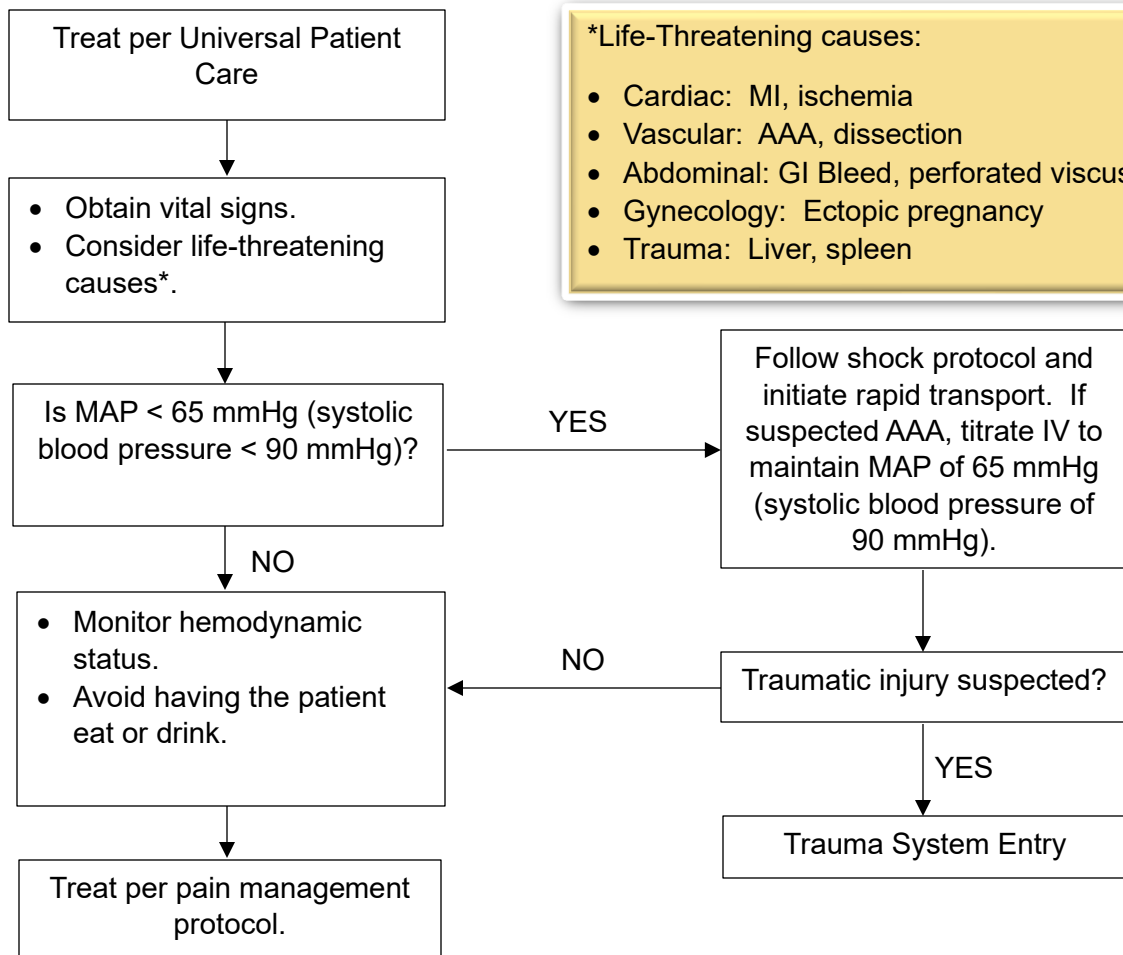


“5 Rights” of Medication Administration:

- Right medication
- Right indication/contraindication
- Right dose
- Right time/frequency
- Right route

NOTES & PRECAUTIONS

- If patient is unable to provide medical history, check for medical bracelets and necklaces, which can provide critical medical information and treatment.
- If any uncertainty exists about the gender of a patient, ask for and use preferred pronouns. In certain conditions such as abdominal pain, you may also need to ask about the menstrual history (e.g., female to male transgender). When obtaining a 12-lead ECG, use the sex assigned at birth for computerized interpretations.



***Life-Threatening causes:**

- Cardiac: MI, ischemia
- Vascular: AAA, dissection
- Abdominal: GI Bleed, perforated viscus
- Gynecology: Ectopic pregnancy
- Trauma: Liver, spleen

NOTES & PRECAUTIONS:

- Abdominal pain may be the first sign of catastrophic internal bleeding (ruptured aneurysm, liver, spleen, ectopic pregnancy, perforated viscus, etc.).
- Monitor the patient closely for signs of shock.
- For transgender and non-binary patients, ask about the presence of intact reproductive organs and consider gynecological (i.e., pregnancy issues) or urological (i.e., testicular torsion) related complications in your differential diagnosis.

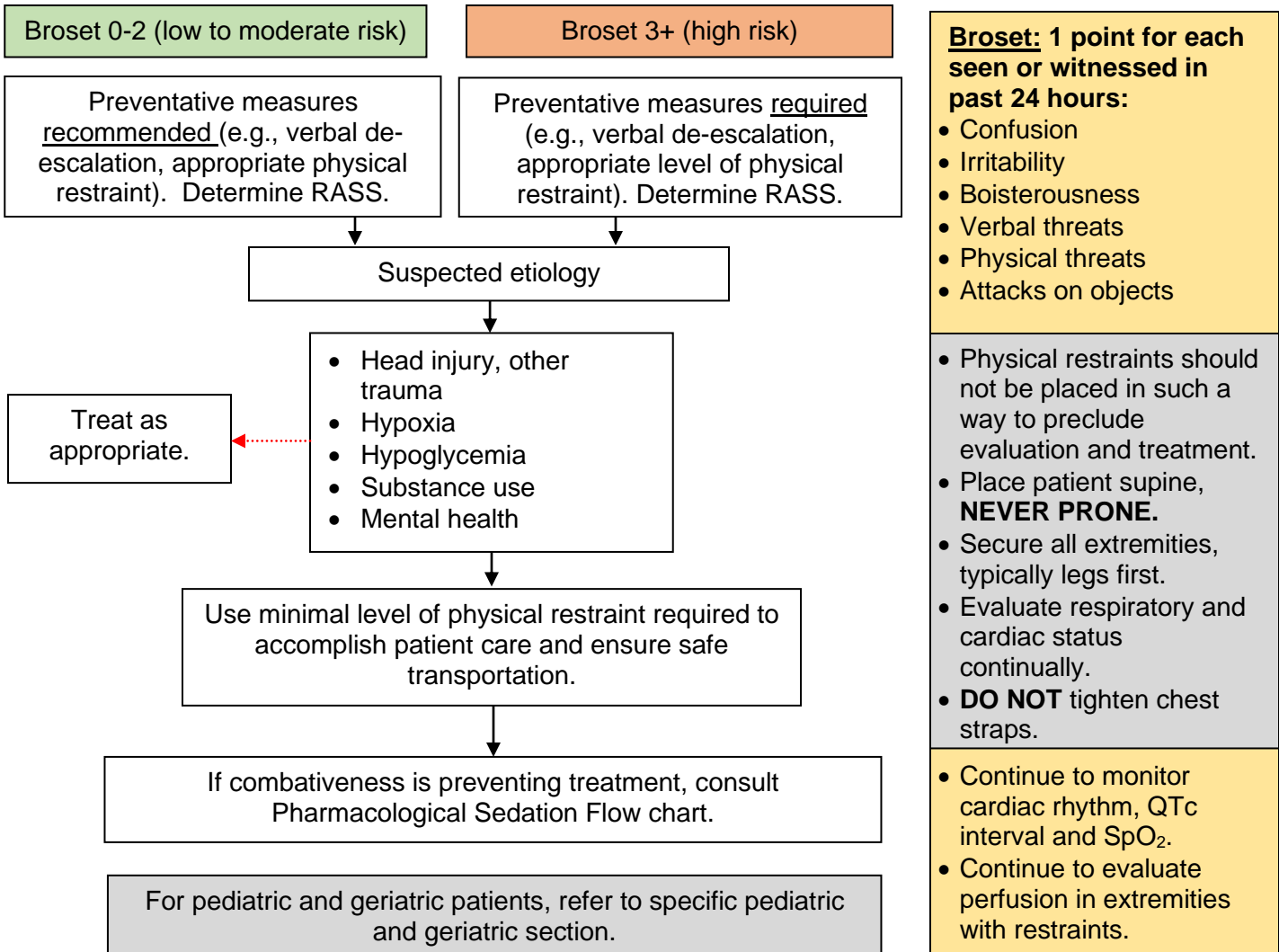
PEDIATRIC PATIENTS:

- Consider non-accidental trauma.
- Closely monitor vital signs; blood pressure may drop quickly.
- If systolic BP is inappropriate for age, treat per Shock protocol.

Lowest normal pediatric systolic blood pressure by age:

- Less than one month: > 60 mmHg.
- One month to 1 year: > 70 mmHg.
- Greater than 1 year: 70 + 2 x age in years.

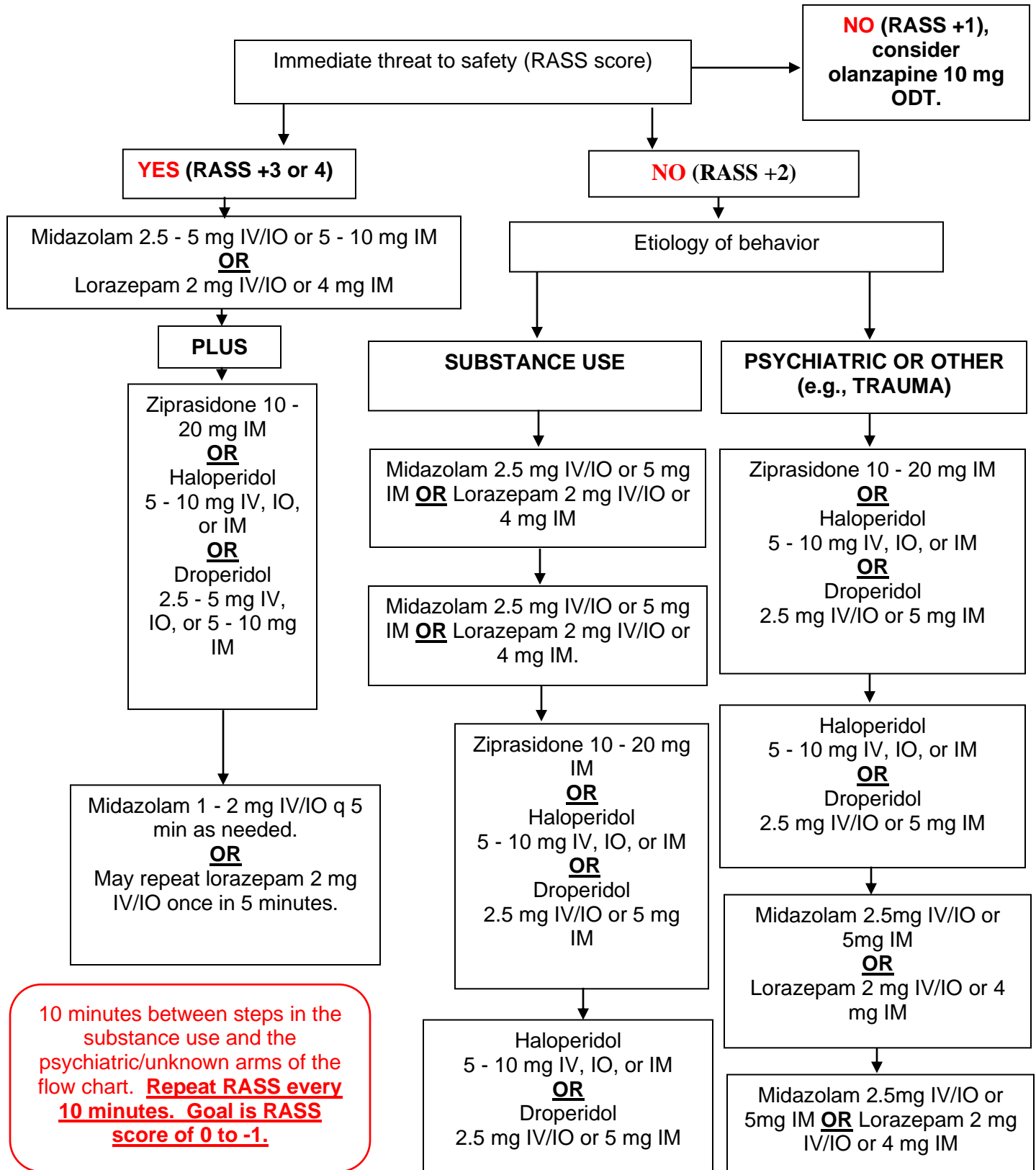
Treat per Universal Patient Care and determine threat assessment utilizing Broset Violence Assessment Checklist and Richmond Agitation Sedation Scale. **PROVIDER SAFETY IS TOP PRIORITY**



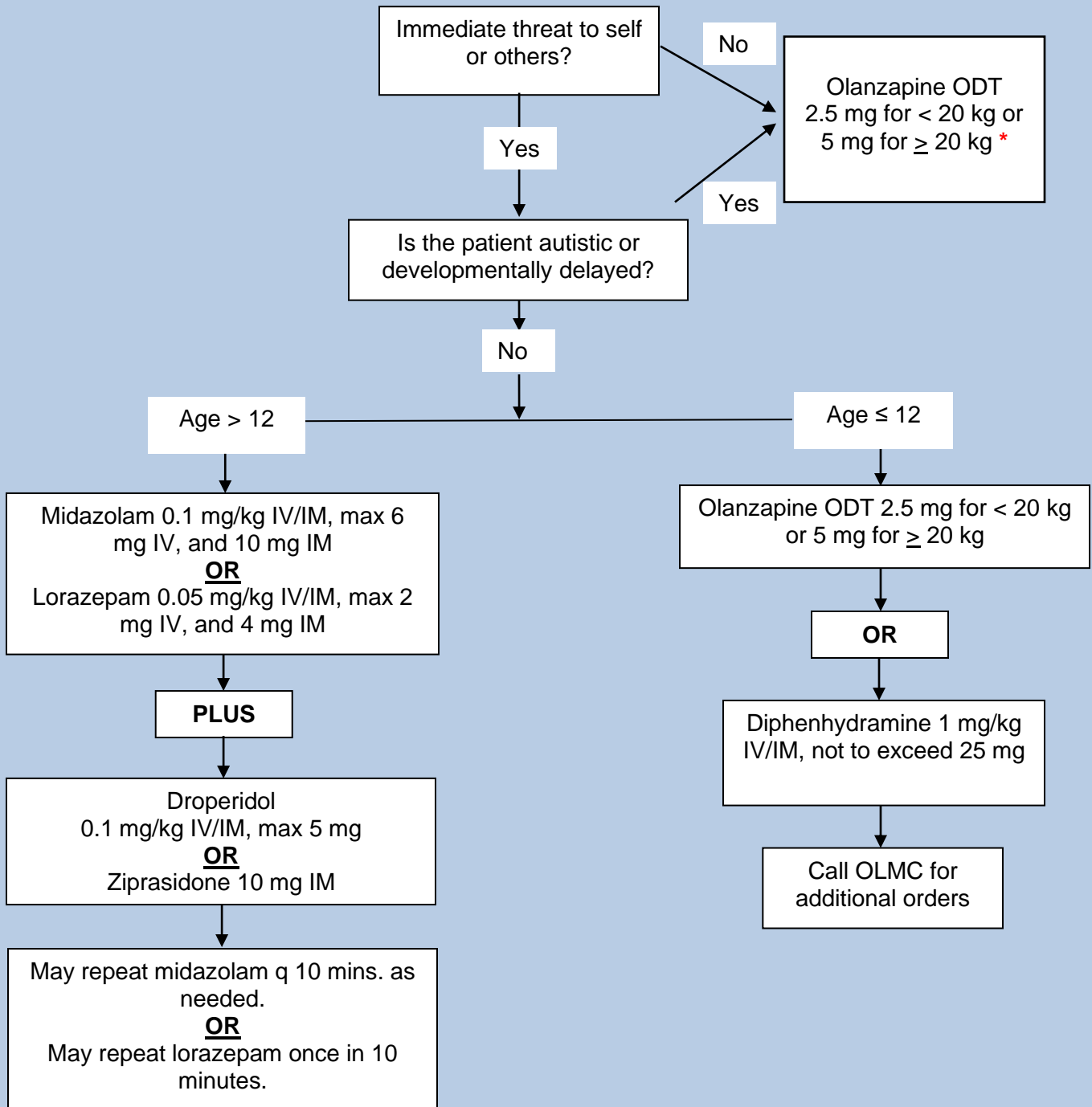
Richmond Agitation Sedation Scale (RASS)

Score	Term	Description
+4	Combative	Overtly combative and violent; immediate danger to EMS
+3	Very agitated	Aggressive; verbally and physically uncooperative towards EMS
+2	Agitated	Frequent non-purposeful movement; agitated when touched or moved
+1	Restless	Anxious but movements not aggressive or dangerous to EMS or self
0	Alert and calm	
-1	Drowsy	Not fully alert, but has sustained awakening (eye opening/eye contact) to voice (> 10 seconds)
-2	Light Sedation	Briefly awakens with eye contact to voice (< 10 seconds)
-3	Moderate sedation	Movement or eye opening to voice (but no eye contact)
-4	Deep sedation	No response to voice but movement or eye opening to physical stimulation
-5	Unarousable	No response to voice or physical stimulation

Adult Pharmacological Sedation Flow Chart



Pediatric Pharmacological Sedation Flow Chart



*For children with a history of autism or developmental delays, chances of paradoxical reactions to benzodiazepines and diphenhydramine are higher, however, if the patient is still agitated following olanzapine administration, diphenhydramine 1 mg/kg IV/IM not to exceed 25 mg may be used with this in mind.

PEDIATRIC PATIENTS:

- Haloperidol should be avoided in children.
- Non-pharmacological considerations:
 - ✓ Clearly introduce yourself, assure patient that you are there to keep them safe.
 - ✓ Allow caregivers to take part (or remove them if they are inciting).
 - ✓ Set firm limits.
 - ✓ Minimize excessive interactions.
 - ✓ Offer choices in treatment.
 - ✓ Offer reward for calmer behavior.
 - ✓ Use distraction.

GERIATRIC PATIENTS (AGE > 65):

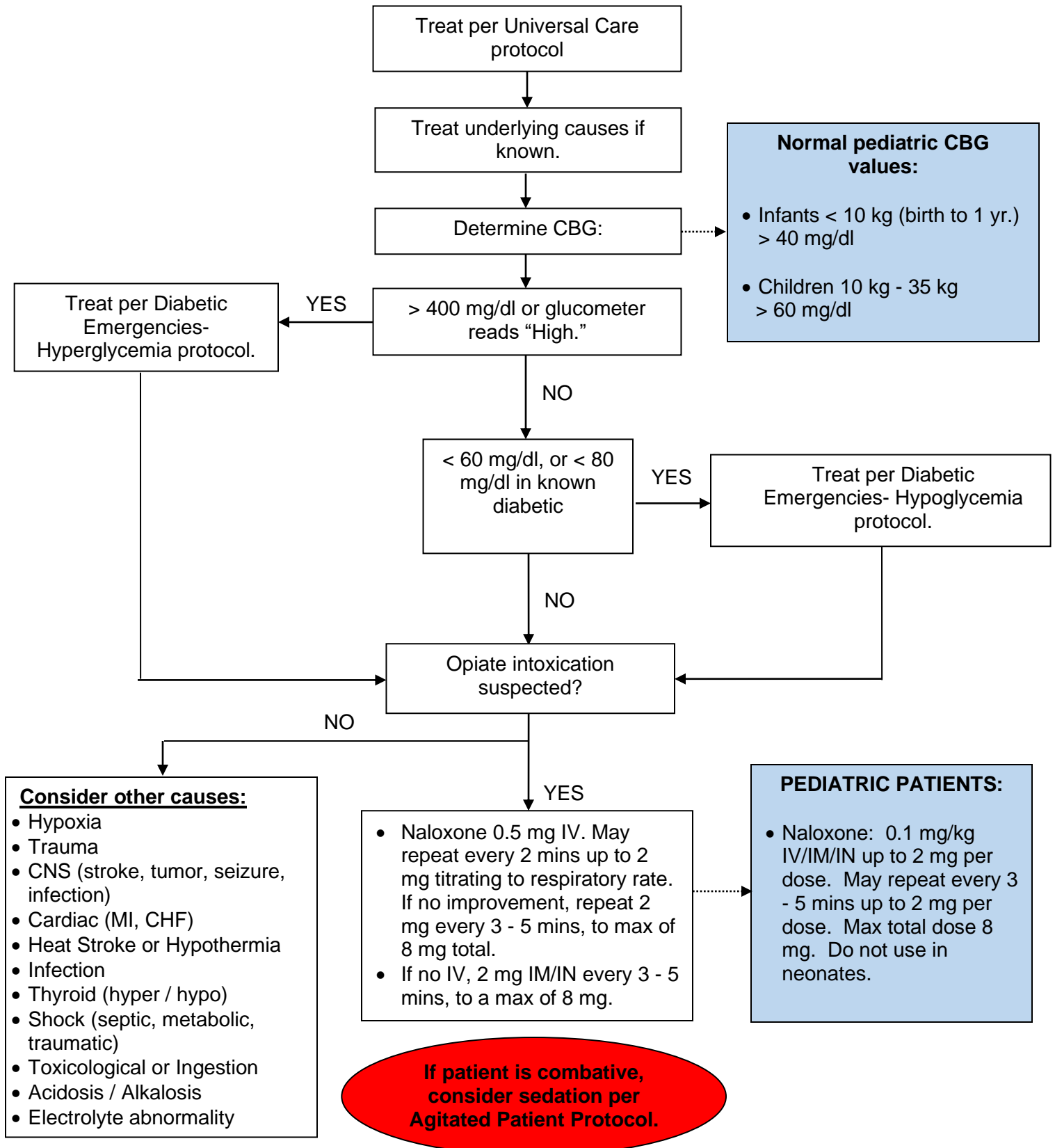
There is an increased risk of using anti-psychotic drugs for patients > 65 years of age, so drug dosing should be adjusted accordingly:

- Droperidol: 2.5 mg IV, IO. May repeat in 5 - 10 minutes. 2.5 – 5 mg IM. May repeat in 10 - 15 minutes.
- Haloperidol: 2 mg IV, IO. May repeat in 15 minutes. 2.5 mg IM. May repeat in 15 - 20 minutes.
- Olanzapine: 2.5 – 5 mg ODT.
- Ziprasidone: 10 mg IM.

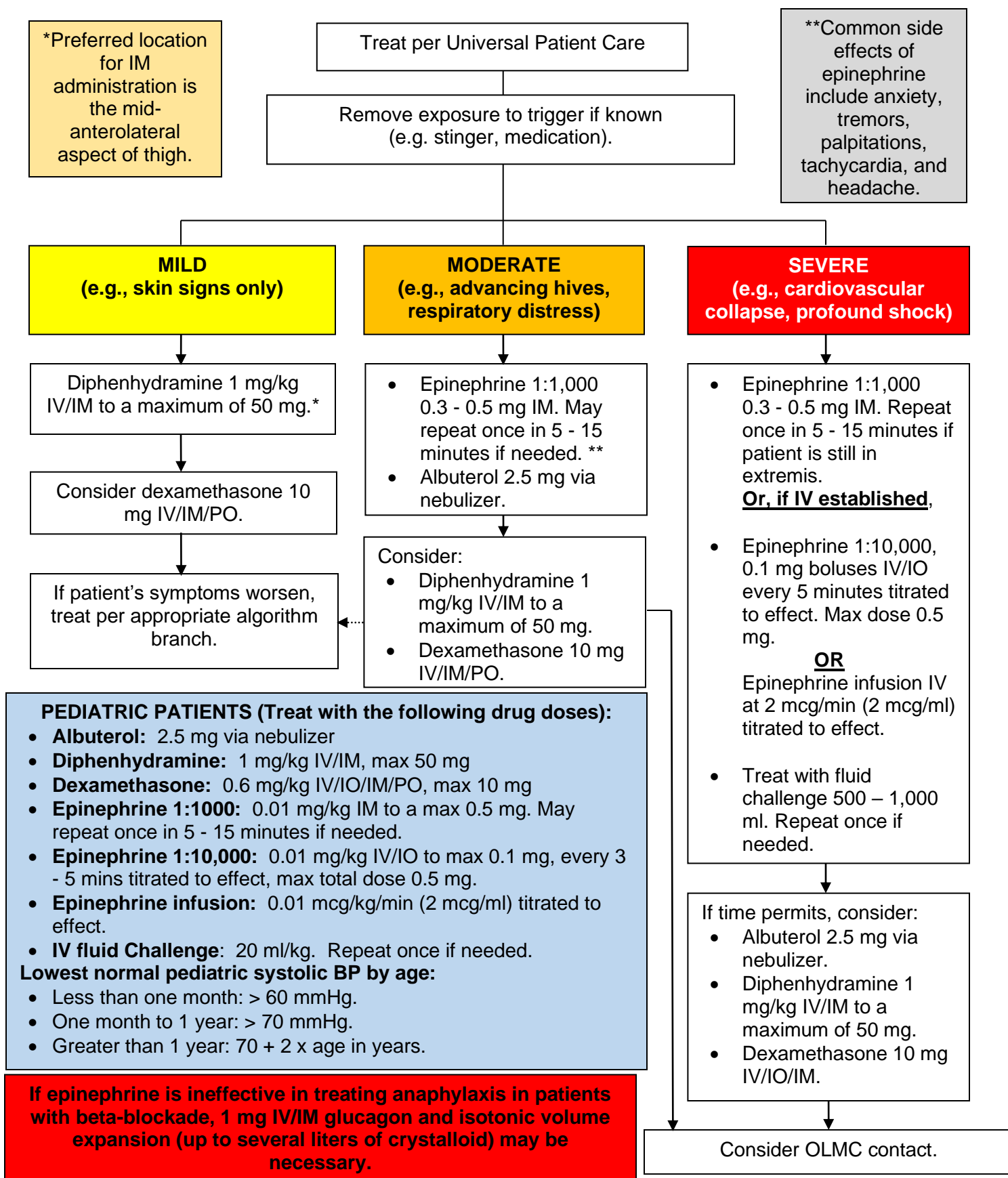
NOTES & PRECAUTIONS:

- All patients who receive IV, IO, or IM pharmacological sedation must be fully monitored, when possible, with cardiac monitor, SpO₂, and EtCO₂.
- Side effects of droperidol, haloperidol, and ziprasidone may include hypotension, tachycardia, and acute dystonic reactions. If patient shows signs of acute dystonic reaction after receiving ziprasidone, droperidol, or haloperidol, give diphenhydramine 1 mg/kg IV or IM to a maximum of 50 mg.
- Droperidol, haloperidol, and ziprasidone may induce Torsades de Pointes in patients with history of prolonged QTc or patients taking QTc-prolonging drugs. Monitor patient's ECG, if possible. If prolonged QTc is present (> 500 msec.), administer 2 grams magnesium sulfate IV/IO.
- Droperidol, haloperidol, or ziprasidone are preferred for patients with known psychiatric disorders. Midazolam or lorazepam are preferred for patients who are known or suspected to be under the influence of stimulants or other intoxicants, who are in withdrawal, or who are postictal.
- If patient has Parkinson's Disease or takes dopamine agonist medications such as carbidopa-levodopa (Sinemet), pramipexole (Mirapex), or ropinirole (Requip), **do not use** droperidol or haloperidol. In these patients, use olanzapine first (2.5 - 5.0 mg ODT), then midazolam (5 mg IM or 2.5 mg IV/IO) or lorazepam (2 mg IV/IO or 4 mg IM) if needed.

Altered Mental Status & Coma – 10.020



Anaphylaxis and Allergic Reaction – 10.030



Brief Resolved Unexplained Event (BRUE) – 10.035

DEFINITION:

Event lasting <1 minute in an infant <1 year of age associated with at least one of the following:

- Cyanosis or pallor
- Absent, decreased, or irregular breathing
- Marked change in muscle tone (hypertonia or hypotonia)
- Altered level of responsiveness

Patient must appear well and be at baseline health.

Follow appropriate airway and/or respiratory protocols.

Obtain and document any complications of pregnancy, birth date and gestational age at birth, fever or recent infection, prior BRUE episodes, and underlying medical conditions.

Obtain and document description of event including symptoms, inciting event, and any resuscitation attempts before EMS arrival.

Obtain vital signs, CBG, and place on cardiac monitor and follow dysrhythmia protocol as needed.

Transport to an emergency department **even** if the infant currently appears in no distress.

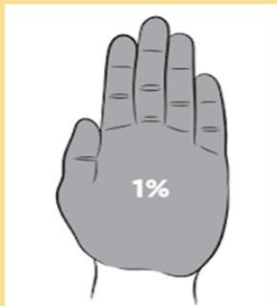
Contact OLMC if parents or caregivers cannot be convinced to take the ambulance to the ED for evaluation.

NOTES & PRECAUTIONS:

- BRUE is a group of symptoms, not a specific disease. BRUEs are most common in infants under one year of age but may occur up to two years of age.
- Many infants appear normal by the time EMS arrives.
- Consider non-accidental trauma.
- Serious underlying causes of BRUE can include pneumonia, bronchiolitis, seizures, sepsis, intracranial hemorrhage, and meningitis.
- BRUEs are more frequent in premature infants and infants with other health conditions such as cystic fibrosis, bronchiolitis, and congenital heart disease.

Total Burn Surface Area (TBSA) only includes second and third degree burns and not superficial burns.

Determine TBSA utilizing the "Palm Method":



Palmar, palm + fingers of patient = 1%

In patients with moderate to severe flame burns and with suspicion for inhalation injury, **carboxyhemoglobin levels should be checked***, and patients should be placed on high flow oxygen until carbon monoxide poisoning is ruled out.

Burn Center Transport Criteria:

- Partial thickness > 10% TBSA
- Full Thickness
- Burns with significant inhalation injuries
- Chemical burns
- Electrical or lightning strike injuries
- Burns to face, hands, feet, genitalia, perineum, major joints, or circumferential burns
- Burns to high-risk patients (peds, elderly, significant underlying cardiac or respiratory problems)
- Trauma system patients with burns meeting above criteria

Treat per Universal Patient Care

Remove jewelry or other constricting items and clothing that is smoldering or non-adherent to the patient. **Determine TBSA%**

- If MAP < 65 mmHg (systolic BP < 90 mmHg), follow Shock protocol, otherwise follow initial fluid administration rate:
 - ✓ ≤ 5 y/o @ 125 ml/hr
 - ✓ 6 -13 years of age @ 250 ml/hr
 - ✓ ≥ 14 y/o @ 500 ml/hr

Cool burned areas < 5 mins. Cover with clean, warm, and dry sheet or blanket, discontinue if shivering. Leave unbroken blisters intact.

Wound Care:

- Transport using clean, dry sheets or blankets.
- Do not wrap extremities individually.
- Do not use products such as Silvadene or burn gel.
- Do not pack burns with wet towels or do saline soaks.

Maintain patient's core body temperature.

Treat pain per Pain Management protocol

Chemical Burns:

- Consider HazMat Response.
- Protect yourself from contamination.
- Flush contaminated areas with copious amounts of water (carefully brush off first if chemical is dry).
- Do not use a neutralizer.

Electrical Burns:

- Apply Sterile dressings to entry and exit wounds.
- Treat any dysrhythmias.
- Early fluid infusion is important due to risk of rhabdomyolysis.
- Specify arc flash or contact and voltage if known.

If **cyanide toxicity** is suspected based on findings (soot in mouth, nose, or oropharynx) and patient is comatose, in cardiac or respiratory arrest, or has persistent hypotension despite fluid resuscitation:

- Hydroxocobalamin 5 g IV/IO over 15 mins. Repeat once if needed. For cardiac arrest, administer as a rapid bolus. (**Peds:** 70 mg/kg not to exceed adult dose. Call OLMC for second dose)
- If hydroxocobalamin not available, Sodium Thiosulfate 50 ml of a 25% solution over 10 – 20 minutes. Do not administer Sodium Thiosulfate and Hydroxocobalamin together.
- Initiate emergent transport and treat other presenting symptoms.
- Notify receiving facility if either Hydroxocobalamin or Sodium Thiosulfate is administered due to changes in urine and blood color.

AIRWAY CONSIDERATIONS:

- Singed nasal hairs and facial burns alone are not indications for intubation.
- Mild inhalation injuries with normal SpO₂ and no signs of respiratory distress can be safely observed.
- Indications for early intubation:
 - ✓ Respiratory distress, stridor, accessory muscle use
 - ✓ New onset hoarseness
 - ✓ Blisters or edema of oropharynx
 - ✓ Deep burns to lower face or neck

PEDIATRICS:

- Consider non-accidental causes of trauma in children.
- If systolic BP is inappropriate for age, treat per Shock protocol.

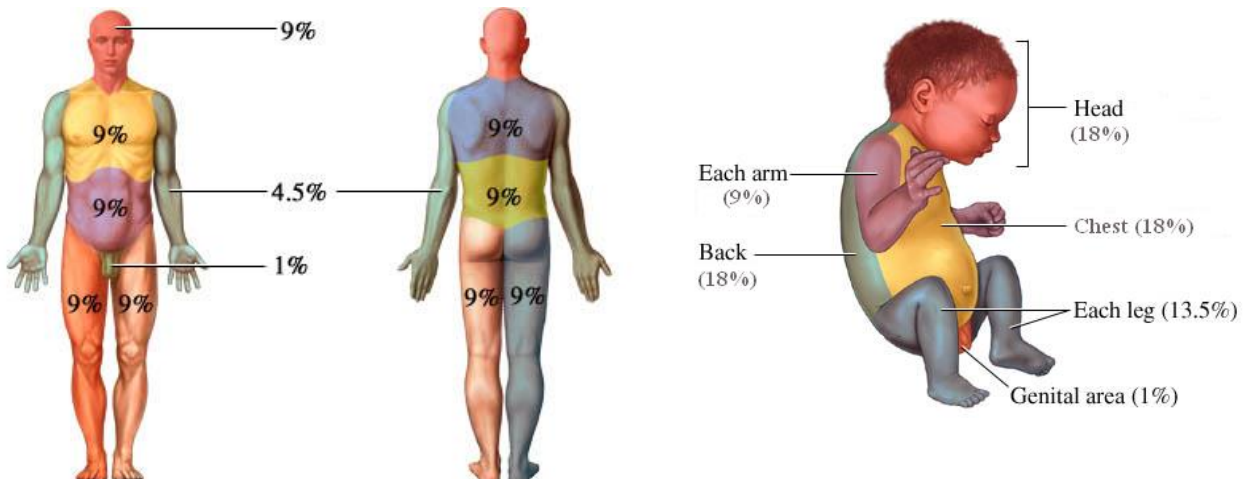
Lowest normal pediatric systolic blood pressure by age:

- Less than one month: > 60 mmHg.
- One month to 1 year: > 70 mmHg.
- Greater than 1 year: 70 + 2 x age in years.

NOTES & PRECAUTIONS:

- *Apply carbon monoxide monitor (e.g., Rad-57) if available.
- Remove rings or other constricting items immediately.
- Be prepared to use RSI/DSI early to control the airway.
- For firefighters, consider potential for traumatic injury or MI.

RULE OF NINES



Cardiac Arrest (AED/CPR) – 10.050

CPR GUIDELINES

Component	Adults and Adolescents	Child 1 year to puberty	Infant under 1 year, excluding neonates
Airway	Head tilt-chin lift. Jaw thrust if suspected cervical trauma.		
Breathing: Without CPR	10 to 12 breaths/min (approximate)	1 breath every 2 - 3 seconds (20 -30 breaths/min) (approximate)	
Breathing: CPR with advanced airway	1 breath every 6 secs. (10 breaths/min) asynchronous with compressions. About 1 second per breath. Visible chest rise. Optional method 30:2 comp./vent. ratio with advanced airway until ROSC.	1 breath every 2 - 3 seconds (approximately 20 - 30 breaths/min) asynchronous with compressions. About 1 second per breath. Visible chest rise. Optional method, 15:2 compression/ventilation ratio with advanced airway until ROSC.	
Foreign Body – Conscious patient	<i>Abdominal thrusts (use chest thrusts in pregnant and obese patients or if abdominal thrusts are not effective)</i>		Back blows and chest thrusts
Compression landmarks	Lower half of sternum between nipples		Just below nipple line (lower half of sternum)
Hand Placement	Heel of one hand, other hand on top	As for adults (may use both hands or the heel of one hand depending on the size of patient and rescuer)	2 thumb-encircling hands preferred for two rescuers
Compression depth	At least 2 inches	Approximately one-third anterior/posterior depth of chest. (Approximately 2” in child and 1 ½” in infant)	
Compression rate	100 - 120 per minute		
Compression/Ventilation ratio w/o advanced airway	30:2 or 10:1 with continuous compressions	15:2	

AED GUIDELINES

AED Defibrillation	Use Adult pads	Use pediatric dose-attenuator system for children and infants if available. Use pediatric pads. If unavailable, use adult pads
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NEONATAL GUIDELINES (LESS THAN 1 DAY OLD)

Assisted ventilations should be delivered at a rate of 40 - 60 breaths/minute to achieve or maintain a heart rate > 100 bpm.
 The ratio of compressions to ventilations should 3:1, with 90 compressions and 30 breaths to achieve approximately 120 events per minute.

COMPRESSIONS AND VENTILATIONS

- Use a pit crew approach to assign responders to positions.
- Initiate and maintain high quality chest compressions with limited interruptions (< 10 secs).
- CPR should be provided at a rate of 30:2 or continuous compressions with interposed ventilations every 6 seconds throughout resuscitation until ROSC is achieved or termination of resuscitation.
- There should be no interruptions to CPR when securing an airway. Consider early use of a supraglottic airway to minimize CPR interruptions or when ALS resources are limited.
- If mechanical CPR device is available, avoid extra or prolonged pauses in CPR when applying.

VASCULAR ACCESS

- Preferred order of vascular access in adults is:
 1. Upper extremity IV (or external jugular)
 2. Upper extremity IO
 3. Lower extremity IO
- Preferred access site for pediatrics is the proximal tibia or the distal femur. Humeral IO **not** recommended for infants and toddlers.
- Medications should be administered IV if multiple means of vascular access are established.

EPINEPHRINE ADMINISTRATION

- For patients in a non-shockable rhythm, epinephrine should be administered as soon as feasible, ideally within 5 minutes of EMS arrival to patient side.
- For shockable rhythms, administer epinephrine as soon as feasible after the second defibrillation attempt has failed.

CPR INDUCED CONSCIOUSNESS

- With high quality CPR and the addition of mechanical CPR devices, a growing number of patients have been reported to experience “CPR Induced Consciousness”. Assess for signs of consciousness by checking for spontaneous eye opening, purposeful movement, or verbal response including moaning.
- If signs of CPR Induced Consciousness are present, treat as follows (repeat vital signs between medications):
 1. 50 mcg of fentanyl IV/IO, then
 2. 2.5 mg of midazolam IV/IO OR 1 mg lorazepam IV/IO
 3. May repeat as needed every 5 - 10 minutes. Max total dose for lorazepam is 4 mg.

ROSC

If patient has return of spontaneous circulation, reassess vital signs to ensure stability before packaging for transport. Follow Cardiac Arrest Post-Resuscitation protocol to include targeted temperature management, obtaining a 12-lead ECG (ideally > 8 mins post ROSC), and managing blood pressure.

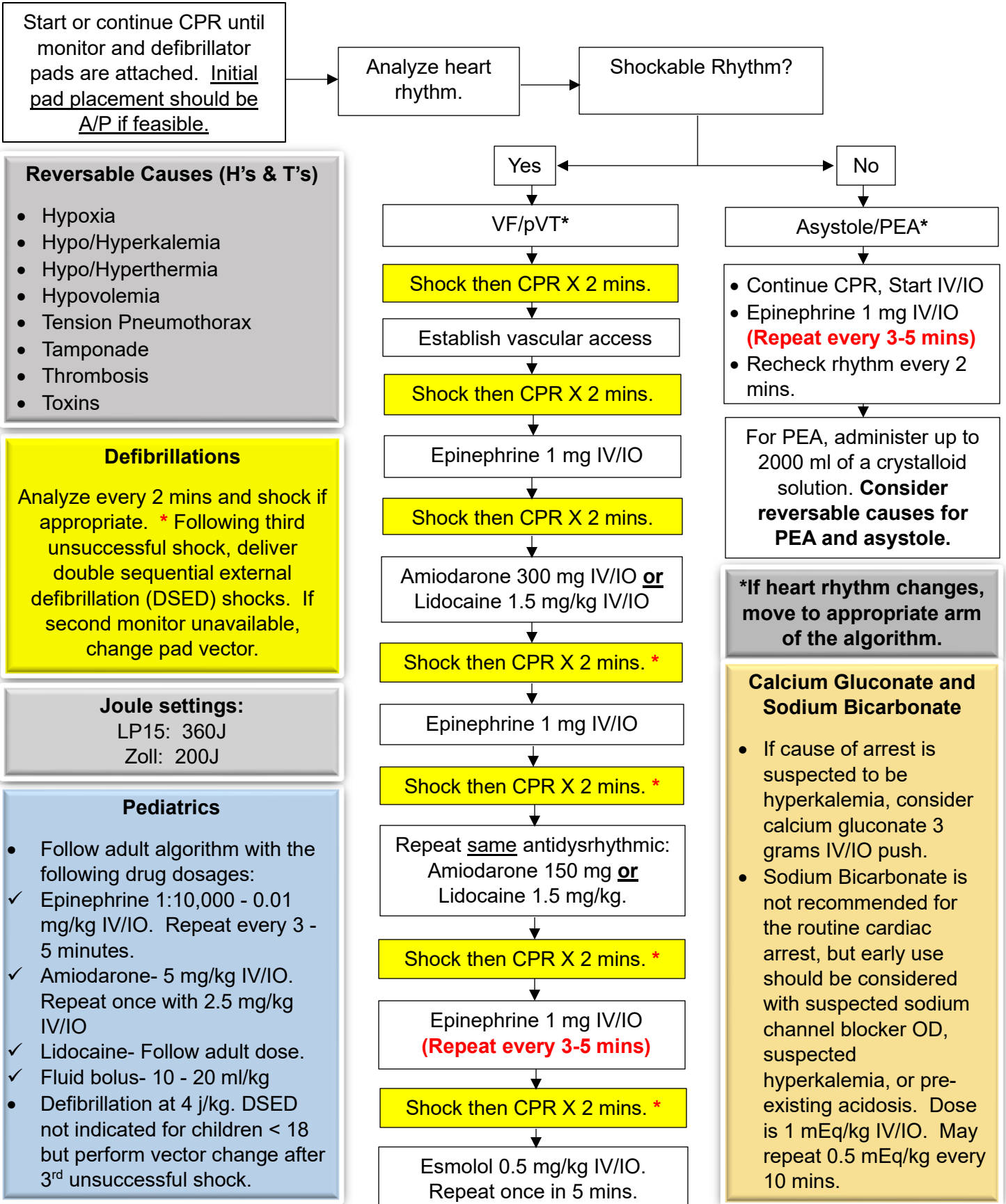
TERMINATION OF RESUSCITATION

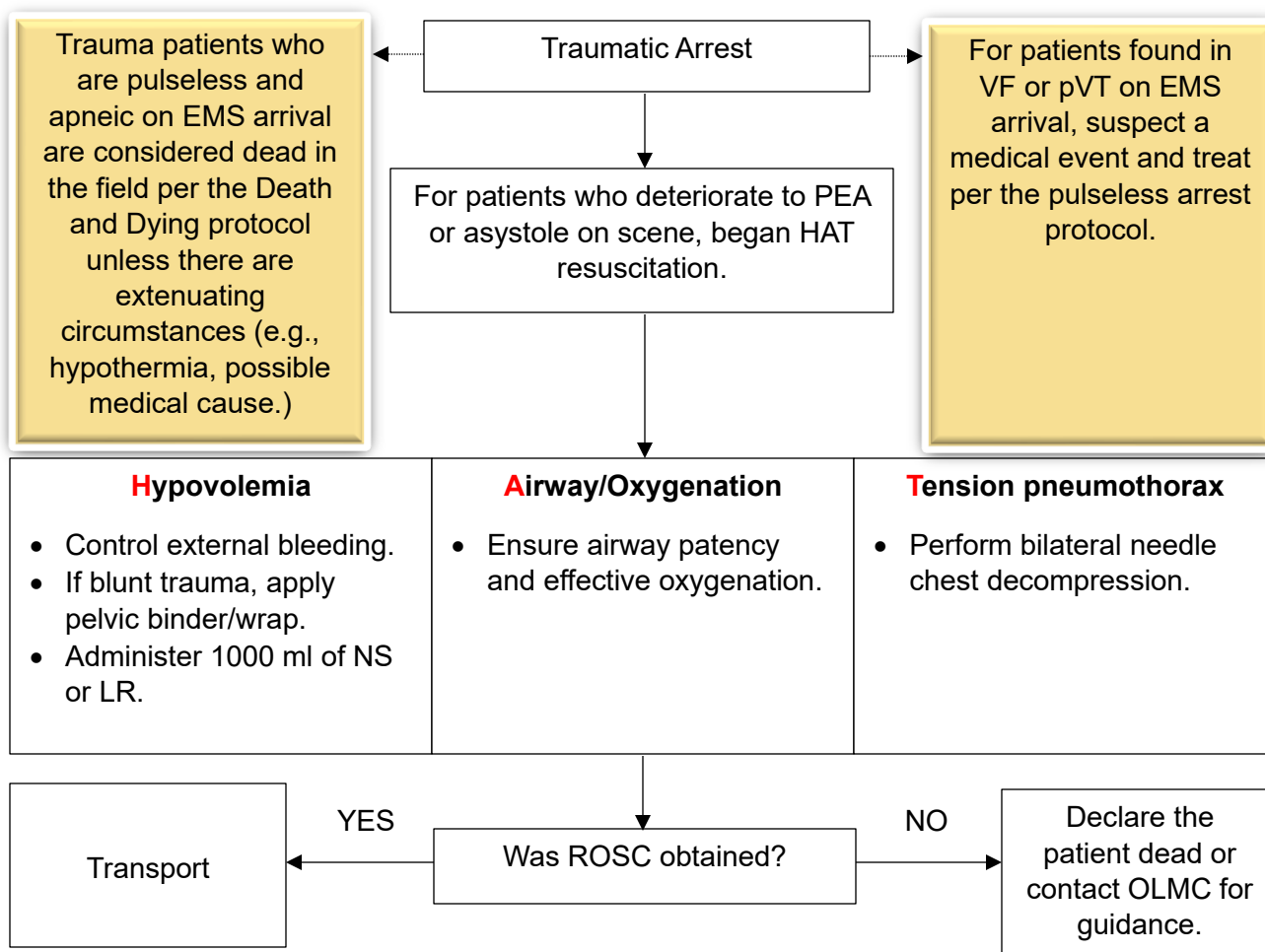
- For patients in whom the asystole protocol has been used throughout the resuscitation, refer to Death and Dying protocol for guidelines regarding termination of resuscitation prior to 30 minutes without OLMC contact.
- Survival from PEA is based on identifying and correcting the responsible factors; consider a broad differential diagnosis, with early and aggressive treatment of possible reversible causes.
- Death in the field for PEA may be determined with $\text{EtCO}_2 \leq 10$ after 30 minutes of attempted ACLS resuscitation. For patients with $\text{EtCO}_2 > 10$ continue resuscitation and contact OLMC to stop resuscitation.

TRANSPORT

- In general, continue resuscitation for a minimum of 30 minutes.
- If persistent/refractory VF/pVT, consider early transport, especially if mechanical CPR is available.

Cardiac Arrest- Pulseless Arrest – 10.050





For patients who arrest during transport:

- Initiate HAT resuscitation.
- If within 15 minutes of a trauma center, continue to the trauma center.
- If farther than 15 minutes to the trauma center, consider pulling over for crew safety and personnel resource reasons. If ROSC is not achieved, you may declare the patient dead or contact OLMC for guidance.

NOTES & PRECAUTIONS:

- If the mechanism of injury appears inconsistent with the patient's condition and not severe enough to induce traumatic arrest, consider a primary medical cause for the patient's cardiac arrest.
- If there is concern for a medical cause of the arrest, transport to the nearest cath lab capable facility if ROSC is achieved. If the patient is still in presumed medical cardiac arrest, then transport to the closest facility.
- Perform chest compressions in traumatic arrest, but DO NOT allow compressions to interfere with addressing the reversible causes of a traumatic arrest in the HAT resuscitation.
- Post-ROSC cooling in the traumatic arrest patient should be deferred to the hospital.

Cardiac Arrest with Pregnancy (> 22 weeks) – 10.050

Manage rhythm per Pulseless Arrest Protocol.



CPR with continuous manual left lateral uterine displacement using the two-handed method.

Ensure BVM ventilations are with high flow oxygen utilizing a two-handed technique to prevent gastric inflation. Suction should be readily available.

Early transport is preferable regardless of ROSC status. The gravid uterus must remain displaced during transport. Continue the two-handed technique for uterine displacement (except in the presence of mechanical CPR when the patient can be attached to a board and the board is lifted 30 degrees in left lateral decubitus position). If patient is in cardiac arrest, notify and transport to the closest facility.

IV/IO access should be above the diaphragm (humeral IO or external jugular access is preferred).

Intubation should be managed with an endotracheal tube if possible and be performed by the most experienced provider using VL if available. Consider using an endotracheal tube 1 - 2 sizes smaller than you would normally use.

NOTES & PRECAUTIONS:

- Consider early transport prior to achieving ROSC, especially if a mechanical CPR device is available.
- Alert the receiving facility early to have an OB team present upon arrival in the emergency department. If you have not achieved ROSC, go to the closest facility regardless of OB capabilities.
- If ROSC has been achieved and maintained prior to, or during transport, bypass to an OB and NICU capable facility.
- Lidocaine is preferable (Class B in Pregnancy) to amiodarone (Class C in Pregnancy) in the setting of ventricular fibrillation or pulseless ventricular tachycardia.
- In the setting of ventricular fibrillation or pulseless ventricular tachycardia, no adjustments need to be made to defibrillation energy settings. Immediately following defibrillation, resume the left lateral uterine displacement.
- If mechanical CPR is in place, continue the left lateral uterine displacement by tilting the backboard 30° to the left or by continuing manual displacement.
- If ROSC is achieved, continue left lateral uterine displacement by placing the patient in the left lateral decubitus position or by manually displacing the gravid uterus.
- High flow oxygen needs to be maintained in all peri-arrest patients.
- Consider OG placement when possible.

Cardiac Arrest Post Resuscitation – 10.050

Post Resuscitation Care:

- Following ROSC, several simultaneous and stepwise interventions must be performed to optimize care and maximize patient outcome.
- Survival and neurologic outcome worsen with fever, hypoxia, hypo/hypercapnia, and hypotension. Post-ROSC care should focus on prevention of these elements.
- Observe briefly to ensure stability before packaging for transport. Place LUCAS backplate prior to transport.

Optimize ventilation and oxygenation.

- Intubate as needed.
- Titrate oxygen to achieve an SpO₂ ≥ 94%.
- Monitor EtCO₂ (normal is 35 - 40 mmHg). **Do not hyperventilate** (ideal rate is 10 - 12 breaths/minute).

Hyperventilation reduces venous return and may cause hypotension. Additional causes of post-resuscitation hypotension include hypovolemia and pneumothorax, especially in the presence of positive pressure ventilation.

If hypotensive (MAP < 65 mmHg or systolic BP < 90 mmHg) follow Shock protocol. Goal is to maintain a mean arterial pressure (MAP) > 65 mmHg.

Perform 12-lead ECG (ideally no earlier than 8 minutes after ROSC). Use sex assigned at birth for 12-lead ECG computerized interpretation.

If patient meets criteria, consider cooling per Induced Hypothermia protocol for patients ≥ 13 years old.

Was the patient defibrillated during treatment?

Transport

All patients with ROSC should be transported to a hospital with emergent interventional capability.

If needed, provide analgesia with fentanyl and sedation with either midazolam or lorazepam.

If arrest reoccurs, treat per appropriate protocol.

NO

YES

If amiodarone was last:

Re-dose with amiodarone 30 minutes after ROSC with 150 mg over 10 minutes. Max total arrest/post-ROSC dose 450 mg.

If lidocaine was last:

Administer lidocaine 0.75 mg/kg every 10 minutes. Max total arrest/post-ROSC dose 3 mg/kg.

If no antidysrhythmic given, administer lidocaine 1.5 mg/kg. Re-bolus with 0.75 mg/kg every 10 minutes. Max total dose 3.0 mg/kg.

OR

Administer amiodarone 150 mg over 10 minutes.

Do not use amiodarone or lidocaine in perfusing patients without OLMC approval in the following situations:

- ✓ Systolic BP is less than 90 mmHg.
- ✓ Heart rate is less than 50 beats per minute.
- ✓ Periods of sinus arrest are present.
- ✓ Second or third-degree heart block are present.

Cardiac Dysrhythmias (Bradycardia) – 10.060

Heart rate generally < 50 bpm

Treat per Universal Patient Care.
Obtain 12-lead ECG if feasible.

Are signs or symptoms of poor perfusion present and caused by the bradycardia?
(Altered mental status, ischemic chest discomfort, acute heart failure, hypotension, or other signs of shock)

No

Observe and monitor patient.

Yes

2nd degree Type II, or
3rd degree heart block, or
Cardiac transplant?

Hyperkalemia may cause bradycardia. If the patient has a wide complex bradycardia with a history of renal failure, muscular dystrophy, paraplegia, crush injury or serious burn > 48 hours prior, consider treatment per Hyperkalemia protocol.

No

Atropine 1.0 mg IV/IO. May repeat every 3 - 5 minutes to a maximum of 3 mg.

If no response to atropine, begin transcutaneous pacing (TCP).

Capture?

Yes

Monitor patient.

No

Atropine 1.0 mg IV/IO. May repeat every 3 - 5 minutes to a maximum of 3 mg.

- If no response to pacing or atropine: Consider epinephrine infusion 2 - 10 mcg/min titrated to effect.

- Consider OLMC

Yes

Begin transcutaneous pacing (TCP).

Capture?

No

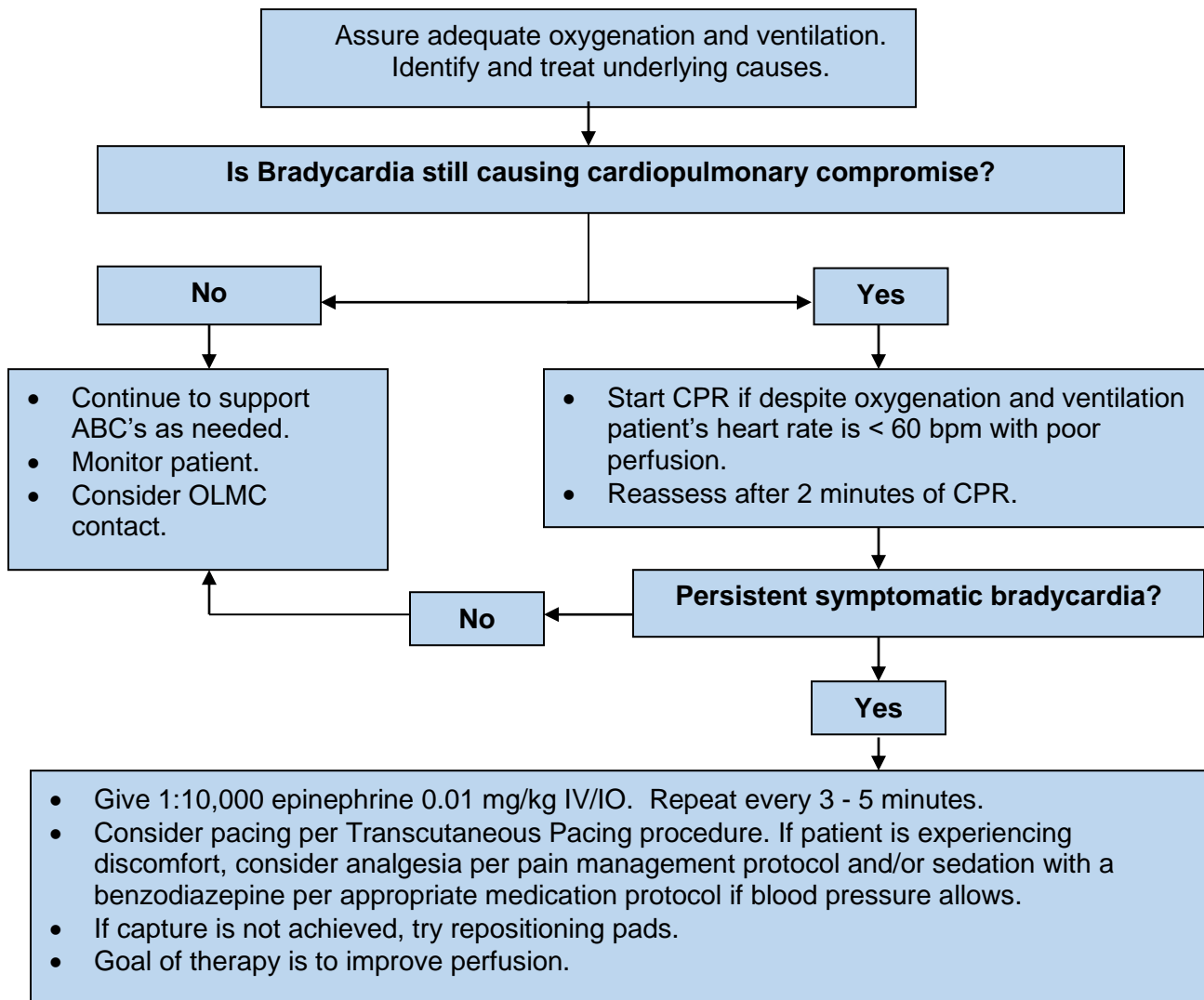
Yes

Monitor patient: If patient is experiencing discomfort, consider analgesia per pain management protocol and/or sedation with a benzodiazepine per appropriate medication protocol if blood pressure allows.

Cardiac Dysrhythmias (Bradycardia) – 10.060

PEDIATRIC PATIENTS:

BRADYCARDIA WITH A PULSE AND POOR PERFUSION

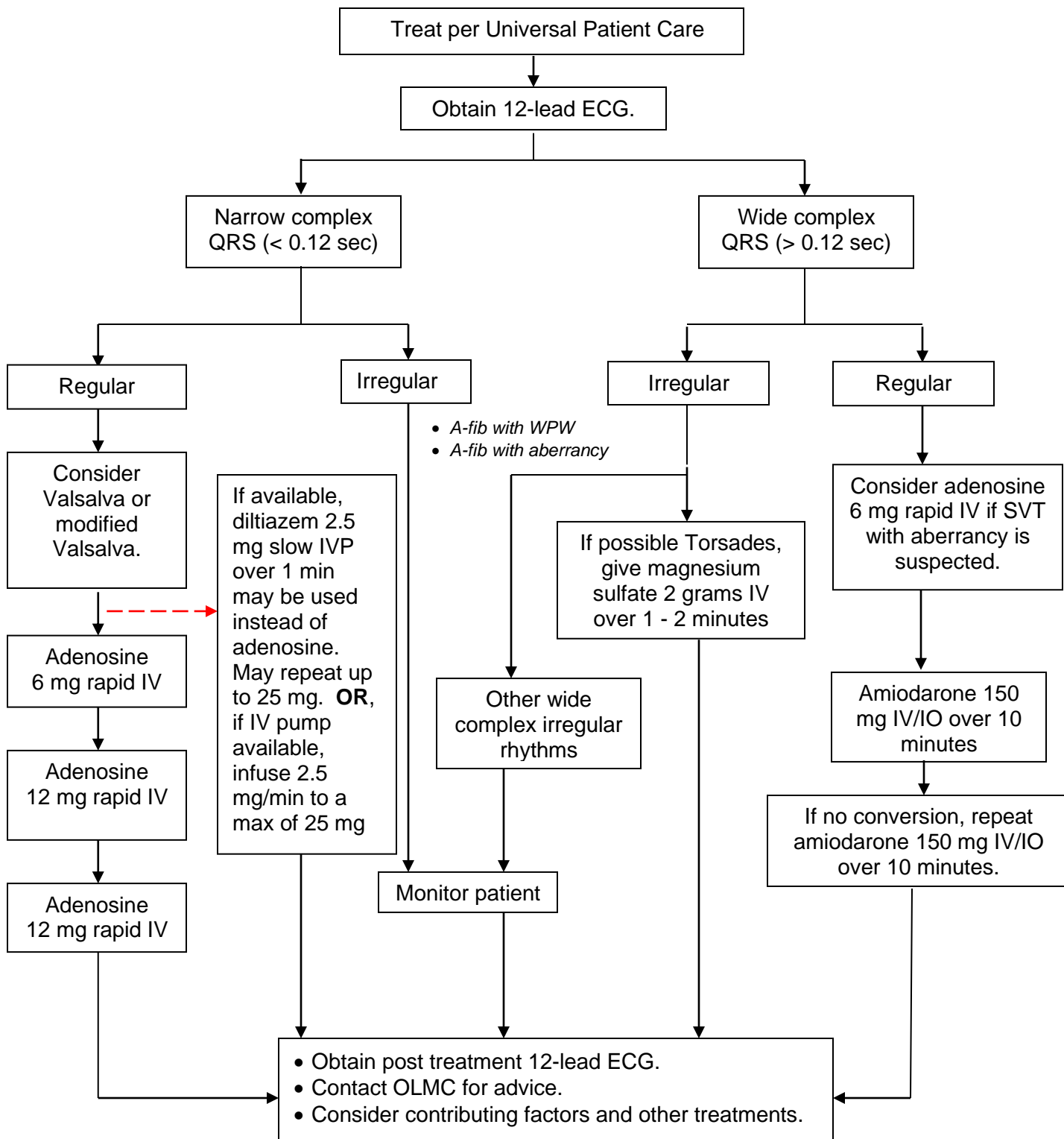


NOTES & PRECAUTIONS:

- Hypoxia is a common cause of bradycardia.
- Bradycardia may be protective in the setting of cardiac ischemia and should only be treated if associated with serious signs and symptoms of hypoperfusion. Increasing heart rate may worsen ischemia or increase infarct size.
- Immediate TCP can be considered in unstable patients when vascular access is not available.
- TCP is at best a temporizing measure and is not useful in asystole.
- If TCP capture is not achieved, try repositioning pads.
- Atropine will likely be ineffective in heart transplant recipients because they lack vagal innervation.
- 3rd degree heart blocks with a wide complex QRS (>0.12 sec) are less likely to respond to atropine than those with a narrow complex.

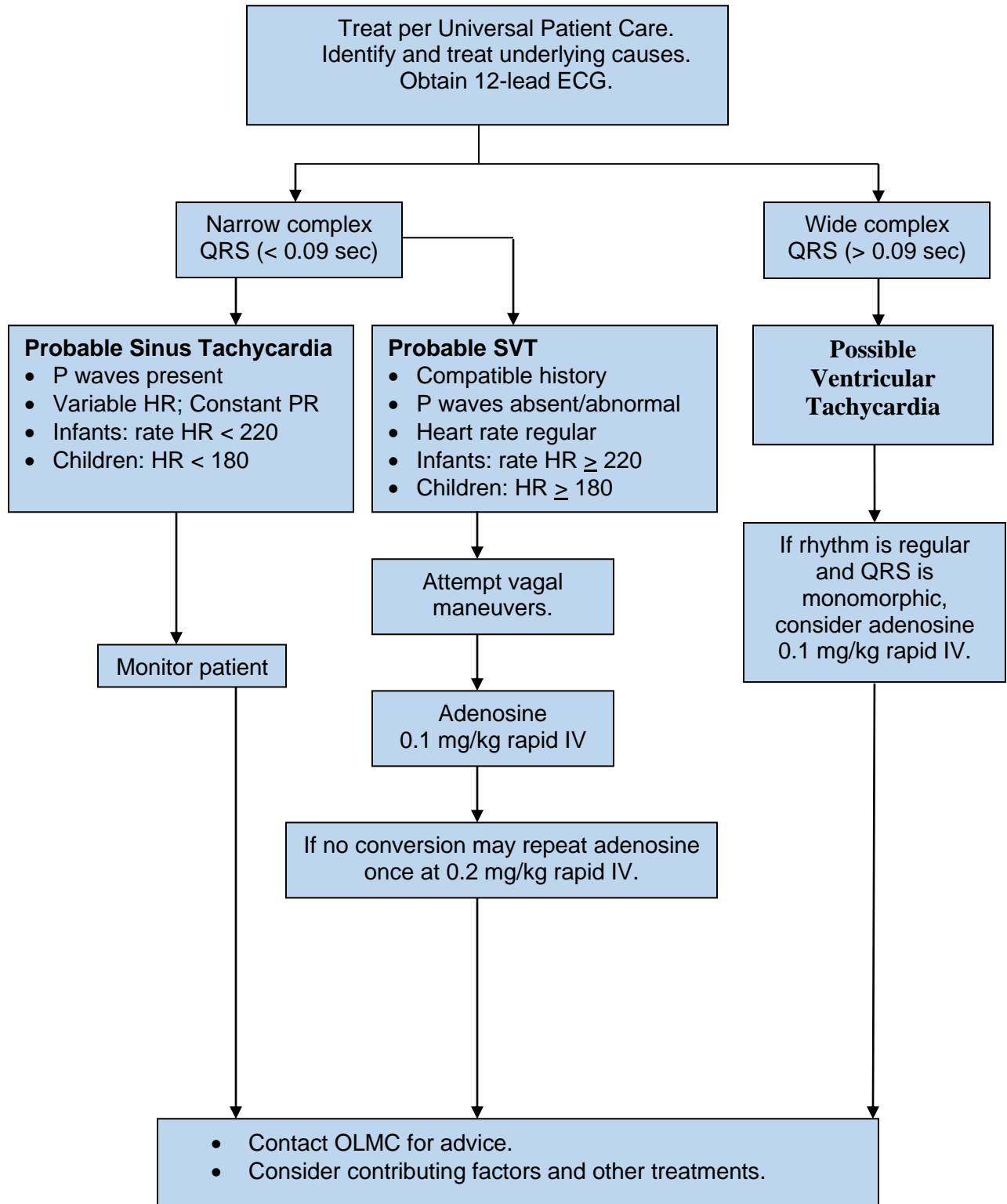
Cardiac Dysrhythmias (Tachycardia Stable) – 10.060

Patient **does not** have signs or symptoms of poor perfusion caused by the dysrhythmia. (e.g., Altered mental status, ischemic chest discomfort, acute heart failure, hypotension, or other signs of shock)
Rate related symptoms uncommon if HR <150 bpm. Consider other causes.



Cardiac Dysrhythmias (Tachycardia Stable) – 10.060

PEDIATRIC PATIENTS:



NOTES & PRECAUTIONS:

- In stable wide complex tachycardia, which is monomorphic, consider adenosine if SVT with aberrancy is suspected.
- If the patient is asymptomatic, tachycardia may not require treatment in the field. Continue to monitor the patient for changes during transport. The acceptable upper limit for heart rate for sinus tachycardia is 220 minus the patient's age.
- Other possible causes of tachycardia include:
 - ✓ Acidosis
 - ✓ Hypovolemia
 - ✓ Hyperthermia/fever
 - ✓ Hypoxia
 - ✓ Hypo/Hyperkalemia
 - ✓ Hypoglycemia
 - ✓ Infection
 - ✓ Pulmonary embolus
 - ✓ Tamponade
 - ✓ Toxic exposure
 - ✓ Tension pneumothorax
- If pulseless arrest develops, follow appropriate Cardiac Arrest protocol.
- All doses of adenosine should be reduced to one-half (50%) in the following clinical settings:
 - ✓ History of cardiac transplantation.
 - ✓ Patients who are on carbamazepine (Tegretol) and dipyridamole (Persantine, Aggrenox).
 - ✓ Administration through any central line.
- Adenosine may initiate atrial fibrillation with rapid ventricular response in patients with Wolff-Parkinson-White syndrome.
- Adenosine should be used with caution in patients with asthma as it may cause a reactive airway response in some cases.
- The Modified Valsalva Maneuver may increase the likelihood of converting SVT to sinus rhythm. Have the patient sit in an upright position. With the assistance of a 10 ml syringe, encourage the patient to strain for a full 15 seconds, trying to push out the plunger by forced expiration. Lay the patient flat and elevate their legs to 45-90 degrees for 15 seconds. Lay the patient's legs flat for 60 seconds. May repeat x1 if patient has not converted to sinus rhythm.
- Consider the following Valsalva techniques for pediatric patients:
 - ✓ For infants and toddlers, apply ice or chilled IV fluid to the patient's face.
 - ✓ For preschool age and up, have the patient blow on a syringe.

Cardiac Dysrhythmias (Tachycardia Unstable) – 10.060

Patient **has** signs or symptoms of poor perfusion caused by the dysrhythmia (e.g., Altered mental status, ischemic chest discomfort, acute heart failure, hypotension or other signs of shock).
Rate related symptoms uncommon if HR < 150 bpm. Consider other causes.

Treat per Universal Patient Care

Immediate synchronized cardioversion**

If patient is conscious, consider sedation. Do not delay cardioversion for sedation.

If IV/IO is established - administer etomidate 0.15 mg/kg IV/IO push to a max of 10 mg. Wait 45 - 60 seconds for signs of sedation such as patient becoming verbally unresponsive or no longer following commands.

If no IV/IO – administer midazolam 5 mg IM/IN or lorazepam 2 mg IM.

If no change, repeat synchronized cardioversion.

Did the patient convert?

No

Yes

Amiodarone 150 mg IV/IO slow push over 3 mins.

Repeat synchronized cardioversion** x 2 if needed

If still no conversion

Initiate rapid transport

Contact OLMC

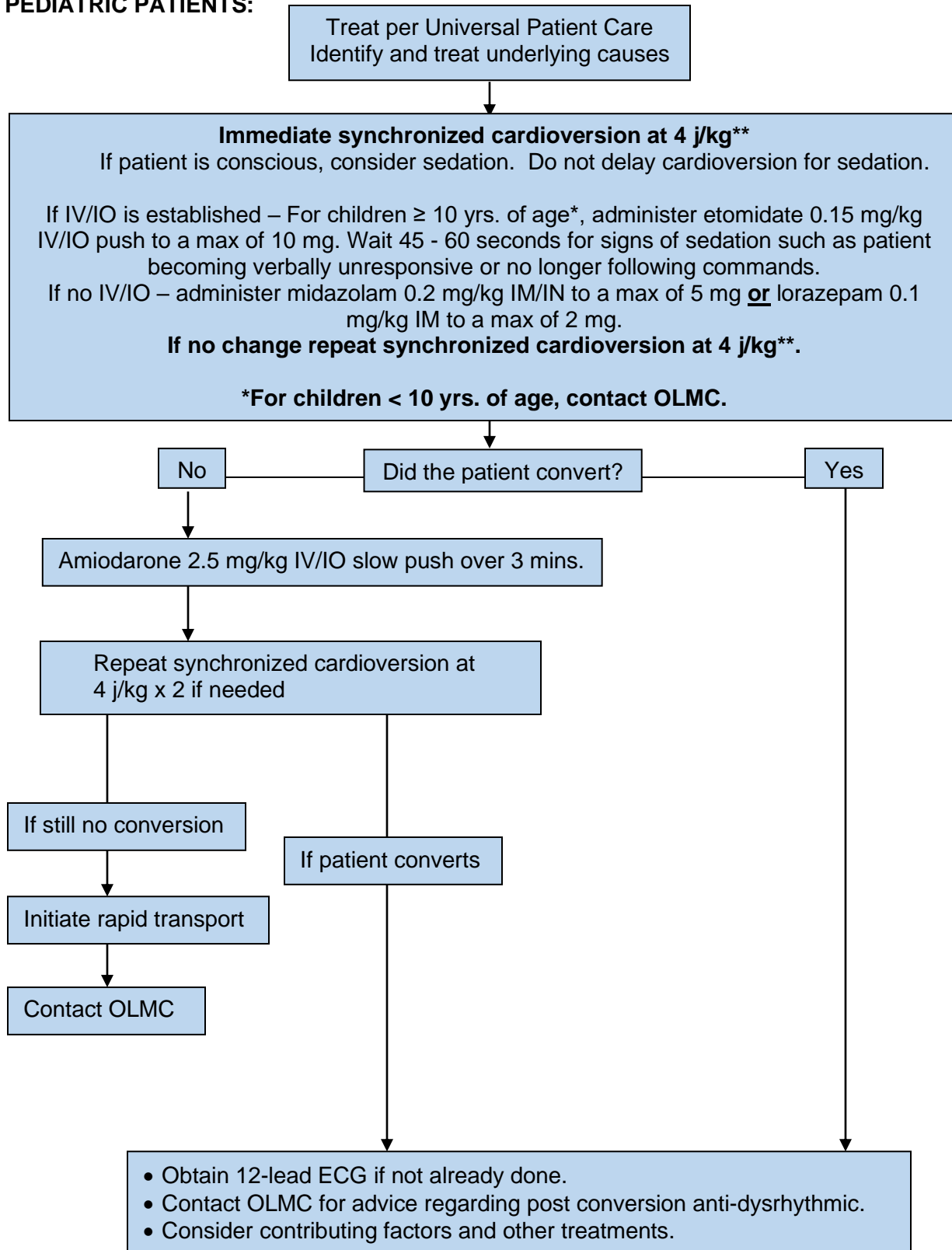
If patient converts

- Obtain 12-lead ECG if not already done.
- Contact OLMC for advice regarding post conversion anti-dysrhythmic.
- Consider contributing factors and other treatments.

**If patient is in a wide complex irregular tachycardia use defibrillation (un-synchronized).

Cardiac Dysrhythmias (Tachycardia Unstable) – 10.060

PEDIATRIC PATIENTS:



Cardiac Dysrhythmias (Tachycardia Unstable) – 10.060

NOTES & PRECAUTIONS:

- Possible causes of tachycardia include:
 - ✓ Acidosis
 - ✓ Hypovolemia
 - ✓ Hyperthermia/fever
 - ✓ Hypoxia
 - ✓ Hypo/Hyperkalemia
 - ✓ Hypoglycemia
 - ✓ Infection
 - ✓ Pulmonary embolus
 - ✓ Tamponade
 - ✓ Toxic exposure
 - ✓ Tension pneumothorax
- If pulseless arrest develops, follow Cardiac Arrest protocol.
- Defibrillation is recommended for wide complex irregular tachycardia.
- Etomidate may result in myotonic jerking, apnea and/or pain at the injection site.

Heart Monitor Adult Synchronous Cardioversion Settings (Joules)

Physio LifePak®	360 j
Zoll E/M Series®	200 j

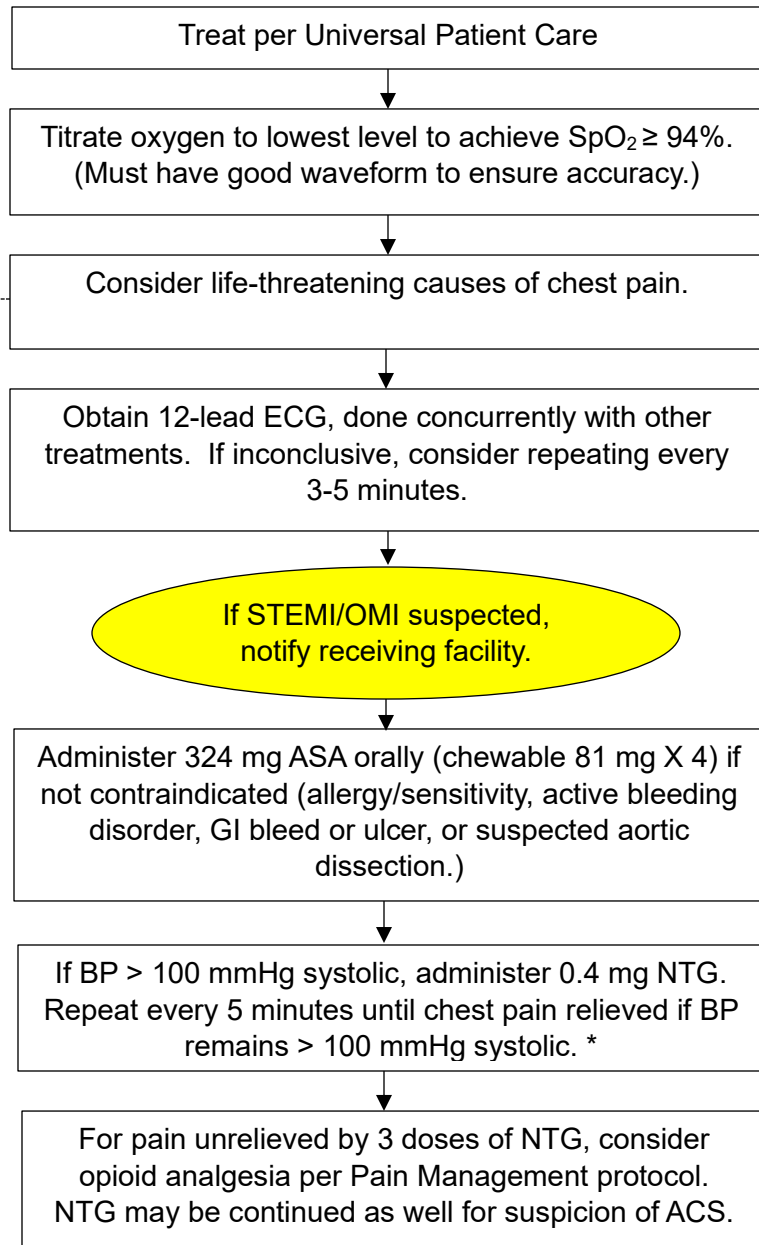
Chest Pain/Acute Coronary Syndromes – 10.065

Life threatening causes of chest pain:

- Acute coronary syndrome (ACS)
 - ✓ Unstable angina
 - ✓ NSTEMI
 - ✓ STEMI
- Pulmonary embolism
- Thoracic aortic dissection
- Tension pneumothorax

Dysrhythmias and PVCs

- Treat any dysrhythmia per appropriate cardiac dysrhythmia protocol.
- Concerning PVCs **in the setting of an acute ischemic event only** may be treated with Amiodarone 150 mg IV/IO over 10 mins.
- Amiodarone should not be used if:
 - ✓ BP < 90 mmHg
 - ✓ HR < 50 bpm
 - ✓ Periods of sinus arrest
 - ✓ Presence of 2° or 3° AV block



*Nitroglycerin Precautions

- Establish vascular access prior to administration for patients having not previously taken NTG or who are at risk of hemodynamic instability.
- NTG can cause hypotension in 10% of patients.
- **Use with caution in patients with an inferior MI as profound hypotension can occur due to an associated right ventricular infarction (RVI can occur in up to 50% of inferior MIs).**
- 12-lead clues to RVI include STE in III > II or STE ≥ 1 mm in V₄R. Current guidelines recommend avoidance of NTG in RVI.
- Do not administer NTG without OLMC if patient has taken sildenafil (Viagra®), vardenafil (Levitra®) in last 24 hours or tadalafil (Cialis®) in last 48 hours, given risk of profound hypotension with concomitant administration.

ST Elevation MIs (STEMIs)

- STEMI is defined by:
 - ✓ At least 1 mm ST elevation in two contiguous leads (except V2 and V3) in the absence of a LBBB or paced rhythm.
 - ✓ For leads V2 and V3, ≥ 2.5 mm STE for men < 40 , ≥ 2 mm in men ≥ 40 , and ≥ 1.5 mm in woman of all ages.
- Field identified STEMI is a 12-lead ECG with:
 - ✓ Automatic ECG interpretation of “Acute MI”, or
 - ✓ Paramedic concern for STEMI or OMI based on provider ECG review and clinical presentation.

Occlusive MIs (OMIs)

ECG findings concerning for an ongoing coronary occlusion also warrant cath lab activation. Findings consistent with OMI include:

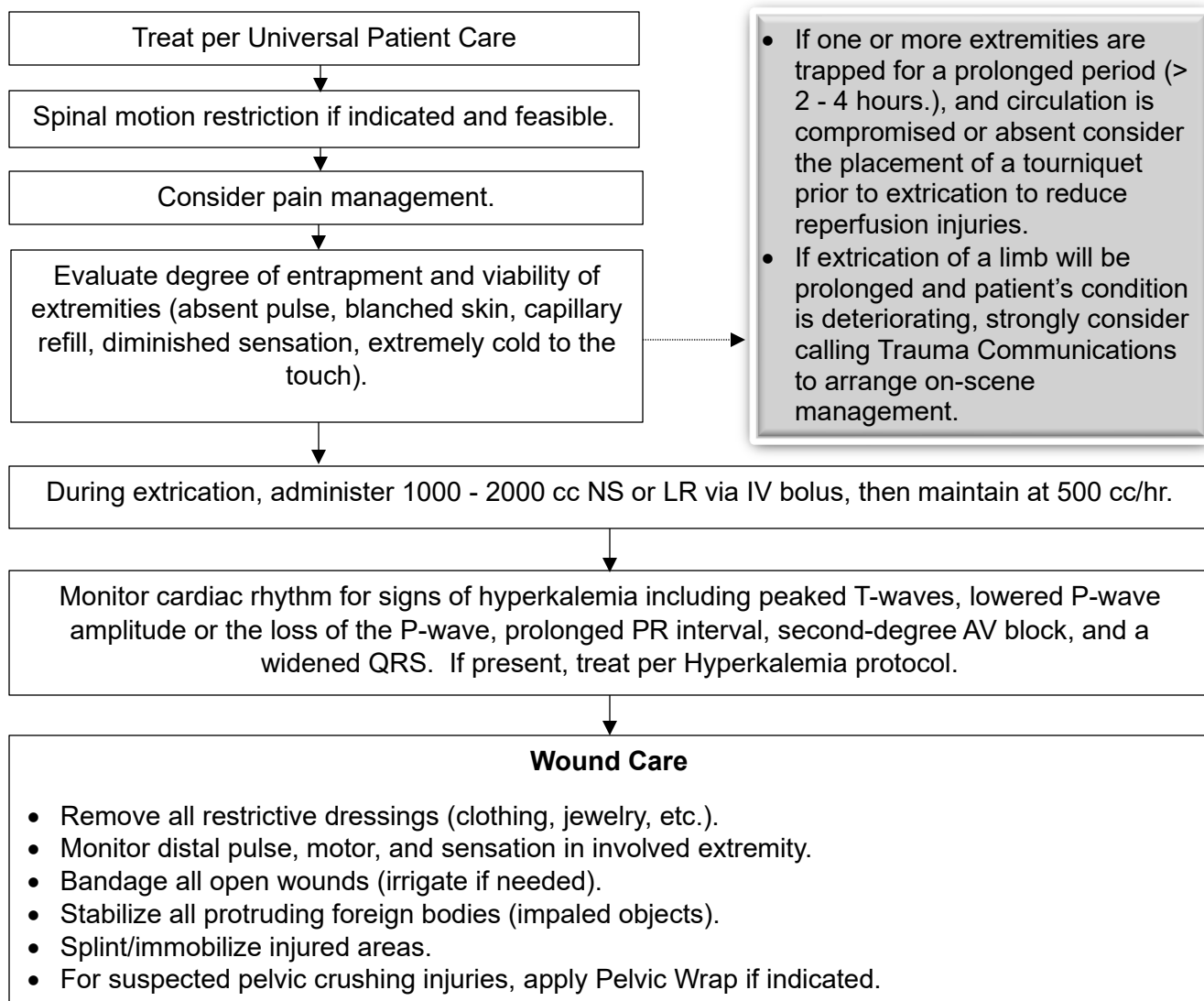
- Hyperacute T waves
- DeWinter T waves
- Mild inferior STE with reciprocal depression in aVL
- Anterior ST depression in the absence of posterior STE
- LBBB or paced rhythm with Smith-Modified Sgarbossa Criteria
- Wellens syndrome: Deep inverted T waves in V2/V3
- Aslanger’s Pattern: Inferior STE in Lead III only, ST depression in any V4-V6 with positive T-Wave, ST segment in V1 $>$ V2.

STEMI/OMI Actions

- If possible, transmit 12-lead ECG to destination hospital.
- Early notification to receiving hospital of “STEMI activation” ideally within 5 mins of identification.
- **Apply defibrillation pads.**
- Rapid transport to destination with cardiac interventional capability.

For pediatrics, consider pleuritic causes or trauma. Contact OLMC for advice

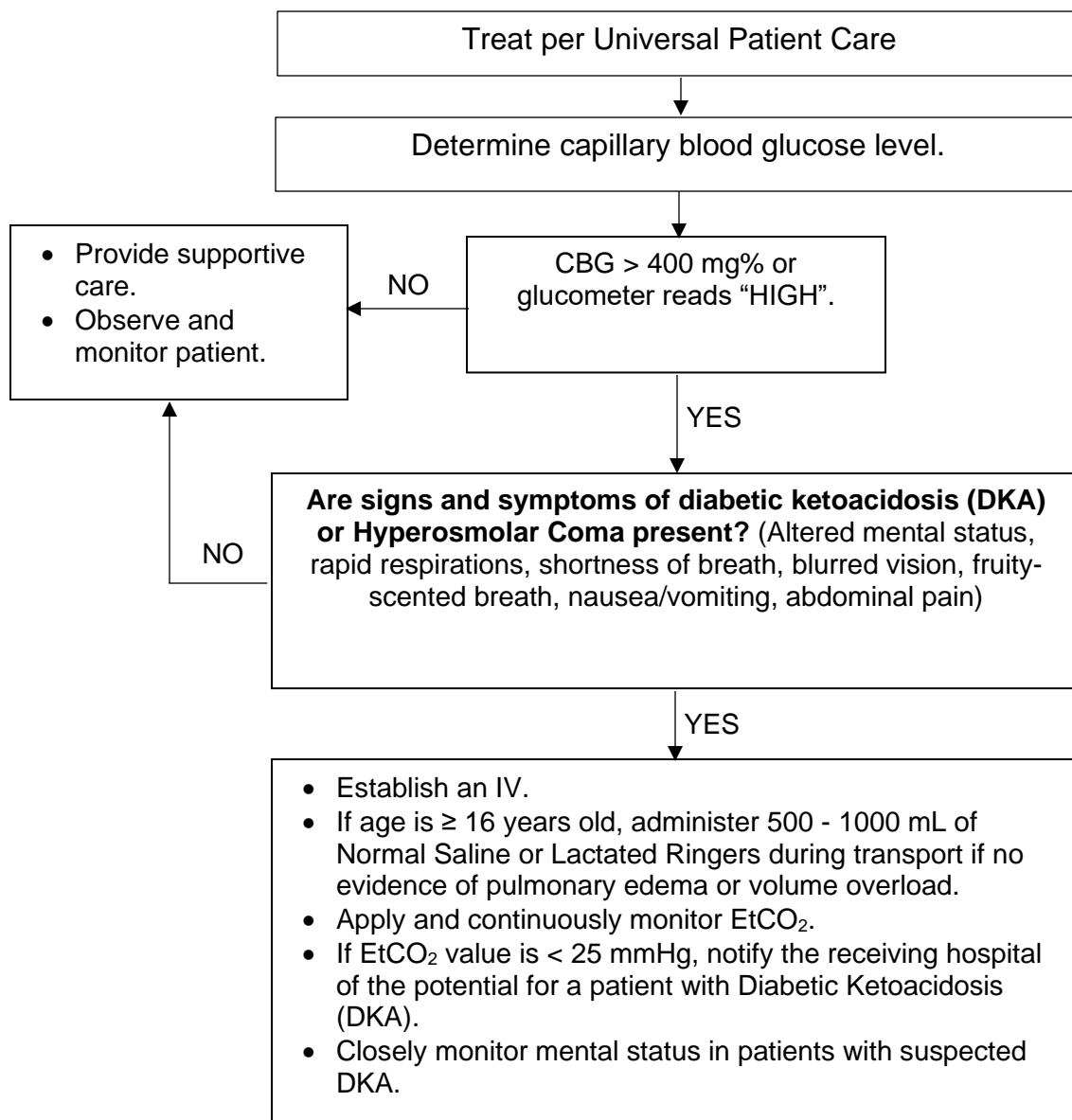
Crush Injury / Entrapment – 10.070



NOTES & PRECAUTIONS:

- Crush injuries may elevate blood potassium levels (hyperkalemia) causing bradycardia, hypotension, weakness, weak pulse, and shallow respirations.
- Plan extrication activities to allow for periodic patient assessment. Plan for occasional extrication equipment "shut down" to assess vital signs.
- Carefully track vital signs, IV fluids, cardiac rhythm, and medications during extrication.
- Protect patient from environment (rain, snow, direct sun, etc.). If needed, begin warming methods (warm blankets, heated air with blower, warm IV fluids) to prevent hypothermia.
- Carefully assess collateral injuries that may have occurred during event.
- If patient is trapped in a heavy dust environment, consider methods to provide filtered oxygen to the patient. If patient is in respiratory distress, consider dust impaction injuries and prepare to administer nebulized albuterol per OLMC direction.
- Do not allow any personnel into extrication area (inner circle) without proper protective equipment and thorough briefing including review of the evacuation signal.
- Notify the receiving Trauma Center through Trauma Communications early in the extrication process for additional recommendations if needed.

Diabetic Emergencies- Hyperglycemia – 10.072



PEDIATRIC PATIENTS:

- Follow adult algorithm.
- If age is < 16 years old, consider administration of 10 mL/kg of Normal Saline or Lactated Ringers during transport if no evidence of pulmonary edema or volume overload.

NOTES & PRECAUTIONS:

If concern for DKA, avoid intubation unless the patient cannot protect their airway or there is evidence of extreme fatigue with an inability to ventilate or oxygenate. If intubation becomes necessary, the ventilation goal should be to maintain pre-intubation EtCO₂ levels.

Diabetic Emergencies- Hypoglycemia – 10.072

Symptoms of hypoglycemia can include the following: Sweating, shakiness, nervousness, hunger, tiredness, dizziness, difficulty thinking, blurred vision, tingling sensation, or heart pounding.

Treat per Universal Patient Care

Determine capillary blood glucose level.

CBG < 60 mg%, or < 80 mg% in a known diabetic

- If patient can protect their own airway, give oral glucose.
 - If patient is unable to protect their own airway give:
 - ✓ Dextrose 10%, 10 - 25 grams (100 - 250 ml) IV/IO by infusion
- OR**
- ✓ Dextrose 50%, 25 grams (50 ml) in large vein

Check CBG after 5 minutes and repeat treatment if blood sugar remains low and patient remains symptomatic.

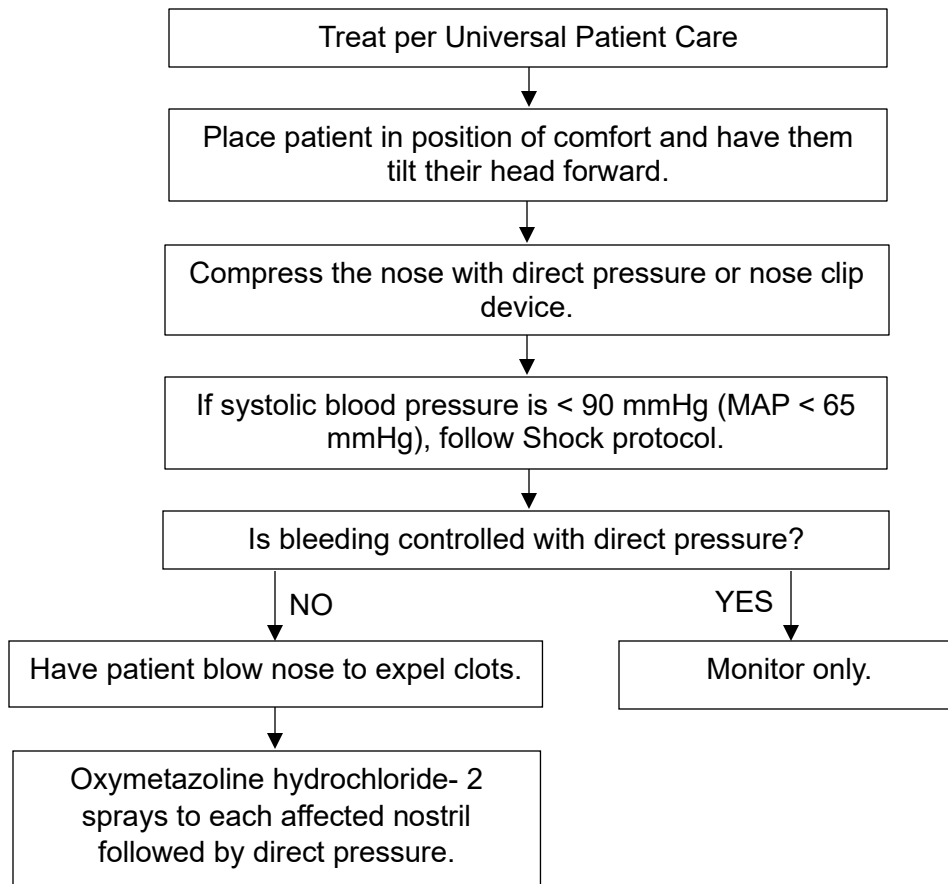
If no IV can be established, give glucagon 1 mg IM.

PEDIATRIC PATIENTS:

- For infants < 10 kg (birth to 1 year) with CBG < 40 mg% and children 10 kg - 35 kg with CBG < 60 mg% give:
 - ✓ Dextrose 10%: 5 ml/kg by infusion not to exceed 250 ml total. (Note: for D10% each 10 ml = 1 gram of dextrose), **OR**
 - ✓ Dextrose 12.5% (if diluting D50): 4 ml/kg by infusion not to exceed 200 ml total, **OR**
 - ✓ Glucagon: 0.02 mg/kg IM to a maximum of 1 mg if IV cannot be established.

NOTES & PRECAUTIONS:

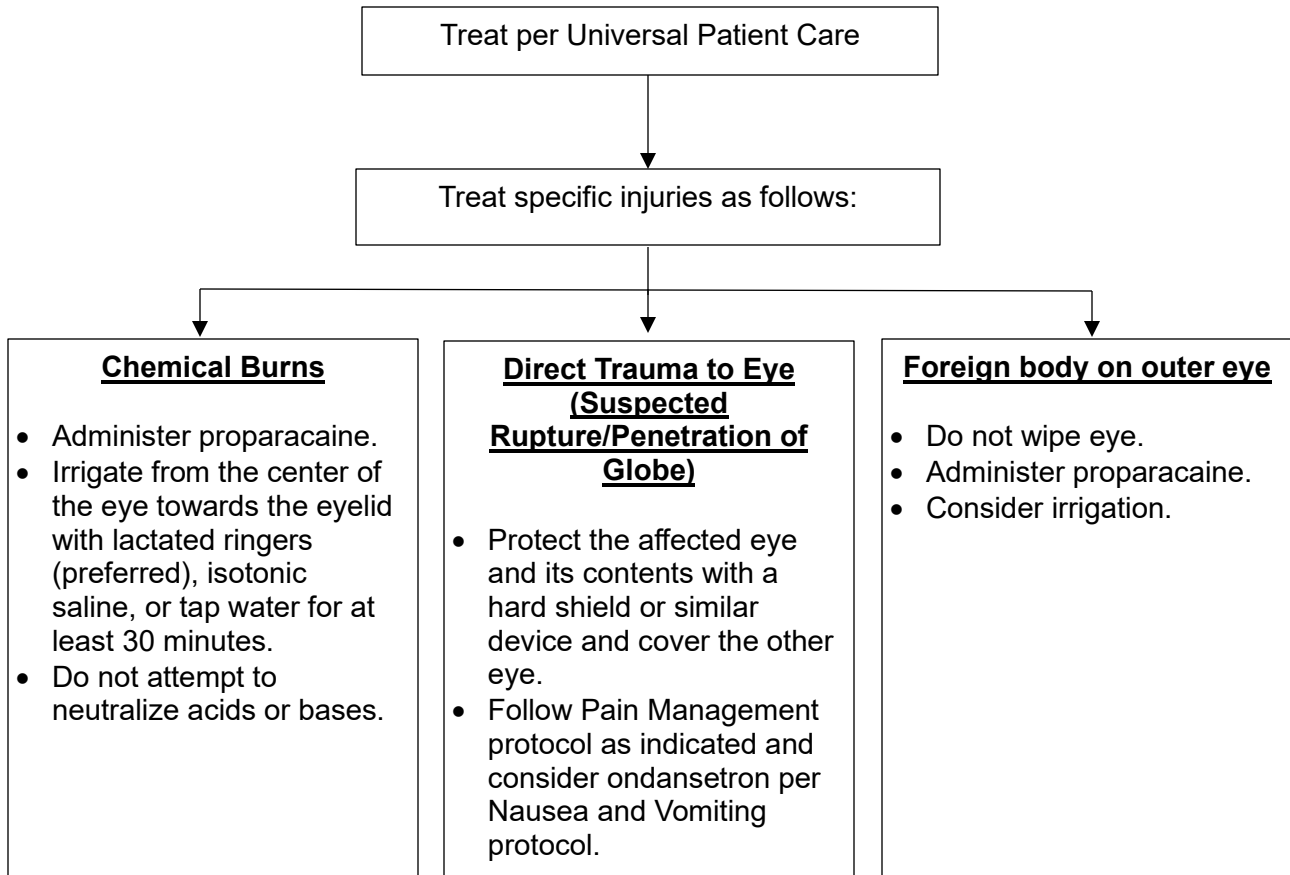
- Hypoglycemic patients who receive glucose/dextrose/glucagon often refuse transport. This may be reasonable if **all** the following are present:
 - ✓ The patient's mental status has returned to normal.
 - ✓ There is a clear precipitating cause (e.g., took insulin but forgot to eat).
 - ✓ The patient can eat a meal.
 - ✓ The patient's recent blood sugar control has been otherwise stable.
 - ✓ The patient's blood glucose level is > 80mg%.
 - ✓ A reliable adult will be with the patient.
- Patients with recent evidence of poor glucose control and those who use oral hypoglycemic medications, particularly the sulfonylurea agents (e.g., glyburide, glipizide, glimepiride) are at high risk for recurrent hypoglycemia and should be transported. If these individuals refuse transport, contact OLMC for assistance.

**PEDIATRIC PATIENTS:**

- Follow adult algorithm.
- Oxymetazoline Hydrochloride should be avoided if child cannot follow instructions to blow their nose or are unable to tolerate the administration of a nasal medication.

NOTES & PRECAUTIONS:

- Blood loss in epistaxis can be hard to quantify.
- Bleeding may be also occurring posteriorly. Evaluate for posterior blood loss by examining the back of the throat.
- Posterior epistaxis may be an emergency and may require advanced ED techniques such as balloon tamponade or interventional radiology. Do not delay transport. Be prepared for potential airway issues.
- Detailed medication history should be obtained to assess for the use of agents such as NSAIDs, antiplatelet agents, or anticoagulant medications that may contribute to bleeding.
- For patients on home oxygen via nasal cannula, place the cannula in the patient's mouth while the nares are compressed for active bleeding.

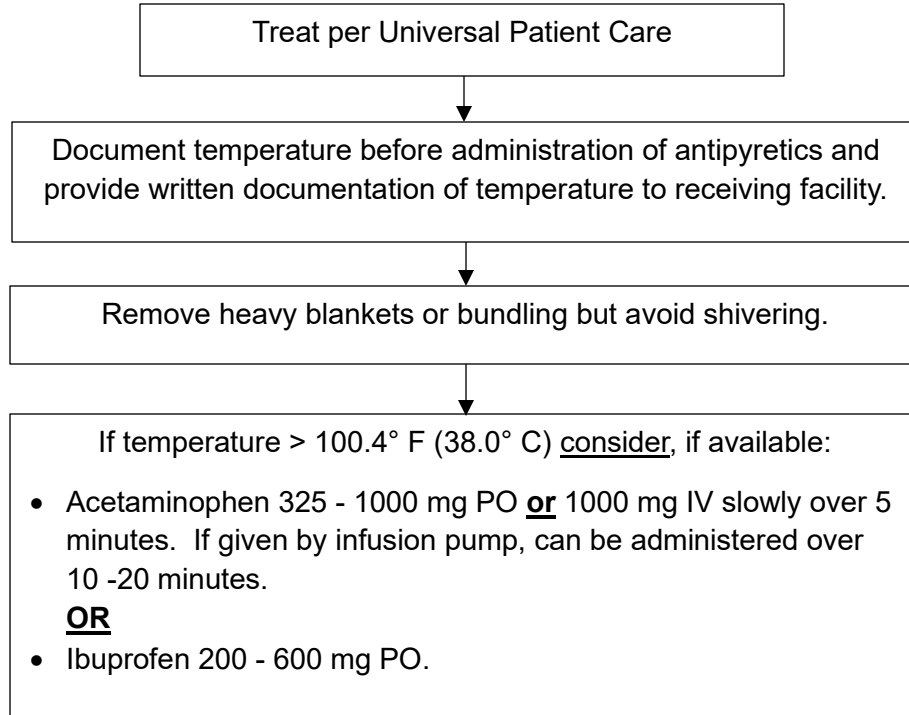


PROPARACAINE ADMINISTRATION:

Instill one drop in the affected eye. If there is no effect within one minute, three additional drops may be instilled at one-minute intervals. For transports longer than 15 minutes, if eye pain returns, 1 - 4 additional drops may be instilled as needed to continue anesthetic effect.

NOTES & PRECAUTIONS:

- Unless contraindicated, patients should be transported in a seated position of at least 30 degrees in order to decrease intraocular pressure.
- Document new onset of blurring, double vision, perceived flashes of light, or other visual changes.
- Contact lenses should be removed, if possible.

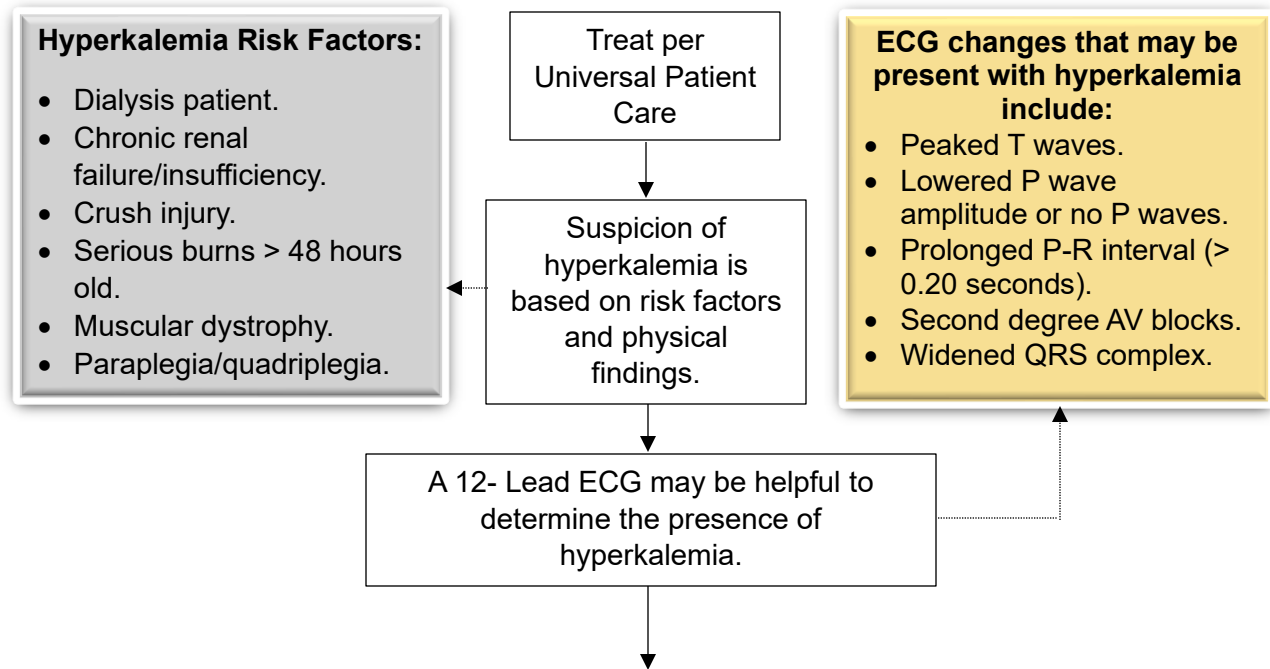


PEDIATRIC PATIENTS:

- **Acetaminophen-**
15 mg/kg PO liquid only to a maximum of 1000 mg
- **Ibuprofen-**
10 mg/kg PO liquid only to a maximum of 600 mg. **Do not give ibuprofen to children less than 6 months old or with signs of dehydration.**

NOTES AND PRECAUTIONS:

- There is no evidence that treating fever decreases the likelihood of febrile seizure or has other therapeutic benefit. Treatment of fever is to improve patient comfort and is optional.
- Do not give acetaminophen if known liver disease, alcohol abuse, acute intoxication, or has taken acetaminophen in last 4 hours.
- Do not give ibuprofen to infants under 6 months, or patients with known renal disease, dehydration, ulcer, GI bleeding, gastric reflux disease (heartburn), pregnancy, or if a NSAID has been taken within the last 6 hours.
- Antipyretics are not indicated for environmental hyperthermia.



If hyperkalemia is suspected based on history and physical findings:

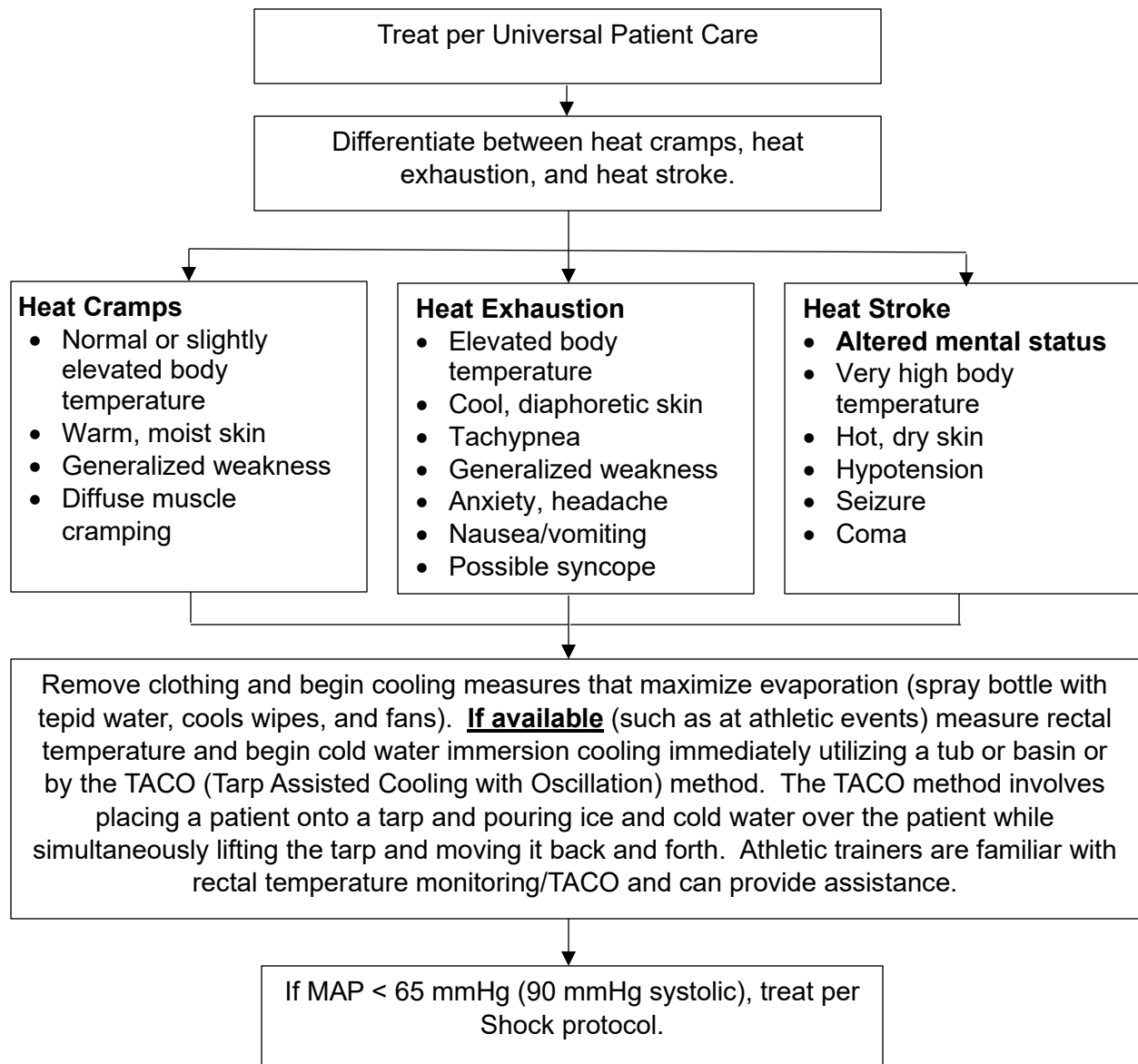
- Administer 10% calcium gluconate 1 - 3 grams IV/IO slowly over 5 - 10 minutes in a proximal port.
- If no change in rhythm following calcium administration and transport time is prolonged, consider alternate therapy:
 - ✓ High dose albuterol (10 mg by nebulizer)
 - ✓ Sodium bicarbonate 50 mEq IV/IO

DO NOT mix sodium bicarbonate solutions with calcium preparations. Slowly flush remaining calcium gluconate from the catheter prior to administering sodium bicarbonate.

PEDIATRIC PATIENTS:

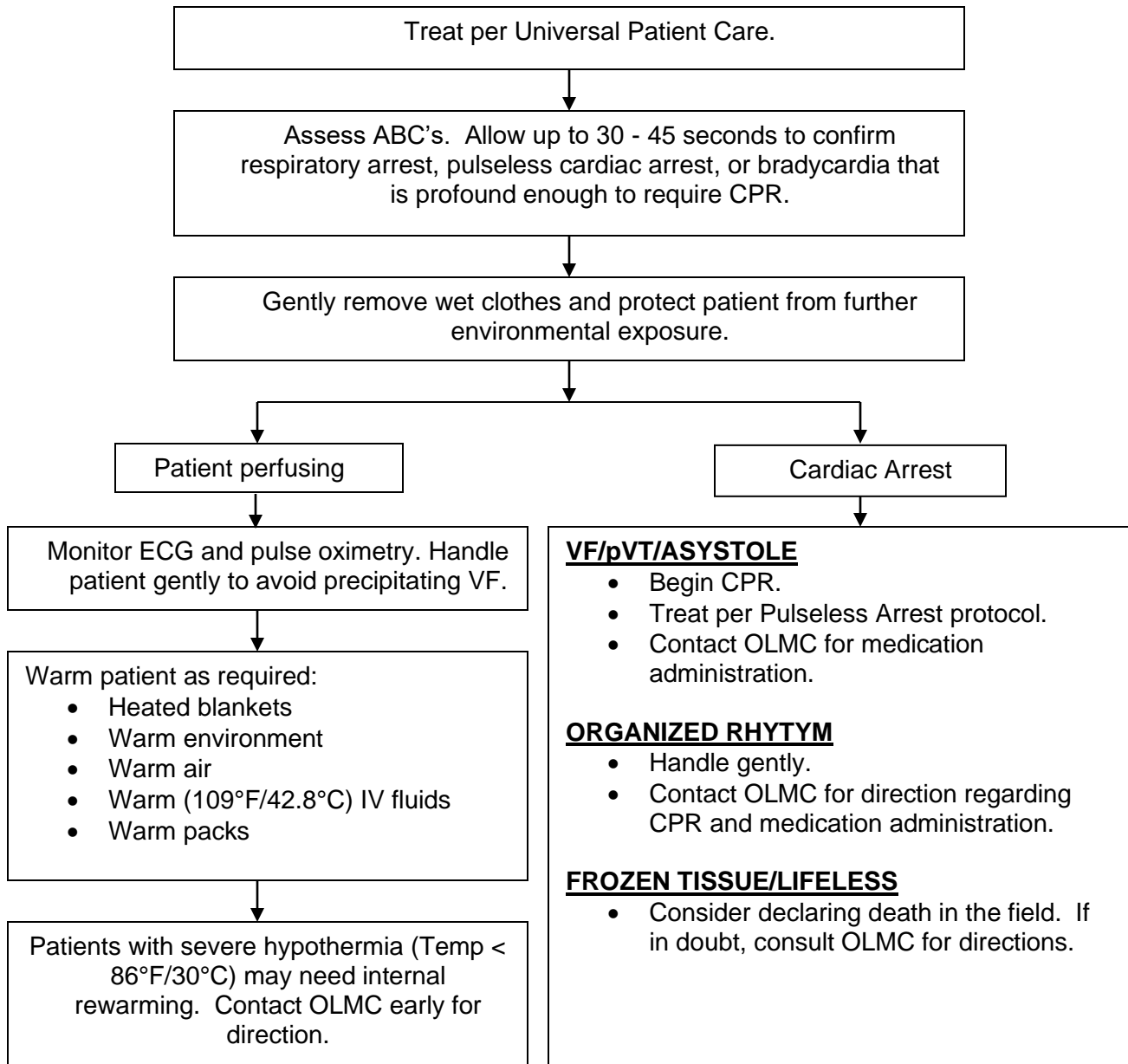
- Calcium gluconate- 0.6 ml/kg IV/IO slowly over 5-10 minutes. Max dose 10 ml.
- Albuterol-
 - ✓ < 25 kg, 2.5 mg via nebulizer
 - ✓ 25-50 kg, 5.0 mg via nebulizer
 - ✓ > 50 kg, 10 mg via nebulizer
- Call OLMC regarding the use of sodium bicarbonate.

Hyperthermia/Heat-Related Emergencies – 10.080



NOTES & PRECAUTIONS:

- Heat stroke is a medical emergency. Be aware that heat exhaustion can progress to heat stroke.
- Wet sheets over a patient without good airflow will increase temperature and should be avoided.
- Suspect hyperthermia in patients with altered mental status or seizure on a hot, humid day.
- Consider sepsis and/or contagious disease. Examine patient closely for rashes and nuchal rigidity.



NOTES & PRECAUTIONS:

- At-risks groups for hypothermia include trauma victims, alcohol and drug abuse patients, houseless persons, elderly, low-income families, infants and small children, and entrapped patients.
- Hypothermia may be preceded by other disorders (alcohol, trauma, OD, hypoglycemia) so look for and treat any underlying conditions while managing the hypothermia.
- The hypothermic heart may be unresponsive to cardiovascular medications, external cardiac pacing, or defibrillation.

Musculoskeletal Trauma – Extremity / Hemorrhage – 10.100

Treat per Universal Patient Care

For external bleeding, control with direct pressure/pressure dressing. If not effective or impractical, apply tourniquet. For wounds not amenable to tourniquet, apply topical hemostatic agent with direct pressure or use XSTAT device for junctional wounds to the groin or axilla.

FRACTURES/SPRAINS/DISLOCATIONS

- Check for pulses, movement, and sensation (PMS), distal to the injury site before and after immobilization.
- Splint fractures/dislocations in the position found. If PMS is compromised distal to fracture, consider applying axial traction to bring extremity into normal anatomical position. If patient complains of increase in pain or resistance is felt, stop, and immobilize. If PMS is compromised distal to dislocation, contact OLMC.
- If fracture/dislocation is open, place a moist sterile dressing over wound and cover with a dry dressing.
- Elevate and/or place cold packs over fracture site if time/injuries allow.
- Apply traction splint to femur shaft fractures.
- For suspected pelvic fractures, utilize pelvic sling and secure to backboard to minimize blood loss.
- Treat per Pain Management protocol.

AMPUTATIONS

- Cover stump or partial amputation with moist sterile dressing.
- Splint partial amputations in anatomical position to avoid torsion and angulation.
- Wrap amputated part in a sterile dressing, and place in a plastic bag to keep dry. Place bag in ice water if available.
- If transport time is prolonged (extended extrication, etc.) consider sending the amputated part ahead to be prepared for reimplantation.
- Treat per Pain Management protocol.

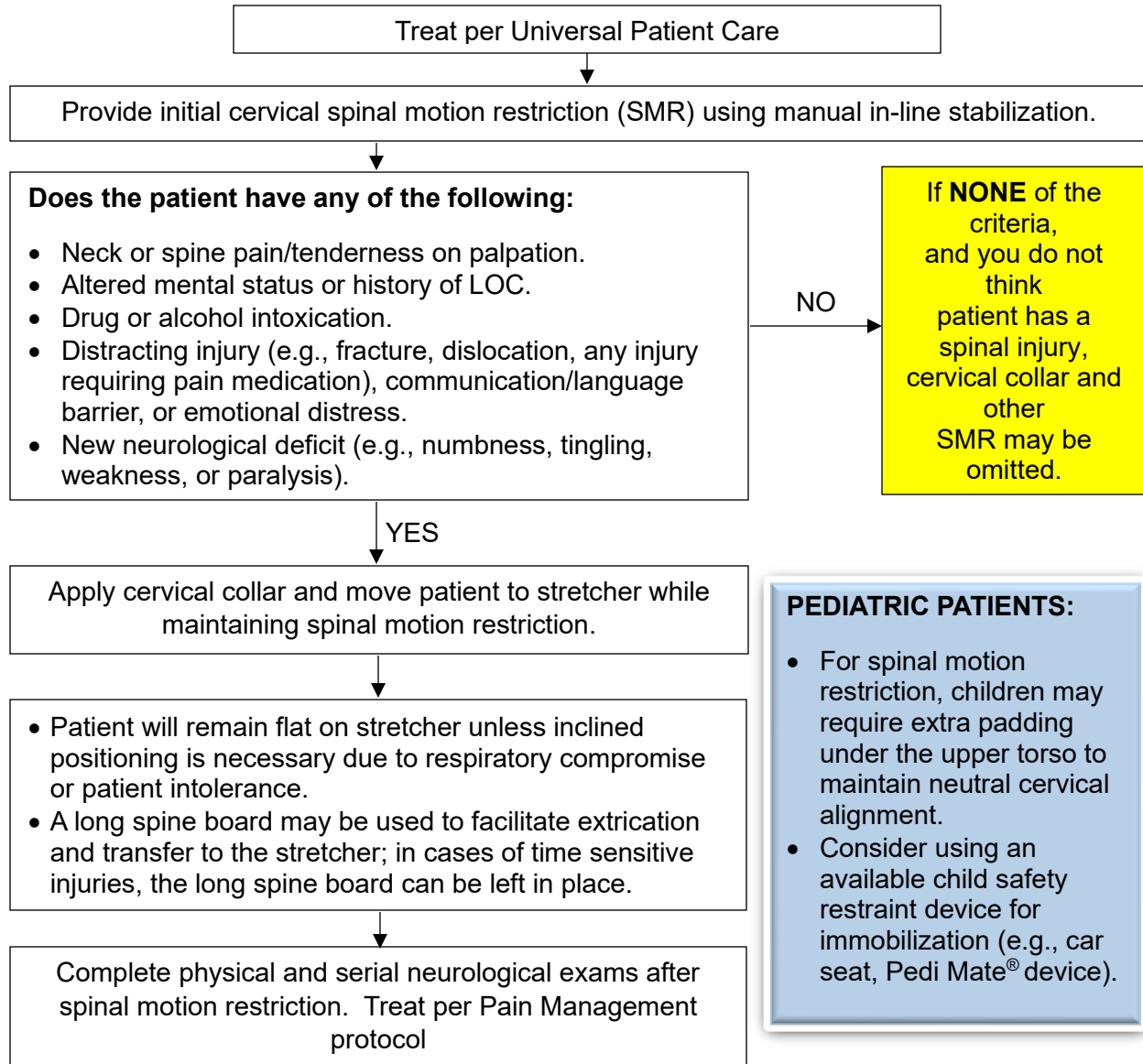
PEDIATRIC PATIENTS:

- Treat pain per Pain Management protocol.
- Consider non-accidental trauma.

NOTES & PRECAUTIONS:

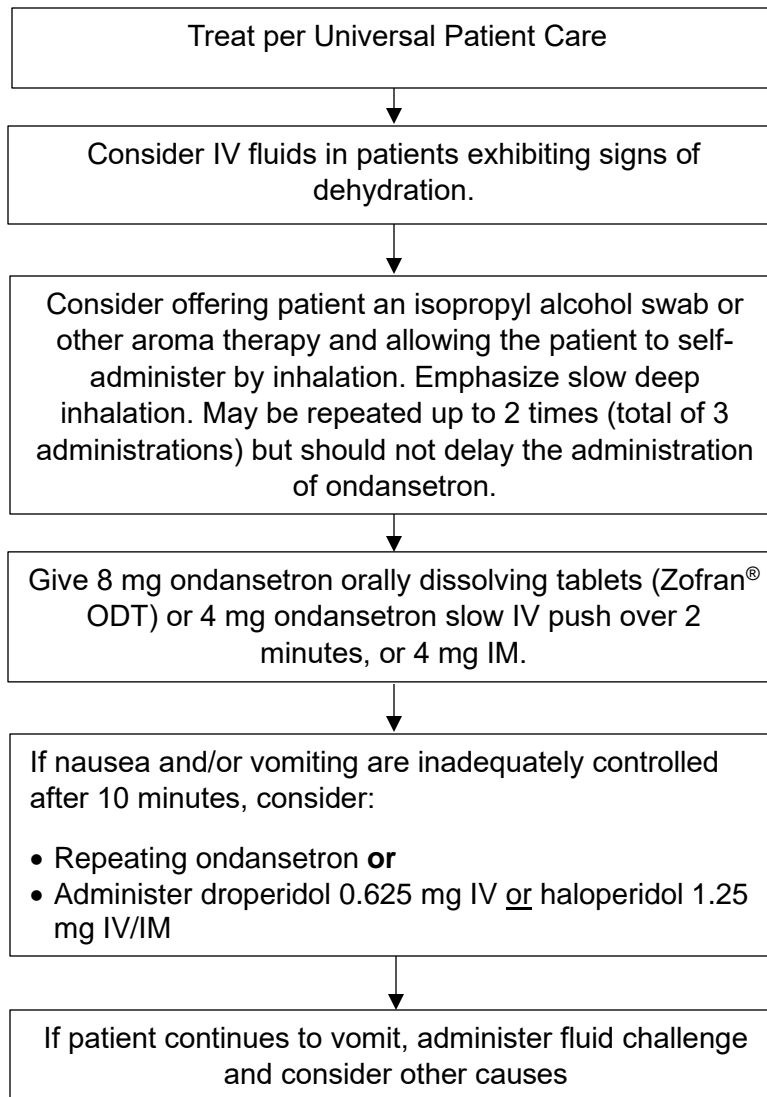
- Use of tourniquet for extremity hemorrhage is strongly recommended if sustained direct pressure is ineffective or impractical; use a commercially produced, windlass, pneumatic, or ratcheting device, which has been demonstrated to occlude arterial flow and avoid narrow, elastic, or bungee-type devices. Utilize improvised tourniquets only if no commercial device is available. If an improvised tourniquet is present before medical provider arrival, place a commercial tourniquet per protocol and remove the improvised tourniquet if operationally feasible. Time tourniquet was placed must be recorded.
- Apply a topical hemostatic agent, in combination with direct pressure, for wounds in anatomical areas where tourniquets cannot be applied, and sustained pressure alone is ineffective or impractical. Only apply topical hemostatic agents in a gauze format that supports wound packing.
- XSTAT is for the control of severe, life-threatening bleeding from junctional wounds in the groin or axilla that are not amenable to tourniquet applications in adults and adolescents. It should only be used for patients at high risk for immediate life-threatening bleeding from hemodynamically significant, non-compressible junctional wounds.

Musculoskeletal Trauma - Spinal Injury – 10.100



NOTES & PRECAUTIONS:

- Decreasing the use of long spine boards does not imply eliminating the use of spinal motion restriction. Long spine boards can be an effective tool in selected circumstances.
- Have a very low threshold for placing patients over 65 years of age in spinal precautions, even with a minor mechanism of injury.
- If any spinal motion restriction techniques cause an increase in pain or neurological deficits, nausea, or respiratory distress, immobilize and transport the patient in the position found or position of greatest comfort.
- There is no role for spinal motion restriction in penetrating trauma.
- Patients in the third trimester of pregnancy should be positioned/tilted toward the left side to prevent compression of the vena cava during transport.
- If feasible, especially in prolonged scene transports, pad backboards.
- If sports injury, follow Sports Equipment Removal protocol.

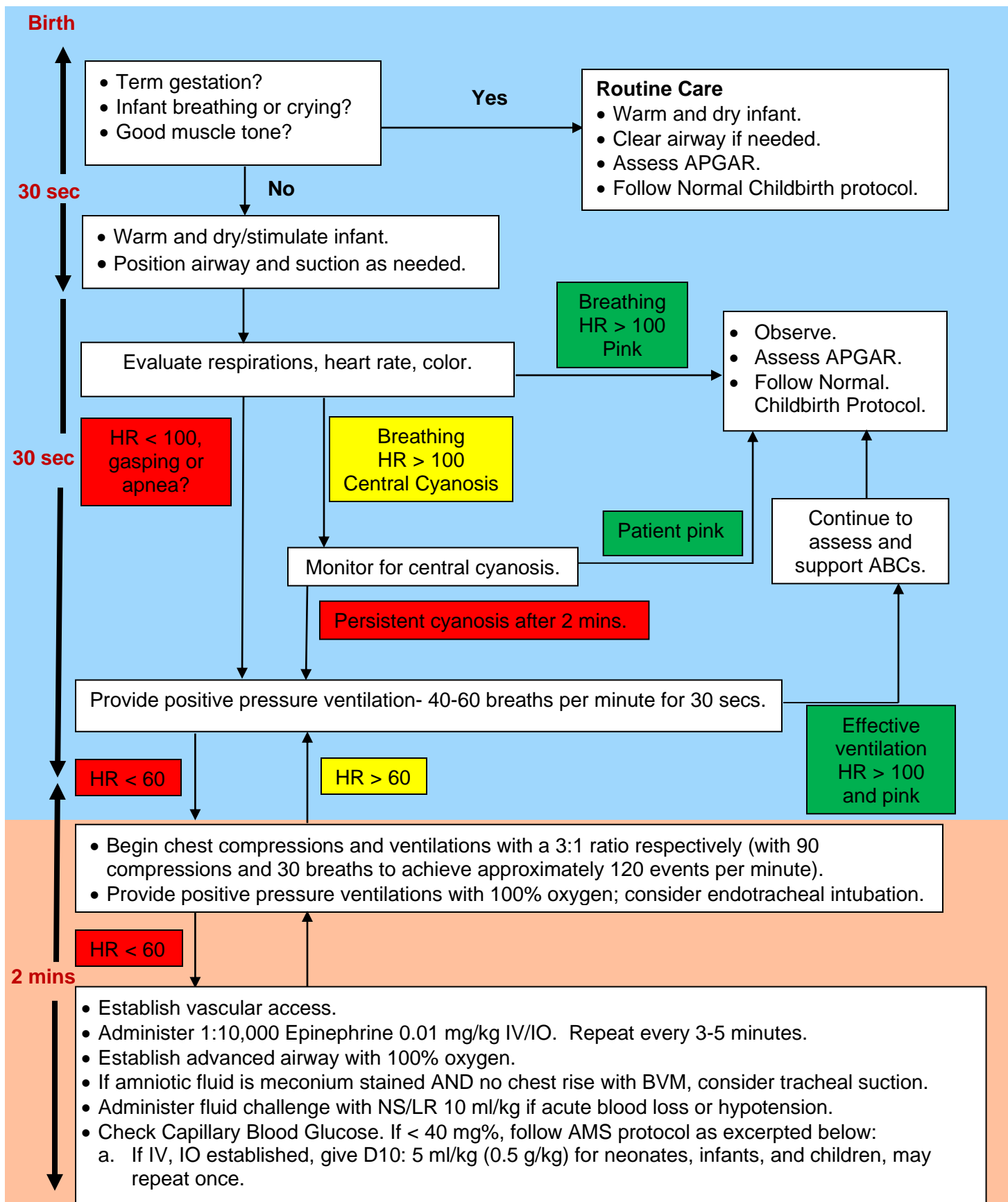


PEDIATRIC PATIENTS:

- Ondansetron use in patients under 6 months of age requires OLMC consultation except for children in spinal immobilization or children receiving chemotherapy.
- For children 6 months - 2 years of age, administer 2 mg ondansetron orally dissolving tablet (Zofran® ODT). For children 2 - 12 years of age, administer 4 mg ondansetron orally dissolving tablet (Zofran® ODT) or administer ondansetron 0.1mg/kg via slow IV push over 2 minutes up to a total maximum single IV dose of 4mg. Consider IM at same dose if unable to start IV and ODT tablet is contraindicated.

NOTES & PRECAUTIONS:

- Do not administer ondansetron (Zofran®) to patients with a hypersensitivity to the drug or other 5-HT₃ type serotonin receptor agonists (e.g., dolasetron, palonosetron, and granisetron.)
- Do not administer alkaline medications or preparations in the same IV as ondansetron as it may cause precipitation.



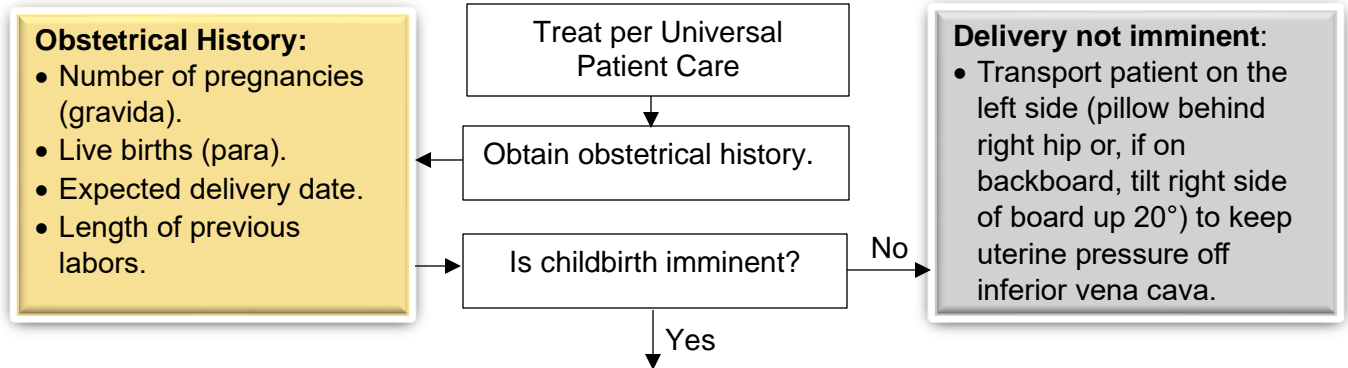
POST RESUCITATION CARE:

- Continue to provide assisted ventilations as needed.
- Closely monitor respiratory effort, heart rate, blood glucose, and pulse oximetry.
- **Keep newborn normothermic.** Hypothermia significantly increases risk of morbidity.
- Babies who required prolonged PPV, intubation and/or chest compressions are likely to have been severely stressed and are at risk for multi-organ dysfunction that may not be immediately apparent.

NOTES & PRECAUTIONS:

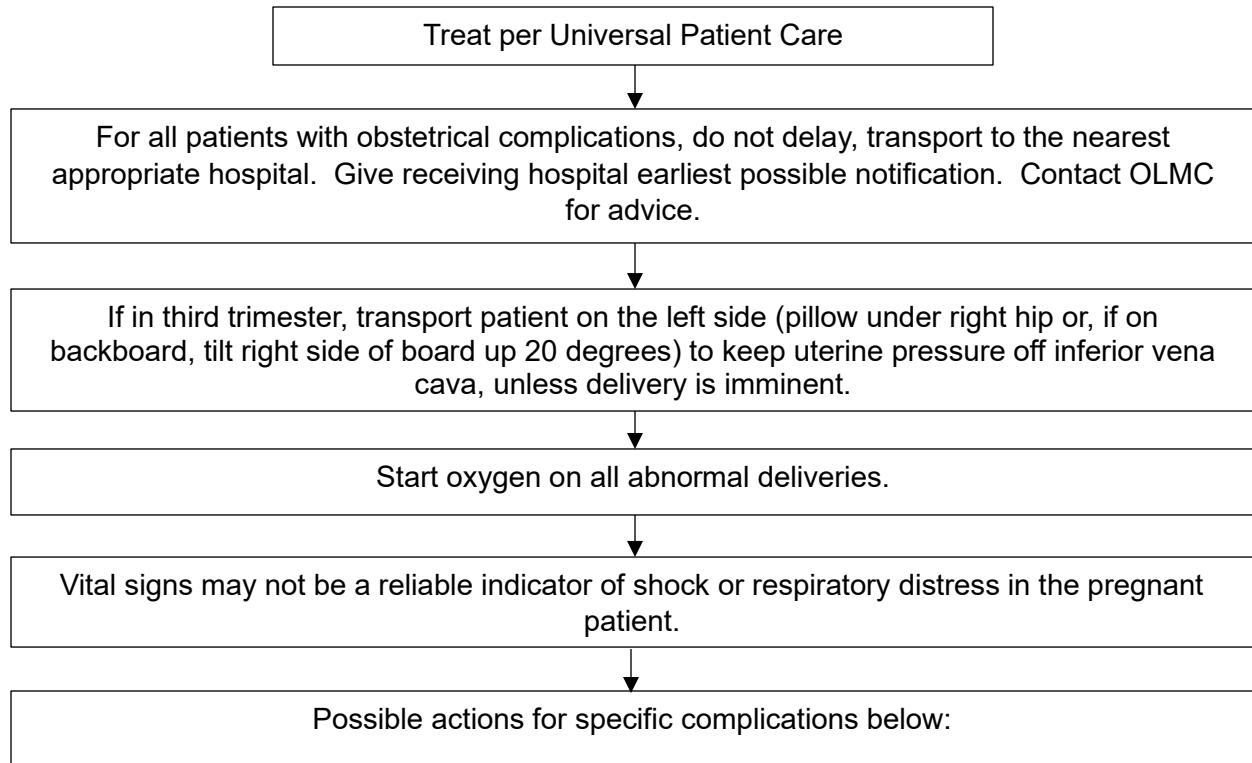
- Tracheal suctioning **is not** indicated in the vigorous infant born with meconium-stained fluid, whatever the consistency. Simply use a bulb syringe or large bore catheter to clear secretions from the mouth and nose as needed. However, if the newborn is having respiratory distress, then meconium aspiration should be performed per suctioning protocol.
- Volume expanders should not be given during resuscitation in the absence of a history or indirect evidence of acute blood loss. Giving a large volume load to a baby whose myocardial function is already compromised by hypoxia can decrease cardiac output. If fluid resuscitation is needed, administer 10 ml/kg NS over 5 - 10 minutes. Contact OLMC for repeat dosing.
- An electronic cardiac monitor is the preferred method for assessing heart rate.
- The ratio of compressions to ventilations should be 3:1, with 90 compressions and 30 breaths to achieve approximately 120 events per minute.
- Pulse oximeter should be applied to the right hand preferentially.
- 100% oxygen should not be used to initiate resuscitation. Begin resuscitation with room air and add supplemental oxygen if infant remains cyanotic or oxygen saturation < 70% after 2 minutes.
- Expected oxygen saturation of full-term newborn:

1 min	60% - 65%
2 min	65% - 70%
3 min	70% - 75%
4 min	75% - 80%
5 min	80% - 85%
10 min	85% - 95%



- Normal Childbirth Procedure:**
- Ask if the patient has had prenatal ultrasound and the possibility of multiple births. If multiple, or abnormal birth, consider second transport unit.
 - Use sterile or clean technique.
 - Guide/control but do not retard or hurry delivery.
 - Check for cord around neck and gently remove if found.
 - After delivery, assess infant per Neonatal Resuscitation protocol. If no resuscitation is needed (term infant, breathing or crying, good muscle tone), proceed as below.
 - ✓ Administer 10 IU oxytocin IV/IM within one minute of delivery when feasible if the neonate is a singleton. For multiple births, administer oxytocin only after last neonate has delivered.
 - ✓ Do not suction infant's nose and mouth unless there is meconium present, **and** the infant is depressed; or there is a need to clear the airway.
 - Briefly dry infant and place on mother's chest, in skin-to-skin contact. Cover both with a clean, dry blanket.
 - Assess infant using APGAR at time of birth and five minutes later. (Documentation should describe the infant using criteria rather than giving a numerical score).
 - At 30 - 60 seconds after delivery, clamp and cut the umbilical cord about 6 inches from infant after cord pulsations have ceased. If resuscitation is needed, cord may be clamped and cut as soon as necessary.
 - Do not delay transport to deliver the placenta. After the placenta has delivered, gently externally massage uterus to encourage contractions and prevent bleeding.
 - If mother has significant postpartum hemorrhage (> 500 ml), administer tranexamic acid 2 g slow IV push.
 - Unless infant needs treatment, keep on mother's chest for transport.
 - Monitor vital signs of mother and infant during transport.

APGAR SCORE	0	1	2
Appearance	Blue/Pale	Body pink, extremities blue	Completely pink
Pulse	Absent	Slow (<100 bpm)	> 100 bpm
Grimace	No response	Grimace	Cough or sneeze
Activity	Limp	Some flexion	Active motion
Respirations	Absent	Slow, irregular	Good, crying



Pre-eclampsia and Eclampsia

- Acute onset severe hypertension in pregnant and postpartum women.
 - ✓ Includes all pregnant women and up to 6 weeks postpartum with symptoms.
 - ✓ Symptoms include headache, visual disturbances, chest discomfort, shortness of breath, confusion, or abdominal pain.
 - ✓ Notify receiving hospital of patients with a sustained elevation in BP ≥ 140 mmHg systolic and/or ≥ 100 mmHg diastolic that are present for at least 15 minutes or more.
 - ✓ Initiate treatment with labetalol (if available and feasible) if sustained elevation in BP ≥ 160 mmHg systolic and/or ≥ 110 mmHg diastolic (either one or both) persists for at least 15 minutes or more.
 - Administer Labetalol 10 mg slow IV push over 1 - 2 minutes.
 - Target systolic BP 140 - 150 mmHg and diastolic BP 90 - 100 mmHg.
 - Labetalol may be repeated twice (up to 3 total doses) every 15 minutes doubling doses if needed depending on effect of preceding dose; (e.g., 1st dose – 10 mg, 2nd dose – 20 mg, 3rd dose – 40 mg). Maximum dose is 70 mg.
 - Stop administration if HR < 60 bpm or other adverse effects.
- Eclampsia is defined as the development of seizures in a patient with pre-eclampsia. Follow seizure protocol and contact OLMC for orders to administer magnesium sulfate.

Breech Delivery (buttocks first):

- If delivery is imminent, prepare the mother as usual and allow the buttocks and trunk to deliver spontaneously then support the body while the head is delivered.
- If the head does not deliver within three minutes, suffocation can occur.
 - ✓ Place a gloved hand into the vagina, with your palm toward the baby's face.
 - ✓ Form a "V" with your fingers on either side of the baby's nose and push the vaginal wall away from the baby's face to create airspace for breathing.
 - ✓ Assess for the presence of pulse in umbilical cord if able.

Limb Presentation

- The presentation of an arm or leg through the vagina is an indication for immediate transport to the hospital.
- Assess for presence of pulse in umbilical cord if presenting.

Prolapsed Cord

- Place the mother in left lateral Trendelenburg position.
- If the cord is visible, gently displace presenting part of baby off cord and maintain displacement. DO NOT pull or over-handle cord to prevent cord compression and spasm.

Abruptio Placenta

- Occurs in the third trimester of pregnancy when the placenta prematurely separates from the uterine wall leading to intrauterine bleeding.
- The patient experiences lower abdominal pain and the uterus often becomes rigid.
- Shock may develop without significant vaginal bleeding (concealed abruptio).

Placenta Previa

- Occurs when the placenta covers the cervical opening, which can result in vaginal bleeding and prevents delivery of the infant through the vagina. The infant needs to be delivered via caesarian section.

Treat per Universal Patient Care

- Consider and treat underlying causes of pain.
- Use non-pharmacological pain management (i.e., position of comfort, hot/cold pack, elevation, splinting, padding, wound care, and therapeutic calming and communication).

Determine location of pain and severity using numeric scale (1 - 10) or faces scale.

For mild pain, consider:

- **Acetaminophen** 325 - 1000 mg PO, or
- **Ibuprofen** 200 - 600 mg PO

Controlled medications (opioids and ketamine) are to be avoided in the following patients: Active labor, headache, non-traumatic neck or back pain, any chronic pain (head, neck, back, fibromyalgia, abdominal/pelvic pain), or dental pain. Contact OLMC

- Monitor SpO₂ and EtCO₂.
- Document vital signs, response to treatment and pain scale rating prior to and after each administration of pain medication.

Opioids and dissociative medications (ketamine) can be used in the same patient to achieve pain relieve if necessary.

For moderate to severe pain, consider:

Non-Opioid medications

- **Acetaminophen:** 1000 mg IV slow push over 5 minutes or over 10 - 20 mins if given by IV infusion.
- **Ketorolac (patients aged 2 - 80):** 30 mg IM or 15 mg IV. Do not repeat. Use for musculoskeletal pain or flank pain with suspected kidney stones.

Opioid medications

- **Fentanyl:** 50 - 100 mcg IV/IN/IM. May repeat with 25 - 50 mcg for IV/IN and 50 - 100 mcg for IM q 10 - 15 mins to max of 500 mcg. If BP < 100 mmHg or minor AMS or resp. depression, the first dose is 25 mcg all routes, repeating with 25 - 50 mcg q 10 - 15 mins, to max of 500 mcg. Monitor patient closely.
- **Hydromorphone:** 0.25 - 0.5 mg IV or 0.5 - 1.0 mg IM q 15 - 20 mins., to max of 2 mg. Do not administer if systolic BP < 100 mmHg.
- **Morphine:** 2 - 8 mg IV q 15 - 20 mins, to max of 20 mg. Or, 5 - 10 mg IM, repeating with 5 mg q 15 - 20 mins, to a max of 20 mg. Do not administer if systolic BP < 100 mmHg.

Dissociative medications

- **Ketamine:** 12.5 - 25 mg IV/IO slowly over 5 mins, or by IV infusion over 15 mins., or 25 - 50 mg IM. May repeat once in 30 mins., unless patient develops nystagmus, hallucinations, or other psychiatric symptoms. Must be diluted prior to IV or IO administration to a min. of 10 ml for slow IV push or 100 ml for IV infusion. Alternatively, 1 mg/kg **VIA BREATH ACTUATED NEBULIZER (BAN)** MAY be used. Add saline for total volume of 5 ml.

PEDIATRIC PATIENTS:

- **Acetaminophen:** 15 mg/kg PO liquid only to a maximum of 1000 mg.
- **Ibuprofen:** 10 mg/kg PO liquid only to a maximum of 600 mg.
- **Ketorolac (age 2 - 16 years):** 1 mg/kg IM to a max of 30 mg or 0.5 mg/kg IV to a max of 15 mg. Do not repeat.
- **Fentanyl** (not to exceed adult dose):
 - ✓ 1 mcg/kg IV. May repeat with 0.5 - 1 mcg/kg every 10 - 15 minutes as needed to a maximum of 4 mcg/kg IV.
 - ✓ 2 mcg/kg IN. May repeat with 1 mcg/kg every 10 - 15 minutes as needed to a maximum of 4 mcg/kg IN.
 - ✓ If no IV/IN, may give fentanyl 1 - 2 mcg/kg IM. May repeat every 10 - 15 minutes to a max of 4 mcg/kg IM.
 - ✓ IN is preferred if no IV.
- **Hydromorphone:** For patients ≥ 12 months: 0.01 mg/kg IV/IM not to exceed the adult dose. May repeat every 15 - 20 minutes to a maximum of 2 mg. **Hydromorphone is not preferred in young infants and toddlers if fentanyl or morphine is available.**
- **Morphine:** 0.1 mg/kg IV or IM. (IM may repeat after 15 - 20 minutes). Do not exceed adult dosing.
- **Ketamine:** For children ≥ 15, dose is 0.3 mg/kg IV slow push over 5 minutes, up to a max of 25 mg. Dose must be diluted in normal saline prior to administration. Alternatively, for children ≥ 7, 1 mg/kg **VIA BREATH ACTUATED NEBULIZER (BAN)** MAY be used. Add saline for total volume of 5 ml.
- Do not administer fentanyl or morphine if patient's systolic blood pressure is lower than what is normal for child's age.

Lowest normal pediatric systolic blood pressure by age:

- Less than one month: > 60 mmHg.
- One month to 1 year: > 70 mmHg.
- Greater than 1 year: 70 + 2 x age in years

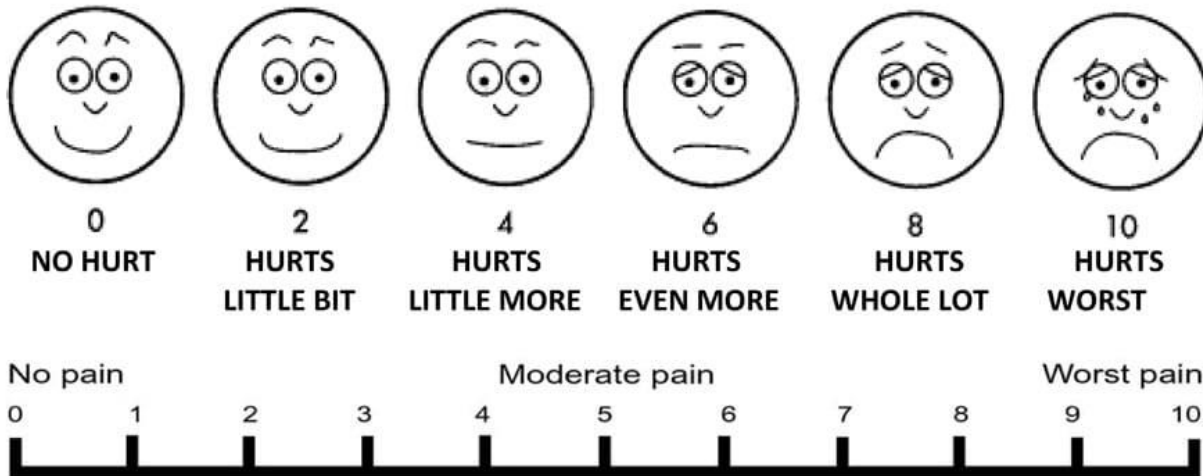
NOTES AND PRECAUTIONS:

- Acetaminophen potentiates the analgesic effect of opioids, and they can be given together.
- Benzodiazepines do not have an analgesic effect. Their anxiolytic effects may potentiate the analgesic effect of opioids but also increase the likelihood of respiratory depression. OLMC consult is required for use of midazolam or lorazepam along with opioids for pain management.
- Do not give oral medication to patients with abdominal pain or open or obviously angulated fractures.
- Ketorolac should not be used in patients less than 2 or over 80.
- Do not administer ketamine to patients who are pregnant or have non-traumatic chest pain.
- Ketamine should not be given to patients with schizophrenia or history of psychosis due to the potential for exacerbating the mental health condition.

Pediatric Pain Scales:

FLACC Score			
CATEGORY	0 POINTS	1 POINT	2 POINTS
Face	Disinterested	Occasional grimace, withdrawn	Frequent frown, clenched jaw
Legs	No position or relaxed	Uneasy, restless, tense	Kicking or legs drawn up
Activity	Normal position	Squirming, tense	Arched, rigid, or jerking
Cry	No crying	Moans or whimpers	Constant crying, screams or sobs
Consolability	Content, relaxed	Distractible	Inconsolable

SCORES ADD UP IN RANGE FROM 0-10



Poisoning & Overdose – 10.140

Treat per Universal Patient Care

If systolic BP < 90 mmHg, follow Shock Protocol. Goal is to maintain a mean arterial pressure (MAP) \geq 65 mmHg.

If unknown poison or overdose and the patient has a decreased LOC, treat per Altered Mental Status protocol. Manage airway per the Airway Management protocol. Contact OLMC and/or Poison Center (**1-800-222-1222**) for advice.

Treat specific **symptomatic** poisoning/overdose patient as outlined below. Strongly consider Haz-Mat Team activation when appropriate.

OVERDOSE/POISONING	TREATMENT
Aspirin and/or Acetaminophen	<ul style="list-style-type: none"> Activated Charcoal 1 g/kg if < 2 hours since ingestion. Max dose 50 g. If ingestion involves other substances, contact OLMC. Avoid intubation for ASA ODs unless necessary. If intubation becomes necessary, the ventilation goal is to maintain pre-intubation EtCO₂ levels.
Beta Blockers	Treat bradycardia/hypotension with push dose epinephrine as bridge until an epinephrine drip at 2 - 10 mcg/min can be started. Titrate to effect.
Calcium Channel Blocker	Calcium gluconate, 1 - 3 g slow IV/IO over 5 - 10 minutes.
Carbon Monoxide	<ul style="list-style-type: none"> Place all suspected CO poisoning patients on CPAP/BiPAP with high flow O₂. Recommend NRB with nasal cannula if contraindications to or if patient does not tolerate CPAP/BiPAP. Measure CO level with SpCO monitor when possible. All symptomatic patients (e.g., headache, dizziness, nausea) or patients with an SpCO monitor reading \geq 15% should be transported. Transport patients with severe symptoms (e.g., cardiac ischemia, coma, syncope, seizures, loss of consciousness) to a hyperbaric facility if available, or nearest facility if unavailable. Treat symptoms per appropriate protocol (e.g., 12-lead ECG for suspected cardiac ischemia.) If cyanide poisoning is also suspected, consider obtaining SpCO, if possible, before administration of CYANOKIT[®] since the latter will interfere with the carboxyhemoglobin monitor. SpCO levels may be elevated in smokers. Levels can range from 3 - 10% depending on the number of packs smoked. Pulse oximeter may provide a false reading in patients with elevated SpCO levels.

Chlorine Inhalation	Treat symptomatic patients with: <ul style="list-style-type: none"> • Albuterol- 2.5 mg nebulized. • Dexamethasone- 10 mg IV/IO/IM/PO. • Sodium bicarbonate 8.4%- 2.5 ml via nebulizer.
Cyanide	Hydroxocobalamin (CYANOKIT®) 5 g IV/IO over 15 minutes. Repeat once if needed. For cardiac arrest, hydroxocobalamin should be administered as a rapid bolus.
Hydrofluoric Acid	Dermal: Calcium gluconate 3 g mixed with 5 oz water soluble lubricant and applied to burn.
Organophosphate	<ul style="list-style-type: none"> • Prepare to handle copious secretions. • In mild to moderate poisonings (e.g., headache, mild bronchorrhea, nausea, vomiting, diarrhea but normal mentation), administer atropine 1 - 2 mg IV/IO/IM every 3 - 5 minutes until symptoms improve. • For severe poisoning (e.g., altered mental status, unconsciousness, seizures), administer atropine 3 - 5 mg IV/IO/IM every 3 - 5 minutes until symptoms begin to improve. • Treat seizures per seizure protocol. • See Haz-Mat Protocol for more specifics of treatment. • For large organophosphate poisonings, refer to HazMat protocol.
Sodium Channel Blocker (TCA, diphenhydramine, Type 1a and 1c antiarrhythmics)	<ul style="list-style-type: none"> • If patient exhibits arrhythmias or a widening QRS complex, administer sodium bicarbonate 1 mEq/kg IV/IO. • Treat hypotension per Shock protocol.
Do not neutralize acids or alkalis.	
If the patient exhibits extrapyramidal symptoms/Dystonia with a history of phenothiazine use, consider diphenhydramine.	

PEDIATRIC PATIENTS:

- Consider possibility of neglect or abuse.
- For organophosphate poisoning, atropine dose is 0.05 mg/kg IV/IO. Contact OLMC for frequency of dosing.
- Activated charcoal dose is 1 g/kg, max of 50 g.
- For children < 1-year, dilute sodium bicarbonate by one-half with normal saline prior to administration.
- Hydroxocobalamin for cyanide poisoning- 70 mg/kg IV/IO to a max of 5 g over 15 minutes. For cardiac arrest, hydroxocobalamin should be administered as a rapid bolus. Contact OLMC for advice regarding second dose.

TOXIDROME TABLE

Toxidrome	Examples	Clinical Features	Antidotes/Treatment
Sympathomimetic	Cocaine Methamphetamine Ecstasy/MDMA	Agitation Diaphoresis HTN Hyperthermia Dilated pupils Tachycardia	Midazolam or lorazepam (OLMC)
Opioid	Heroin/Fentanyl Hydromorphone Methadone Oxycodone	Depressed mental status Hypoventilation Constricted pupils	Naloxone
Cholinergic (Anti-cholinesterase)	Pesticides • Carbamates • Organophosphates Nerve agents	Muscarinic* Nicotinic** Central***	Atropine Pralidoxime (2-Pam) Midazolam (Hazmat, OLMC)
Sedative-Hypnotic	Barbiturates Benzodiazepines GHB	Depressed mental status Hypotension Hypothermia	Supportive care
Cardiotoxic drugs	Beta-blockers Calcium channel blockers	Bradycardia Conduction issues Hypotension	Epinephrine Calcium (OLMC)
Anticholinergic	Atropine Jimson Weed Scopolamine Diphenhydramine	Delirium Hyperthermia Tachycardia Warm, dry skin	Supportive treatment Physostigmine (ED)
Sodium channel blockade	Tricyclic antidepressants Antiarrhythmics • Type 1A – quinidine, procainamide • Type 1C – flecainide, propafenone	Altered mental status Hypotension Seizures Wide complex tachycardia	Sodium Bicarbonate (OLMC)
Methemoglobinemia (nitrate/nitrite poisoning)	Contaminated well water (nitrates) Inhalation injuries Topical anesthetics (benzocaine, lidocaine) Amyl Nitrites (poppers)	Cyanosis SpO ₂ 75-85% despite supp. O ₂ Headache Weakness Seizures/Coma Dysrhythmias Chocolate brown blood	Supportive Care O ₂ administration Methylene blue (ED)

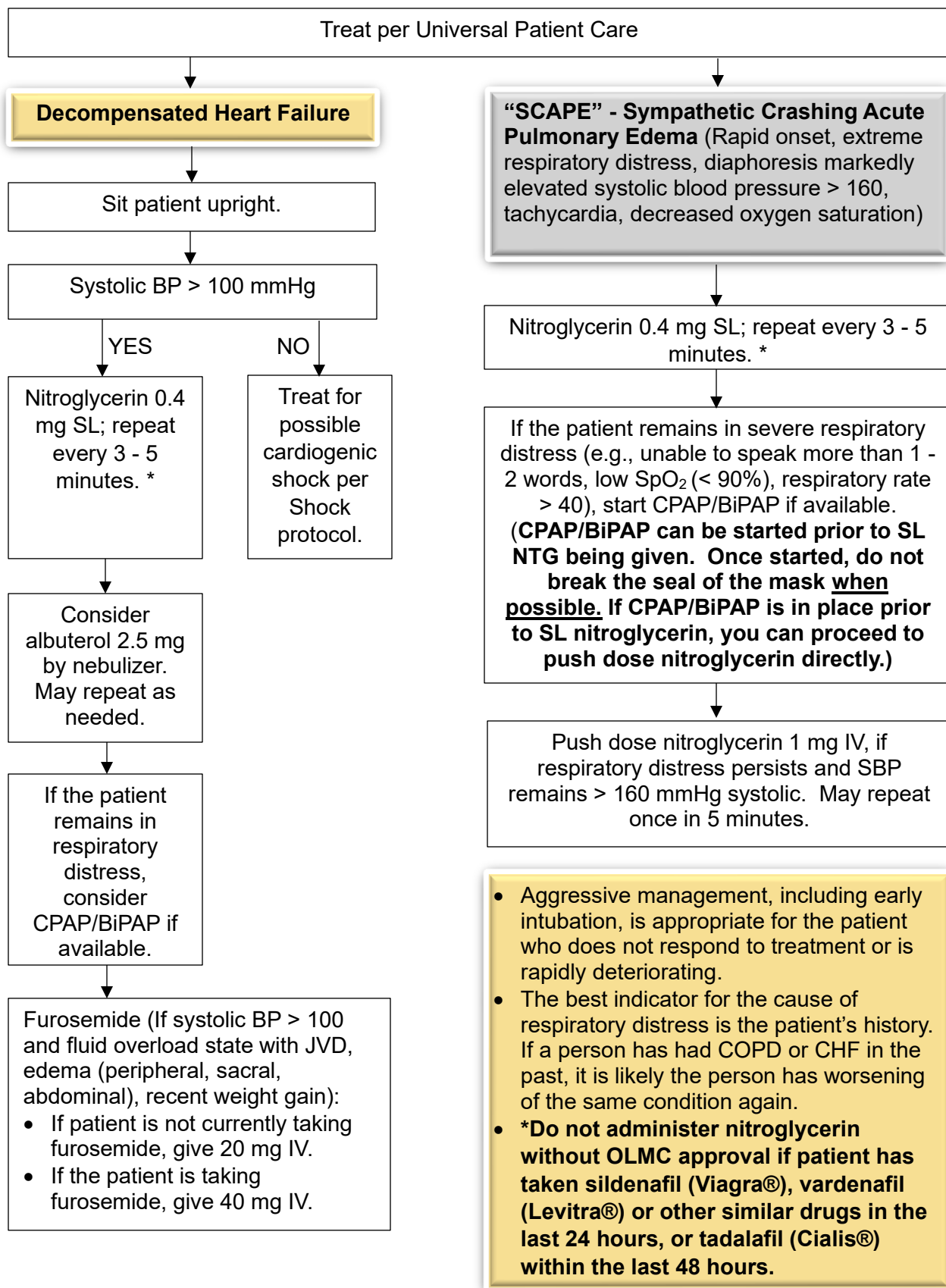
***Muscarinic:** Diarrhea, urination, miosis, bradycardia, bronchospasm, bronchorrhea, emesis, lacrimation salivation, sweating.

****Nicotinic:** Mydriasis, tachycardia, weakness, hypertension, hyperglycemia, fasciculations.

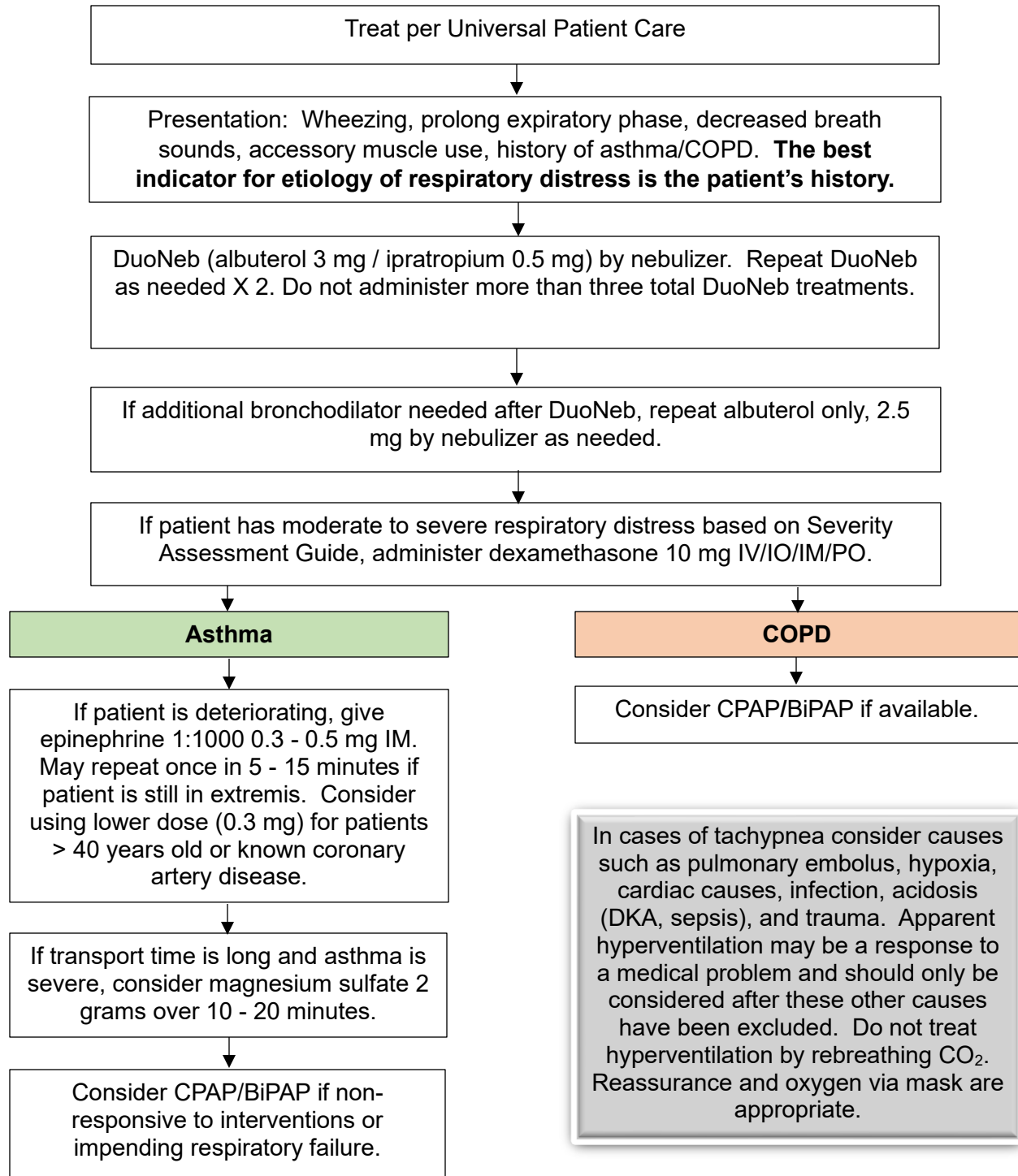
*****Central:** Confusion, convulsions, coma.

CO Clinical Presentation Transport Matrix				
Carbon Monoxide (Symptomatic or SpCO > 15%)	Yes	Yes	Yes	Yes
Burns	No	Yes	No	Yes
Trauma	No	No	Yes	Yes
Destination	Nearest facility or Hyperbaric Center if available	Burn Center	Trauma Center	Trauma Center

Respiratory Distress- CHF/Pulmonary Edema – 10.160



Respiratory Distress- COPD/Asthma – 10.160



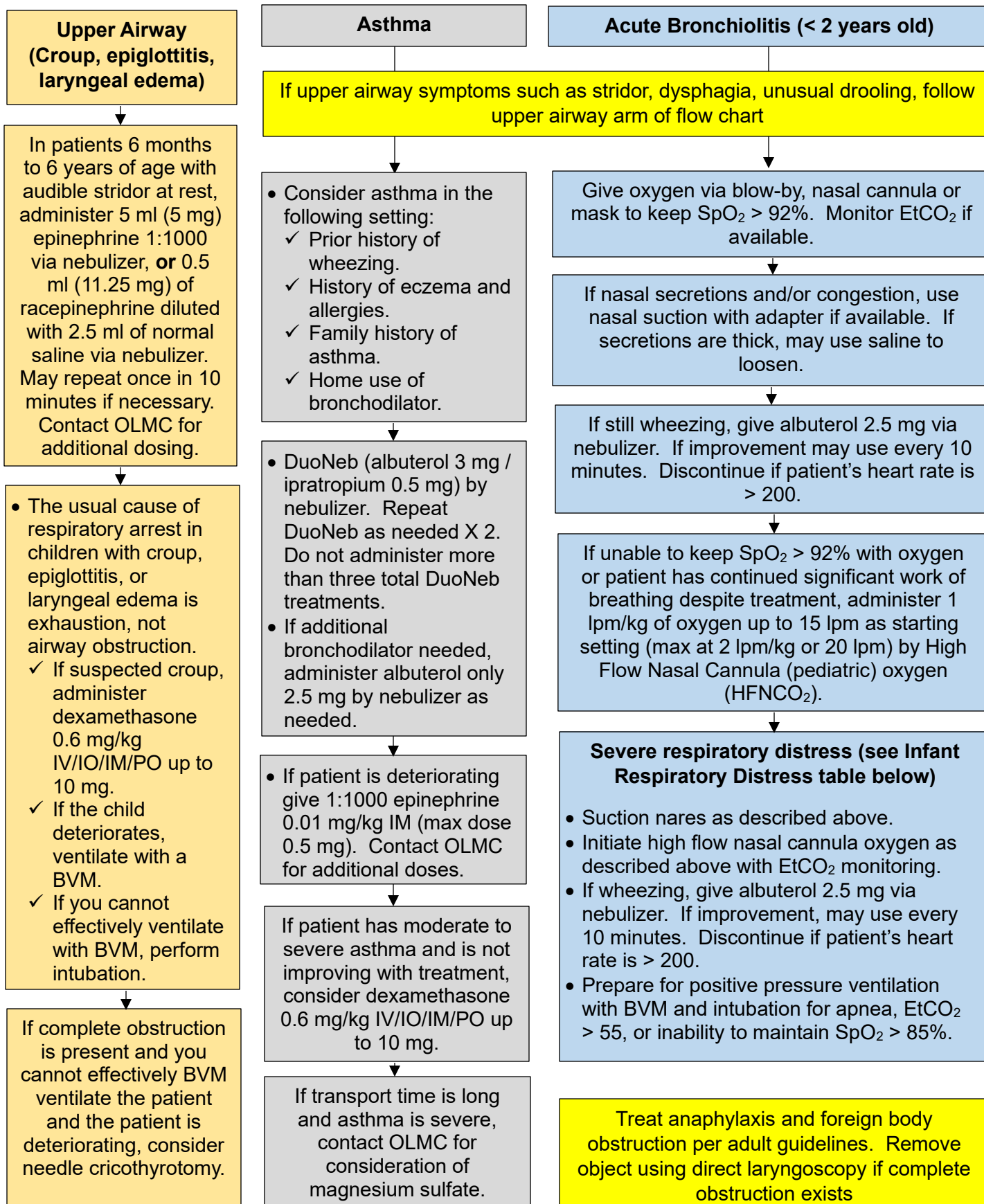
NOTES & PRECAUTIONS:

- Aggressive management, including early intubation, is appropriate for the patient who does not respond to treatment or is rapidly deteriorating.
- COPD and asthma patients receiving CPAP/BiPAP need to be monitored closely due to the higher risk of secondary pneumothorax from positive pressure ventilation.

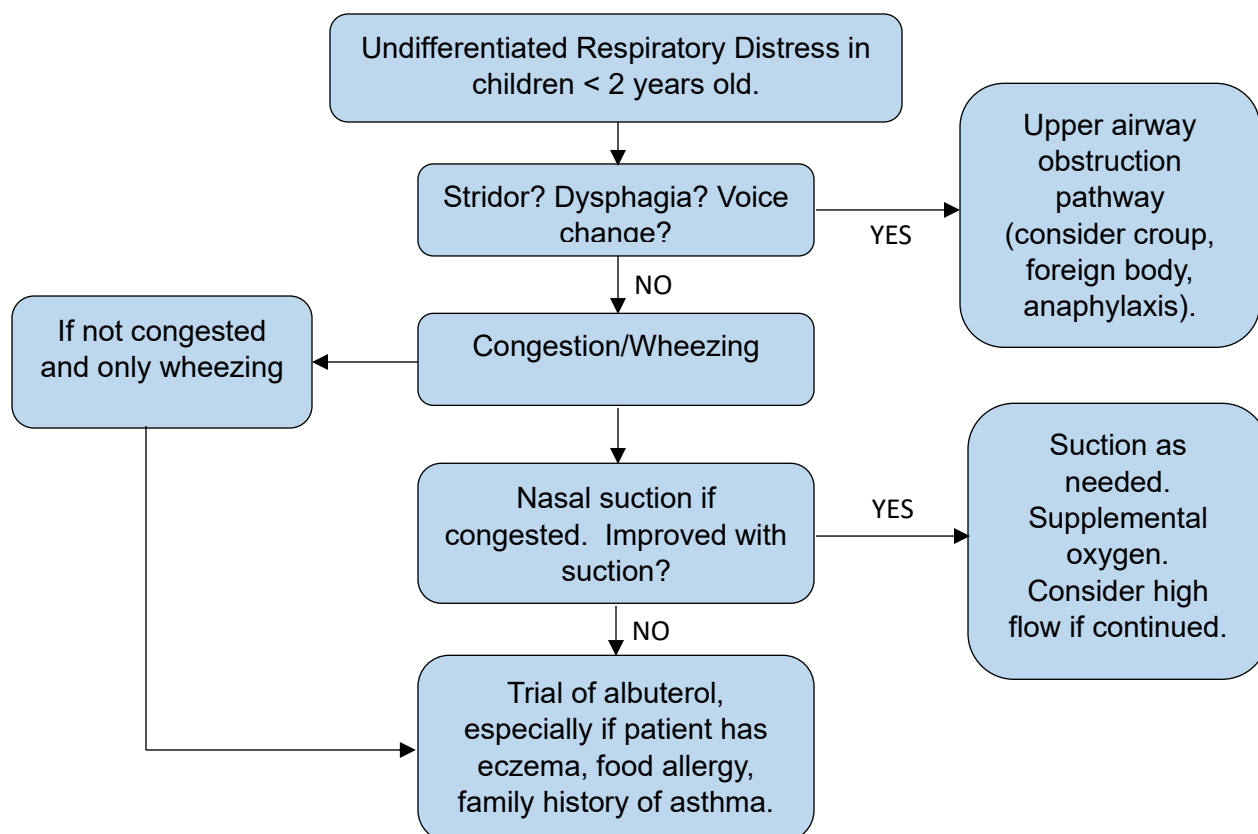
Respiratory Distress- COPD/Asthma – 10.160

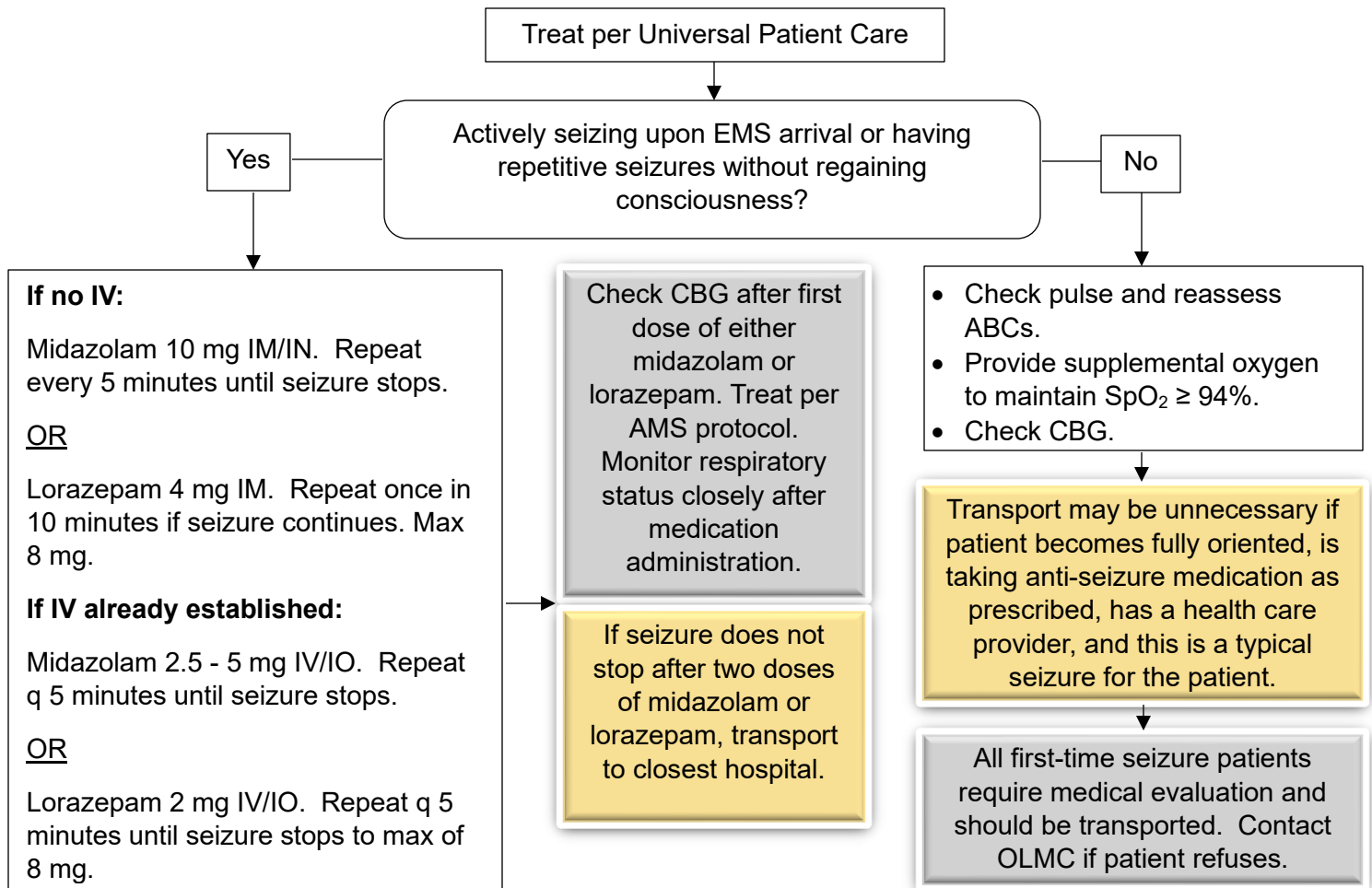
ASTHMA SEVERITY ASSESSMENT GUIDE			
	MILD	MODERATE	SEVERE
Short of breath	Walking	Talking	At rest
Able to speak	In sentences	In phrases	In words
Heart rate	< 100	100 - 120	> 120
Respiratory rate	Elevated	Elevated	> 30
Lung sounds	End expiratory wheezes	Full expiratory wheezes	Wheezes both phases or absent
Accessory muscle use	Not usually	Common	Usually
Alertness	Possibly agitated	Usually agitated	Usually agitated
EtCO₂	20 - 30	30 - 40	> 50

Respiratory Distress- Pediatrics – 10.160



INFANT RESPIRATORY DISTRESS ASSESSMENT GUIDE			
	MILD	MODERATE	SEVERE
Respiratory Rate			
≤ 2 months	≤ 60	61 - 69	≥ 70
2 - 12 months	≤50	51 - 59	≥ 60
1 - 2 years	≤ 40	41 - 44	≥ 45
Retractions	Subcostal or intercostal	2 of: subcostal, intercostal, substernal retractions, OR nasal flaring	3 of: subcostal, intercostal, substernal, suprasternal, supraclavicular retractions, OR nasal flaring, OR head bobbing
Dyspnea	1 of: difficulty feeding, decreased vocalization or agitation	2 of: difficulty feeding, decreased vocalization or agitation	Stops feeding, no vocalization OR drowsy and confused
Auscultation	End-expiratory wheeze only	Expiratory wheeze only	Inspiratory and expiratory wheezing OR diminished breath sounds OR both





PEDIATRIC PATIENTS:

- If patient is actively seizing upon EMS arrival or having repetitive seizures without regaining consciousness:
 - ✓ **0 - 11 months** (16 - 29", 0 - 8 kg) **or patient is extremely small for age:** Follow pediatric guide and administer midazolam 0.3 mg/kg IM/IN to a max of 10 mg. Repeat every 5 minutes until seizure stops.
 - ✓ **12 months - 13 years old** (use reported age; if unknown, measure patient and use corresponding length in inches to determine dose):
 - 12 - 16 months (29.5 - 31.5", 9 kg): 0.25 ml (= 1.25 mg) IM/IN
 - 17 months - 5 years (32 - 43", 10 - 19 kg): 0.5 ml (= 2.5 mg) IM/IN
 - 6 - 11 years (43.5 - 56.5", 20 - 37 kg): 1 ml (= 5 mg) IM/IN
 - 12 - 13 years (≥ 57", ≥ 38 kg): 2 ml (= 10 mg) IM/IN
- **Repeat every 5 minutes until seizure stops.**
- If an IV/IO is already available, follow pediatric guide and administer midazolam 0.1 mg/kg IV/IO to a max of 5 mg. Repeat every 5 minutes until seizure stops.
- **If midazolam unavailable**, administer lorazepam 0.2 mg/kg IM, max single dose 4 mg. Repeat q 10 mins until seizure stops to a total max of 8 mg, or 0.1 mg/kg IV/IO, max single dose 2 mg. Repeat q 5 minutes until seizure stops, max total dose 8 mg.
- If seizure does not stop after two doses of midazolam or lorazepam, transport to closest hospital. Transport to a non-pediatric hospital may be necessary to get alternative antiepileptics.
- If on arrival, the patient is not actively seizing (post-ictal), an IV is not required.
- All hypoglycemic or first-time pediatric seizure patients should be transported.
- Febrile seizures are typically found between the ages of 6 months - 6 yrs. and are usually brief.

NOTES & PRECAUTIONS:

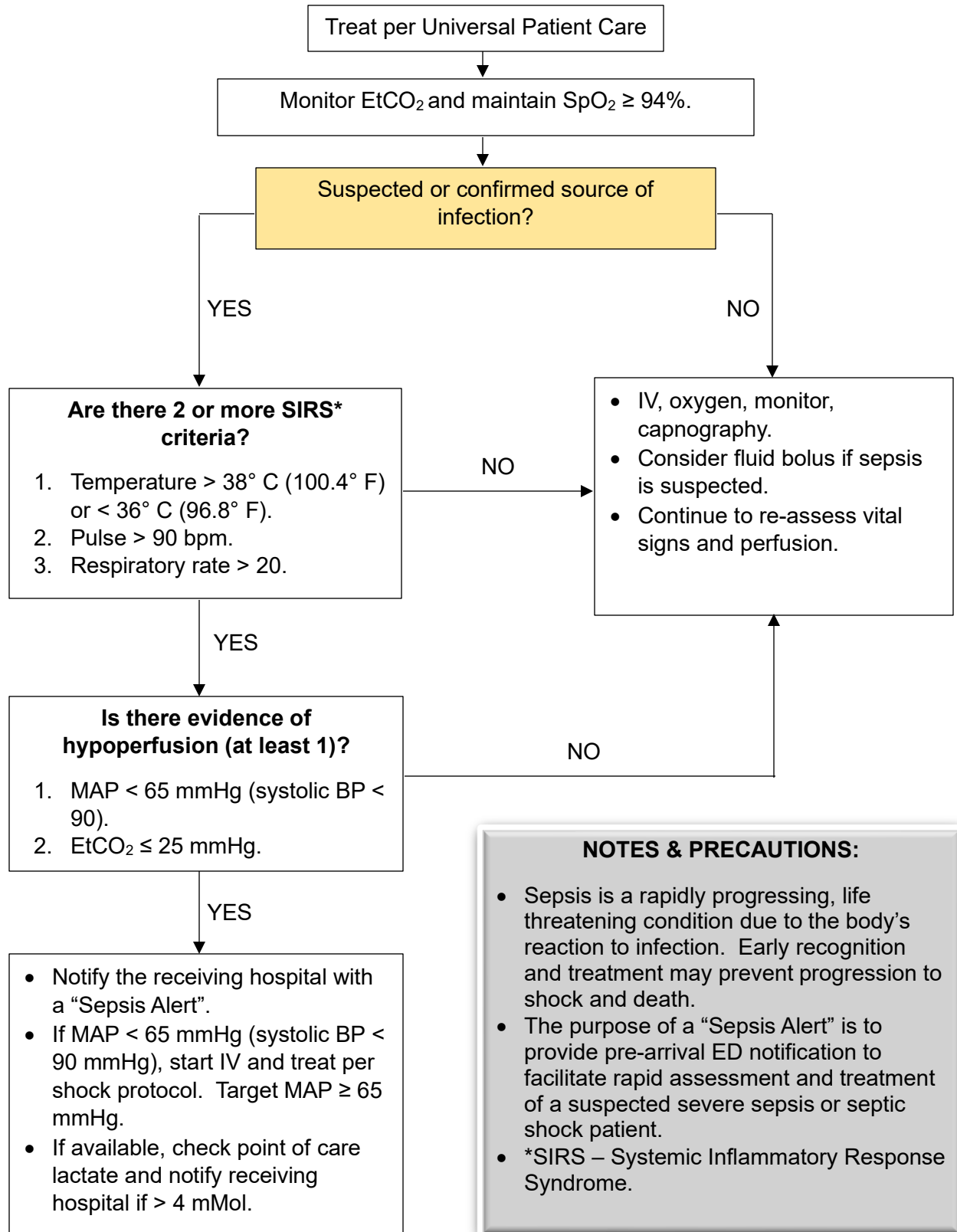
- Seizures in patients > 50 years of age can be caused by dysrhythmias. Monitor rhythm and treat per appropriate protocol. Remember to check a pulse once a seizure stops.
- The longer status seizure lasts, the more difficult it is to control. Seizures that aren't responsive to midazolam or lorazepam may require alternative antiepileptic agents in a timely manner.
- New onset of seizures in a pregnant patient, especially in the third trimester, may indicate eclampsia. Contact OLMC for consideration of magnesium sulfate. Normal dose is 4 grams IV over 15 - 20 minutes.

PediDOSE

- Enrollment criteria:
 - ✓ Age \geq 6 months to \leq 13 years **AND**
 - ✓ Had a paramedic -witnessed seizure **AND**
 - ✓ Require transport to any hospital
- Exclusion criteria:
 - ✓ A prior history of a benzodiazepine allergy; **OR**
 - ✓ Known or presumed pregnancy; **OR**
 - ✓ Severe growth restriction based on the paramedic's assessment
- If the patient's family has questions about PediDOSE please provide them with the following phone number for them to reach out to the study staff:

503-494-1777
- Following enrollment into the PediDOSE study (enrollment does not require medication to have been administered, but may include self-terminating seizures, if witnessed by a paramedic), scan the QR code below and complete the paramedic self-report:





NOTES & PRECAUTIONS:

- Sepsis is a rapidly progressing, life threatening condition due to the body's reaction to infection. Early recognition and treatment may prevent progression to shock and death.
- The purpose of a “Sepsis Alert” is to provide pre-arrival ED notification to facilitate rapid assessment and treatment of a suspected severe sepsis or septic shock patient.
- *SIRS – Systemic Inflammatory Response Syndrome.

Treat per Universal Patient Care and prepare for rapid transport

Determine type of shock and treat as follows:

<p>Hypovolemic or Hemorrhagic Shock</p> <ul style="list-style-type: none"> • Control external bleeding with direct pressure, elevation, tourniquet, and/or hemostatic dressing. • Administer 500 - 1000 ml fluid challenge to maintain MAP > 65 mmHg (SBP > 90 mmHg). Repeat fluid boluses if continued signs of shock and no pulmonary edema. • For shock secondary to trauma or suspect AAA do not over resuscitate. MAP 55 - 65 mmHg (Goal is SBP 70 - 90 mmHg). • If <u>hemorrhagic shock</u> with blunt or penetrating trauma and MAP < 50 mmHg (SBP < 70 mmHg), administer 2 grams TXA slow IV/IO push. • Contact OLMC for advice. 	<p>Obstructive Shock (Tamponade, Pneumothorax, PE)</p> <ul style="list-style-type: none"> • If tension pneumothorax is suspected, decompress per the Tension Pneumothorax Decompression procedure protocol. • Administer 500 - 1000 ml fluid challenge to maintain MAP > 65 mmHg (SBP > 90 mmHg). Repeat fluid boluses if continued signs of shock and no pulmonary edema. • If <u>not</u> responding to fluid administration begin norepinephrine infusion at 4 mcg/min. If no response, increase every 5 minutes in 4 mcg/min increments to max of 24 mcg/min. Goal is MAP > 65 mmHg (SBP > 90 mmHg). • While drip is being set up, consider push dose epinephrine, per epinephrine protocol, for temporary hemodynamic support. • Contact OLMC for advice.
<p>Cardiogenic Shock (STEMI, cardiomyopathy)</p> <ul style="list-style-type: none"> • If suspected cardiac event, follow Chest Pain protocol. • Monitor cardiac rhythm and follow Cardiac Dysrhythmia protocol. • Administer 250 - 500 ml fluid challenge to maintain MAP > 65 mmHg (SBP > 90 mmHg). May repeat once if continued signs of shock and no pulmonary edema/volume overload. Max of 1000 ml. • If <u>not</u> responding to fluid administration, begin norepinephrine infusion at 4 mcg/min. If no response, increase every 5 minutes in 4 mcg/min increments to max of 24 mcg/min. Goal is MAP > 65 mmHg (SBP > 90 mmHg). • While drip is being set up, consider push dose epinephrine, per epinephrine protocol, for temporary hemodynamic support. • Contact OLMC for advice. 	<p>Distributive Shock (septic, neurogenic, anaphylactic) or unknown type of shock</p> <ul style="list-style-type: none"> • <u>If anaphylaxis is suspected</u>, follow Anaphylaxis and Allergic Reaction protocol. • Administer 500 - 1000 ml fluid challenge to maintain MAP > 65 mmHg (SBP > 90 mmHg). Repeat once if continued signs of shock and no pulmonary edema. • If <u>not</u> responding to fluid administration, begin norepinephrine infusion at 4 mcg/min. If no response, increase every 5 minutes in 4 mcg/min increments to max of 24 mcg/min. Goal is MAP > 65 mmHg (SBP > 90 mmHg). • While drip is being set up, consider push dose epinephrine, per epinephrine protocol, for temporary hemodynamic support. • Contact OLMC for advice.

PEDIATRIC PATIENTS:

Treat per Universal Patient Care and prepare for rapid transport

Determine type of shock and treat as follows:

Hypovolemic or Hemorrhagic Shock

- Control external bleeding with direct pressure, elevation, tourniquet, and/or hemostatic dressing.
- Administer 20 ml/kg fluid challenge (10 ml/kg in neonates) to maintain age appropriate SBP. Repeat twice if continued signs of shock and no pulmonary edema to a max of 60 ml/kg (30 ml/kg in neonates)
- Contact OLMC for advice.

Lowest normal pediatric systolic blood pressure by age:

- Less than one month: > 60 mmHg.
- One month to 1 year: > 70 mmHg.
- Greater than 1 year: $70 + 2 \times \text{age in years}$.

Cardiogenic Shock (STEMI, cardiomyopathy)

- If suspected cardiac event, follow Chest Pain protocol.
- Monitor cardiac rhythm and follow Cardiac Dysrhythmia protocol.
- Administer 20 ml/kg fluid challenge (10 ml/kg in neonates) to maintain age appropriate SBP. Repeat twice if continued signs of shock and no pulmonary edema to a max of 60 ml/kg (30 ml/kg in neonates).
- If blood pressure remains low, begin norepinephrine infusion at 0.1 mcg/kg/min. If no response in 5 minutes, increase to 0.2 mcg/kg/min. If still no response after 5 more minutes, may increase to 0.4 mcg/kg/min. Goal is age appropriate SBP.
- While drip is being set up, consider push dose epinephrine, per epinephrine protocol, for temporary hemodynamic support.
- Contact OLMC for advice.

Obstructive Shock (Tamponade, Pneumothorax, PE)

- If tension pneumothorax is suspected, decompress per the Tension Pneumothorax Decompression procedure protocol.
- Administer 20 ml/kg fluid challenge (10 ml/kg in neonates) to maintain age appropriate SBP. Repeat twice if continued signs of shock and no pulmonary edema to a max of 60 ml/kg (30 ml/kg in neonates)
- If **not** responding to fluid administration begin norepinephrine infusion at 0.1 mcg/kg/min. If no response, in 5 minutes, increase to 0.2 mcg/kg/min. If still no response after 5 more minutes, may increase to 0.4 mcg/kg/min. Goal is age appropriate SBP.
- While drip is being set up, consider push dose epinephrine, per epinephrine protocol, for temporary hemodynamic support.
- Contact OLMC for advice.

Distributive Shock (septic, neurogenic, anaphylactic) or unknown type of shock

- **If anaphylaxis is suspected**, follow Anaphylaxis and Allergic Reaction protocol.
- Administer 20 ml/kg fluid challenge (10 ml/kg in neonates) to maintain age appropriate SBP. Repeat twice if continued signs of shock and no pulmonary edema.
- If blood pressure remains low, begin norepinephrine infusion at 0.1 mcg/kg/min. If no response in 5 minutes, increase to 0.2 mcg/kg/min. If still no response after 5 more minutes, may increase to 0.4 mcg/kg/min. Goal is age appropriate SBP.
- While drip is being set up, consider push dose epinephrine, per epinephrine protocol, for temporary hemodynamic support.
- Contact OLMC for advice.

NOTES & PRECAUTIONS:

- Closely monitor patient's respiratory status and vital signs. Avoid fluid overload.
- Mean Arterial Pressure targets:
 - ✓ Uncontrolled traumatic hemorrhagic shock without TBI or suspected AAA, target MAP is 55 - 65 mmHg (SBP 70 - 90).
 - ✓ Uncontrolled traumatic hemorrhagic shock with TBI or shock from all other causes, target MAP is ≥ 65 mmHg (SBP ≥ 90).
- For patients in shock with known or suspected adrenal insufficiency (AI) consider administration of dexamethasone 10 mg (0.6 mg/kg for pediatric patients) in addition to fluids and/or norepinephrine.
- If an improvised tourniquet is present before medical provider arrival, place a commercial tourniquet per protocol and remove the improvised tourniquet if operationally feasible.

Treat per Universal Patient Care

- Apply cardiac monitor as soon as possible and continuously assess rhythm.
- Place 18g IV or larger in AC when possible.
- Check CBG: If low, treat per Diabetic Emergencies-Hypoglycemia protocol.
- **No oxygen if SpO₂ ≥ 94% with good waveform.**

Complete the **BEFAST stroke assessment** if last known well time is ≤ 24 hours ago.

1

BEFAST STROKE SCREEN

Neurological examination	Normal	Abnormal (any positive)
<p>Balance</p> <p><u>Symptoms:</u></p> <ul style="list-style-type: none"> • Acute loss of balance, coordination, trouble walking <p><u>Test:</u></p> <ul style="list-style-type: none"> • Perform bilateral index finger-to-nose test (FTN test) • Have the patient walk if normally able to (walk next to them in case of gait instability) • If patient unable to walk, have the patient sit up (truncal stability test) <p><u>Positive findings:</u></p> <ul style="list-style-type: none"> • Patient overshoots or undershoots intended target (FTN test) • Patient falls over to one side (truncal instability) • Unsteady gait (shuffling, wide based gait, falling to one side) that the patient reports is acutely abnormal 	Normal	Abnormal
<p>Eyes</p> <p><u>Symptoms:</u></p> <ul style="list-style-type: none"> • Acute onset of vision loss, double vision, or part of vision loss (visual field cut) <p><u>Test:</u></p> <ul style="list-style-type: none"> • Ask the patient if they have double vision or loss of vision in one or both eyes • Make sure the patient can move their eyes all the way from left to right up and down (extraocular movements) <p><u>Positive findings:</u></p> <ul style="list-style-type: none"> • Trouble seeing out of one or both eyes or acute onset of double vision or visual field cut • Eyes are deviated together to the left or to the right or are unable to perform full movement 	Normal	Abnormal

Neurological examination	Normal	Abnormal (any positive)	
<p>Face</p> <p><u>Symptoms:</u></p> <ul style="list-style-type: none"> Acute onset facial droop <p><u>Test:</u></p> <ul style="list-style-type: none"> Ask the patient to smile or show their teeth <p><u>Positive findings:</u></p> <ul style="list-style-type: none"> The patient's face looks uneven, is drooping, or has numbness on one side 	Normal	Right	Left
<p>Arms/Legs</p> <p><u>Symptoms:</u></p> <ul style="list-style-type: none"> Acute onset numbness or weakness of the <u>arm/leg on one side of the body</u> <p><u>Test:</u></p> <ul style="list-style-type: none"> Ask the patient to raise and extend both arms with their palms up for 10 seconds, then close their eyes Ask the patient to raise one leg at a time for 5 seconds Touch each side of the patient's extremities and ask if they feel each equally <p><u>Positive finding:</u></p> <ul style="list-style-type: none"> One arm or leg drifts downward Unequal extremity sensation 	Normal	Right	Left
<p>Speech</p> <p><u>Symptoms:</u></p> <ul style="list-style-type: none"> Acute onset slurred speech, trouble speaking, or understanding <p><u>Test:</u></p> <ul style="list-style-type: none"> Ask the patient to repeat the phrase, "The sky is blue." Ask the patient to (1) squeeze <i>AND</i> let go of your hand (2) open <i>AND</i> close their eyes Ask the patient to name common objects (e.g., glove, pen, watch) <p><u>Positive findings:</u></p> <ul style="list-style-type: none"> Slurred speech, trouble finding words, unintelligible words Patient is unable to follow simple commands Patient is unable to recognize common objects 	Normal	Abnormal	
<p>Time</p> <ul style="list-style-type: none"> What time was the patient last known well (i.e., last appear normal)? 	Last Known Well Time: _____		

If BEFAST is positive (at least 1 of the neurological examination findings are **ABNORMAL**), the patient is considered to have a **POSITIVE** stroke screen. Continue to **Cincinnati – Stroke Triage Assessment Tool (C-STAT)** to screen for a large vessel occlusion (LVO) stroke.

2

C-STAT – CINCINNATI STROKE TRIAGE ASSESSMENT TOOL

	Points	
Conjugate Gaze Deviation – Eyes are deviated together to the left or to the right or are unable to perform full movement.		
Absent	0	
Present	2	
Arm Weakness - Cannot hold up one arm for 10 seconds		
Absent	0	
Present	1	
Level of Consciousness - Incorrectly answers at least one of two LOC questions (1) what is your name? (2) what is the month? AND does <i>NOT</i> follow at least one of two commands (1) squeeze AND let go of your hand (2) open AND close their eyes.		
Absent	0	
Present	1	

******* POSITIVE C-STAT SCORE IS ≥ 2 *******

POSITIVE C-STAT stroke patients should be transported to the nearest interventional stroke center

- If **BEFAST** and C-STAT positive (≥ 2), transport to the **nearest interventional stroke center** *AND* notify the receiving facility of acute stroke alert as soon as feasible.
- If **BEFAST** positive and C-STAT negative, transport to the **nearest stroke center** *AND* notify the receiving facility of acute stroke alert as soon as feasible.
- If **BEFAST** is negative, transport to any receiving facility.
- Notify the receiving facility if the patient is either C-STAT positive or negative.

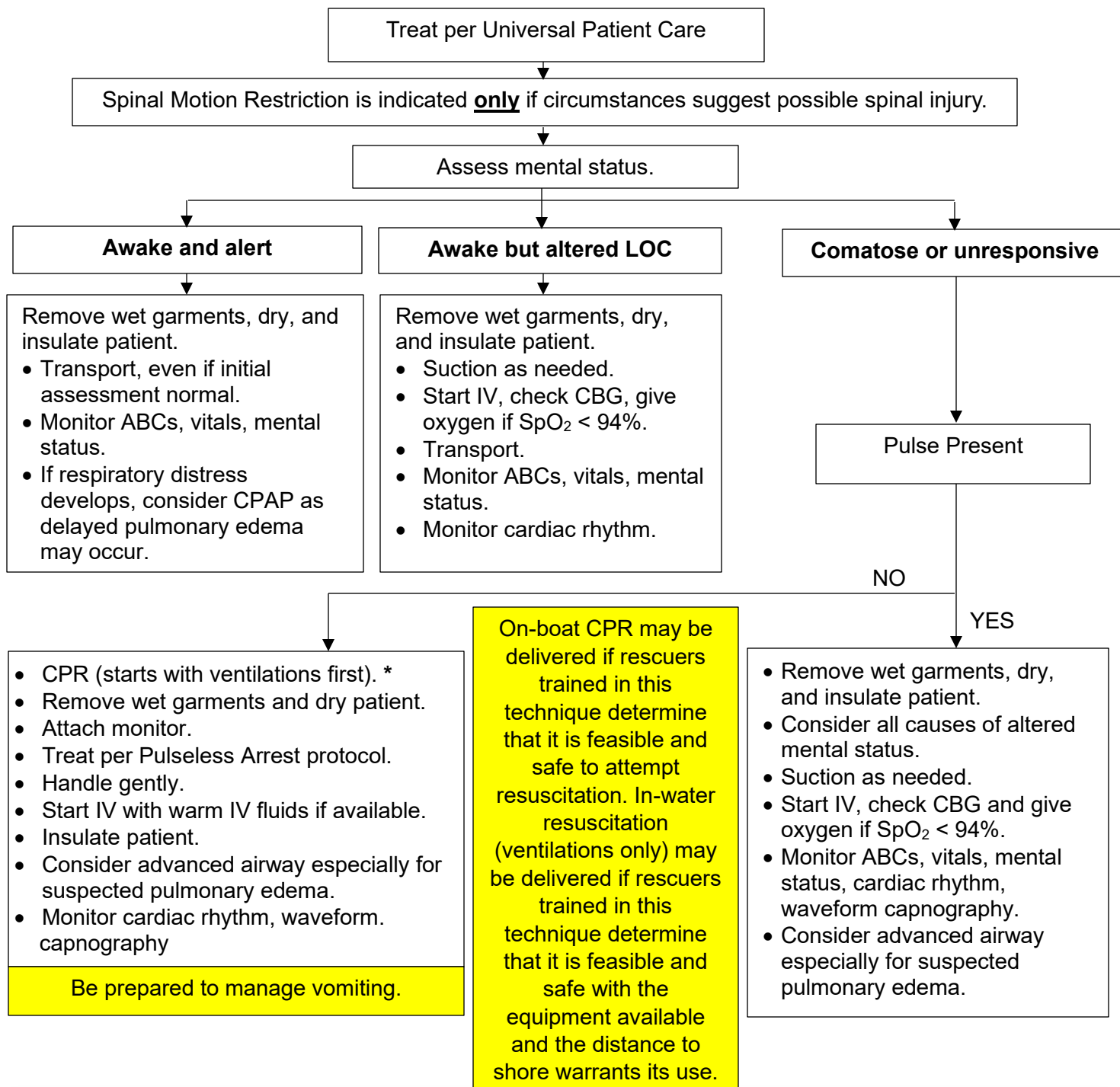
Transport patient with head elevated at least 30 degrees.

Document serial neurologic examinations.

NOTES & PRECAUTIONS:

- Do not treat hypertension or give aspirin.
- All potential stroke patients should be transported to a stroke center.

Submerged Patient/Drowning- 10.200



***Do not attempt resuscitation if patient has been submerged for more than 30 minutes, with the following exceptions:**

Resuscitation may be initiated if the patient is recovered within 60 minutes if:

- Children < 6 years of age and water temperature at recovery depth of < 40° F.
- Patients who may have been trapped in an underwater air pocket.
- Water temperature at recovery depth is < 40° F and information suggests that patient may have been swimming on the surface for at least 15 minutes prior to becoming submerged.
- Paramedic discretion (contact OLMC).

Traumatic Brain Injury – 10.300

Treat per Universal Patient Care.



Determine GCS to categorize injury severity.



Place a non-rebreather facemask on ALL patients with potential TBI. **Avoid Hypoxia at all times.**



Prevent hypotension: Goal MAP \geq 80 mmHg (SBP \geq 110) for isolated traumatic brain injuries only.

- Initiate a bolus of normal saline or lactated ringers.
- Continue fluid boluses to maintain the MAP \geq 80 mmHg (SBP \geq 110 mmHg).



AIRWAY CONSIDERATIONS:

- If patient is unable to maintain airway, consider oral airway (nasal airways should not be used in the presence of significant facial injury or possible basal skull fracture).
- Place an advanced airway (oral endotracheal intubation, supraglottic device, surgical airway) if BVM ventilation ineffective in maintaining oxygenation or if airway is continually compromised. Nasal intubation should not be attempted.
- If the patient has an airway placed (oral or advanced), carefully manage ventilations to minimize hyperventilation.
 - ✓ Monitor EtCO₂ with goal of EtCO₂ of 40 mmHg.
 - ✓ If available, use a pressure-controlled bag (PCB) and ventilation rate timer (VRT).
 - ✓ If a transport ventilator is available, begin with the following settings:
 - Tidal volume of 7ml/kg,
 - Rate of 10 BPM. Adjust rate to keep EtCO₂ within target range.



If there are signs of herniation, then MILD hyperventilation to an EtCO₂ of 35 mmHg may be performed. Signs of herniation include:

- Blown pupil
- Posturing



For moderate to severe blunt or penetrating head trauma: **If available**, administer 2 grams Tranexamic acid (TXA) slow IV/IO push if **both** of the following indications are met:

- Age \geq 15 (or \geq 50 kg if age unknown).
- GCS between 3 and 12, with a reactive pupil.

Contraindications to TXA:

- Time of head injury > 2 hours.
- GCS of 3 with no reactive pupil.
- EMS chest compressions at any time (manual or mechanical).
- Patients with a clinical concern for: Epilepsy, seizures, MI, stroke, PE, DVT, renal failure dialysis.
- Known or suspected pregnancy.
- Drowning, hanging, or burns > 20% TBSA.



Consider and treat reversible causes of AMS including hypoxia, hypoglycemia, and overdose.

- Mild: GCS 13 - 15
- Moderate: GCS 9 - 12
- Severe: GCS \leq 8

PEDIATRIC PATIENTS (follow adult flow chart with the following considerations):

- Manage blood pressure. **Avoid hypotension.**
 - ✓ Initiate a 20 ml/kg bolus of normal saline or lactated ringers.
 - ✓ Continue fluid boluses to maintain SBP goals:
 - Infants/children age < 10: 70 mmHg + (age X 2).
 - Children age ≥ 10: 110 mmHg (same as adults).
- Pediatric ventilatory rates:
 - ✓ Infants: (age 0 - 24 months): 25 breaths per minute (bpm);
 - ✓ Children: (age 2 - 14): 20 bpm;
 - ✓ 15 years: 10 bpm (same as adults).

NOTES & PRECAUTIONS:

- The main goal is to address the three H's that increase mortality with isolated TBI:
 - ✓ Avoid **Hypoxia**.
 - ✓ Avoid **Hyperventilation**.
 - ✓ Avoid **Hypotension**.
- A single episode of hypoxia is independently associated with **DOUBLING** of the mortality rate.
- Hyperventilation is independently associated with a mortality rate that is between **TWO** and **SIX** times higher. Inadvertent hyperventilation happens reliably if not meticulously prevented by proper external means.
- A single episode of hypotension is independently associated with **DOUBLING** of the mortality rate and persistent hypotension is independently associated with a mortality rate that is **eight** times higher.