Treatment

TREATMENT:

A. Treat per Universal Patient Care protocol.
B. Obtain 12 lead ECG as indicated.
C. Place patient in a position of comfort.
D. If systolic blood pressure is < 90 mmHg systolic follow Shock Protocol. If traumatic injury is suspected, enter patient into Trauma System. If patient has a suspected abdominal aortic aneurysm: titrate IV to maintain systolic blood pressure of 90 mmHg.
E. Nothing by mouth
F. Establish IV NS TKO.
G. Treat pain per Pain Management Protocol.
    a. **Fentanyl 50 mcg IM/IN/IV/IO**. Contact medical control for respiratory depression/compromise, shock, or altered mental status. Repeat every 5 minutes PRN.
    b. **Morphine 2-5 mg IM/IN/IV/IO**. Repeat every 5 minutes PRN to a maximum amount of 20 mg.
    c. **Hydromorphone 1-4 mg IM/IV/IO.** Titrate to effect. Not recommended for pediatric patients.
    d. **Ketorolac 30 mg IV or 60 mg IM**
H. Suspected GI Bleed
    a. Consider TXA 1 Gram in 100 cc's NaCl or D5w over 10 min IV.

PEDIATRIC PATIENTS:

A. Consider non-accidental trauma.
B. Closely monitor vital signs, blood pressure may drop quickly.
C. **Fentanyl** per Pain Management protocol PRN.

NOTES & PRECAUTIONS:

A. Abdominal pain may be the first sign of catastrophic internal bleeding (ruptured aneurysm, liver, spleen, ectopic pregnancy, perforated viscous, etc).
B. Since the bleeding is not apparent you must think of volume depletion and monitor the patient closely for signs of shock.

KEY CONSIDERATIONS:

Inferior MI, ectopic pregnancy, abdominal aortic aneurysm, recent trauma, perforated viscous, emesis type and amount, last meal, bowel movements, urinary output, ruptured spleen or liver, GI bleed, abnormal vaginal bleeding.

Adrenal Insufficiency Crisis– 10.015

PURPOSE:

Adrenal Insufficiency Crisis is the inability to cope with shock due to lack of appropriate cortisol production. It can occur from stress secondary to medical or trauma etiologies. Patient will likely have a known history of Addison's Disease, Adrenal Tumors, Adrenal Insufficiency, or Congenital Adrenal Hypo/Hyperplasia. Patients will be on replacement medications (Hydrocortisone, Fluticortisone, Methylprednisolone) on a daily basis. Look for medical alert bracelets/pendants. Patient/family will likely be well versed in their condition and may have a Hydrocortisone or Solu-Cortef emergency kit with them. Further training provided by OHA on this subject can be found here.

TREATMENT:

A. Treat per Universal Patient Care protocol.
B. Obtain 12-lead ECG and CBG as part of assessment.
C. Acute Adrenal insufficiency (crisis) can occur in the following settings:
    a. During neonatal period (undiagnosed adrenal insufficiency)
    b. In patients with known, pre-existing adrenal insufficiency (eg, Addison's disease)
    c. In patients who are chronically steroid dependent (ie, taking steroids daily, long-term, for any number of medical conditions)
    d. Triggered by any acute stressor (eg, trauma or illness), as well as by abrupt cessation of steroid use (for any reason).
D. Signs/symptoms of adrenal crisis: Altered mental status, HA, dizziness, seizures, abd pain, nausea/vomiting, generalized weakness, hypotension, hypoglycemia, hyperkalemia.
E. If the patient is suspected of being in an acute adrenal crisis, **administer the patient's prescribed auto-injector** and transport.
F. Obtain vascular access.
G. **Consider Dexamethasone 10 mg IV/IO/IM/PO**.
H. Notify hospital you are transporting known/suspected adrenal crisis patient.
I. Acute adrenal crisis is an immediately ***life-threatening*** emergency, and must be treated aggressively

PEDIATRIC PATIENTS:

Same treatment protocol as adult patients. See above.

Altered Mental Status– 10.020

TREATMENT: Treat per Universal Patient Care protocol.

A. Hypoglycemia
   1. Determine capillary blood glucose level. If < 80 mg/dl treat with the following:
      a. If patient can protect their own airway administer **Oral Glucose**.
      b. If patient is unable to protect their own airway, administer **Dextrose 10%, IV/IO** titrate to effect or **Dextrose 50% (Dilute with NS or LR) slow IV. IO** if unable to obtain IV access**.**
   2. Repeat blood glucose level after 5-10 minutes and repeat treatment if it remains low.
   3. If no IV can be established give **Glucagon 1 mg IM**.

B. Hyperglycemia
   1. Determine CBG. If >300 mg/dl, treat with **250-500 ml NS or LR** via IV. Repeat CBG and treatment PRN every 5-10 minutes.

C. Opiate Overdose
   1. If opiate intoxication is suspected, administer **Narcan 0.4 - 2.0 mg IV/IM/IN/IO**
   2. If no improvement and opiate intoxication is still suspected, repeat *Narcan* every 3-5 minutes prn.

D. Combative Patient
   1. Consider causes for behavior (seizure, stroke, poisoning)
   2. Request police assistance.
   3. Restrain the patient in a lateral recumbent position or supine.

      Consider chemical sedation below:
      a. **Haloperidol 5-10 mg IM may repeat for a max of 10 mg**,
      b. **Midazolam 2-5 mg IM/IV/IN**,
      c. **Diphenhydramine 25-50 mg IM/IV**.
      d. or **Ketamine 2-4 mg/kg IM or 1-2 mg/kg IV**.
      (**Use caution with intoxicated patients or illicit drug use**)

C. Anxiety Patient

   Consider:
   a. **Ativan 0.5-1mg IV**
   b. **Valium 2-4 mg IV**

PEDIATRIC PATIENTS:

A. Hypoglycemia
- Infants < 10 kg (birth to 1 year) with CBG < 45 mg%:
  - Give 2.5 - 5 ml/kg of **Dextrose 10%.**
- Children 10 kg – 35kg with CBG < 60 mg%:
  - Give 2 - 4 ml/kg of **Dextrose 25%.**
- Repeat dextrose as needed.
- **Glucagon 0.5 mg IM** (< 5 y/o or < 20 kg) to a maximum of 1 mg.

B. If suspected opiate overdose
- **Naloxone 0.1 mg/kg IV/IO/IM/IN** to a maximum of 2 mg.

NOTES & PRECAUTIONS:

A. If patient is disoriented, think of medical causes.
B. If patient is suicidal do not leave alone.

C. All patients in restraints must be monitored closely.
D. Observe for decreased LOC, focal neurological findings, and hypothermia.
E. Look for Medical Alert tags.
F. Sedated pts should have cardiac, capnography and SpO2 monitoring if available.

Anaphylaxis & Allergic Reactions – 10.030

TREATMENT:

A. Treat per Universal Patient Care.
B. Remove stinger or source of toxin.
C. If Resp <10 or >30 oxygen 100% and assist with BVM prn.
D. If patient exhibits signs of progressive anaphylaxis and/or respiratory distress:
    1. Administer **1:1,000 Epinephrine 0.5 mg IM**.
    2. Administer **2.5 mg Albuterol nebulized** if wheezing persists.
    3. With diminished perfusion or shock symptoms, consider:
        a) **1:100,000 Epinephrine 0.5 mg slow IV/IO.** Make 1:100,000 by diluting 1 mg 1:1,000 in a 100cc bag of LR or NS. Administer 50cc.
        b) Epinephrine IV should not be given unless signs of cardiovascular collapse or respiratory distress are present.
        c) Treat with fluid challenge per Shock Protocol.
    4. If no improvement noted repeat **Epinephrine** as needed every 5-15 min.
E. Consider **Diphenhydramine 25-50mg IV/IO/IM**. For itching, flushing or hives.
F. Consider corticosteroid administration: **Dexamethasone 10 mg IV/IO/PO/IM**
G. If unable to secure a protected airway or unable to ventilate with BVM after epinephrine has been administered, a cricothyrotomy may be required.

PEDIATRIC PATIENTS:

A. If patient exhibits signs of progressive anaphylaxis and/or significant respiratory distress:
    1. With normal perfusion, administer **1:1,000 Epinephrine 0.01 mg/kg IM** to a maximum single dose of 0.5 mg IM.
    2. With diminished perfusion or shock symptoms administer:
        a) **1:1,000 Epinephrine 0.01 mg/kg IM** to a maximum of single dose 0.5 mg **OR**
        b) **1:100,000 Epinephrine 0.01 mg/kg slow IV/IO.** Make 1:100,000 by diluting 1 mg 1:1,000 in 100cc bag of NS or LR. Admin 0.01 mg/kg IV, not to exceed adult dose.
        c) Epinephrine IV should not be given unless signs of cardiovascular collapse or respiratory distress are present.
        d) Treat with fluid challenge per Shock Protocol.
            1. (Ped fluid bolus 20cc/ kg)
            2. Hypotensive systolic B/P 70 +(2 x age)
            3. Use caution if more than 2 bolus needed****
    3. If no improvement noted repeat epinephrine every 5 minutes.
B. Consider **Diphenhydramine 1-2 mg/kg IM** or slow IV/IO to a maximum of 50 mg.
C. Consider corticosteroid administration: **Dexamethasone 0.6 mg/kg** not to exceed the adult dose of 10 mg's.

NOTES & PRECAUTIONS:

A. Allergic reactions, even systemic in nature, are not necessarily anaphylaxis. Treatment may not be indicated if only hives and itching are present.
B. Epinephrine increases cardiac workload and may cause angina or AMI in some individuals. Consider lower dose (0.3 mg) in elderly pts.
C. Common side effects of Epinephrine include anxiety, tremor, palpitations, tachycardia and headache particularly with IV administration.
D. Contact Medical control if after Epinephrine administration, anaphylaxis or symptoms persist.

KEY CONSIDERATIONS:

Toxic exposure, insect bites, recent exposure to allergen, dyspnea or hives, abdominal cramps, known allergens, chest or throat tightness, swelling, numbness

TREATMENT:

A. Secure scene ensuring rescuer safety, then help victim.
B. Stop the burning process.
    a. Remove clothes, flood with water ONLY if flames or smoldering is present.
C. Establish ABCs.
    a. Consider CO poisoning if patient was in a confined space.
    b. If in respiratory distress, administer Oxygen 100%, assist ventilations as needed, and intubate as needed.
    c. Remove constricting/obstructing clothing and jewelry.
    d. If shock is present, consider underlying causes.
D. Transport ASAP to the most appropriate facility.
E. Cool burned areas (less than 10 minutes for large burns) then cover with dry sterile dressings. Discontinue cooling if patient begins to shiver. Attempt to leave unbroken blisters intact.
F. Treat pain per Pain Management protocol.
G. Evaluate degree of burn and % of second- and third-degree burns
    a. Use patient's palm as reference for 1% BSA.
H. Critical burns are defined as:
    1. Any degree 25% or more of body surface area.
    2. Full thickness burns greater than 10% of body surface area.
    3. Burns with inhalation injuries.
    4. Electrical burns
    5. Burns to hands, feet, genitalia, facial or circumferential burns.
    6. Burns in high risk patients (pediatrics, elderly, significant cardiac or respiratory problems)
I. Dress burns with dry dressings. Consider wet dressing if burn is 5% or less.
J. Start 2 large bore IVs in unburned areas if possible and administer fluids per appropriate formula below.
K. If chemical burn:
    1. Consider Haz-Mat response.
    2. Protect yourself from contamination. (See HazMat protocol)
    3. Flush contaminated areas with copious amounts of water.
    4. If chemical is dry, carefully brush off prior to flushing.
L. If electrical burn:
    1. Make sure victim is de-energized.
    2. Apply sterile dressings to entry and exit wounds. Suspect internal injuries.
    3. Treat any dysrhythmias per appropriate Cardiac Dysrhythmia protocol.

PEDIATRIC PATIENTS:

A. Treat pain per Pain Management protocol.
B. Consider possibility of non-accidental cause in children.

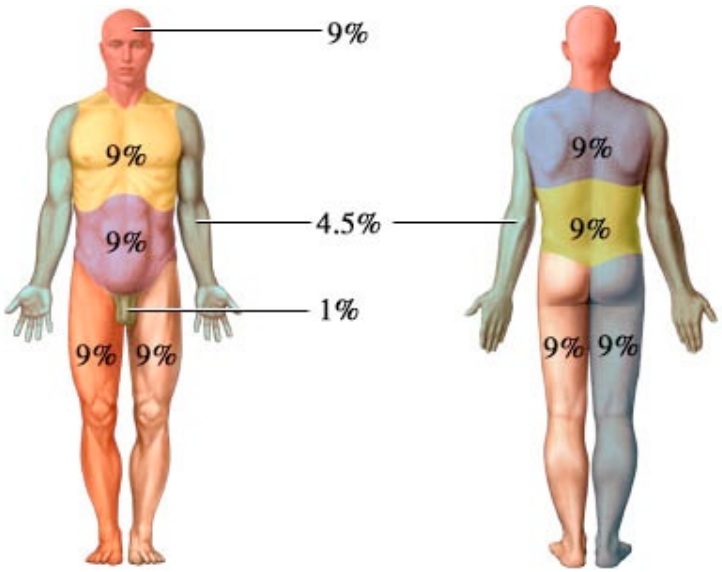
FLUID RESUSITATION FORMULAS:

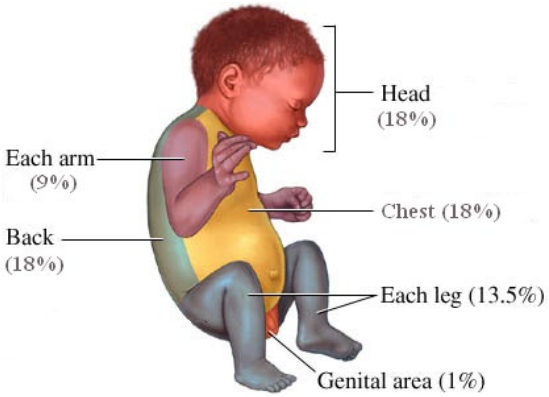
1. IV fluids should be warmed. Preferred fluid for burns is Lactated Ringers, Normal Saline is an acceptable alternative.

2. Less than 30-minute transport time:
    a. Older than 14 years old
        i. 500ml/hr.
    b. Older than 6 years old, younger than 13 years old
        i. 250ml/hr.
    c. Less than 6 years old
        i. 125ml/hr.
3. Greater than 30-minute transport time:
    a. Calculate percentage of second- and third-degree burns
    b. **CONSENSUS BURN FORMULA:**
        i. **4ml x patient weight in kg x % of 2nd and 3rd degree burns**
        ii. Administer half the total fluid within 8 hours of the burn
        iii. Administer the second half over the next 16 hours
4. Electrical Burns:
    a. 4ml x patients' weight in kg x % of 2nd and 3rd degree burns

KEY CONSIDERATIONS:
Enclosed space, airway sounds, possibility of inhaled toxins, past medical history, CO/Cyanide poisoning, evidence of respiratory burns, extent of burns, explosion or trauma injuries. If airway burns are suspected, aggressively manage airway EARLY!

RULE OF NINES:





Cardiac Arrest (AED/CPR/HP CPR) – 10.050

CPR GUIDELINES			
Maneuver	Adult Adolescent and older	Child 1 yr to adolescent	Infant Under 1 year of age
Airway	Head tilt-chin lift. Jaw thrust if suspected cervical trauma.		
Breathing: Without CPR	10 to 12 breaths/min (Approximate)	20 to 30 breaths/min (Approximate)	
Foreign Body – Conscious pt	Abdominal thrusts (*use chest thrusts in pregnant and obese patients or if abdominal thrusts are not effective*)		Back blows and chest thrusts
Compression landmarks	Lower half of sternum between nipples		Just below nipple line (lower half of sternum)
Compression method	Heel of one hand, other hand on top	Heel of one hand, as for adults	2-3 fingers or 2 thumb-encircling hands
Compression depth	At least 2 inches	Approximately one-third anterior/posterior depth of chest. (Approx 2” in child and 1 ½” in infant)	
Compression rate	At least 110 per minute		
Compression-ventilation ratio with or without advanced airway	10:1 Continuous chest compressions	5:1 Continuous chest compressions	

AED GUIDELINES		
AED Defibrillation	Use adult pads, do not use child pads	Use pediatric dose-attenuator system for children and infants if available.

NEONATAL GUIDELINES
Assisted ventilation 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 be 3:1, with 90 compressions and 30 breaths to achieve approximately 120 events per minute.

***High Performance CPR ON NEXT PAGE**

High Performance Cardio-Pulmonary Resuscitation (HP-CPR)

- Cardiac arrest rhythms frequently change during CPR. If, or when there is a change in the rhythm, move to the appropriate algorithm and next appropriate medication

  Utilize a “Pit-Crew” approach to assigning responders to designated roles. Designated Compression Person will immediately begin continuous chest compressions for 2 minutes at a rate of 110/min. Allow full recoil, compress to a depth ≥2 inches.

- Count 10 compressions and repeat out loud.
- Switch compressors every 2 minutes.
- Designated ventilation person will ventilate person every 10 compressions or 11/min for adult patients, every 5 compressions or 22/min for pediatrics.
- DO NOT interrupt chest compressions for airway/IO/IV placement or medications.
- Paramedics will pre-charge defibrillator and analyze/shock at the end of 2 minutes of CPR and attempt to keep pauses at 10 seconds or less.
- Continue cycles of 2 minutes of CPR and 10 seconds or less of analysis (unless utilizing an AED) or treatment
- Always clear patient before defibrillation.
- Consider early use of extra-glottic/supra-glottic device when ALS resources are limited. Studies have not shown superiority of prehospital use of ET-tube vs extraglottic devices in patient outcome data.
- Consider early use of the ResQpod; the impedance threshold device (ITD) on patients > 10 kg’s.
- Preferred order of vascular access is upper extremity IV (or external jugular vein), upper extremity IO, then lower extremity IO.
- 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:

Up to **2.5 mg of midazolam IV/IO** and **50 mcg of fentanyl IV/IO**. May repeat as needed every 5 – 10 minutes prn

Cardiac Arrest (Asystole) – 10.051

TREATMENT:

Initiate High Performance CPR
Perform HP CPR for 2 minutes
If down time is less than 5 minutes, perform CPR until defibrillator is attached
If Opioid Overdose is suspected, administer **Narcan** ASAP.

1:10,000 Epinephrine 1mg IV/IO as soon as access is obtained.

Continue HP CPR; check rhythm every 2 minutes

1:10,000 Epinephrine 1 mg IV/IO, repeat every 3-5 minutes.

PEDIATRIC PATIENTS:

A. Begin CPR and airway management.
B. Administer **1:10,000 Epinephrine 0.01 mg/kg IV/IO**, repeat every 3-5 minutes.
C. Consider and treat other possible causes. Obtain CBG.

NOTES & PRECAUTIONS:

A. If unwitnessed arrest, unknown downtime, and no obvious signs of death, proceed with resuscitation and get further information from family/bystanders.
B. Consider OLMC for advice on continuing resuscitation.
C. If history of traumatic event, consider Death in the Field protocol.
D. DO NOT interrupt CPR when securing patient's airway.
E. Studies have shown no superiority of ET vs Supraglottic airways for survival rates.
F. Follow the Cardiac Triage Transport protocol in **10.054**
G. Continued Epinephrine use after 3 rounds of Epi administration should have a prolonged administration interval (8-10 minute interval instead of 3-5 minutes).
H. $ETCO_2$ may be a useful adjunct in the decision to terminate resuscitation with Asystole/PEA. An $ETCO_2$ of 10 or less in patients in Asystole/PEA after 20 minutes of ACLS resuscitation does not correlate with survival.

KEY CONSIDERATIONS:

Consider and treat other possible causes:

- Acidosis - **Sodium Bicarbonate 1 mEq/kg IV/IO**.
- Cardiac tamponade – Initiate rapid transport.
- Hyperkalemia – Treat per Hyperkalemia protocol.
- Hypothermia – Treat per Hypothermia protocol
- Hypovolemia – Treat with fluids per Shock protocol.
- Hypoxia – Oxygenate and ventilate
- Pulmonary embolus – Initiate rapid transport.
- Tension pneumothorax – Needle decompression.
- Tri-cyclic antidepressant overdose – **Sodium Bicarbonate 1 mEq/kg IV/IO**

Cardiac Arrest (PEA) – 10.052

TREATMENT:

Initiate HP CPR
If down time is estimated at greater than 5 minutes, perform CPR for 2 minutes
If down time is less than 5 minutes, perform CPR until defibrillator is attached
If Opioid Overdose is suspected, administer **Narcan** ASAP.

1:10,000 Epinephrine 1 mg IV/IO as soon as access is obtained.

Continue CPR; check rhythm and switch compressors every 2 minutes

1:10,000 Epinephrine 1 mg IV/IO, repeat every 3-5 minutes.

If end-tidal CO2 is ≥ 20 with an organized rhythm, initiate fluids per Shock protocol and consider **Levophed, or Epinephrine Drip.**

PEDIATRIC PATIENTS:

A. Begin CPR and airway management.
B. Administer **1:10,000 Epinephrine 0.01 mg/kg IV/IO**, repeat every 3-5 minutes.
C. Consider and treat other possible causes. Obtain CBG

NOTES & PRECAUTIONS:

A. DO NOT interrupt CPR when securing patients airway.
B. Follow the Cardiac Triage Transport protocol in **10.054**
C. Continued Epinephrine use after 3 rounds of Epi administration should have a prolonged administration interval (8-10 minute interval instead of 3-5 minutes).
D. $ETCO_2$ may be a useful adjunct in the decision to terminate resuscitation with Asystole/PEA. An $ETCO_2$ of 10 or less in patients in Asystole/PEA after 20 minutes of ACLS resuscitation does not correlate with survival.

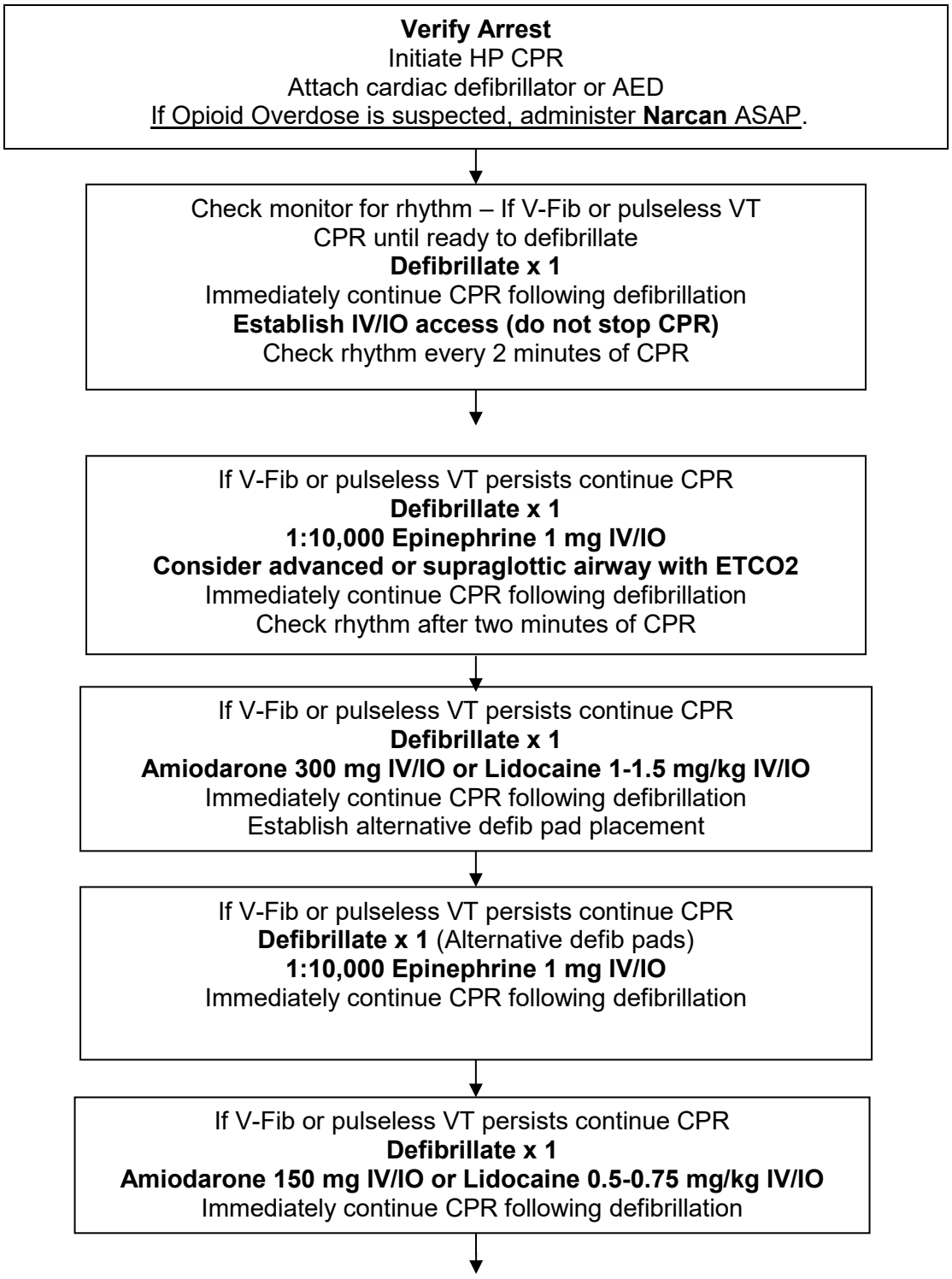
KEY CONSIDERATIONS:

Consider and treat other possible causes:

- Acidosis - **Sodium Bicarbonate 1 mEq/kg slow IV/IO**.
- Cardiac tamponade – Initiate rapid transport.
- Hyperkalemia – Treat per Hyperkalemia protocol.
- Hypothermia – Treat per Hypothermia protocol
- Hypovolemia – Treat with fluids per Shock protocol.
- Hypoxia – Oxygenate and ventilate
- Pulmonary embolus – Initiate rapid transport.
- Tension pneumothorax – Needle decompression.
- Tri-cyclic antidepressant overdose – **Sodium Bicarbonate 1 mEq/kg slow IV/IO**

Cardiac Arrest (V-Fib / Pulseless VT) – 10.053

TREATMENT:
Flow of algorithm presumes that the initial rhythm is continuing. If a rhythm change occurs begin the appropriate algorithm. Interruptions to CPR should be avoided. When necessary they should be less than 10 seconds. Follow manufacturer's recommendations for defibrillation settings:



If V-Fib or pulseless VT persists continue CPR
Defibrillate x 1
1:10,000 Epinephrine 1 mg IV/IO
Immediately continue CPR following defibrillation
Consider **Magnesium Sulfate 2 grams** as third line antidysrhythmic

Consider potential reversible causes:
Hypoxia, Hypovolemia, Hydrogen Ion (acidosis), Hyperkalemia/ Hypokalemia, Hyperthermia, Toxins Cardiac Tamponade, Tension pneumothorax, Thrombosis (coronary, pulmonary)

NOTES & PRECAUTIONS:

A. If the initial rhythm is Torsades de Pointes, give **Magnesium Sulfate 1-2 grams IV/IO**.
B. After successful resuscitation, antiarrhythmic therapy should be administered only as needed to treat ongoing arrhythmias.
    1. If administering Amiodarone as an antiarrhythmic, be cautious with any of the following:
        a. Systolic BP is less than 90 mmHg
        b. Heart rate is less than 50 beats per minute
        c. Periods of sinus arrest are present
        d. Any AV block is present
    2. May consider Lidocaine infusion during EMS transport.
C. Sodium Bicarbonate is not recommended for the routine cardiac arrest sequence, but should be used early in cardiac arrest of known cyclic antidepressant overdose or in patients with hyperkalemia. It may also be considered after prolonged arrest. If used, administer **Sodium Bicarb 1 mEq/kg <u>slow</u> IV/IO**. It can be repeated at 0.5 mEq/kg every 10 minutes.
D. Continued Epinephrine use after 3 rounds of Epi administration should have a prolonged administration interval (8-10 minute interval instead of 3-5 minutes).
E. Studies have shown no superiority of ET vs Supraglottic airways for survival rates.
F. Follow the Cardiac Triage Transport protocol in **10.054**

PEDIATRIC PATIENTS:
Follow adult algorithm flow. Obtain CBG.
Use the following dosing:

Defibrillation:

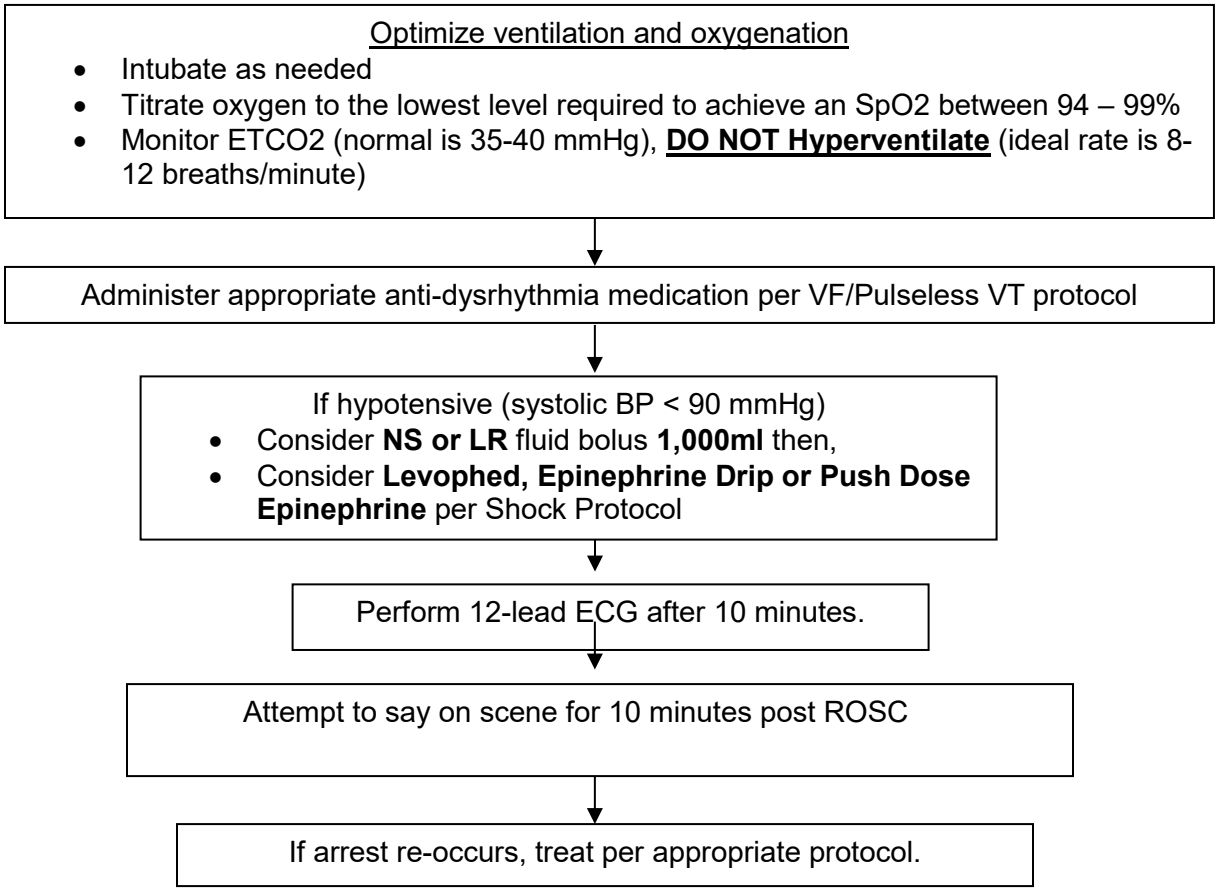
1. First shock 2 j/kg.
2. Second shock 4 j/kg, subsequent doses ≥ 4 j/kg up to maximum of 10j/kg or adult dose.

Drugs:

1. **Epinephrine (**1:10,000) – 0.01 mg/kg IV/IO
2. **Amiodarone** – 5 mg/kg IV/IO. May repeat twice prn. OR
3. **Lidocaine** – 1 mg/kg IV/IO. May repeat once. Post ROSC, may consider prophylactic infusion at 20-50 mcg/kg/min during EMS transport.

Cardiac Arrest Post Resuscitation – 10.054

TREATMENT:



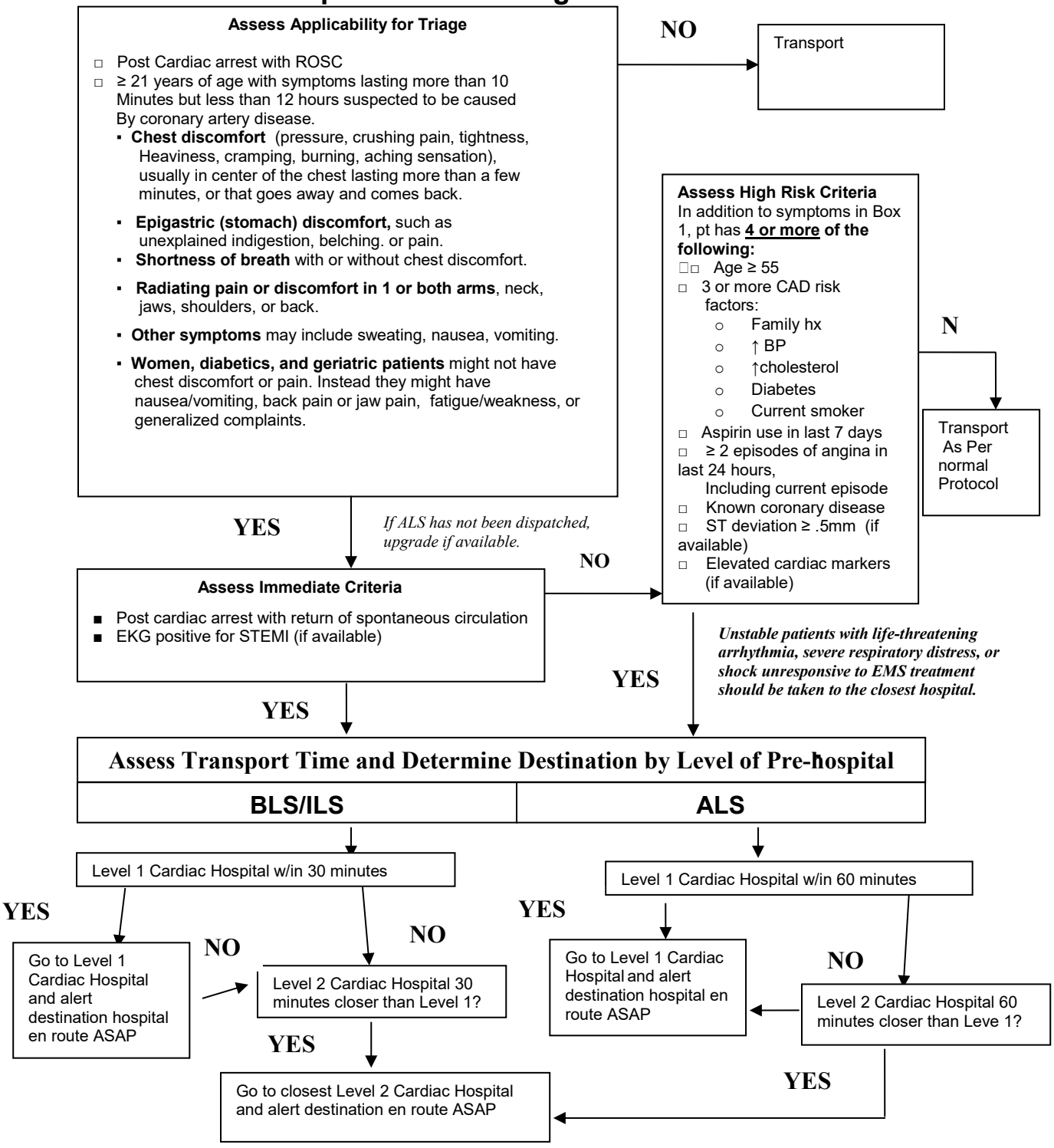
NOTES & PRECAUTIONS:

A. 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.

B. The condition of post-resuscitation patients fluctuates rapidly and they require close monitoring.

A. Follow the Cardiac Triage Transport procedure

Pre-Hospital Cardiac Triage Destination Procedure



Cardiac Arrest with Pregnancy (>22 weeks) – 10.055

TREATMENT:

Manage rhythm per appropriate cardiac arrest algorithm (V-Fib/Pulseless VT, PEA, Asystole)

↓

CPR with continuous manual left lateral uterine displacement using the two-handed method shown below (see Note G).

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.

Cardiac Arrest with Pregnancy (>22 weeks) – 10.055

NOTES & PRECAUTIONS:

A. Consider early transport prior to achieving ROSC, especially if a mechanical CPR device is available.
B. Alert the receiving facility early in order 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.
C. If ROSC has been achieved and maintained prior to, or during transport, bypass to an OB and NICU capable facility.
D. Lidocaine is preferable (Class B in Pregnancy) to amiodarone (Class C in Pregnancy) in the setting of ventricular fibrillation or pulseless ventricular tachycardia.
E. 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.
F. 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.
G. 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.
H. High flow oxygen needs to be maintained in all peri-arrest patients.
I. Consider OG placement when possible.

Cardiac Arrest (Trauma) – 10.056

PURPOSE: Unwitnessed traumatic arrest is almost uniformly fatal while EMS witnessed arrest due to severe hypovolemia, hypoxia, or tension pneumothorax may respond to prehospital resuscitation. The purpose of this protocol is to determine when someone should have an attempt at resuscitation when in traumatic arrest.

DEFINITIONS:

A. Traumatic arrest: Loss of pulses and apnea secondary to trauma, not attributable to medical causes.
B. **HAT** Resuscitation: Treatable causes of witnessed traumatic arrest.

Hypovolemia:
- Control external bleeding
- If blunt trauma, apply pelvic binder/wrap
- Administer 1000 ml of Normal Saline or Lactated Ringers

Airway/Oxygenation:
- Ensure airway patency and effective oxygenation

Tension Pneumothorax:
- Perform bilateral needle chest decompression

PROCEDURE:

A. Trauma patients who are pulseless and apneic on EMS arrival are considered dead in the field per the Death and Dying protocol (50.025) unless there are extenuating circumstances (e.g. hypothermia, possible medical cause).
B. For patients found in VF or Pulseless VT on EMS arrival, suspect a medical event and treat per the VF/pulseless VT protocol.
C. For patients who deteriorate to PEA or asystole on scene, begin HAT resuscitation:
   1. If ROSC is obtained, transport.
   2. If ROSC is not achieved, you may declare the patient dead or contact OLMC for guidance.
D. For patients who arrest during transport, initiate HAT resuscitation and:
   1. If within 15 minutes of a trauma center, continue to the trauma center.
   2. 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 AND PRECAUTIONS:

A. 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.
B. 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.
C. 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.
D. Post-ROSC cooling in the traumatic arrest patient should be deferred to the hospital.

Cardiac Dysrhythmias (Bradycardia) – 10.060

HEART RATE < 50 BPM AND INADEQUATE FOR CLINICAL CONDITION

Treat per Universal Patient Care
Obtain 12-lead ECG

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

No – Pt Stable

Observe and monitor patient.

Yes – Pt Unstable

- **Transcutaneous Pacing** per protocol. Use pacing without delay for high-degree heart blocks (2nd degree Type II, and 3rd degree with wide QRS complex) **OR**
- **Atropine 1 mg IV/IO**. May repeat every 3-5 minutes to a maximum of 3 mg
- Consider **Levophed 4 mcg/min or Epinephrine Drip 2-10 mcg/min or push dose Epinephrine** if no response to pacing or atropine. Titrate to effect.

- If patient is uncomfortable, consider **Midazolam 2.5 mg IV/IO/IN or 5 mg IM**. May repeat IV/IO once. **OR Lorazepam 1 mg IV/IO or 2 mg IM/IN. OR Ketamine 15-30 mg's IV**
- If capture is not achieved, try repositioning pads**.**

NOTES & PRECAUTIONS:

A. Bradycardia may be protective in the setting of cardiac ischemia and should only be treated if associated with serious signs and symptoms of hypoperfusion.
B. Most pediatric bradycardia is due to hypoxia.
C. 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.
D. Immediate transcutaneous pacing can be considered in unstable patients when vascular access is not available.
E. Transcutaneous pacing is not useful in asystole.

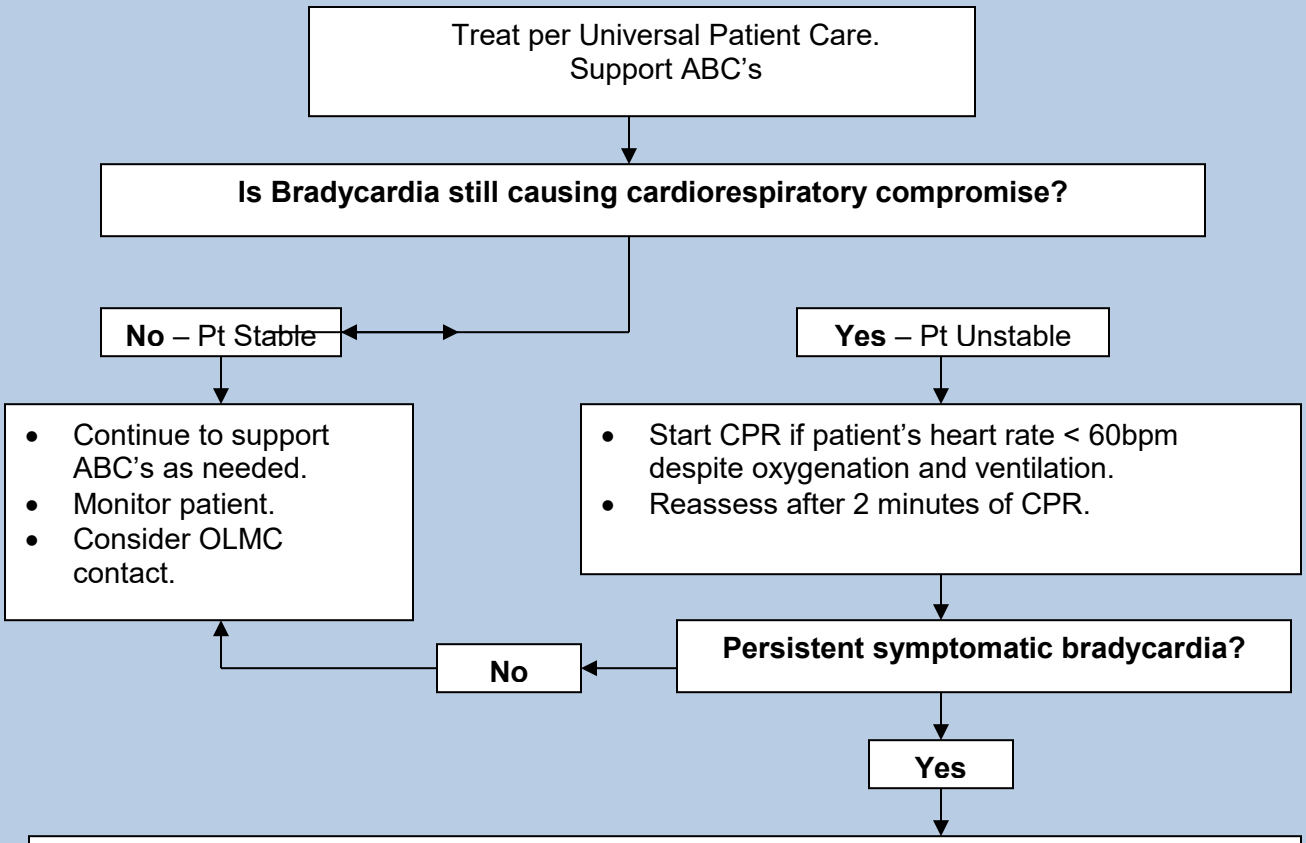
KEY CONSIDERATIONS:

Pain evaluation (PQRST), nausea and vomiting, drug overdose, speed of onset, previous MI, angina, fever or recent illness, medical history, medications.

Cardiac Dysrhythmias (Bradycardia) – 10.060

PEDIATRIC PATIENTS:

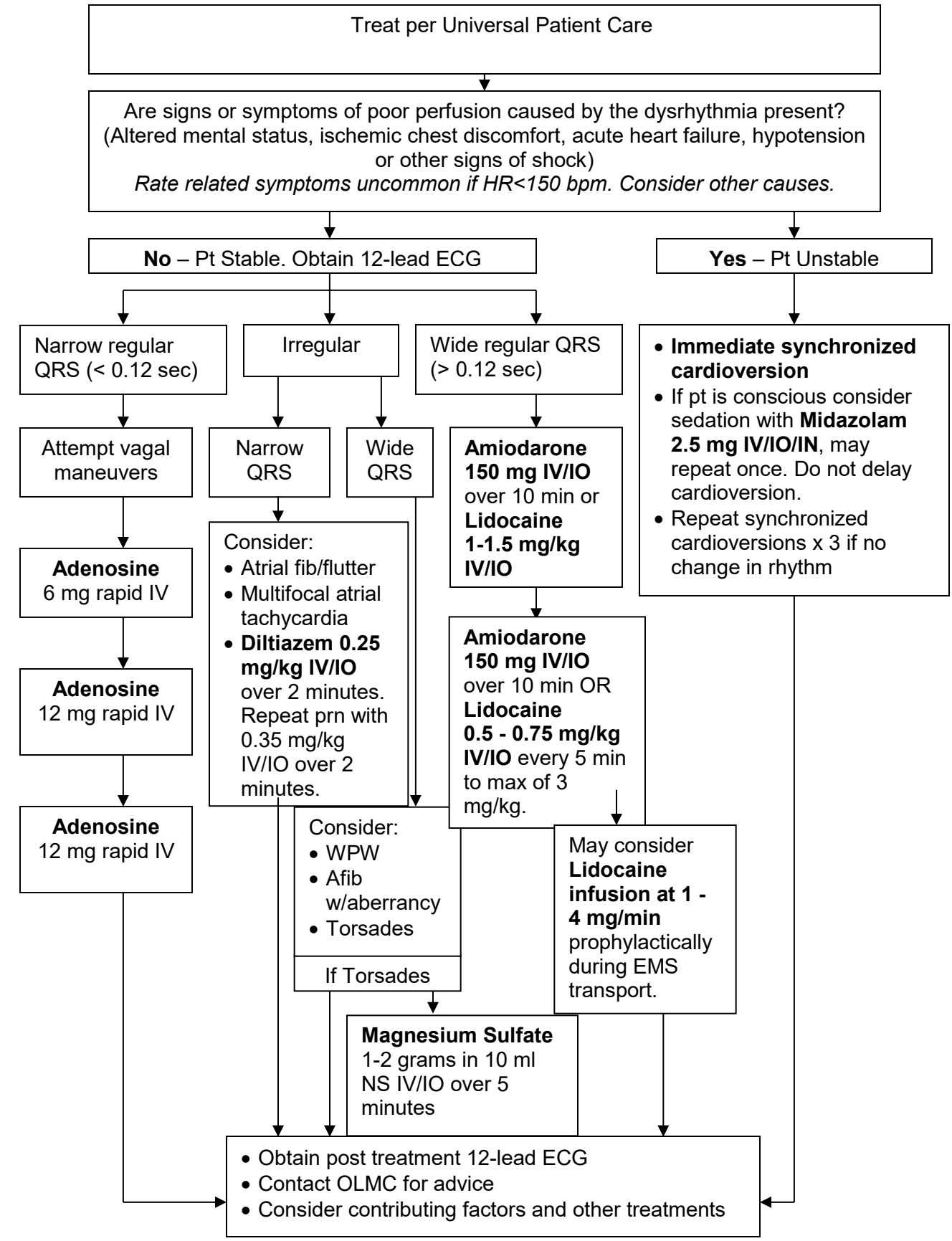
BRADYCARDIA WITH A PULSE CAUSING CARDIORESPIRATORY COMPROMISE



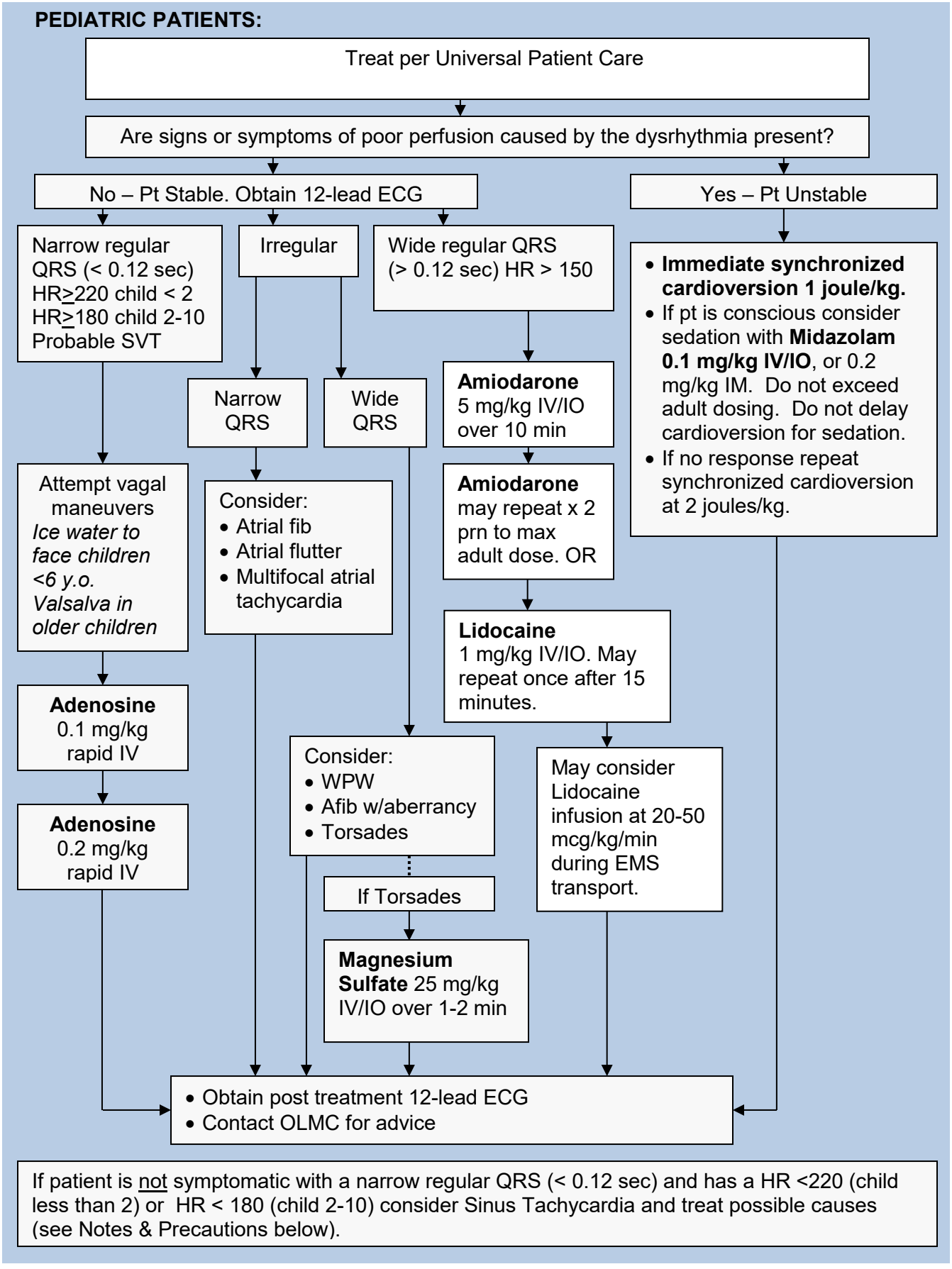
**** Utilize Pediatric Guide ****

- Give **1:10,000 Epinephrine 0.01 mg/kg IV/IO**.
- Repeat epinephrine every 3-5 minutes.
- If increased vagal tone or AV block, consider **Atropine 0.02 mg/kg IV/IO**. Minimum single dose 0.1 mg, maximum single dose 1 mg.
- Consider pacing per *Transcutaneous Pacing* protocol.
- If capture is achieved and patient is uncomfortable, consider **Midazolam 0.1mg/kg IV/IO/IN** to a maximum of 2.5 mg, or 0.2 mg/kg IM to a maximum of 5 mg **OR Ketamine 0.5-1 mg IV/IO not to exceed adult dose of 15-30 mg's.**
- If capture is not achieved, try applying a new set of pads and repositioning.

Cardiac Dysrhythmias (Tachycardia) – 10.061



Cardiac Dysrhythmias (Tachycardia) – 10.061



Cardiac Dysrhythmias (Tachycardia) – 10.061

NOTES & PRECAUTIONS:

A. In stable narrow complex irregular tachycardia, consider **Calcium Gluconate 10% 1 Gram, or Calcium Chloride 500 mg slow** IV/IO before Diltiazem if systolic BP < 90 mmHg. If patient is unstable at any time, perform synchronized cardioversion.
B. In stable wide complex tachycardia which is monomorphic, consider **Adenosine** if SVT with aberrancy is suspected.
C. 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.
D. Other possible causes of tachycardia include:
    1. Acidosis
    2. Hypovolemia
    3. Hyperthermia/fever
    4. Hypoxia
    5. Hypo/Hyperkalemia
    6. Hypoglycemia
    7. Infection
    8. Pulmonary embolus
    9. Tamponade
    10. Toxic exposure
    11. Tension pneumothorax
E. If pulseless arrest develops, follow Cardiac Arrest protocol.
F. All doses of **Adenosine** should be reduced to one-half (50%) in the following clinical settings:
    1. History of cardiac transplantation.
    2. Patients who are on Carbamazepine (Tegretol) and Dipyridamole (Persantine, Aggrenox).
    3. Administration through any central line.
G. Adenosine should be given with caution to patients with asthma.
H. Patients with Atrial fibrillation duration of >48 hours are at increased risk for cardioembolic events. Electric or pharmacologic cardioversion should not be attempted unless patient is unstable. Contact OLMC.
I. Verapamil or Metoprolol may be substituted for Diltiazem
    1. **Verapamil Dose: 5 mg's IV q 15 minutes to a max of 20**
    2. **Metoprolol Dose: 2.5-5 mg's <u>Slow</u> IV push over 2 minutes q 5 minutes to a max of 15 mg's**

KEY CONSIDERATIONS:

Medical history, medications, shortness of breath, angina or chest pain, palpitations, speed of onset

HEART MONITOR ADULT SYNCHRONOUS CARDIOVERSION SETTINGS

- **Medtronics Lifepak® – 100j, 200j, 300j, 360j**
- **Philips MRX® – 100j, 120J, 150J, 150J**
- **Zoll E-Series® – 70j, 120j, 150j, 200j**

TREATMENT:

A. Treat per Universal Patient Care.
B. Consider **Oxygen** at 2-4 lpm via NC to maintain a Sp02 ≥94%.
C. Monitor cardiac rhythm. Obtain a 12 lead ECG no later than 10 minutes after pt's initial complaint or you suspect ACS. This may be done concurrently with other treatments.
D. Establish IV access. AVOID R WRIST IF POSSIBLE. Attempt second line if possible.
E. Transport ASAP to closest appropriate cardiac facility.
    1. You may bypass closest receiving with 12 lead indicators and transport to appropriate receiving cardiac hospital.
F. Obtain vital signs including SpO2 and obtain a medical history.
    1. Assess circulation and consider volume problem vs. pump problem vs. rate problem.
G. Consider the following treatment options:
    1. **Aspirin 162-324 mg PO** (refer to relative contraindications on med sheet)
    2. **Nitroglycerin 0.4 mg SL** if BP is ≥100 mmHg. **DO NOT ADMINISTER NTG IF PT HAS USED PHOSPHODIESTERASE INHIBITORS IN LAST 48 HOURS.**
    3. **Nitroglycerin IV/IO 5 mcg/min**. Limit BP drop to 10% if normotensive or 30% if pt is hypertensive. Maintain BP of at least 100 mmHg.
    4. **Fentanyl 50 mcg IV/IO/IM/IN** prn. May repeat 50 mcg dose prn.
H. Treat any dysrhythmias per appropriate Cardiac Dysrhythmia protocol.

PEDIATRIC PATIENTS:

A. Consider pleuritic causes or trauma.
B. Contact OLMC for advice.

NOTES & PRECAUTIONS:

A. Use caution when giving nitroglycerin to patients with an inferior myocardial infarction (ST elevation in II, III and AVF) as this may result in hypotension due to right ventricle involvement. The latter is present in 50% of such infarcts.
B. **Avoid benzodiazepines in the presence of a STEMI.**
C. If initial 12-lead negative or inconclusive consider repeating every 3-5 minutes if symptoms persist or change.
D. Email/Fax 12 lead ECG and consult medical control if there are concerns.
E. **IV/IO Nitroglycerin** Infusion **MUST** be on a mechanical pump

FIELD IDENTIFIED ST-ELEVATION MI (STEMI)

Indication: 12-lead ECG with:

A. Consider automatic ECG Interpretation of "Acute MI"
B. Paramedic interpretation of probable STEMI
    a. Women with 1.5 mm ST elevation in V2/V3 or Men with 2 mm ST elevation in V2/V3 and/or
    b. 1 mm ST elevation in any other 2 or more contiguous leads
    c. Consult Local ED if needed a STEMI can be called based on ED Physician interpretation of the transmitted 12-lead ECG.

Chest Pain/Acute Coronary Syndrome – 10.070

Action:

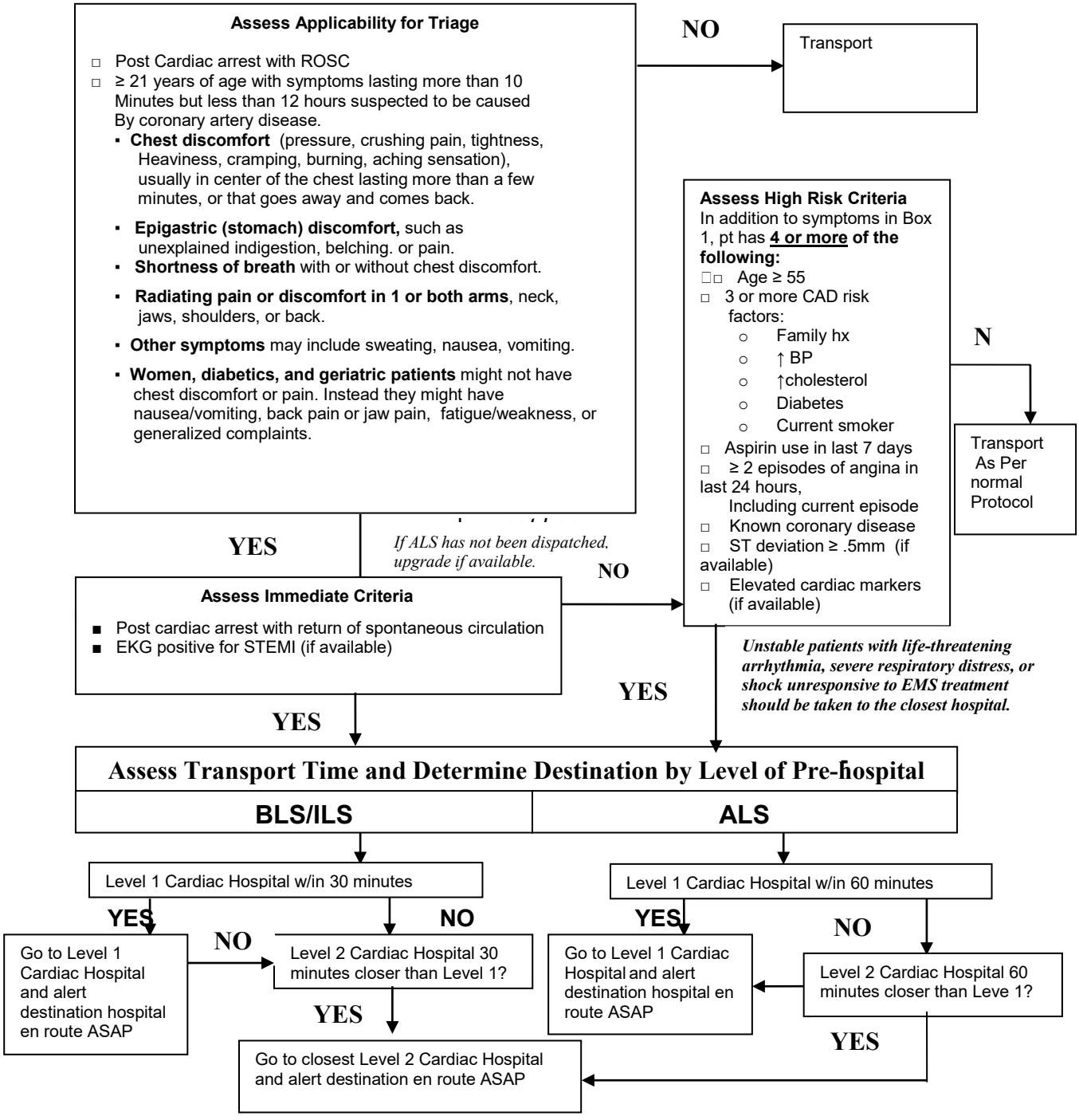
A. Activate **STEMI**.
B. Rapid transport according to the Cardiac Triage Transport Procedure
C. If available, transmit 12-lead ECG to destination hospital.

Myocardial Infarction	**Leads**
Inferior	II, III, aVF
Septal	V1-V2
Anterior	V3-V4
Lateral	I, aVL, V5, V6

DOCUMENT:

1. ABCs
2. Medical History
3. Onset time of signs and symptoms
4. Cardiac Rhythm
5. If a therapy, especially aspirin, was withheld, why
6. SpO2, VS
7. GCS
8. Color, diaphoresis
9. Lung sounds
10. Response to treatment

Pre-Hospital Cardiac Triage Destination Procedure



TREATMENT:

A. Treat per Universal Patient Care.
B. Protect patient from environment (rain, snow, direct sun...). If applicable, begin warming methods to prevent hypothermia. (warm blankets, heated air with blower, warm IV fluids)
C. Plan extrication activities to allow for periodic patient assessment. Plan for occasional extrication equipment "shut down" to assess vital signs.
D. Carefully track vitals, IV fluids, and medications during extrication.
E. Evaluate degree of entrapment and viability of extremities. (absent pulse, blanched skin, capillary refill, diminished sensation, extremely cold to the touch) If one or more extremities are trapped and circulation is compromised or absent consider the placement of constricting bands to inhibit rapid venous return to the central circulatory system of potassium, lactic acid, and myoglobin upon extrication. Contact Medical Control for direction.
F. If extrication of a limb will be prolonged, direct mechanical crush injuries are present (tissue is crushed), and patient's condition is deteriorating, strongly consider calling OLMC to arrange on-scene amputation.
G. Carefully assess collateral injuries that may have occurred during event.
H. 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 Medical Control direction.
I. During extrication of a severely trapped patient who is at risk for crush syndrome, administer **Lactated Ringers or Normal Saline 1,000 – 2,000 ml IV/IO** bolus, then maintain at 500 cc/hr.
J. Consider treatment per **Hyperkalemia** treatment protocol prior to release to buffer acid release from anaerobic metabolism. **Contact Medical Control** for direction.

NOTES & PRECAUTIONS:

A. Do not allow any personnel into extrication area (inner circle) without proper protective equipment and thorough briefing to include evacuation signal.
B. Notify the receiving hospital early in the extrication process to facilitate receiving advanced medical resources if needed.
C. Technical Rescue Team Leader should coordinate all extrication activities, especially the release of patient, with Medical Branch Director.
D. Keep patient well-hydrated and warm during extrication efforts.
E. Constantly evaluate the risks associated with your position, and the possibility of complicating factors (hazardous materials, wind, rain or runoff, gas leaks, etc...).

KEY CONSIDERATIONS:

Previous medical history, current medications, length and degree of entrapment, use of technical rescue, length of extrication, alternate treatment plans

TREATMENT:

A. Treat per Universal Patient Care.
B. In order to decrease intraocular pressure, patients should be transported in a sitting position of at least 30 degrees unless contraindicated.
C. Treat specific injuries as follows:
    1. Chemical Burns
        a. Irrigate from the center of the eye towards the eyelid with isotonic saline, sterile water or tap water for at least 30 minutes.
        b. Do not attempt to neutralize acids or bases.

    2. Direct Trauma to Eye (Suspected Rupture/Penetration of Globe)
        a. Protect the affected eye and its contents with a hard shield or similar device and cover the other eye.
        b. Follow Pain Management Protocol as indicated and consider **Ondansetron or Phenergan** per Nausea and Vomiting protocol.

    3. Foreign body on outer eye
        a. Do not wipe eye.
        b. Consider irrigation.

NOTES & PRECAUTIONS:

A. Document new onset of blurring, double vision, perceived flashes of light or other visual changes.
B. Contact lenses should be removed, if possible.

Hyperkalemia – 10.100

TREATMENT:

A. Treat per Universal Patient Care.
B. If hyperkalemia is suspected based on history and physical/ECG findings:
    1. Administer **Calcium Gluconate 1 gram/10 ml slow IV/IO over 5 – 10 , or 10% Calcium Chloride 10 ml slow IV/IO over 5 – 10 minutes** in a proximal port, **minutes**. May repeat after every 5 minutes until desired effect.
    2. If no change in rhythm following calcium administration and transport time is prolonged consider alternate therapy:
        a) **Sodium bicarbonate 50 mEq IV/IO**
        b) **High dose Albuterol 10 mg by nebulizer**
C. Obtain 12-lead ECG.

NOTES & PRECAUTIONS:

A. Treatment is going to be 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, paraplegia/quadriplegia, crush injury, or patients who have sustained serious burns > 48 hours.
B. ECG changes that may be present with hyperkalemia include
    1. Peaked T waves.
    2. Lowered P wave amplitude or no P waves.
    3. Prolonged P-R interval (> 0.20 seconds).
    4. Second degree AV blocks.
    5. Widened QRS complex.
C. DO NOT mix Sodium Bicarbonate solutions with Calcium preparations. Slowly flush remaining Calcium Chloride from the catheter prior to administering Sodium Bicarbonate.

KEY CONSIDERATIONS:

Previous medical history, medications and allergies, trauma

PEDIATRIC PATIENTS:

Calcium chloride dosing is 0.2 ml/kg slow IV/IO over 5 – 10 minutes. Max dose 10 ml.
Calcium gluconate dosing is 0.5 ml/kg slow IV/IO over 5 – 10 minutes. Use a proximal port. Max dose 10 ml.

TREATMENT:

A. Treat per Universal Patient Care.
B. Consider **Nitroglycerine 5 mcg/min IV/IO** (NTG 0.4 mg SL if IV is not an option)

- Hypertensive Crises =
  Systolic BP > 220mmHg; Diastolic BP > 130 mmHg and symptoms of end organ compromise, I.e. CHF, Pulmonary Edema, unstable angina, changes in mental status, CNS changes and renal disease.

KEY CONSIDERATIONS:

The overall goal in pharmacologic therapy is to reduce the patient's blood pressure slowly. Contact Medical Control.

A. **IV/IO Nitroglycerin** Infusion **MUST** be on a mechanical pump

Hyperthermia – 10.120

TREATMENT:

A. Treat per Universal Patient Care.
B. Move patient to a cool environment
C. Remove clothing and begin cooling measures that maximize evaporation. (Spray bottle with tepid water, cool wipes, fans)
D. Start IV/IO **Lactated Ringers or Normal Saline** and adjust rate as needed. Do not overload the patient.
E. Give PO fluids (Gatorade®, etc) if alert
F. If blood pressure is less than 100 mmHg systolic, treat per Shock Protocol.

NOTES & PRECAUTIONS:

A. Heat stroke is a medical emergency. Differentiate from heat cramps or heat exhaustion. Be aware that heat exhaustion can progress to heat stroke.
B. Wet sheets over a patient without good airflow will increase temperature and should be avoided.
C. Do not let cooling measures in the field delay transport.
D. Suspect hyperthermia in patients with altered mental status or seizures on a hot, humid day and elderly patients on multiple medications.
E. Consider sepsis and/or contagious disease. Examine patient for rashes or blotches on the skin or nuchal rigidity.

DOCUMENT:

History of onset, sweating, patient's temperature, recent infection/illness, medical history, medications and allergies, detailed assessment, neurological status, GCS, temperature, response to treatment, amount of IV fluids, VS, signs and symptoms, and cardiac rhythm.

Treatment:

1. Treat per Universal Patient Care.
2. ABCs. Allow up to 45 seconds to confirm respiratory arrest, pulseless cardiac arrest or bradycardia that is profound enough to require CPR.
3. Handle gently and remove wet clothing
4. Prevent further heat loss/wind chill
5. Monitor core temperature and cardiac rhythm
6. Patients with severe hypothermia (core temp <30˚C (86˚F)) may need internal rewarming. Contact Medical Control for direction.

FOR PATIENT IN CARDIAC ARREST

1. <u>VF/Pulseless VT/Asystole/Pulseless Electrical Activity</u>
   a. Begin CPR
   b. Defibrillate VF/VT once @ 120J biphasic or equivalent monophasic setting.
   c. Intubate and ventilate with warm, humid **Oxygen** if possible.
   d. Establish IV/IO access
   e. If patient is <30˚C (86˚F), withhold IV/IO meds and further defib attempts
   f. As patient is warming and is >30˚C (86˚F), give IV meds prn at longer than standard intervals and repeat defibrillation as core temp rises until normothermic.
   g. Infuse warm lactated ringers or normal saline.
2. <u>Frozen Tissue/Lifeless</u>
   a. Consider declaring death in the field. If in doubt, consult Medical Control for directions.

FOR PERFUSING PATIENTS:

1. Monitor ECG and pulse oximetry.
2. Handle patient gently to avoid VF
3. Warm patient as required:
   a. Heated blankets
   b. Warm environment
   c. Warm air
   d. Warm IV fluids
   e. Warm packs

NOTES & PRECAUTIONS:

A. At-risks groups for hypothermia include trauma victims, alcohol and drug abuse patients, homeless persons, elderly, low income families, infants and small children, and entrapped patients.
B. Hypothermia may be preceded by other disorders (alcohol, trauma, OD) look for and treat any underlying conditions while treating the hypothermia.
C. The hypothermic heart may be unresponsive to cardiovascular drugs, pacer stimulation or defibrillation.

TREATMENT:

A. Treat per Universal Patient Care.
B. Spinal Immobilization as indicated in Spinal Injury protocol
C. Treat for shock as needed
D. Control external bleeding with direct pressure, elevation, hemostatic dressings, and/or tourniquet.
   - **Fracture, Sprain or Dislocation**
     1. Check for pulses, sensation and movement distal to the injury site before and after immobilization.
     2. Splint fractures/dislocations in the position found. If PMS is compromised distal to fracture consider applying gentle 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 Medical Control.
     3. If fracture/dislocation is open, place a moist sterile dressing over wound and cover with a dry dressing.
     4. Elevate and/or place cold packs over fracture site if time/injuries allow.
     5. Apply traction splint to mid-shaft femur fractures.
     6. For pelvic fractures, utilize pelvic sling and secure patient to a backboard to minimize movement and blood loss.
   - **Amputation**
     1. Cover stump or partial amputation with moist sterile dressing.
     2. May use a tourniquet to control bleeding.
     3. Splint partial amputations in anatomical position to avoid torsion and angulation.
     4. Wrap amputated part in a sterile dressing, and place in a plastic bag to keep dry. Place bag in ice water if available.
     5. If transport time is prolonged (extended extrication, etc.) consider sending the amputated part ahead to be prepared for reimplantation.
E. Treat pain per Pain Management protocol.
F. Keep patient warm
G. Monitor distal pulses, skin temp, sensation, and motor function
H. Transport ASAP

PEDIATRIC PATIENTS:

A. Treat pain per Pain Management protocol.
B. Consider non-accidental trauma as a cause of injury.

DOCUMENT:

Mechanism of injury, previous medical history, medications and allergies, time of injury, quality of distal pulses, capillary refill, treatment(s) and responses, degree of deformity, and distal skin color.

Spinal Injury – 10.141

High Risk Criteria:

- Fall from a height (>6 feet, or down 5 stairs.)
- Motor vehicle collision (high speed, rollover, ejection, motorcycle, pedestrian.)
- Diving injuries.
- Obvious blunt force trauma above the clavicles.
- Found unconscious with signs of significant trauma above the clavicles.
- Any other mechanism of injury that may indicate significant energy transfer to the spinal column.

Determine Patient Criteria Status

Low Risk Criteria:

- Falling from a standing position where there are no signs of trauma above the clavicles.
- Penetrating trauma **unless** neurological deficit is present.

Perform standard patient assessment and obtain full history & vital signs.

Maintain C-spine while performing assessment.

Assessment produces any concerns for cervical spine trauma.

YES

NO

Perform C-Spine Clearance Evaluation in Order:

1. Age is greater than 65
2. GCS less than15 or Mental Status Orientation is less than 4/4 (Person, Place, Time, Event)
3. There are signs of intoxication (drugs or alcohol)
4. There are major distracting injuries; (fractures, burns, significant chest or abdominal trauma).
5. There are focal neurological deficits; (loss of sensation or motion in any extremity).
6. There is pain, deformity or tenderness to posterior cervical or upper thoracic spine. (**See Note**)
7. Patient is unable to turn head 45 degrees left & right without pain, numbness, or loss of sensation in any extremities.
8. Patient experiences pain in cervical or upper thoracic spine with deep cough.

Patient C-spine is cleared, and patient may be transported in a position of comfort.

NO to ALL

YES to Any of the above

Immobilize the neck/cervical spine

- Utilize cervical collar and fit appropriately to the patient.
- May substitute padding along the back & sides of neck for anatomically difficult patients.
- Allow patient to assume any position of comfort.
- Utilize other padding and positioning methods as needed with goal of comfort during transport.

NOTE ON LBBs:
In general, long spine boards are not to be used for routine immobilization or transport. Use LBB, along with slat stretcher, scoop stretcher, KED, and other adjuncts as needed to facilitate transfer/extrication and patient comfort. LBB is also indicated to facilitate good chest compressions during CPR.

Attention to spinal precautions among at-risk patients is paramount. This includes application of a cervical collar, adequate security to a stretcher, minimal movement/transfers, and maintenance of stabilization during any necessary movement/transfers.

TREATMENT:

A. Treat per Universal Patient Care.
B. If shock syndrome is present follow Shock protocol.
C. Consider fluid challenge in patients exhibiting signs of dehydration.
D. Give **Ondansetron 4-8 mg's IM/IN/PO or slow IV/IO** push over 2-5 minutes.
    1. If nausea and/or vomiting are inadequately controlled after 10 minutes, may repeat **Ondansetron 4 mg** once for a max dose of 8mg.
    2. Consider **Phenergan 12.5-25 mg IV/IM/IO**
    3. If the patient shows adverse reaction or dystonia to antiemetic administration, administer **Benadryl 12.5 - 25 mg IV/IM/IO**.
E. If patient continues to vomit administer fluid challenge and consider other causes.

PEDIATRIC PATIENTS:

A. Ondansetron use in patients under 2 years of age requires OLMC consultation.
B. For children < 40 kg administer **Ondansetron 0.1mg/kg slow IV/IM/IO** push over 2 minutes up to a total maximum IV dose of 4mg.

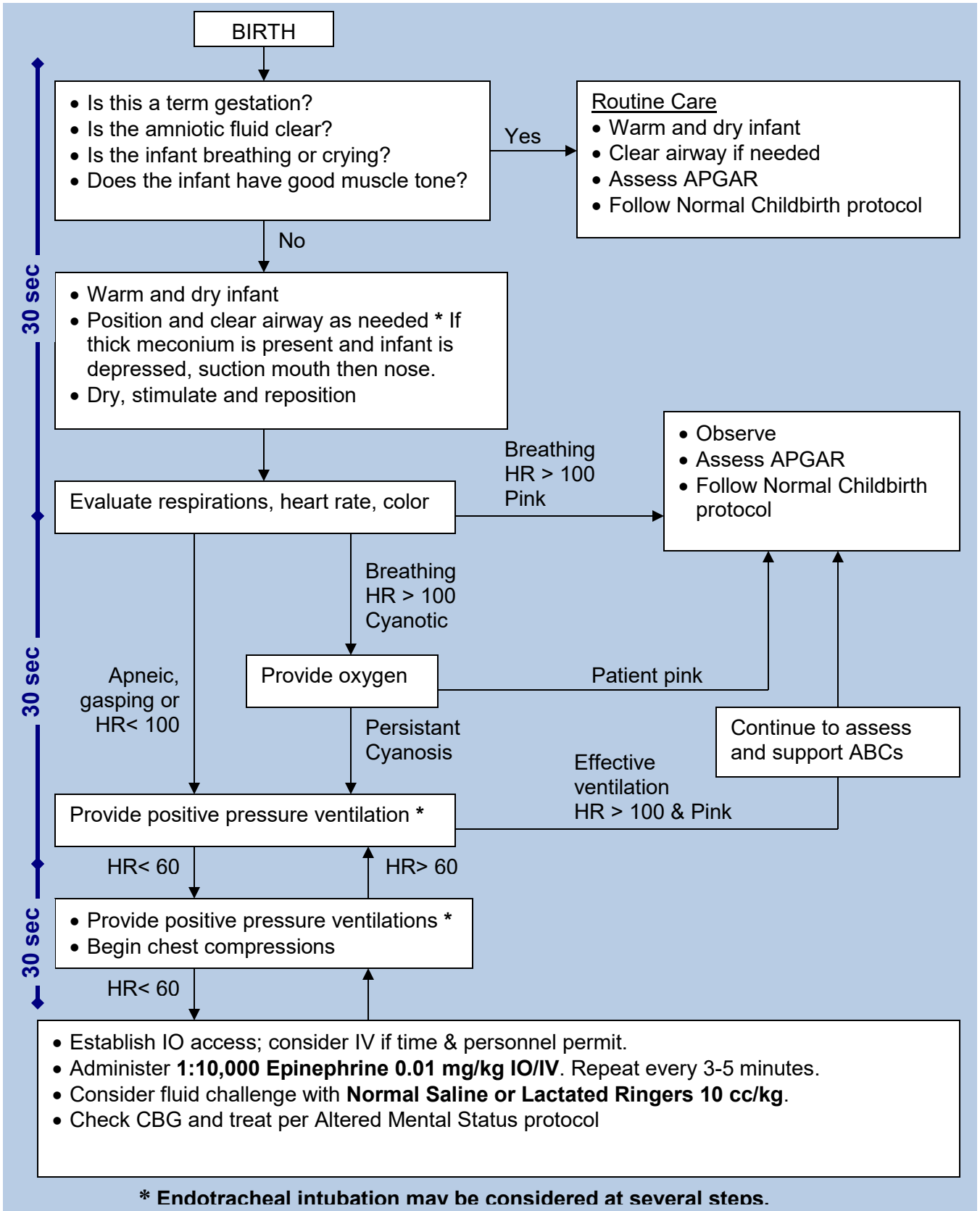
NOTES & PRECAUTIONS:

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

KEY CONSIDERATIONS:

Vomiting blood or bile, complaint of nausea, medications and allergies, pregnancy, abdominal pain or trauma, diarrhea, head trauma, orthostatic vital signs.

Neonatal Resuscitation – 10.160



Neonatal Resuscitation – 10.160

NOTES & PRECAUTIONS:

A. Neonatal age is birth to 28 days.
B. Do not use atropine in neonatal resuscitation.
C. If meconium is lightly stained and infant is vigorous (strong respiratory effort, good muscle tone, heart rate > 100 bpm) endotracheal suctioning should not be performed.
D. An infant may need resuscitation if intrapartum risk factors for asphyxia are present (prolapsed cord, painful bleeding, prolonged rupture of membranes, maternal fever, multiple births, abnormal presentation, maternal hypo-hypertension or seizure)

KEY CONSIDERATIONS:

Fetal presentation, recent trauma, maternal health/risk factors, maternal medications, previous birth difficulties, APGAR

APGAR SCORE:	**0**	**1**	**2**
Appearance	Blue/Pale	Body pink, blue extremities	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

Newborn Target Spo2 after birth:

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

TREATMENT:

A. General
1. Treat per Universal Patient Care. Start O2 in all abnormal deliveries.
2. If multiple, or abnormal birth, consider second transport unit.
3. If in second trimester or third trimester, transport patient on the left side (pillow under right hip or, if on backboard, tilt right side of board up 20 degrees) to keep uterine pressure off inferior vena cava unless delivery is imminent.
4. Vital signs may not be a reliable indicator of shock or respiratory distress in the pregnant patient. BP does not change until significant blood loss occurs due to physiologic changes in pregnancy.

B. Toxemia of Pregnancy
1. If in seizure (eclampsia) follow Seizure protocol.
2. Contact OLMC for consideration of use of **Magnesium Sulfate**.

C. Normal Childbirth
1. Use sterile or clean technique.
2. Guide/control but do not retard or hurry delivery.
3. Check for cord around neck and gently remove if found. If unable to remove, place clamps 2 inches apart and cut cord if needed.
4. Suction mouth, then nose with bulb syringe after head is delivered. Keep infant level with perineum.
5. Guide head upward to deliver lower shoulder, then downward to deliver upper shoulder.
6. Place clamps 2 inches apart and cut umbilical cord about 8 inches from navel and then dry infant. Keep infant level with mother's heart until cord is cut.
7. Assess and treat ABC's. Follow Neonatal Resuscitation protocol if needed.
8. Assess infant using APGAR at time of birth and five minutes later. (The Pre-hospital Care Report should describe the infant using criteria rather than giving a numerical score.)
9. Dry infant and place against mother's skin. Cover both with a clean, dry blanket to maintain warmth.
10. If child does not need treatment, place on mother's chest for transport.
11. Gently but firmly massage fundus to encourage contraction and prevent excessive bleeding.
12. Transport
    a. Monitor vital signs of mother and infant enroute.
    b. Do not delay transport to deliver the placenta.
    c. Severe bleeding following placental delivery, consider **TXA 1 Gram in 100 ml's over 10 minutes**

D. Abnormal Childbirth
1. General
    a. Transport to nearest appropriate hospital.
    b. Give receiving hospital earliest possible notification.
    c. Contact OLMC for advice.
    d. Transport in position as described in General treatment above.
    e. If extended transport considers Air Resources

2. Breech Presentation (buttocks first)
    a. If delivery is imminent, prepare the mother as usual and allow the buttocks and trunk to deliver spontaneously then support and lower the body to help the head pass. As the hairline appears, raise the body by the ankles upward to fully deliver the head.
    b. If the head does not deliver within three minutes suffocation can occur.
        1. Place a gloved hand into the vagina, with your palm toward the baby's face.
        2. 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.
        3. Assess for the presence of pulse in umbilical cord, if presenting.
3. Shoulder Dystocia:
    a. Shoulders will not pass through the pelvis
    b. Apply gentle traction to back while applying suprapubic pressure
        - McRoberts Maneuver: Pulling the women's knees towards her chest, applying suprapubic pressure.

E. <u>Prolapsed Cord</u>
1. With a gloved hand, gently attempt to push the baby back up the vagina several inches.
2. Do not attempt to push the cord back.
3. Assess for the presence of pulse in umbilical cord.
4. Use saline soaked gauze to prevent cord from drying
5. Move mother to Trendelenburg position or knees to chest. This will help with cord pressure and increase fetal circulation

F. <u>Limb Presentation</u>
1. The presentation of an arm or leg through the vagina is an indication for immediate transport to the hospital.
2. Assess for presence of pulse in umbilical cord, if presenting.
3. Do not pull on limb.

G. <u>Abruptio Placentae –</u> Occurs in the third trimester of pregnancy when the placenta prematurely separates from the uterine wall leading to intrauterine bleeding.
1. The patient experiences lower abdominal pain and the uterus becomes rigid.
2. Shock may develop without significant vaginal bleeding.

H. <u>Placenta Previa –</u> Occurs when the placenta covers the cervical opening and can result in vaginal bleeding and prevents delivery of the infant through the vagina. The infant needs to be delivered via caesarian section.

OB/GYN & Childbirth Emergencies – 10.170

NOTES & PRECAUTIONS:
Always consider the possibility of ectopic pregnancy in a woman of child bearing age (13 – 55) with abdominal pain or vaginal bleeding. The patient may decompensate quickly due to internal blood loss.

KEY CONSIDERATIONS:
Due date/prenatal care, last menstrual period, previous childbirth history, single or multiple birth, fetal heart tones, ruptured membranes, vaginal bleeding, contractions, cramping, edema or hypertension, abdominal pain, seizures

APGAR SCORE:	**0**	**1**	**2**
Appearance	Blue/Pale	Body pink, blue extremities	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

Normal Maternal Changes:

- **HR increases 15-20 BPM**
- **B/P decreases 5-15mmHg 2nd tri**
- **Plasma increases 40%**
  - **Increase in clotting factors, increased risk of Pulmonary Embolus (PE)**

- **Hormones Progesterone and Relaxin relaxes sphincters**
  - **Increased risk of aspiration in intubation and RSI**

Newborn Target Spo2 after birth:

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

TREATMENT:

A. Treat per Universal Patient Care.
B. For acute pain and uncontrolled chronic pain:
    1. Determine location of pain and severity using numeric scale (1-10) or Faces scale.
    2. Consider and treat underlying cause of pain.
    3. Use non-pharmacological pain management (i.e., position of comfort, hot/cold pack, elevation, splinting, padding, wound care, therapeutic calming and communication).
    4. Administer pain medication:
        i. **Fentanyl 50 micrograms IV/IO/IM/IN**. Repeat with 25-50 micrograms every 3-5 minutes as needed.
        ii. **Morphine 2-5 mg IV/IO/IM** every 3-5 minutes to a maximum of 10 mg.
        iii. Ketorolac (Toradol) 30 mg IV or 60 mg IM
        iv. Dilaudid (Hydromorphone) 1-4 mg IV/IO/IM titrated to effect
        v. Contact Medical Control if pain is not controlled within maximum dosing.
    5. For the relief of muscle spasms and joint or long bone injuries consider **Ketamine 15-30 mg's IV/IM/IO or Versed 0.5-2.5 mg's IV/IM/IN to a max of 5 mg's or Diazepam 2-10 mg's IV/IM to a max of 10 mg's**
    6. **Ativan 0.5-1 mg's IV** for anxiety.

<u>Do not administer pain medications if any of the following are present:</u>

- **Respiratory distress or O2 saturation of < 90%**
- **Known allergy to that pain medication**
- **Altered mental status**
- **Systolic blood pressure of < 100 mm/Hg (except Ketamine)**

C. Obtain a full set of vital signs and pain scale rating prior to and after each administration of pain medication.

PEDIATRIC PATIENTS:

<u> Utilize Pediatric Guide **</u>**

A. **Fentanyl 1 mcg/kg IV/IO/IM/IN**. May repeat with 0.5 -1 mcg/kg every 3-5 minutes as needed to a maximum of 4 mcg/kg. Do not exceed adult dosing.
B. For children < 20 kg, **Morphine 0.1 mg/kg IV/IO/IM**. May repeat every 3-5 min. Do not exceed adult dosing.
C. Contact Medical Control if maximum dose of either medication is reached without adequate pain management.
D. Ketorolac (Toradol)
    1. IV 0.5 mg/kg to max of 30
    2. IM 1 mg/kg to max of 60

Poisoning & Overdose – 10.190

USE PROPER PRECAUTIONS. DECONTAMINATE PT PRIOR TO TREAMENT/TRANSPORT

TREATMENT:

A. Treat per Universal Patient Care
B. If systolic BP < 90 mmHg follow Shock Protocol.
C. If unknown poison or overdose and patient has a decreased level of consciousness, treat per Altered Mental Status protocol.
D. Contact **Poison Control 1-800-222-1222** for specific management and treatment. **Poison Control is same as Online Medical Control for this protocol only.**
E. Treat specific poisons/overdoses as outlined below:

- **Beta blockers:**
  *Contact Poison Control/OLMC for consideration of **Glucagon**.*

- **Calcium channel blocker:**
  *Contact Poison Control/OLMC for consideration of **Calcium Gluconate**, 10 ml's over 5-10 min IV/IO **or Calcium Chloride**, 10cc of 10% over 5-10 min*

- **Carbon Monoxide:**
  1. High flow **Oxygen**.
  2. All symptomatic patients (e.g. headache, dizziness, nausea) should be transported.
  3. Transport patients with severe symptoms (e.g. cardiac ischemia, coma, syncope, seizures, loss of consciousness). Consider Air Ambulance for transport to hyperbaric facility.
  4. If CO monitor is available and CO reading is ≥ 15, transport to nearest facility with a hyperbaric chamber (unless patient meets burn or trauma center criteria) via Air Ambulance.

- **Tricyclic antidepressant:**
  1. Treat seizures per Seizure Protocol
  2. Treat hypotension per Shock protocol.
  3. If patient exhibits arrhythmias or a widening QRS complex administer **Sodium Bicarbonate 1 mEq/kg IV/IO**. See Tachycardia Protocol.

- **Organophosphates:**
  1. Prepare to handle copious secretions.
  2. Contact Poison Control/OLMC. Administer **Atropine 1 – 5 mg slow IV/IO** every 5 minutes until symptoms improve.

- **Narcotic**
  1. Assist ventilations prn. Intubate prn
  2. Administer **Naloxone 0.4 - 2mg IV/IO/IM/IN**. Repeat dose if no response to max of 8mg.

F. Contact Poison Control for advice on other ingested poisons.

PEDIATRIC PATIENTS:

<u> Utilize Pediatric Guide **</u>**

- **<u>Narcotic</u>**
  1. Assist ventilations prn. Intubate prn
  2. Administer **Narcan 0.1 mg/kg IV/IO/IM/IN**, Max single dose 2mg. Repeat dose once if no response.

NOTES & PRECAUTIONS:

A. SpCO levels may be elevated in smokers. Levels can range from 3-20% depending on the number of packs smoked.
B. Pulse oximeter may provide a false reading in patients with elevated SpCO levels.
C. If the patient exhibits extrapyramidal symptoms/dystonia's with a history of Phenothiazine use, consider **Diphenhydramine 12.5-25mg IV/IO or Deep IM**.
D. For large organophosphate poisonings, refer to Haz Mat protocol.
E. Do not neutralize acids or alkalis.
F. Consider Haz Mat Team activation.

KEY CONSIDERATIONS:

Route of poisoning, amount of ingestion, antidote given, suicidal intent, multiple patients, psychiatric history

TOXIDROME TABLE			
Toxidrome	**Examples**	**Clinical Features**	**Antidotes**
Sympathomimetic	Cocaine Methamphetamine	Agitation Diaphoresis Hypertension Hyperthermia Dilated pupils Tachycardia	Midazolam
Opioid	Heroin Hydromorphone Methadone Oxycodone	Depressed mental status Hypoventilation Constricted pupils	Naloxone
Cholinergic (Anti-cholinesterase)	Pesticides • Carbamates • Organophospates Nerve agents	Muscarinic* Nicotinic** Central***	Atropine Pralidoxime (2-Pam) (Hazmat, OLMC)
Sedative-Hypnotic	Barbituates Benzodiazepines GHB	Depressed mental status Hypotension Hypothermia	Supportive treatment
Cardiotoxic drugs	Beta-blockers Calcium channel blockers	Bradycardia Conduction issues Hypotension	Glucagon (OLMC) 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 – flecanide, propafenone	Altered mental status Hypotension Seizures Wide complex tachycardia	Sodium Bicarbonate

***Muscarinic**	****Nicotinic**	*****Central**
Diarrhea, Urination, Miosis, Bradycardia, Bronchospasm, Bronchorrhea, Emesis, Lacrimation, Salavation, Sweating	Mydrasis, Tachycardia, Weakness, Hypertension, Hyperglycemia, Fasciculations	Confusion, Convulsions, Coma

TREATMENT:

A. Treat per Universal Patient Care.
B. Follow appropriate Airway Management or Cardiac Dysrhythmia protocol if indicated.
C. Treat patient's clinical impression as follows:

1. **Upper Airway**
   a) **Croup & Epiglottitis –**
      a. Transport in position of comfort, Airway Management protocol as needed
      b. If stridor persists at rest, consider **Epinephrine 1:1,000 3 ml nebulized or Racemic Epinephrine 0.5 ml's in 2.25% solution diluted in 3 ml's of NS**.
      c. Consider corticosteroid administration: **Dexamethasone 10 mg** if IV/IO established.
   b) **Anaphylaxis** – Treat per Anaphylaxis and Allergic Reaction protocol.
   c) **Foreign Body** – Obstructed airway procedures. Remove object using direct laryngoscopy if complete obstruction.
   d) **Complete Obstruction** – If you cannot effectively BVM ventilate the patient and the patient is deteriorating, consider cricothyrotomy.

2. **Pulmonary Edema/ CHF**
   a) Sit patient upright.
   b) *Consider CPAP* {e.g. unable to speak more than 1-2 words, low O2 saturation (<90%), respiratory rate > 25}; start CPAP if available.
   c) If BP > 100 mmHg systolic:
      a. **Nitroglycerine 0.4 mg SL**, repeat every 3-5 minutes;
         Consider **Nitroglycerine 5 mcg/min IV/IO drip**, titrating to effect. **Do not administer nitroglycerine without OLMC approval if pt has taken Viagra® (Sildenafil), Levitra® (Vardenafil) or other similar drugs in the last 24 hours, or Cialis® (Tadalafil) within the last 48 hours**.
      b. **Morphine 2-5 mg IV/IO**.
   d) If BP < 90 mmHg systolic, treat possible cardiogenic shock per Shock protocol. **Levophed, Epinephrine infusion, or push dose Epinephrine**; stop NTG Drip/Spray until BP > 100 systolic.

3. **COPD**
   a) **DuoNeb** (Albuterol 2.5 mg & Atrovent 0.5 mg) via nebulizer.
   b) Repeat with **DuoNeb x 2** or **Albuterol 2.5 mg only via nebulizer** every 10 minutes. Discontinue if pt. develops chest pain or increased tachycardia.
   c) Consider **Dexamethasone (10 mg) IV/IO/IM/PO** for moderate to severe respiratory distress.
   d) Consider CPAP if available with ongoing nebulization.

4. **Asthma**
    1. **DuoNeb** via nebulizer- (Albuterol 2.5 mg & Atrovent 0.5 mg).
    2. Repeat with **DuoNeb x2** or **Albuterol only via nebulizer**- (Albuterol 2.5 mg).
    3. If patient is deteriorating and < 40 years old consider **Epinephrine 1:1,000. Adult: 0.5 mg IM**; may repeat every 10 min up to 3 doses. Contact OLMC for additional doses, patients > 40 years old and/or if a past medical history of CAD.
    a. With diminished perfusion or shock symptoms, consider:
        i. **1:100,000 Epinephrine 0.5 mg slow IV/IO.** Make 1:100,000 by diluting 1 mg 1:1,000 in a 100cc bag of NS or LR. Give 50cc. May repeat every 5 minutes to maintain BP of 90 mmHg systolic. Treat per Shock protocol.
    4. If transport time is long and asthma is severe, contact OLMC for consideration of **Magnesium Sulfate** (usual dose is 1-2 grams diluted to 10cc in NS IV/IO). Administer slowly. (Contraindicated in the hypotensive pt.).
    5. Consider **Dexamethasone (10 mg) IV/IO** for moderate to severe respiratory distress.
    6. Consider CPAP if available with ongoing nebulization.

PEDIATRIC PATIENTS:

A. Upper Airway-Croup/Epiglottitis

1. In patients 6 months to 6 years of age with audible stridor at rest, give **3 ml Epinephrine 1:1,000 via nebulizer or Racemic Epinephrine 0.5 ml's in 2.25% solution diluted in 3 ml's of NS**. Contact OLMC for additional dosing.
2. Consider corticosteroid administration: **Dexamethasone 0.6 mg/kg** if IV/IO/IM established not to exceed adult dosing.
3. Treat anaphylaxis and foreign body obstruction per adult guidelines.
4. The usual cause of respiratory arrest in children with croup, epiglottitis or laryngeal edema is exhaustion, not complete obstruction. If the child with suspected upper airway compromise deteriorates, you may still be able to ventilate with a BVM. Only attempt intubation if you cannot effectively ventilate with BVM.
5. If complete obstruction is present and you cannot effectively BVM ventilate the patient and the patient is deteriorating, consider needle cricothyrotomy.

B. Asthma

1. Give **DuoNeb and Albuterol** per adult guidelines.
2. If patient is deteriorating give **1:1,000 Epinephrine 0.01 mg/kg IM** every 15 minutes (max single dose 0.3 mg) up to 3 doses. Contact OLMC for additional doses.
    a. With diminished perfusion or shock symptoms, consider:
        i. **1:100,000 Epinephrine 0.01 mg/kg slow IV/IO.** Make 1:100,000 by diluting 1 mg of 1:1,000 in 100cc bag of NS or LR. May repeat prn every 5 minutes.
3. Consider corticosteroid administration: **Dexamethasone 0.6 mg/kg** for moderate to severe distress.
4. If patient has Moderate to Severe asthma based on Severity Assessment Guide and is not improving with treatment contact medical control.

5. If transport time is long and asthma is severe, contact OLMC for consideration of **Magnesium Sulfate** (usual dose is 50 mg/kg diluted to 10cc in NS IV/IO). Administer slowly over 20 minutes. (Contraindicated in the hypotensive pt.).

NOTES & PRECAUTIONS:

A. In addition to specific interventions for respiratory distress, aggressive airway management, including early intubation, is appropriate for the patient who does not respond to treatment or is rapidly deteriorating.
B. The best indicator for the cause of respiratory distress is past history. If a person has had COPD or CHF in the past, it is likely the person has the same condition again.
C. In cases of tachypnea it is essential to consider all causes such as pulmonary embolus, hypoxia, cardiac causes, infection and trauma. Hyperventilation may be a response to an underlying medical problem and should only be considered after these other causes have been excluded. Do not treat hyperventilation by rebreathing CO2. Reassurance and oxygen via mask are appropriate.
D. **IV/IO Nitroglycerin** Infusion **MUST** be on a mechanical pump

KEY CONSIDERATIONS:

Speed of onset, recent illness/infection, fever, chills or productive cough, medications and allergies, distended neck veins, peripheral edema, lung sounds, medical history (including asthma, CHF, COPD, pneumonia)

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

TREATMENT:

A. Treat per Universal Patient Care.
B. If patient is in status seizure (continuous seizure or repetitive seizures without regaining consciousness):
    1. Administer **Midazolam 10 mg IM/IN**.
    2. If an IV is established and still seizing, may administer **Midazolam 5 mg IV/IO**. May repeat to a maximum dose of 10 mg for seizures lasting longer than five minutes.
    3. Consider **Lorazepam 2-4 mg IV/IM/IN**.
        i. If still seizing after 5-10mins you can repeat dose once
    4. Monitor patient's respiratory status closely after midazolam administration.
    5. Contact OLMC if further doses are needed.
C. Check blood glucose and treat per Altered Mental Status protocol.
D. Place patient on their left side for transport.
E. <u>All first-time seizure patients require medical evaluation by a physician</u>. Contact OLMC if patient refuses transport and obtain AMA signature.

PEDIATRIC PATIENTS:

A. If patient is in status seizure (continuous seizure or repetitive seizures without regaining consciousness):
    1. Administer **Midazolam 0.1 mg/kg IV/IO** to a maximum initial adult dose. May repeat to a maximum dose of 10 mg for seizures lasting longer than five minutes.
    2. If no IV access, administer **Midazolam 0.2 mg/kg IM** to a maximum initial dose of 5 mg. May repeat to a maximum dose of 10 mg.
    3. Consider **Lorazepam 0.05-0.1mg/kg IV/IO/IM/IN** (28 days to 12 years)
        i. IV diluted 1:1 with Normal Saline
        ii. If still seizing after 5-10mins you can repeat dose once
    4. Contact OLMC if further doses are needed.
B. Febrile seizures are generally found between the ages of 1- 6 and are usually short in duration.
    1. **Tylenol (acetaminophen) 15mg/ kg PO** if gag reflex intact. Can be administered via **rectal suppository** same dose if no gag reflex or if patient is vomiting.
C. First time seizures in children should be considered sepsis or meningitis until proven otherwise.

NOTES & PRECAUTIONS:

A. Seizures in patients > 50 years of age are frequently caused by arrhythmias. Treat per appropriate protocol.
B. New onset of seizures in a pregnant patient, especially in the third trimester, may indicate toxemia of pregnancy. Contact OLMC for consideration of **Magnesium Sulfate**. Normal dose is 4 grams slow IV over 1-2 minutes.
C. Remember to check a pulse once a seizure stops. Seizure activity may be the sign of hypoxia or dysrhythmias.
D. In newborns seizure most commonly is related to hypoglycemia, treat under hypoglycemia protocol.
E. Seizure patients should have cardiac, capnometry and SpO2 monitoring if available.

TREATMENT:

A. Treat per Universal Patient Care protocol.
B. Apply cardiac monitor to obtain 12-lead ECG.
C. Establish IV 18g or larger.
D. Administer O2 if SpO2 < 94%.
E. Notify hospital of incoming **Sepsis Alert** if Sepsis criteria are met.
F. **Severe Sepsis only (note C): administer 30mL/kg up to a maximum of 2 L.** (**LR** is fluid of choice but **NS** is acceptable if only fluid available.)
    a. Titrate fluid volume to a MAP pressure of 70 mmHg.
    b. Consider **Levophed or Epinephrine** titrated to a MAP pressure of 70 mmHg.
    c. Consider 2nd large bore IV.
G. Treat pain per Pain Management Protocol.

PEDIATRIC PATIENTS:

A. Monitor vital signs every 5 minutes
B. Begin treatment per shock protocol and Contact OLMC

NOTES:

A. **Systemic Inflammatory Response Syndrome (SIRS)= 2 or more of below criteria:**
    a. Temperature greater than 38° C (100.4 ° F) OR less than 36° C (96.8°F)
    b. Respiratory rate greater than 20/min
    c. Heart rate greater than 90 beats/min
    d. Systolic BP < 90 mmHg or Diastolic BP < 60 mmHg

B. **Sepsis** = *SIRS + documented or suspected infection*.
    a. Documented infections include but are not limited to: pneumonia, UTI, wounds, skin and/or decubitus ulcers.
    b. Suspected infection may be determined via the presence of high risk criteria such as: A) nursing home resident, B) recent surgery, C) immunosuppression or D) in-dwelling device.

C. **Severe Sepsis**
    a. Sepsis + Sepsis-induced organ failure or tissue hypoperfusion
        i. Shock Index (SI) of >1
        ii. ETCO2 ≤ 32 mmHg;
        iii. Hypoperfusion = Mean Arterial Pressure (MAP) less than 65 mmHg;
        iv. Lactate (if available) > 4 mg/dl;
        v. Acute altered mental status

D. Sepsis Alert Example- *"This is Medic _____ coming in with a Sepsis Alert. This patient is a ____y/o m/f with suspected sepsis. Pt is positive for SIRS criteria and a suspected infection. Current vitals as follows ____ with a MAP of _____. This patient does/does not qualify for 30 cc/kg bolus based on severe sepsis criteria."*

E. **Shock Index** = Heart Rate divided by Systolic Blood Pressure
    Example: HR= 125 Systolic= 98 mmHg 125/98 = 1.3 Meets SI criteria

TREATMENT:

A. Treat per Universal Patient Care
B. Prepare for rapid transport.
C. Determine type of shock and treat as follows:

- **Hypovolemic Shock:**
  1. Elevate legs.
  2. Give **NS or LR 500 ml** fluid bolus, repeat if needed if no signs of pulmonary edema.
  3. For penetrating trauma or AAA, do not fluid overload. Goal is a systolic BP of 100 mmHg.
  4. For BP <100 mmHg systolic with signs of traumatic hemorrhagic shock, if available, give **TXA 1g IV/IO** in 100 ml fluid bolus over 10 minutes if under 3 hrs. since injury.
- **Cardiogenic Shock:**
  1. Follow appropriate cardiac dysrhythmia protocol.
  2. Administer 250 ml fluid boluses if no pulmonary edema present.
  3. If unresponsive to fluid challenge, administer **Levophed, Epinephrine infusion, or push dose Epinephrine**. Increase medication infusion per protocol until systolic BP is at least 90 mmHg and signs of shock are alleviated.
- **Distributive Shock (anaphylaxis, sepsis, neurogenic):**
  1. Give **NS or LR 500 ml** fluid bolus, repeat if needed if no signs of pulmonary edema. May repeat to a total of 1,000 ml. If shock persists consider **Levophed, Epinephrine infusion, or push dose Epinephrine**
  2. If possible, treat underlying cause.

PEDIATRIC PATIENTS:

Treat as outlined above with the exception of the following Fluid Administration guidelines:

1. Infants – 10 ml/kg.
2. Children – 20 ml/kg.
3. Maximum fluid amount in Cardiac and Obstructive shock is 20 ml/kg

NOTES & PRECAUTIONS:

A. Closely monitor patient's respiratory status and vital signs. Avoid fluid overload.
B. Other signs and symptoms of shock include confusion, restlessness, altered mental status, moist skin, apathy and tachycardia.
C. Keep patient warm
D. Notify receiving hospital ASAP

DOCUMENT:

A. Respiratory Effort
B. Signs & Symptoms of shock
C. Vital signs including temp, Sp02 and C02
D. GCS
E. Skin Color and Temp
F. Cardiac Rhythm
G. Response to treatments

TREATMENT:

A. Treat per Universal Patient Care.
B. Obtain a description of the snake if possible.
C. Remove rings or other jewelry which might constrict circulation later.
D. Splint and immobilize the extremity.
E. Keep affected part below heart.
F. Mark extent of spread of erythema and swelling with a pen.
G. Start IV Lactated Ringers or Normal Saline in unaffected extremity.
H. See Pain Management protocol.
I. See Shock protocol.

NOTES & PRECAUTIONS:

A. Obtain a description of the snake if possible. Do not place self or others in danger while doing so.
B. Document time of snakebite.
C. Notify receiving hospital ASAP so that they have a chance to secure the specific anti-venom.
D. Do not apply ice.

KEY CONSIDERATIONS:

Scene safety.

TREATMENT:

A. Treat per Universal Patient Care.
B. Monitor cardiac rhythm and obtain 12 lead ASAP and provide to receiving facility.
C. If CBG is low, treat per Altered Mental Status protocol.
D. Complete **EMS/ ED Triage Stroke Screening**.
E. Transport patient in supine position with > 15 degree of head elevation if tolerated.
F. If the patient meets criteria below, activate "**Stroke Alert**" and give an ETA to the hospital.
G. Document serial neurologic examinations.
H. Prepare to suction airway as needed.

NOTES & PRECAUTIONS:

A. Do not treat hypertension or give aspirin.
B. Acute interventions, if indicated, generally must begin within 6 hours of symptom onset. All potential stroke patients should go to an appropriate stroke center.
C. Pt's experiencing a TIA are at 10-30% risk of having a stroke within 30-90 days.
D. **Scene Time** should be 10min or less for all patients with possible stroke.
E. If one or more components of BEFAST is Abnormal and last seen normal <24 hours prior to arrival, the Stroke scale is considered positive. Continue to C-Stat

KEY CONSIDERATIONS:

Time last seen normal, pertinent medical history including history of GI bleeding, trauma or surgery in last 3 months, history of prior CVA/TIA, CBG, neurological exam (including pupils), currently taking Coumadin, clopidogrel (Plavix®) or heparin

BE FAST Stroke Screen (Balance - Eyes - Face - Arm - Speech - Time)	**Normal**	**Abnormal**	
Balance-Finger to nose, gait test			
Normal: Not dizzy, steady gait	Normal	Balance	Gait/Ataxia
Abnormal: Inability to walk, abnormal gait, ataxia			
Eyes-Visual Acuity, visual field assessment			
Normal: Vision normal for patient, with or without correction	Normal	Left	Right
Abnormal: Sudden double or blurred vision, blindness, visual field cut			
Face-Have patient smile or show teeth			
Normal: Both sides of face move equally	Normal	Left	Right
Abnormal: One side of face weak/unequal/movement absent			
Arm-Arm-Extend arms, close eyes, palms up			
Normal: Both arms move equally or not at all	Normal	Left	Right
Abnormal: One arm drifts compared to the other			
Speech-Ask patient to repeat, "You can't teach an old dog new tricks'			
Normal: Patient uses correct words with no slurring	Normal	Slurred	Fluency/ Comprehension
Abnormal: Speech fluency disruption, slurred speech or is mute			
Time- Onset and Last seen normal	**Time**		
New onset of neurologic deficit within the last 6 hours?	**Yes**		**No**
New onset of neurologic deficit within the last 24 hours?	**Yes**		**No**
If one or more components of the BE FAST Stroke Screen is abnormal and the patient was last seen normal < 24 hours prior to arrival, the stroke screen is considered POSITIVE. Continue to C-STAT evaluation.			

LARGE VESSEL OCCLUSION (LVO ASSESSMENT

CINCINNATI STROKE TRIAGE ASSESSMENT TOOL - C-STAT		
	Points	**Definition**
GAZE		Unable to look in certain direction with both eyes.
Absent (Normal) Present (Abnormal)	0 2	
ARM WEAKNESS		Cannot hold up arm(s) for 10 seconds.
Absent (Normal) Present (Abnormal)	0 1	
LEVEL OF CONCSIOUSNESS		Incorrectly answers at least one of two LOC questions **AND** does not follow at least one of two commands.
Absent (Normal) Present (Abnormal)	0 1	**LOC Questions-What** month is it? How old are you? **LOC Commands-Open** your eyes. Make a fist.
C-STAT positive is defined as a score of ≥ 2		

TREATMENT:

A. Treat per Universal Patient Care.
B. If there is any doubt as to mechanism of injury or any possibility of cervical injury, immobilize patient and consider Trauma System entry.
C. If indicated, treat per Hypothermia protocol.
D. If patient is in cardiac arrest, 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:
   1. Children < 6 years of age and water temperature at recovery depth of < 40 deg F.
   2. Patients who may have been trapped in an underwater air pocket.
   3. Water temperature at recovery depth is < 40 deg F and information suggests that patient may have been swimming on the surface for at least 15 minutes prior to becoming submerged.
   4. Paramedic discretion (contact OLMC)
E. All near-drowning victims should be examined by a physician.

NOTES & PRECAUTIONS:

A. If patient is still in the water rescue should be performed by properly trained and equipped personnel only.
B. Be prepared to manage vomiting.
C. Even if patient initially appears fine, delayed pulmonary edema is likely to occur.

KEY CONSIDERATIONS:

Medical history, length of submersion, water temperature at recovery depth, medications and allergies, events prior to submersion

TREATMENT:

A. Treat per Universal Patient Care.
B. Obtain BG and temperature.
C. Monitor cardiac rhythm. Obtain a 12 lead ECG ASAP regardless of age. Attempt to obtain within 10 min from first medical contact.
D. Establish IV access for suspected dehydration and give Lactated Ringers 500 ml, repeat prn.
E. Perform full secondary exam.
F. Treat per appropriate protocol based on findings.

KEY CONSIDERATIONS:

A. Syncope can have many causes; perform full work up on every patient.
B. Although many pediatrics and young adults have syncope caused by dehydration, vasovagal, or overdose a full 12 lead is still required.Consider outlier events such as Hypertrophic Cardiomyopathy, Brugada syndrome, Arrhythmogenic Right Ventricular Cardiomyopathy, PE or others in unexplained syncope or near syncope in pediatrics.
C. Be very wary of exercise induced syncope.
D. Strongly consider transporting all syncope patients.

TREATMENT:

A. Treat per Universal Patient Care.
B. Patient evaluation should include best GCS to help categorize injury severity.
    1. Mild injury GCS of 13-15
    2. Moderate GCS 9-12
    3. Severe GCS <= 8
C. Avoid hypoxia at all times. Place a non-rebreather facemask on **ALL** patients with potential TBI.
D. Prevent hypotension (Goal SBP > 100).
    1. Initiate a bolus of normal saline or lactated ringers.
    2. Continue fluid boluses to maintain the systolic blood pressure >100 mmHg.
E. 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).
F. 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.
G. If the patient has an airway placed (oral or advanced), carefully manage ventilations in order to minimize hyperventilation.
    1. Monitor ETCO2 with goal of ETCO2 of 40 mmHg.
    2. If available, use a pressure-controlled bag (PCB) and ventilation rate timer (VRT).
    3. If a transport ventilator is available, begin with the following settings:
        i. Tidal volume of 7ml/kg,
        ii. Rate of 10 BPM. Adjust rate to keep ETCO2 within target range
H. If there are signs of herniation, then **MILD** hyperventilation to an ETCO2 of 35 mmHg may be performed. Signs of herniation include:
    1. Blown pupil
    2. Posturing
I. Consider and treat reversible causes of altered mental status including hypoxia, hypoglycemia, and overdose. Obtain pmhx including blood thinner use.

PEDIATRIC PATIENTS:

A. Manage hypoxia. Place a non-rebreather facemask in **ALL** patients with potential TBI.
B. Manage blood pressure. Avoid hypotension.
    a. Initiate a 20ml/kg bolus of normal saline or lactated ringers.
    b. Continue fluid boluses to maintain SBP goals:
        i. Infants/children age < 10: 70 mmHg + (age X 2).
        ii. Children age >/= 10: 100 mmHg (same as adults)
C. If patient 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).
D. 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.
E. If an airway is placed (oral or advanced), then carefully manage ventilations in order to minimize hyperventilation.
    a. Monitor ETCO2 on all patients with goal of ETC02 of 40 mmHg.
    b. If available, use a pressure-controlled bag (PCB) and ventilation rate timer (VRT).
    c. If a transport ventilator is available, set a tidal volume of 7ml/kg. Adjust rate to keep ETCO2 within target range.

   d. Pediatric ventilatory rates:
      i. Infants: (age 0-24 months): 25 breaths per minute (bpm);
      ii. Children: (age 2-14): 20 bpm;
      iii. > 15 years: 10 bpm (same as adults).
F. If there are signs of herniation, then MILD hyperventilation to an ETCO2 of 35 mmHg may be performed. Signs of herniation include:
   a. Blown pupil
   b. Posturing

NOTES & PRECAUTIONS:

A. The main goal is to avoid the three H's that increase mortality:
   a. Avoid hypoxia
   b. Avoid hyperventilation
   c. Avoid hypotension
B. A single episode of hypoxia is independently associated with DOUBLING of the mortality rate.
C. Hyperventilation is independently associated with a mortality rate that is between TWO and SIX times higher.
D. Inadvertent hyperventilation happens reliably if not meticulously prevented by proper external means.
E. 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.
F. If the patient takes blood thinners, ensure that information is relayed during the HEAR.