TREATMENT

Abdominal Pain

HX	PE	DDX
Pain: nature, duration, location, radiation, intensity Associated symptoms: fever, nausea and vomiting, diarrhea, melena, painful urination Last menstrual period	Distension Tenderness Guarding Rigidity Rebound Masses	Diffuse: Perforation, intraabdominal bleeding (trauma, ectopic, AAA), gastroenteritis RUQ: cholecystitis, hepatitis, pancreatitis Epigastric: peptic ulcer, pancreatitis, gastritis LUQ: spleen, pancreatitis, stomach (PUD) Flank: kidney stone, pyelonephritis RQL: Appendicitis , kidney stone, PID, ovarian cyst, cystitis LLQ: diverticulitis, kidney stone, PID, ovarian cyst, cystitis

Treatment:

A. Start O_2, follow ***Airway Management*** procedure.

[**] **B.** If shock syndrome is present and BP less than 90 mm/Hg, follow ***Shock*** protocol, and **[consider IV/IO, NS, large bore, TKO or as needed].** If traumatic event, enter into trauma system. Rapid transport is of primary importance.

C. Place patient in comfortable position.

D. Do not allow patient to eat or drink.

E. Obtain vital signs frequently.

Specific Precautions:

A. Abdominal pain may be the first warning of catastrophic internal bleeding (ruptured aneurysm, liver, spleen, ectopic pregnancy, perforated viscus, etc.).

B. Since the bleeding is not apparent, you must think of **volume depletion** and monitor patient closely to recognize shock.

Altered Mental Status and Coma

HX	PE	DDX
Onset / changes LOC Recent history: headache, nausea and vomiting, trauma Diabetes CVA Hypertension Seizure Medications Pregnancy	LOC Evidence of traumatic injury Vital signs Pupils Breath odor Nuchal rigidity Neuro deficits (weakness)	Hypoglycemia (diabetes) Hypoxia/hypercarbia/CO Shock (MI, hypovolemia) Drug/toxin Trauma Cerebrovascular (CVA, intracranial hemorrhage, infection, tumor) Metabolic (e.g., electrolyte imbalance, hypothermia, hyperthermia) Seizure (postictal) Infection (meningitis/encephalitis)

Treatment:

A. Determine level of consciousness.
B. Start O_2, follow ***Airway Management*** procedure. Unless intubated transport on left side, if possible, to protect airway.
C. Monitor vital signs and respiratory status during transport.
** **D.** Start IV/IO as needed.
** **E.** Monitor cardiac rhythm and follow ***Cardiac Dysrhythmia*** protocol.

Consider underlying causes: Altered mental status has many causes, and may require the use of multiple protocols.

Hypoglycemia:

* Determine capillary blood glucose level using blood glucose meter or colorimetric reagent strips. If the blood glucose reading is less than 60 mg% or glucose less than 100 mg% in a symptomatic patient:
  - **A.** Give glucose:
    - **1.** Do not give oral glucose to patients without a gag reflex or with a rapidly diminishing level of consciousness.
    - ** **2.** If patient is unable to take sugar orally, give dextrose 50%, 50 mL, in large vein.
  - ***B.** Repeat capillary blood glucose level after 10 minutes and treat if it remains low.
  - ** **C.** If unable to give oral glucose or establish IV/IO, give glucagon 1 mg IM.

Overdose:

- **A.** Follow **Poisoning and Overdose** protocol, if indicated.
- ** **B.** If opioid intoxication is suspected:
  - **1.** If no IV/IO has been established, administer naloxone 2 mg IM.
  - **2.** If IV/IO already established, administer naloxone 0.5 mg IV/IO and observe for improved respiration, IV/IO dose may be repeated every 2 minutes up to 2 mg.
  - **3.** In most instances, a total dose of 2 mg IM or IV/IO will be sufficient to reverse opioid intoxication. In some cases (methadone or designer drugs), larger doses of naloxone may be necessary. In these cases, additional doses of naloxone (2 mg IM or IV/IO every 3-5 minutes) up to a maximum of 8 mg of naloxone may be administered to reverse opioid intoxication.

Psychiatric Disorders:

- **A.** Almost never cause disorientation or alteration in level of consciousness. If the patient is disoriented, assume a medical cause.
- **B.** Follow ***Psychiatric and Behavioral Disorders*** protocol.
- **C.** If a non-organic cause of coma in adults (over age 16) is suspected, ammonia inhalants or other noxious stimuli may be considered.
  - **1.** Response to noxious stimuli does not rule out medical or traumatic causes of initial coma.
  - **2.** **Never place inhalants in nostrils or inside O_2 mask.**

Seizure:

Follow ***Seizure*** protocol.

Stroke:

Follow ***Stroke/CVA*** protocol.

Toxemia:

Follow ***OB/GYN Emergencies*** protocol, if indicated.

Trauma:

A. Maintain spinal precautions.
B. If GCS score is less than 13, enter patient into the Trauma System.
C. Perform all treatment possible en route.
D. Maintain ventilation as per end tidal CO_2 protocol.
** **1.** Secure protected airway if GCS score is less than 8.

Pediatric Considerations:

1. Consider etiology and appropriate protocols: shock, toxic exposure, head trauma (consider intentional injury), seizure.
** **2.** Vascular access.
* **3.** Rapid blood glucose determination. If glucose determination is less than 60 mg% (less than 40 mg% for newborn), give oral glucose to conscious patient, OR,
** **a.** If no IV/IO established and airway protective reflexes are intact, give D_{50}, or other glucose containing substance, orally.
** **b.** If IV/IO established, give D_{25} 0.5 gm/kg (2 mL/kg) for neonates, infants, and children ≤10 kg, may repeat once.
** **c.** If no IV/IO established and airway protective reflexes are not intact, give glucagon 0.02 mg/kg IM to a maximum of 1 mg.
* **d.** Repeat blood glucose determination and treat if it remains low.
**4. If mental status and respiratory effort are depressed, administer Naloxone 0.1 mg/kg, max. 2 mg IV/IO/IM.
a. Do Not Give Naloxone to newborns.
b. May repeat every 5 minutes with strong suspicion of opiate overdose, or if partial response is noted.

Anaphylaxis and Allergic Reactions

HX	PE	DDX
Difficulty breathing / speaking (hoarseness) Chest tightness Subjective airway impairment or swelling Itching Exposure: Meds, insects or stings, food / toxic substance Known allergies Prior allergic reactions	LOC Edema (face, tongue, extremities) Respiratory (wheezing, hoarseness, stridor etc.) Rash, flushing, hives	Anaphylaxis Upper airway infections Angioedema (medication) Asthma (bronchospasm) Urticaria Foreign body

Treatment:

A. Protect airway; suction as needed.
- **1.** Follow ***Airway Management*** procedure.

*** **2.** Cricothyrotomy may be required if unable to secure protected airway or ventilate by BVM after epinephrine has been administered.

** **B.** Start IV/IO as needed. If shock syndrome is present and BP < 90 mm/Hg, follow ***Shock*** protocol.

** **C.** Monitor cardiac rhythm and if dysrhythmia is present, follow ***Cardiac Dysrhythmia*** protocol.

D. If signs of severe allergic reaction and/or significant respiratory distress:
- **1.** With BP > 90 mm/Hg, administer:
  - * **a.** 1:1,000 epinephrine 0.3 mg (0.3 mL) SQ.
  - ** **b.** 1:1,000 epinephrine 0.3 mg (0.3 mL) IM.
- **2.** With shock syndrome present, and BP < 90 mm/Hg, administer:
  - * **a.** 1:1,000 epinephrine 0.3 mg (0.3 mL) SQ.
  - ** **b.** 1:10,000 epinephrine 0.3 mg (3 mL) IV/IO, **OR** 1:1,000 epinephrine 0.3 mg (0.3 mL) IM.
- **3.** If no improvement noted, repeat epinephrine.

SPECIAL NOTE:
If 1:10,000 not available, you may dilute 1 mL of 1:1,000 epinephrine with 9 mL of NS (1 mg/10 mL) and administer 3 mL IV or IO.

** **E.** Consider diphenhydramine 25 to 50 mg IM or IV/IO for adults.
*** **F.** If patient continues to exhibit signs of respiratory distress, administer dexamethasone 10 mg IV, IO, IM or PO.
** **G.** Consider use of Albuterol, follow ***Respiratory Distress*** protocol.

Specific Precautions:

A. Epinephrine increases cardiac work and may precipitate angina or MI in susceptible individuals.
B. Common side effects include anxiety, tremor, palpitations, tachycardia and headache, particularly with IV/IO administration.
C. Epinephrine should not be given unless signs of cardiovascular collapse and/or significant respiratory distress are present.

Pediatric Considerations:

1. Mild:
* **a.** Administer 1:1,000 epinephrine, 0.01 mg/kg (0.01 mL/kg) SQ, maximum dose of 0.3 mg (0.3 mL). May repeat once after 20 minutes, if needed for respiratory distress or persistent wheezing.
** **b.** If itching is severe, consider diphenhydramine 1 mg/kg IV/IO or IM, maximum dose of 50 mg.

2. Severe:
* **a.** If there is no vascular access or ET tube, give epinephrine (1:1,000), 0.01 mg/kg (0.01 mL/kg) SQ. Maximum dose is 0.3 mg (0.3 mL).
** **b.** For diminished perfusion, administer 20 mL/kg fluid bolus NS, IV/IO.
** **c.** Administer 1:10,000 epinephrine, 0.01 mg/kg (0.1 mL/kg) IV/IO, maximum dose 0.3 mg (0.3 mL). Repeat every 3-5 minutes as needed for respiratory distress or diminished perfusion.
*** **d.** If child is intubated **and** there is no vascular access, give 1:1,000 epinephrine by ET, 0.1 mg/kg (0.1 mL/kg), diluted in 1 to 2 mL of normal saline.
e. If wheezing is present, follow ***Respiratory Distress*** protocol.
** **f.** If itching is severe, consider diphenhydramine 1 mg/kg IV/IO or deep IM, maximum dose of 50 mg.

Burns

HX	PE	DDX
Closed space (how long) Loss of consciousness Trauma Accompanying explosion Toxic exposure, fumes Respiratory complaints	Respiratory distress Airway burns (singed hair, soot, erythema, edema) Lung sounds Burns (% BSA Rule of 9s) Trauma	Airway Carbon monoxide/toxins Cyanide Trauma

Treatment:

A. If possibility of airway burn or closed space start O_2, and follow ***Airway Management*** procedure.

B. If **significant** burn or respiratory distress:

1. If shock syndrome is present and BP is less than 90 mm/Hg, follow ***Shock*** protocol.

** **2.** Start IV/IO as needed.

C. Remove jewelry and clothing that is smoldering or which is non-adherent to the patient.

D. Burn Center criteria:

1. Significant burn of 15% or greater of body surface area.
2. Full thickness burn greater than 5% of body surface area.
3. Burns with inhalation injuries.
4. Electrical burns.
5. Trauma System patients with burns meeting the above criteria.
6. Facial, hands or feet, genitalia or circumferential burns.

E. Wound Management:

1. Cool burned area then cover large burns.
2. Attempt to leave unbroken blisters intact.
3. Prevent hypothermia.

***F.** Fentanyl 50 micrograms IV/IO, repeat with 25-50 micrograms every 3-5 minutes as needed to a maximum of 200 micrograms.

G. Electrical Burns:
- **1.** Apply sterile dressings to entry and exit burns.
- ** **2.** Start IV/IO as needed.
- ** **3.** Monitor cardiac rhythm and if dysrhythmia is present, follow ***Cardiac Dysrhythmia*** protocol.

H. Chemical Burns: **[Consider HAZMAT Response]**
- **1.** Protect yourself from contamination first.
- **2.** Flush contaminated skin and eyes with copious amounts of water.
- **3.** If chemical is dry, brush off then flush with copious amounts water. If liquid, flush with copious amounts water.

I. Apply Carbon Monoxide Monitor if available.

J. If cyanide toxicity is suspected based on findings of smoke inhalation (soot in mouth, nose oropharynx, etc.) and patient is comatose, in cardiac or repiratory arrest, or has persistent hypotension despite fluid resuscitation:
- **1.** Administer Cyanokit® 5 gm IV/IO as an infusion over 15 minutes and monitor for clinical response. Contact OLMC for advice regarding second 5 gm dose.
- **2.** If Cyanokit® is not available, then administer Sodium Thiosulfate 50 ml of 25% solution IV/IO over 10-20 minutes. Do not administer Sodium Thiosulfate and Cyanokit® in the same line.
- **3.** Treat other presenting symptoms per appropriate protocol.
- **4.** Initiate emergent transport to appropriate facility.

Specific Precautions:

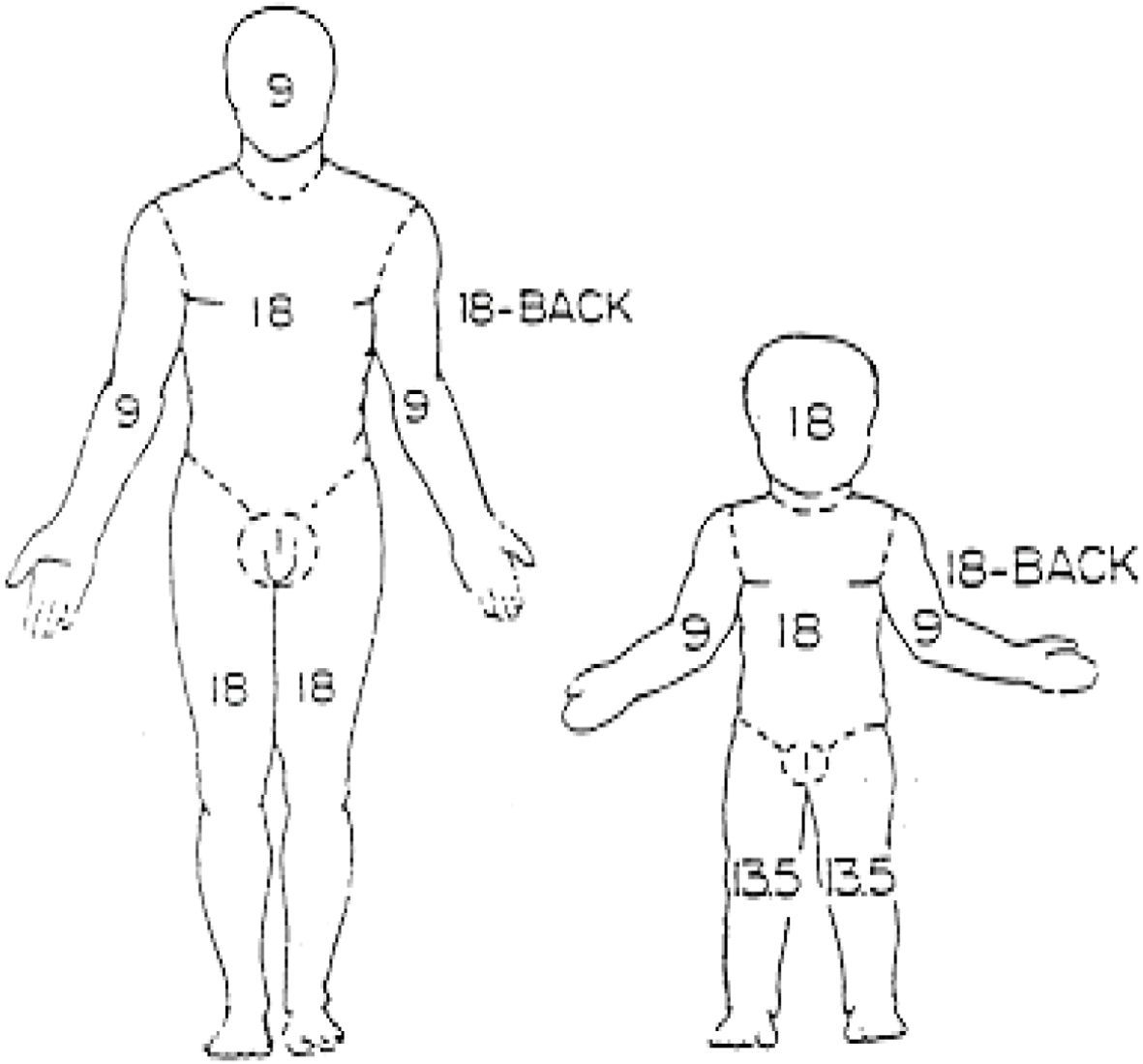
A. Succinylcholine should be avoided in major burn patients > 48 hours post burn.

Pediatric Considerations:

- **1.** Consider child abuse in pediatric burns (especially burns that show a specific pattern such as partial immersion).
- *** **2.** Fentanyl dose for children <40 kg: initial dose 1 microgram/kg, repeat with 0.5-1 microgram/kg every 3 -5 minutes as needed, maximum 4 microgram/kg. If ≥40 kg follow adult dosing. Contact OLMC for further doses.
- **3.** Administer Cyanokit® 5 gm IV/IO as an infusion over 15 minutes and monitor for clinical response. Contact OLMC for advice regarding second 5 gm dose.

Rule of Nines:

In adults, most areas of the body can be divided roughly into portions of 9 percent, or multiples of 9. This division, called the "Rule of Nines," is useful in estimating the percentage of body surface damage an individual has sustained in burn. In the small child, relatively more area is taken up by the head and less by the lower extremities. Accordingly, the Rule of Nines is modified. In each case, the rule gives a useful approximation of body surface.



Cardiac Arrest

Do not delay management to obtain history

HX	PE	DDX
Preceding symptoms Witnessed arrest (yes or no) Down time Presence or absence of bystander CPR Medications/allergies History of cardiac disease or hypertension Evidence of drug ingestion Presence of Advance Directive or DNAR orders	Determine pulselessness and/or apnea Pupil size and reaction Lung sounds (document each time the patient is moved) If present, document: o Dependent lividity o Decomposition o Rigor mortis	Rhythm Asystole VF PEA Etiologies Primary Cardiac Hypovolemia Hypoxia Acidosis Hypoglycemia Hypothermia Toxins Tamponade Tension pneumothorax Thrombosis Trauma

See ***Death in the Field, Advance Directives*** and ***Do Not Attempt Resuscitation Orders*** protocols and follow if appropriate.

Treatment:

A. Initiate CPR. Interruptions in CPR should be avoided. When necessary, interruptions should be < 10 seconds.

B. Check cardiac rhythm and follow appropriate **Arrest Algorithm.**

C. Airway should be addressed with MINIMAL INTERRUPTION TO CPR. Ventilation rate should be 8-10 breaths/minute.

****D.** Start IV/IO.

E. If ROSC is achieved, see ***Induced Hypothermia*** protocol.

*** **NOTES:**
ET tube administration of lidocaine, epinephrine, and atropine only if an IV/IO can not be obtained. When giving a drug through the ET tube, double the dosage.

Cardiac Arrest Algorithm

First Responder/EMT-Basic:

Flow of the algorithm presumes that the initial rhythm is continuing. If the rhythm changes, begin the appropriate care.

ALS backup must be requested, if not responding, for all cardiac arrests. If for any reason this protocol cannot be followed OLMC should be contacted.

ABCs

If down time estimated at greater than 5 min, CPR for 2 min.
If down time less than 5 min, then CPR until AED/SAD is attached

1. Press "analyze" and defibrillate, if recommended
2. CPR for 2 minutes
3. Check pulse
4. If no pulse, repeat sequence

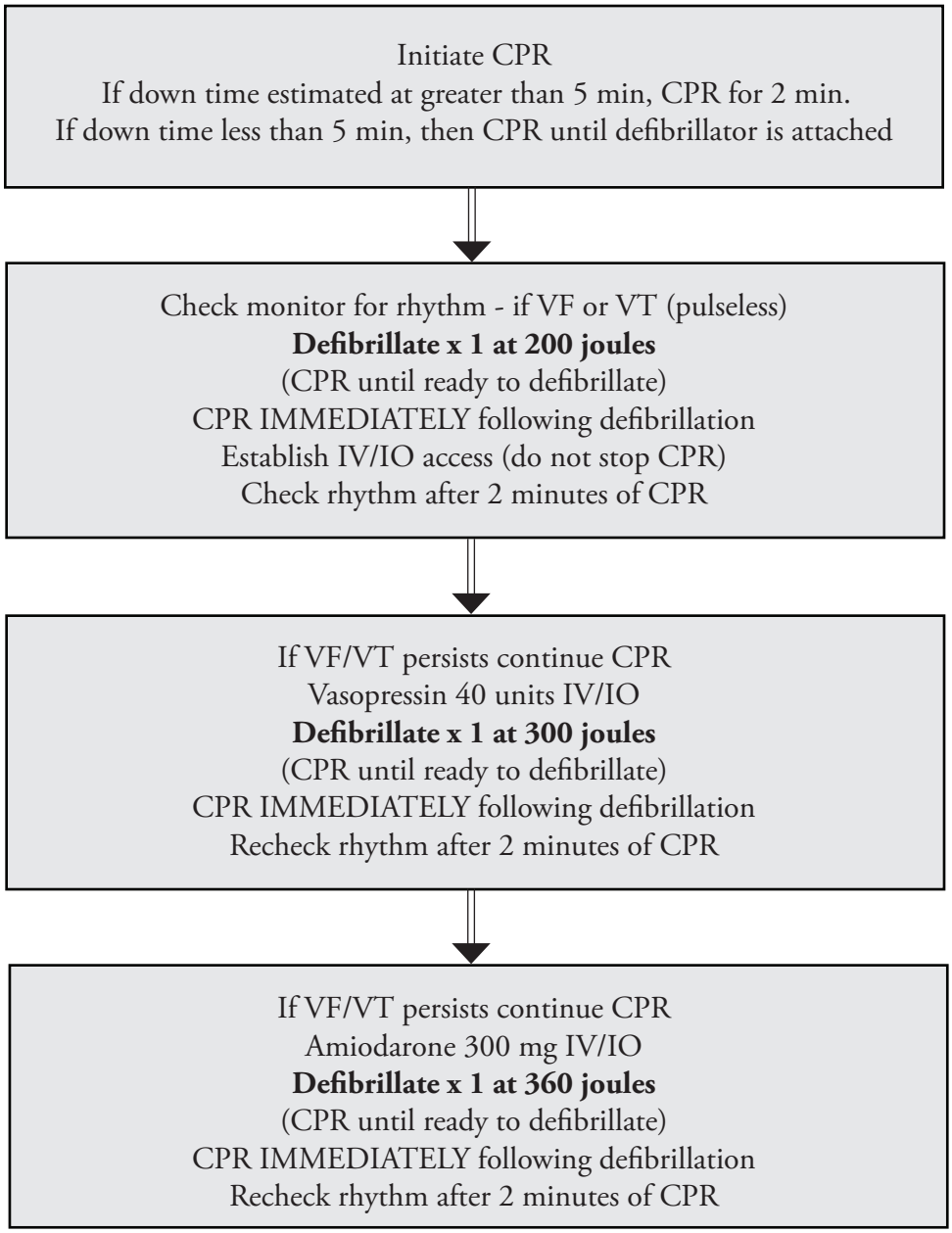
NOTES: Follow manufacturer recommendations for appropriate age and/or weight restrictions for AED/SAD.

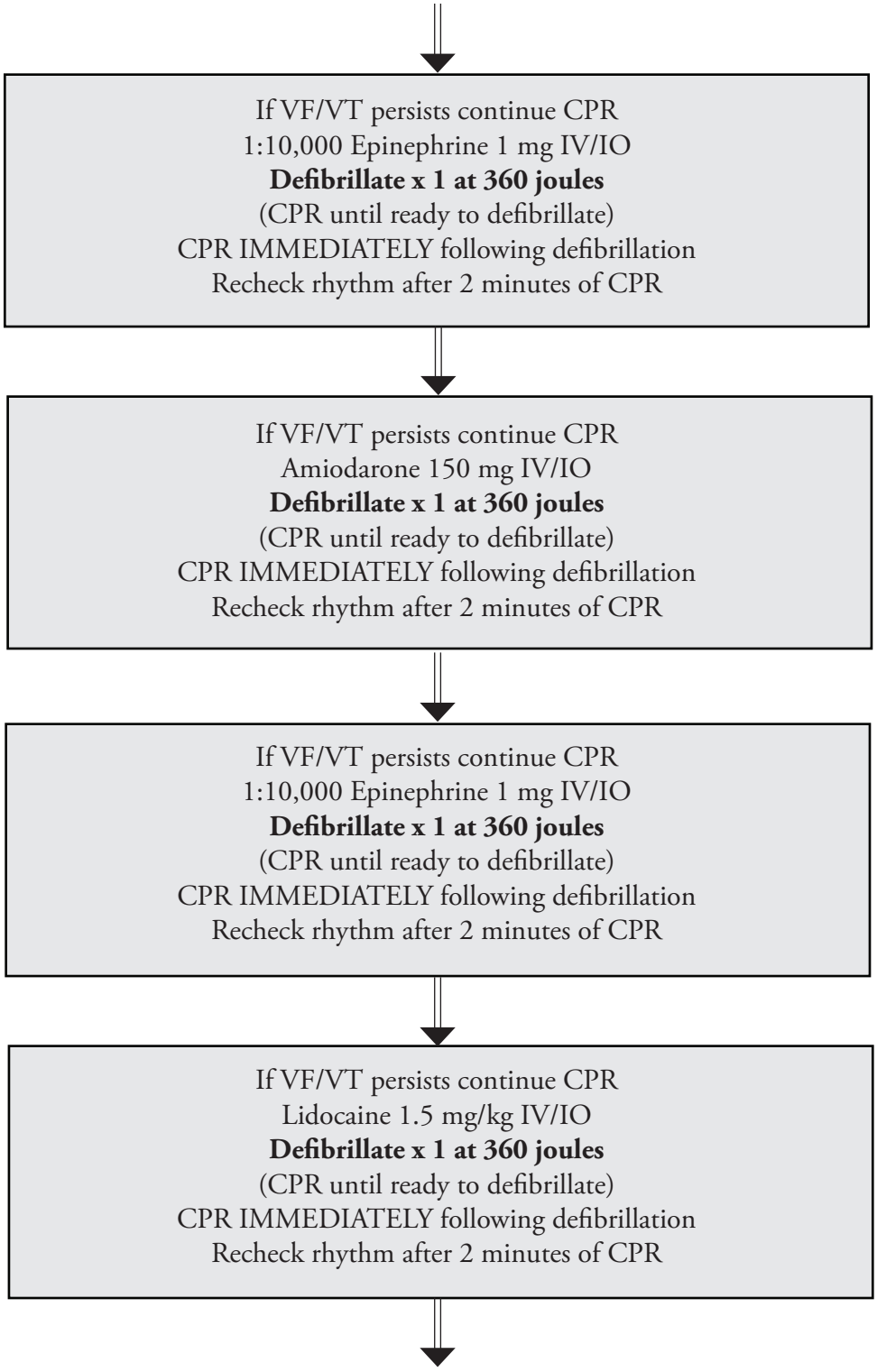
Cardiac Arrest Algorithm

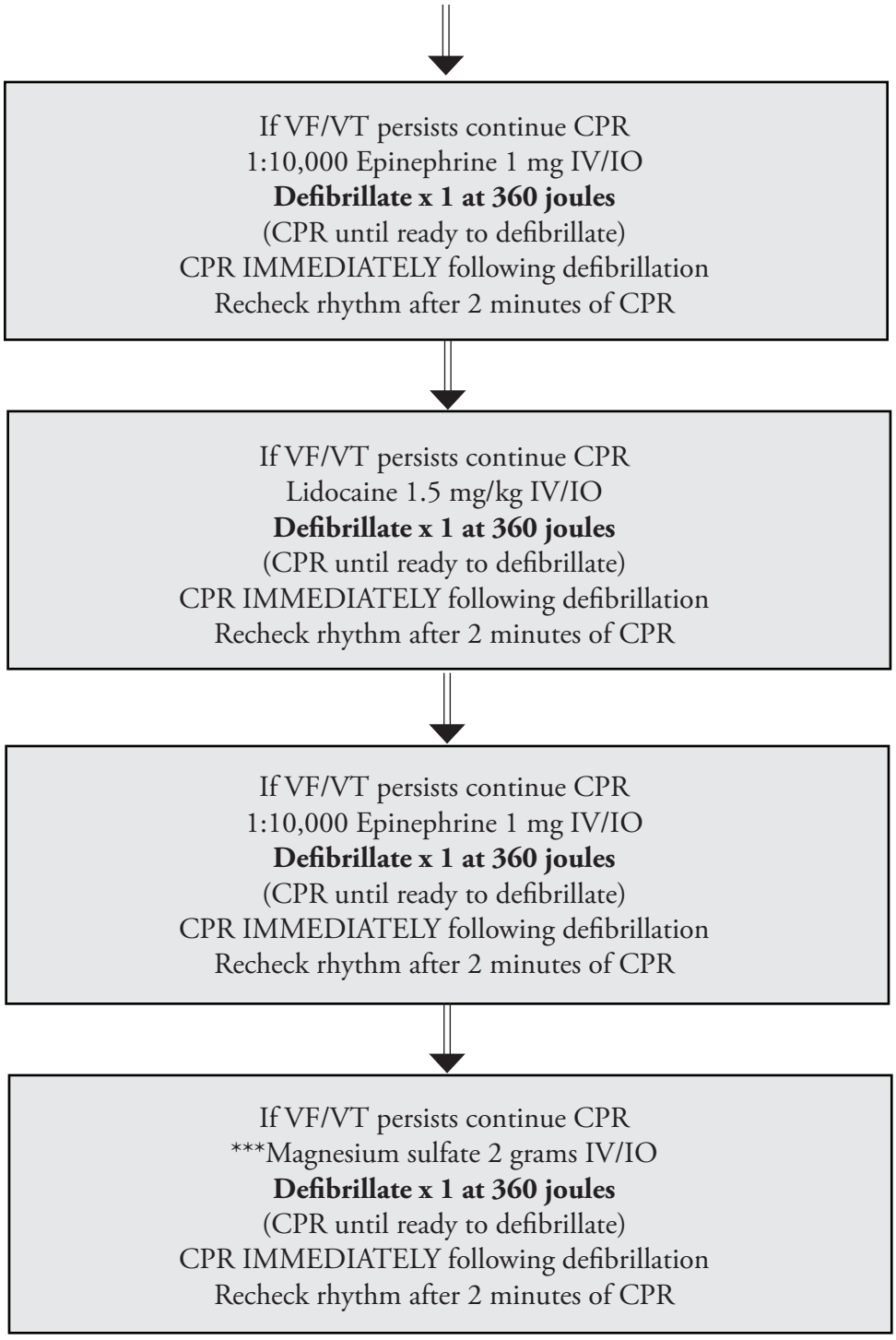
**EMT-Paramedic/Intermediate:

Flow of algorithm presumes that the initial rhythm is continuing. If the rhythm changes, begin the appropriate algorithm.
Interruptions in CPR should be avoided. When necessary, interruptions should be < 10 seconds.

Ventricular Fibrillation and Pulseless Ventricular Tachycardia




If VF/VT persists continue CPR
1:10,000 Epinephrine 1 mg IV/IO
Defibrillate x 1 at 360 joules
(CPR until ready to defibrillate)
CPR IMMEDIATELY following defibrillation
Recheck rhythm after 2 minutes of CPR
If VF/VT persists continue CPR
Amiodarone 150 mg IV/IO
Defibrillate x 1 at 360 joules
(CPR until ready to defibrillate)
CPR IMMEDIATELY following defibrillation
Recheck rhythm after 2 minutes of CPR
If VF/VT persists continue CPR
1:10,000 Epinephrine 1 mg IV/IO
Defibrillate x 1 at 360 joules
(CPR until ready to defibrillate)
CPR IMMEDIATELY following defibrillation
Recheck rhythm after 2 minutes of CPR
If VF/VT persists continue CPR
Lidocaine 1.5 mg/kg IV/IO
Defibrillate x 1 at 360 joules
(CPR until ready to defibrillate)
CPR IMMEDIATELY following defibrillation
Recheck rhythm after 2 minutes of CPR


If VF/VT persists continue CPR
1:10,000 Epinephrine 1 mg IV/IO
Defibrillate x 1 at 360 joules
(CPR until ready to defibrillate)
CPR IMMEDIATELY following defibrillation
Recheck rhythm after 2 minutes of CPR
If VF/VT persists continue CPR
Lidocaine 1.5 mg/kg IV/IO
Defibrillate x 1 at 360 joules
(CPR until ready to defibrillate)
CPR IMMEDIATELY following defibrillation
Recheck rhythm after 2 minutes of CPR
If VF/VT persists continue CPR
1:10,000 Epinephrine 1 mg IV/IO
Defibrillate x 1 at 360 joules
(CPR until ready to defibrillate)
CPR IMMEDIATELY following defibrillation
Recheck rhythm after 2 minutes of CPR
If VF/VT persists continue CPR
***Magnesium sulfate 2 grams IV/IO
Defibrillate x 1 at 360 joules
(CPR until ready to defibrillate)
CPR IMMEDIATELY following defibrillation
Recheck rhythm after 2 minutes of CPR

NOTES:

(a) Airway should be addressed with MINIMAL INTERRUPTION TO CPR. Ventilation rate should be 8-10 breaths/minute.

(b) If the rhythm is Torsades de Pointes, give magnesium sulfate 2 grams IV/IO.

(c) After successful resuscitation:
1. With no antidysrhythmic: Give a lidocaine bolus (1.5 mg/kg) and re-bolus with 0.75 mg/kg every 10 minutes.
2. If amiodarone was the last antidysrhythmic given: Re-dose after 30 minutes with amiodarone 150 mg over 10 minutes.
3. If lidocaine or magnesium was the last antidysrhythmic given: Give lidocaine 0.75 mg/kg every 10 minutes.

(d) Be cautious with the administration of lidocaine or amiodarone if:
1. Systolic BP is less than 90, OR,
2. Heart rate is less than 50 beats per minute, OR,
3. Periods of sinus arrest, OR,
4. Any A-V block is present

(e) *** Sodium bicarbonate is not recommended for routine cardiac arrest sequence but may be considered in a dose of 1 mEq/kg after prolonged arrest. Half of the original dose may be repeated every 10 minutes, if it is used.

(f) *** Sodium bicarbonate should be used early in cardiac arrest of known cyclic antidepressant overdose or patients with possible hyperkalemia (high potassium).

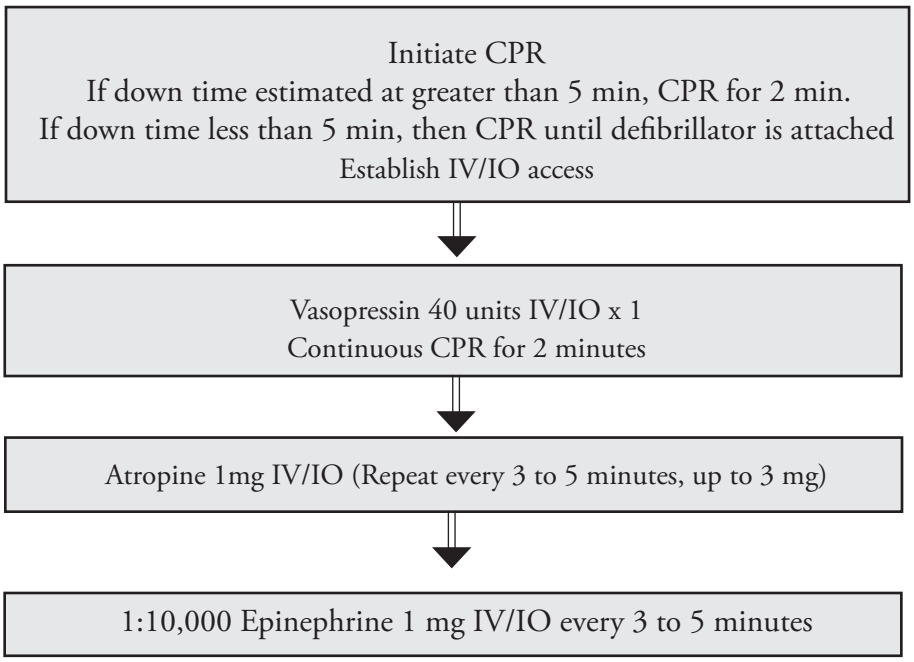
Cardiac Arrest Algorithm

**EMT-Paramedic/Intermediate:

Asystole

(Confirm in two leads, increase gain to rule out fine VF; if rhythm is unclear and possibly Ventricular Fibrillation, defibrillate as for VF)

ABCs



NOTES:

Consider and treat other possible causes:

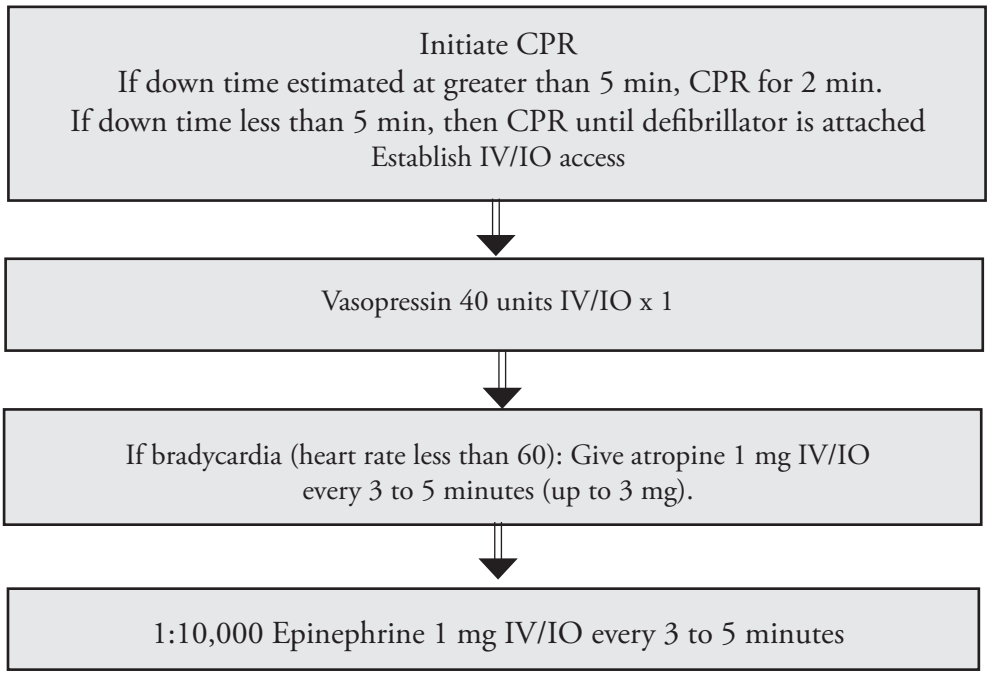
*** Acidosis — consider sodium bicarbonate 1 mEq/kg IV/IO
Cardiac Tamponade - immediate transport
*** Cyclic antidepressants - consider sodium bicarbonate 1 mEq/kg IV/IO
*** Hyperkalemia- consider calcium gluconate or sodium bicarbonate 1 mEq/kg IV/IO
Hypothermia- see ***Hypothermia*** protocol
Hypovolemia- fluid challenge
Hypoxia- oxygenate and ventilate
Pulmonary Embolism - immediate transport
*** Tension Pneumothorax - needle decompression.

If unresponsive to **at least** epinephrine 3 mg and atropine 3 mg, consider termination of efforts if asystole is confirmed in all six limb leads (with full gain).

Pulseless Electrical Activity (PEA)

1. Electromechanical dissociation
2. Idioventricular rhythm
3. Ventricular escape rhythm
4. Pulseless bradycardic rhythm
5. Post defibrillation idioventricular rhythm

ABCs



NOTES:

If $ETCO_2 \geq 20$, with organized rhythm, initiate fluids and consider dopamine (10 micrograms/kg/min). Continue CPR until palpable pulse.

Consider and treat other possible causes:

*** Acidosis — consider sodium bicarbonate 1 mEq/kg IV/IO
Cardiac Tamponade - immediate transport
*** Cyclic antidepressants - consider sodium bicarbonate 1 mEq/kg IV/IO
*** Hyperkalemia- consider calcium gluconate or sodium bicarbonate 1 mEq/kg IV
Hypothermia- see ***Hypothermia*** protocol
Hypovolemia- fluid challenge
Hypoxia- oxygenate and ventilate
Pulmonary Embolism - immediate transport
*** Tension Pneumothorax - needle decompression

Cardiac Arrest Algorithm

**EMT-Paramedic/Intermediate:

Pediatric Considerations:

Cardiac arrest in children is often secondary to respiratory failure. Ventilation may cause spontaneous return of cardiac function!

NO VASOPRESSIN IN PEDIATRICS

Ventricular Fibrillation and Pulseless Ventricular Tachycardia

Follow adult cardiac arrest algorithm except as noted.
Defibrillate in the following sequence: 2 joules/kg, 4 joules/kg, and 4 joules/kg.
Substitute the following drug dosages.

1. Epinephrine 0.01 mg/kg IV/IO; maximum 1 mg (10 mL 1:10,000 IV/IO)
2. Amiodarone 5 mg/kg IV/IO repeat once with 2.5 mg/kg
3. Lidocaine 1.5 mg/kg IV/IO up to 3 mg/kg
4. Sodium bicarbonate 1 mEq/kg IV/IO then 0.5 mEq/kg for subsequent doses.
5. Magnesium sulfate 25 mg/kg IV/IO

Asystole

1. Epinephrine every 3-5 minutes

Pulseless Electrical Activity

1. Epinephrine every 3-5 minutes

Consider and treat other possible causes:

*** Acidosis — consider sodium bicarbonate 1 mEq/kg IV/IO
Cardiac Tamponade - immediate transport
*** Cyclic antidepressants - consider sodium bicarbonate 1 mEq/kg IV/IO
*** Hyperkalemia- consider sodium bicarbonate 1 mEq/kg IV/IO or calcium gluconate 0.5 mL/kg IV/IO
Hypothermia - see ***Hypothermia*** protocol
Hypovolemia - fluid challenge
Hypoxia - oxygenate and ventilate
Pulmonary Embolism - immediate transport
*** Tension Pneumothorax - needle decompression

**Quick Reference to Pediatric Drugs - Resuscitation

Table 1: Neonates - Immediate Postnatal Resuscitation

Drug	Indication	Dose
** Dextrose, 25% (Dilute D_{50} by 1/2 with NS)	Hypoglycemia	0.5 gm/kg (2 mL/kg)
** Epinephrine	Bradycardia, Cardiac Arrest	0.01 mg/kg Repeat every 3-5 minutes
*** Sodium Bicarbonate (Dilute by 1/2 with NS)	Metabolic Acidosis	1 mEq/kg

Table 2: Infants And Children

Drug	Indication	Dose
*** Adenosine	PSVT	0.1 mg/kg; 0.2 mg/kg
** Amiodarone	V-fib/Pulseless V-tach V-tach with pulse	5 mg/kg IV/IO Repeat once with 2.5 mg/kg 2.5 mg/kg IV/IO Mix with 2 mL/kg of NS in Buretrol and infuse over 10 min
** Atropine	Bradycardia	0.02 mg/kg - May repeat dose once. Minimum dose: 0.1 (Do not exceed adult dose)
*** Calcium Gluconate	Antidote for calcium channel blocker OD, HF, iatrogenic magnesium intoxication	0.5 mL/kg IV/IO
** Dextrose, 25%	Hypoglycemia	0.5 gm/kg (2 mL/kg) (Dilute D_{50} by 1/2 with NS)
*** Dopamine	Low cardiac output	5 to 20 micrograms/kg/min
** Epinephrine	V-fib, low cardiac output, Cardiac arrest, asystole, PEA	0.01 mg/kg Repeat every 3-5 min.
** Lidocaine	Recurrent Ventricular Fibrillation, Stable VT	Bolus: 1.5 mg/kg (3 mg/kg MAX) Maintenance: 0.75 mg/kg q 10 min. (No MAX)
*** Midazolam	Pacing - V-tachycardia Seizures	IV or IO: 0.1 mg/kg, to max 2.5 mg IM: 0.2 mg/kg to max 5 mg.
*** Magnesium Sulfate	V-fib/Pulseless V-tach	25 mg/kg IV/IO
** Naloxone	Respiratory depression secondary to narcotics	0.1 mg/kg - Maximum to 2 mg.
*** Sodium Bicarbonate (Dilute by 1/2 with NS)	Metabolic acidosis, Cyclic antidepressant OD, Hyperkalemia	1 mEq/kg/dose

Note: All pediatric doses must not exceed adult dose.

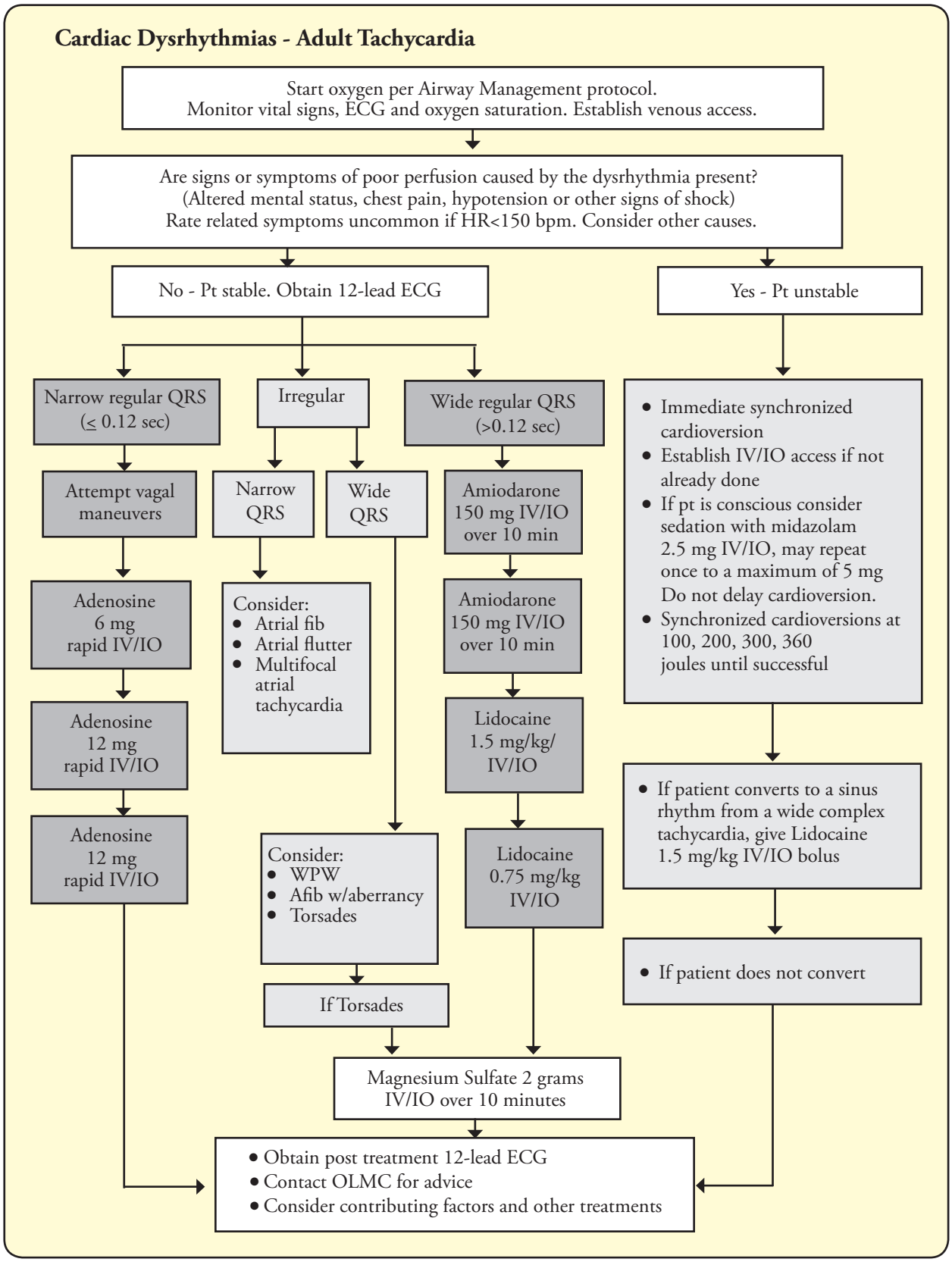
Cardiac Dysrhythmias

HX	PE	DDX
Past medical history Medications • Beta blockers • Calcium Channel blockers • Clonidine • Digitalis Pacemaker	AMS Respiratory distress Hypotension / shock Chest pain CHF Syncope Seizures	Sinus bradycardia AV blocks Acute MI Hypoxia Hypothermia Head injury (increased ICP) Spinal cord lesion Sick sinus Overdose

Treatment:

A. Start O_2, follow ***Airway Management*** procedure, and apply pulse oximeter.
****B.** Start IV/IO, NS and follow ***Shock*** protocol if indicated.
****C.** Monitor cardiac rhythm, see following cardiac dysrhythmias:

NOTES:
If the patient is asymptomatic, dysrhythmias may not require treatment in the field.


Cardiac Dysrhythmias - Adult Tachycardia
Start oxygen per Airway Management protocol.
Monitor vital signs, ECG and oxygen saturation. Establish venous access.
Are signs or symptoms of poor perfusion caused by the dysrhythmia present?
(Altered mental status, chest pain, hypotension or other signs of shock)
Rate related symptoms uncommon if HR<150 bpm. Consider other causes.
No - Pt stable. Obtain 12-lead ECG
Yes - Pt unstable
Narrow regular QRS (≤ 0.12 sec)
Irregular
Wide regular QRS (>0.12 sec)
Attempt vagal maneuvers
Narrow QRS
Wide QRS
Amiodarone 150 mg IV/IO over 10 min
Adenosine 6 mg rapid IV/IO
Consider:
• Atrial fib
• Atrial flutter
• Multifocal atrial tachycardia
Amiodarone 150 mg IV/IO over 10 min
Adenosine 12 mg rapid IV/IO
Lidocaine 1.5 mg/kg/ IV/IO
Adenosine 12 mg rapid IV/IO
Consider:
• WPW
• Afib w/aberrancy
• Torsades
Lidocaine 0.75 mg/kg IV/IO
If Torsades
Magnesium Sulfate 2 grams IV/IO over 10 minutes
• Obtain post treatment 12-lead ECG
• Contact OLMC for advice
• Consider contributing factors and other treatments
• Immediate synchronized cardioversion
• Establish IV/IO access if not already done
• If pt is conscious consider sedation with midazolam 2.5 mg IV/IO, may repeat once to a maximum of 5 mg Do not delay cardioversion.
• Synchronized cardioversions at 100, 200, 300, 360 joules until successful
• If patient converts to a sinus rhythm from a wide complex tachycardia, give Lidocaine 1.5 mg/kg IV/IO bolus
• If patient does not convert

Specific Precautions:

A. If the patient is asymptomatic, tachycardia may not require treatment in the field. Continue to monitor the patient for changes during trasport.

B. 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

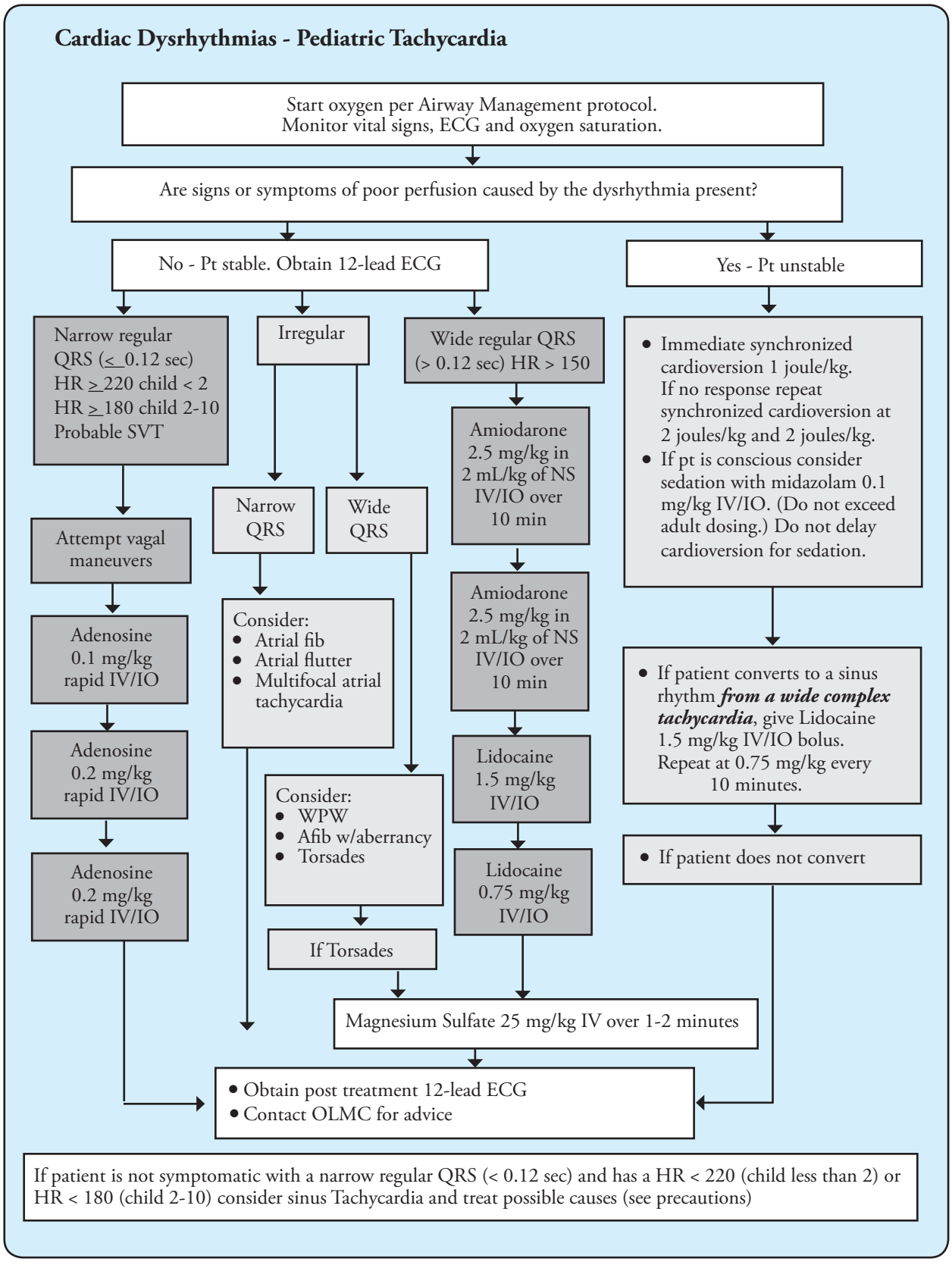
C. All lidocaine doses after the initial bolus must be reduced to 0.375 mg/kg in patients with CHF, shock, hepatic disease, or in patients greater than 70 y/o.

D. If pulseless arrest develops, follow Cardiac Arrest protocol.

E. All doses of adenosine should be reduced by 1/2 (50%) in the following clinical settings:

1. History of cardiac transplantation.
2. Patients who are on carbamazepine (Tegretol), dipyridamole (Persantine).
3. Administration through any type of central line (Porta Cath, Broviac, Hickman etc).

Cardiac Dysrhythmias - Pediatric Tachycardia



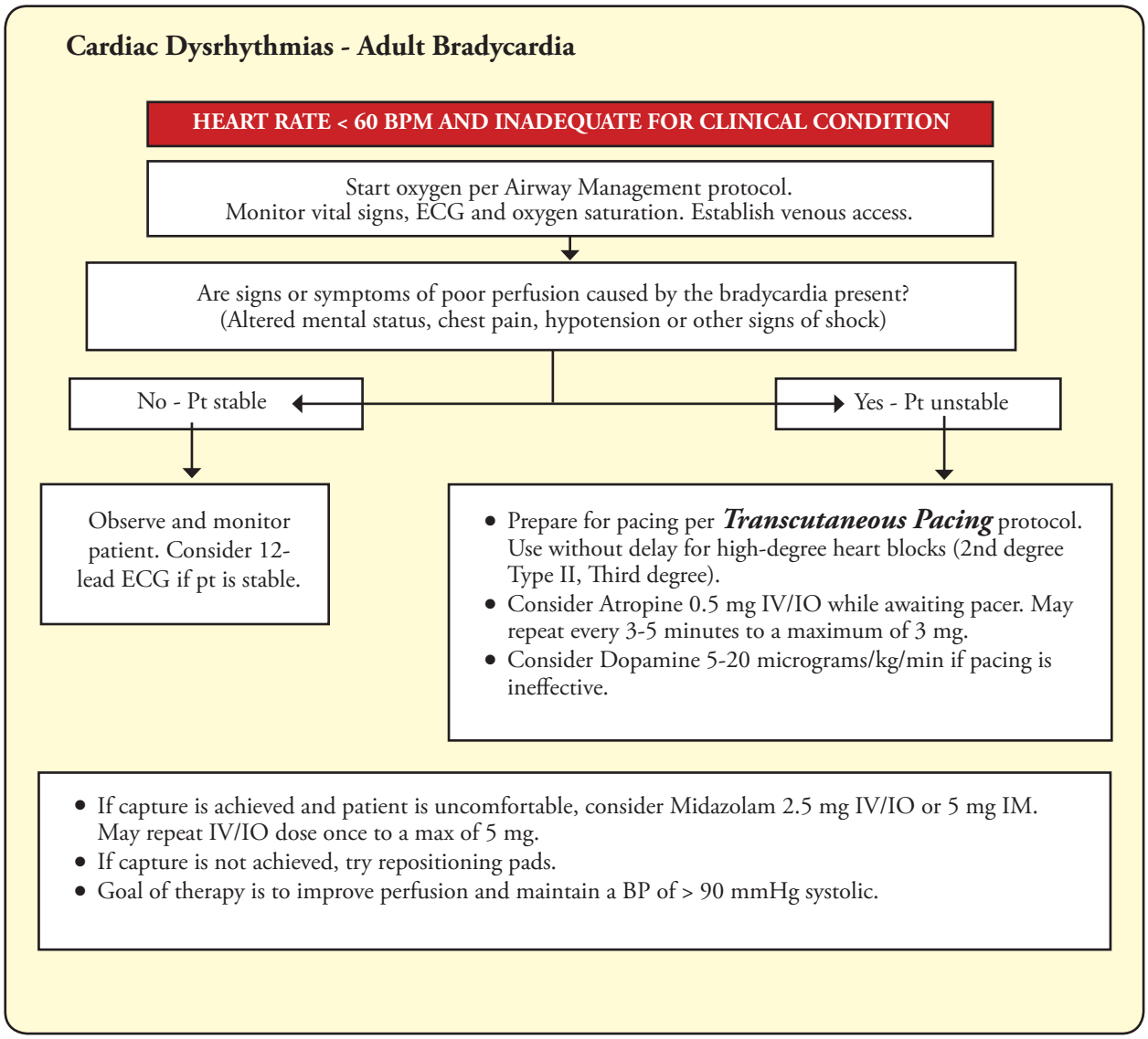
NOTES:

A. Use pediatric pads for cardioversion for children less than 10 kg.

B. Place on anterior chest in sternal-apical location.

C. If pediatric pads are not available, use adult pads placed anterior-posterior on the chest wall with firm contact.

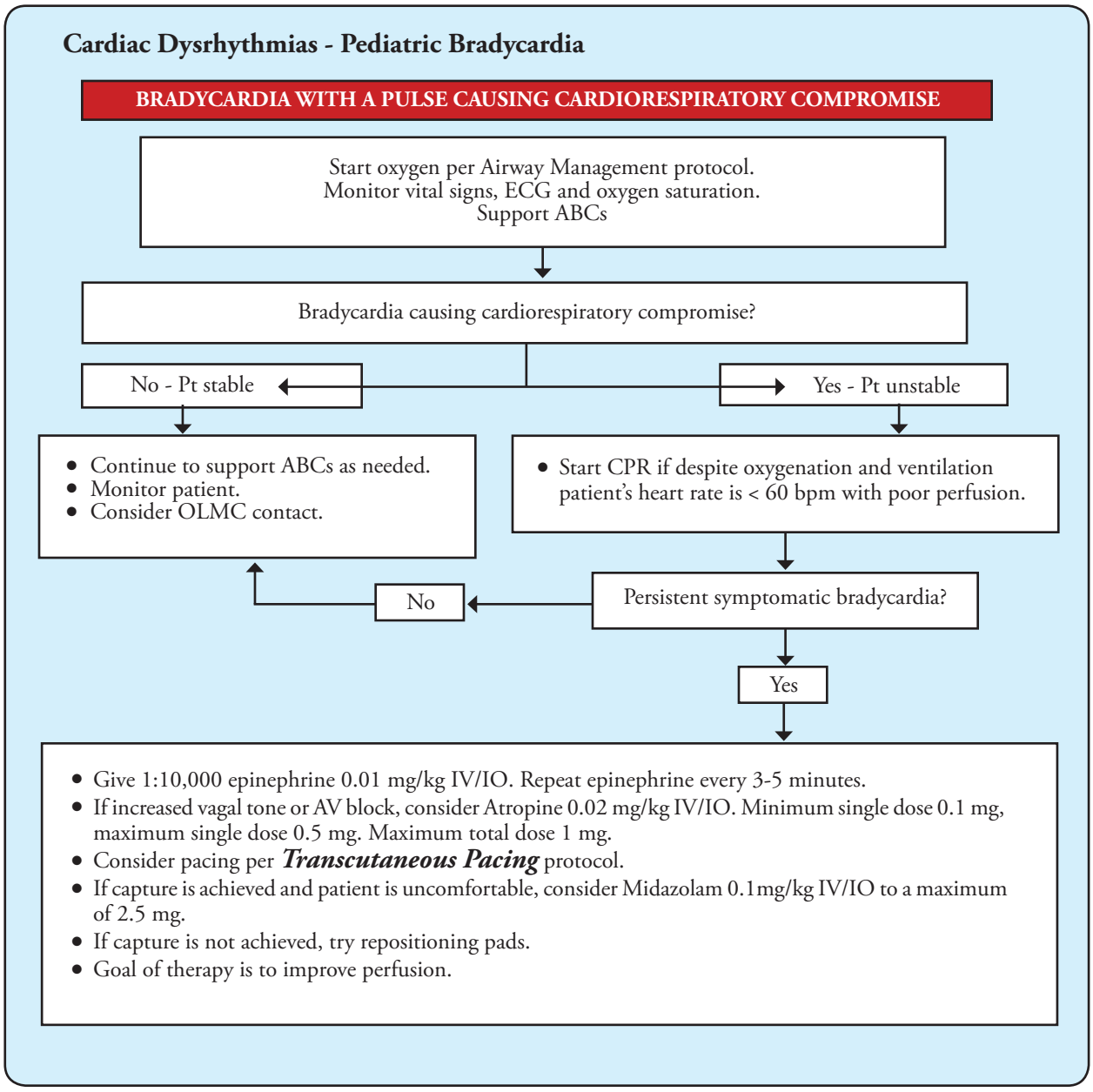
D. If available defibrillator will not "dial down" to appropriate energy level, use lowest possible energy level available.



Specific 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. 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 consider treatment per "Wide Complex Arrhythmia with HX of Renal Failure" (page 8 of Cardiac Dysrhythmias).



Specific Precautions:

A. Most pediatric bradycardia is due to hypoxia. Oxygenate and ventilate aggressively.

Premature Ventricular Complexes (PVCs):

1. Treat only in the setting of a suspected ischemic event.
2. If PVCs are associated with bradydysrhythmia, see section on bradydysrhythmias.

***3. Lidocaine for PVCs:
   - **a.** Initial bolus of 1.5 mg/kg over 1 to 2 minutes.
   - **b.** If no change, give 0.75mg/kg every 5 minutes up to 3mg/kg.
   - **c.** When PVCs are suppressed give 0.75 mg/kg every 10 minutes.
   - **d.** All doses, **after** initial bolus, must be reduced to 1/4 of initial bolus in patients with congestive heart failure; shock; hepatic disease; or in patients over 70 years of age.
   - **e.** Lidocaine should not be used without OLMC direction, if:
     1. BP is less than 90 mm/Hg.
     2. Heart rate is less than 50 beats per minute.
     3. Periods of sinus arrest.
     4. Presence of second or third degree AV block.

*** **Wide Complex Arrhythmia with HX of Renal Failure**

1. Renal failure may elevate blood potassium levels (hyperkalemia) causing bradycardia, hypotension, weakness, weak pulse and shallow respiration. Typical ECG changes include peaked T-waves, lowered P-wave amplitude or the loss of the P-wave altogether, prolonged PR interval, second degree AV block, and a widened QRS.
   - **a.** Administer 10 mL calcium gluconate 10% solution slow IV over 5-10 minutes.
   - **b.** If no change in rhythm and transport time is prolonged, consider alternative therapy as per OLMC.
     - **i.** Glucose and insulin (glucose and insulin may be given if patient is insulin dependent and patient's insulin is available).
     - **ii.** High dose albuterol (10 mg in saline by nebulizer).
     - **iii.** Sodium bicarbonate, one amp (50 mL) IV/IO.

NOTES:
Do not mix sodium bicarbonate with calcium preparations. Administer calcium gluconate at a site proximal to the IV catheter. Slowly flush remaining calcium gluconate from the catheter prior to administering sodium bicarbonate.

Chest Pain / Acute Coronary Syndrome

HX	PE	DDX
Pain (onset, duration, severity, location, radiation, aggravation) (N/V, SOB, diaphoresis, arm pain) Previous MI, angina, HTN, diabetes, COPD Previous cardiac surgeries, stents Medications	Breath sounds Peripheral edema	Acute MI Unstable angina Pulmonary embolus Pneumothorax Aortic dissection Esophageal rupture

Treatment:

A. Start O_2, follow ***Airway Management*** procedure.

B. Monitor vital signs, cardiac rhythm and oxygen saturation. Attempt to maintain O_2 saturation above 95%.

C. If ischemic event suspected, obtain 12-lead ECG if available. This may be done concurrently with other treatment and should not delay treatment or transport. See below for interpretation.

** **D.** Start IV/IO prior to administration of nitroglycerin for patients who have never taken nitroglycerin; follow Shock protocol if indicated.

E. Drugs:

* **1.** Administer aspirin PO (approximately 324 mg) unless contraindicated.

** **2.** After 12 lead is obtained, nitroglycerin 0.4 mg SL (spray or tablet) every 5 min, if systolic BP is equal to or greater than 100 mm/Hg, or until chest pain is relieved.

** **3.** For pain unrelieved after 3 nitroglycerin, and if the BP is greater than 100 mm/Hg systolic, give fentanyl 50 micrograms IV/IO, repeat with 25-50 micrograms every 3 to 5 minutes as needed to a maximum of 200 micrograms. Nitroglycerin may be continued for strong suspicion of acute coronary syndrome.

Specific Precautions:

A. DO NOT DELAY ADMINISTRATION OF ASPIRIN TO OBTAIN 12 LEAD

B. NTG administration to patients with an acute inferior wall myocardial infarction should be performed with close monitoring of vital signs and rhythm. NTG in these patients may result in symptomatic hypotension and/or shock which should be treated with usual measures (fluids, changes in position, medications if necessary).

C. Do not administer nitroglycerin without OLMC if patient has taken Viagra® or other similar drugs in the last 24 hours or Cialis® (tadalafil) within last 48 hours.

D. Contraindications to administration of aspirin:

1. Allergy to aspirin or aspirin induced asthma.

2. History of active bleeding disorder, (i.e., hemophilia).

3. Current ulcer or GI bleeding.

4. Suspected aortic dissection.

Field Identified ST-elevation MI (STEMI)

Indication

12-lead ECG with:

- Automatic ECG interpretation of "Acute MI Suspected"
- Paramedic interpretation of probable STEMI: 1 mm elevation in 2 contiguous limb leads or 2 mm elevation in 2 contiguous chest leads

Action

A. Rapid transport to destination hospital ED with interventional capability.

B. Early notification of destination and advise receiving of "STEMI patient" or "STEMI alert."

C. If available, transmit 12-lead ECG to destination hospital.

D. Non-diagnostic ECGs with potential "imitators" of ACS or ECGs that are clinically concerning should also be transmitted **without** STEMI activation. (If transmission is unavailable, describe ECG to receiving hospital or contact OLMC). These may include:

- LBBB or RBBB
- LVH
- SVT with aberrancy
- Paced rhythms
- Pericarditis
- Benign early repolarization
- Digitalis effect

Crush Injury

HX	PE	DDX
Body part entrapped	LOC	Respiratory distress
Mechanism of entrapment	Airway	Dehydration
Length of time entrapped	Extremity pulses, neurologic function	Pain
Function of body part (e.g. able to feel, move extremity)		Hypo and/or hyperthermia

Treatment:

A. Start oxygen, follow ***Airway Management*** procedure if indicated.
B. Spinal immobilization if indicated.
** **C.** Start IV.
** **D.** Monitor cardiac rhythm if indicated.
E. Wound care.
1. Control/stop hemorrhage.
2. Bandage all open wounds. (Irrigate with normal saline if needed.)
3. Stabilize all protruding foreign bodies (impaled objects).
4. Splint/immobilize injured areas.
5. For suspected pelvic crushing injuries, tightly wrap pelvic region in a sheet or blanket prior to stabilizing on a backboard.

F. If severe crushing injury/compartment syndrome:
1. Remove all restrictive dressings (clothing, jewelry, etc).
2. Continually monitor distal pulse, motor and sensation in involved extremity.
** 3. Administer 1000 to 2000 mL of normal saline fluid bolus, then maintain at 500 mL per hour.
*** 4. Na Bicarbonate infusion: 1000 mL of D5W + 0.25 normal saline with 100 mEq of sodium bicarbonate administered at 125 mL per hour.
*** 5. Mannitol 1 gm/kg.
*** 6. If mannitol unavailable or contraindicated give furosemide 20 mg IV.

Precautions:

A. If circumstances warrant, begin warming procedures to prevent hypothermia.
B. If patient is trapped in a heavy dust environment, consider methods to provide nebulized oxygen. Consider the use of nebulized albuterol.
C. If patient is severely trapped and requires prolonged extrication or potential amputation, contact OLMC for Trauma Surgeon advice and ensure that a technical rescue team is activated.
D. During extrication, continually monitor patient condition, and ensure a designated Safety Officer is present to evaluate risk-benefit decisions.
E. Call OLMC for pediatric dosing.

Hyperthermia

HX	PE	DDX
Onset of symptoms Environmental temperature/ humidity Physical activity Muscle cramps Weakness Headache/ syncope Drugs Medications	LOC Sweating (present or absent) Skin Neuro	Heat stroke Drugs (cocaine etc) Sepsis CVA Primary seizure disorder Encephalitis / meningitis Malignant hyperthermia See below for heat illness DDX

Treatment:

A. Undress patient and begin cooling measures that maximize evaporation and convection. (A spray bottle with tepid water works well.)
B. If the patient starts shivering, stop cooling measures.
C. Start O_2, follow ***Airway Management*** procedure.
D. Obtain vital signs during transport.
** **E.** Monitor cardiac rhythm and follow ***Cardiac Dysrhythmia*** protocol.
** **F.** Start IV/IO as needed.
G. For seizures follow ***Seizure*** protocol.

Specific 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 patient **without** good airflow will tend to increase temperature and should be avoided.
C. **Do Not Let Cooling in the Field Delay Your Transport;** cool patient if possible while en route.
D. Suspect hyperthermia in patients with altered mental status or seizures on hot, humid day.

Hypothermia

HX	PE	DDX
Environmental Exposure (submersion, cold environmental) Underlying medical conditions Elderly Infants, newborn Sepsis Shock Starvation Endocrine (diabetes, hypothyroid) Medications Spinal cord injury Burns	LOC Presence or absence of spontaneous respiration, oxygen saturation (if obtainable) Pulse (rate) ECG (underlying rhythm wide/ narrow QRS)	Etiology: Increased heat loss (environment, burns, prolonged extrication etc) OR Decrease heat production (starvation, age extremes etc) Severity of hypothermia best assessed by: Mental status Orientated : Mild Confused, disorientated: Moderate Comatose : severe ECG QRS duration Narrow : Mild Sinus brady: Moderate Severe bradycardia (<40), Wide QRS: Severe Consider underlying medical conditions if no environmental factors.

Treatment:

A. Start O_2, follow ***Airway Management*** procedure with the following exception:
- **1.** Manage airway with BVM.

*** **2.** If oral intubation is necessary, proceed carefully.
- **a.** If jaw is difficult to open, use BVM.
- **b.** Paralytics should not be used in these patients.

B. Remove all wet clothing as soon as possible and provide patient with warm blankets. Place patient in a heated environment as soon as possible.

** **C.** Start IV/IO as needed, if possible infuse warmed IV/IO fluids (99° to 113° F).

D. Patients who are profoundly hypothermic, (Patient "A"), may require pump rewarming; call OLMC for direction.

*[**] **E.** Apply AED **[or cardiac monitor]**, if available, and use the following guidelines.
- **1. Patient "A"** — Disorganized ECG rhythm, no pulses, follow ***Arrest Algorithm*** for cardiac arrest:
  - **a.** CPR is advised for these patients.
  - **b.** Call OLMC for direction regarding resuscitation and before administering any medications.
- **2. Patient "B"** — Organized ECG, with or without palpable pulses, handle gently.

F. No CPR or pacing if patient is bradycardic, call OLMC for direction regarding resuscitation and before administering any medications.

Specific Precautions:

A. In the profoundly hypothermic patient, medications may not be effective until circulation is adequately restored. Repeat dosages of medications commonly given during a standard arrest sequence may not be advised.

B. Search and Rescue teams may use protocols that apply to the wilderness environment. It is recognized that they may not be able to contact OLMC for direction when so stated in the protocol.

Musculoskeletal Injuries

HX	PE	DDX
Mechanism of injury (location, time) Area of greatest pain Loss of consciousness Restriction on normal function (i.e. able to walk, move arm etc)	LOC Neck/ spine pain Extremity exam (lacerations, swelling, discoloration, deformity, crepitus, angulation, amputation, restriction on range of motion) Pulse Capillary refill Neuro deficit	Strain Minimal swelling, mild tenderness Sprain Moderate to severe swelling, severe tenderness, inability to bear weight (weight bearing joints) Possible fracture All above + Deformity

Spinal Immobilization

Treatment:

A. Provide initial cervical spine immobilization using manual in-line stabilization.
B. Immobilize using a long spine board if the patient has a mechanism with the potential for causing spinal injury and meets ANY of the following clinical criteria:
  1. Altered mental status.
  2. Evidence of intoxication.
  3. Distracting pain/injury (extremity fracture, drowning, etc.).
  4. Neurological deficit (numbness, tingling, paralysis).
  5. Spinal pain or tenderness.
  6. Distracting situation (communication barrier, emotional distress, etc.).
C. Complete a secondary exam to include serial neurological status after immobilization.
D. Treat pain per Pain Management protocol.

Specific Precautions:

A. If any immobilization techniques cause an increase in pain or neurological deficits, immobilize patient in the position found or position of greatest comfort.
B. Carefully assess the patient's respiratory status during transport. Loosen straps as needed to avoid respiratory compromise.
C. Comorbid age factors (< 12 or > 60 yrs) may impact the EMT's ability to assess the patient's perception and communication of pain. A conservative approach to immobilizing these patients is strongly recommended.
D. Patients in the third trimester of pregnancy should have the right side of the backboard elevated six inches.
E. Pad backboards for all inter-facility transports. Consider padding backboards for prolonged scene transports.
F. If sports injury, immobilize patient ***Sports Equipment Removal*** protocol.

Amputation:

A. If amputation is above the wrist or ankle, enter the patient into the **Trauma System.**
B. Cover stump or partial amputation with sterile dressing, saturate with sterile Normal Saline and cover with dry dressing.
  1. Partial amputations should be splinted in anatomical position to avoid torsion and angulation.
  2. Control bleeding by direct pressure, indirect pressure and/or elevation, hemostatic dressings and/or tourniquet.
C. Wrap severed part in sterile dressing, place in plastic bag or wrap in plastic and keep dry.
  1. Place bag in ice water combination without salt, if available.
  2. Time is of the greatest importance to assure viability, if the transport time will be prolonged due to extrication or other circumstances, consider sending the amputated part ahead to be surgically prepared for reimplantation.

Sprains, Possible Fractures and Dislocations:

A. Dislocations should not be reduced in the field.
B. Check for pulses, sensation and movement in the extremity distal to the injury site both before and after immobilization.
C. Splint fractures in normal anatomical position. Apply axial traction as needed. Follow ***Pelvic Wrap*** procedure if indicated.
D. Elevate and apply ice or cold packs if time and extent of other injuries allow.

Open Fractures:

A. Control bleeding by direct pressure, indirect pressure and/or elevation, hemostatic dressings and/or tourniquet.
B. Apply sterile dressing.
C. Saturate with sterile Normal Saline.
D. Cover with dry dressing.
E. If the fracture/dislocation is open or involves a joint, splint in place unless neurovascular compromise is present distal to the fracture site.

Femur Shaft Fracture:

Apply traction splint for immobilization.

Pain Control for Isolated Extremity Injuries:

****A.** Consider Fentanyl 50 micrograms, repeat with 25-50 micrograms every 3-5 minutes as needed to a maximum of 200 micrograms, titrated slowly for relief. Contact OLMC if more than 200 micrograms is needed for pain control.

Pediatric Considerations:

1. Small children may require extra padding under the shoulders.
- **a.** Children require extra padding behind the T-spine and shoulders and are best immobilized on a pediatric backboard.
- **b.** If using an adult backboard
  - **1.** Since the pediatric patient is at risk of sliding from side to side on a backboard, it is recommended that the EMT place rolled up blankets or other dense, soft support material on both sides of the pediatric patient prior to securing the chest and hip straps.
  - **2.** The location of the straps on the backboard may have to be adjusted so they securely hold the pediatric patient in place and do not compress the abdomen

*** **2.** Fentanyl dose for children < 40 kg: initial dose 1 microgram/kg, repeat with 0.5-1 microgram/kg every 3 -5 minutes as needed, maximum 4 microgram/kg. If ≥ 40 kg follow adult dosing.

Nausea and Vomiting

HX	PE	DDX
Onset, duration, total number Blood, bile? Associated symptoms (abdominal pain, headache, dizziness, pain, neuro symptoms) Pregnancy Medications, allergies	LOC Neuro deficits Abdominal exam Ataxia	CNS (migraine, CVA) Vestibular (vertigo, dizziness, middle ear) Cardiac: Acute MI Eye (blurred vision) GI (gastroenteritis) Pregnancy Severe pain (MI, renal stone, fracture, trauma) Medication

Treatment:

A. Start O_2, follow ***Airway Management*** procedure, as indicated.

** **B.** Start IV if needed; if shock syndrome is present follow Shock protocol.

C. Consider fluid challenge in patients exhibiting signs of dehydration.

D. Consider offering patient an isopropyl alcohol swab and allowing the patient to self-administer the swab by inhalation. Emphasize slow deep inhalation. May be repeated up to 2 times (total of 3 administrations) but should not delay the administration of ondansetron.

*** **E.** Give 8 mg ondansetron orally dissolving tablets (Zofran® ODT) or 8 mg ondansetron slow IV push over 2 minutes or IM.

- **a.** If nausea and/or vomiting are inadequately controlled after 10 minutes, may repeat ondansetron for a total of 3 doses.
- **b.** If the patient has a known allergy to ondansetron administer diphenhydramine 25 to 50 mg IV/IM.

** **F.** If patient continues to vomit administer fluid challenge and consider other causes.

Specific Precautions

A. Do not administer ondansetron (Zofran®) to patients with a hypersensitivity to the drug or other 5-HT3 type serotonin receptor antagonists (i.e., dolasetron [Anzemet®] and granisetron [Kytril®])

B. Do not administer with alkaline medications or preparations, which may cause precipitation.

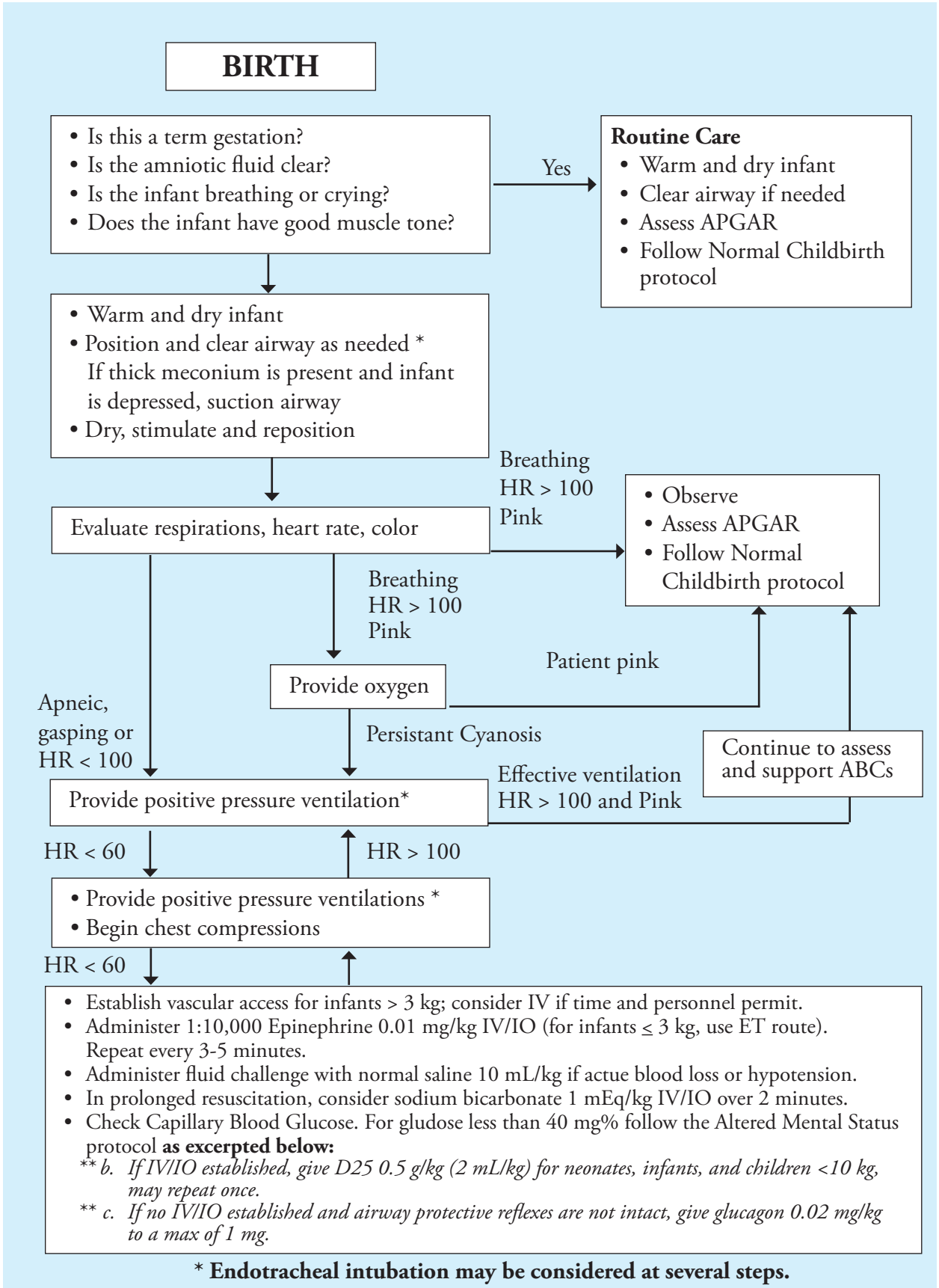
Pediatric Considerations

A. Ondansetron use in patients under 2 years of age requires OLMC consultation except for children in spinal immobilization or children receiving chemotherapy.

*** **B.** For children 2-12 years of age, administer one (1) 4 mg ondansetron orally dissolving tablet (Zofran ODT) or administer 0.1 mg/kg IV/IO to a max of 4 mg.
Consider IM at same dose if unable to start IV and ODT tablet is contraindicated.

Neonatal Resuscitation

HX	PE	DDX
Painful bleeding in mother (Abruptio Placentae) Prolonged rupture of membranes Maternal fever, hypertension, edema, seizures	Meconium-stained fluid Prolapsed cord APGAR score	Initial questions: • Amniotic fluid clear of meconium? • Breathing or crying? • Good muscle tone? • Pink color? • Term infant? Management priorities: • Provide warmth • Clear, open airway • Dry, stimulate infant • Oxygen



*** Endotracheal intubation may be considered at several steps.**

Notes & Precautions

A. Do not use Atropine in neonatal resuscitation.
B. 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.
C. 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).

Meconium Aspiration:

Meconium in the amniotic fluid can be aspirated resulting in a potentially fatal course or requiring high-pressure ventilation and resulting chronic lung disease. Many of these complications can at least be attenuated, if not prevented, by suctioning meconium from the airway PRIOR to ventilating. This can be emotionally difficult to do when confronted with a depressed, blue, bradycardic newborn, but direct tracheal suctioning through the ET tube should be considered part of establishing a patent airway in these newborns.

A. With all infants who have passed meconium, as soon as the baby's head is delivered (before delivery of the shoulders), using a l0 French or larger suction catheter, suction the mouth, pharynx and nose.
B. After delivery, proceed with intubation for all infants who are depressed and have passed meconium or any infant passing thick, particulate meconium.
  1. Check blood glucose and follow ***Altered Mental Status and Coma*** protocol.
  2. Procedure:
  * **a.** Suction the mouth, nose and posterior pharynx, using a 10 French or larger catheter hooked to machine suction, when the head is delivered and again after the rest of the infant has been delivered.
  *** **b.** Secure protected airway, intubate the infant with the appropriately sized endotracheal tube and suction with a meconium suction adapter or use a specially designed meconium aspiration catheter/endotracheal tube such as a Neovac® type device.
    c. Suction should not last more than 3 to 5 seconds.
      i. Do not suction with your own mouth!
      ii. Use the portable machine suction or wall suction if available.
  3. In an infant with severe asphyxia, clinical judgment should be used to determine the number of intubation attempts. It may not be possible to clear the trachea of all meconium before initiating other resuscitation measures.

OB/GYN Emergencies

HX	PE	DDX
Last menstrual period Pregnancy • Single or multiple • Due date • Abdominal pain/ contractions (timing/ duration) • Ruptured membranes Seizures Hypertension Vaginal bleeding Past medical /OB Hx	Hypertension Edema Abdominal exam Vaginal bleeding If possibility of delivery exist, inspect perineum for bleeding, fluid (not color), crowning or abnormal presentation Do not perform a digital exam	Vaginal bleeding Early pregnancy Ectopic pregnancy Spontaneous abortion Late pregnancy Abruptio placenta Placenta previa HTN / headache/edema /seizures Eclampsia /pre-eclampsia

Treatment:

1. If multiple, or abnormal birth, consider second transport unit.
2. Start O_2 in all abnormal deliveries. Follow ***Airway Management*** procedure.
3. If in third trimester, transport on left side unless delivery is imminent.

** 4. Start IV/IO as needed.

5. Toxemia of Pregnancy
   - **a.** Seizures (eclampsia) follow ***Seizure*** protocol.
   - *** **b.** Consult OLMC for consideration of use of Magnesium Sulfate.
6. **Abruptio Placentae/Placenta Previa**
   - **a.** Treat per Shock Protocol if necessary.
   - **b.** Transport immediately to the nearest appropriate hospital.
   - **c.** Contact OLMC early.

Childbirth:

A. Normal child birth.

1. Use sterile or clean technique.
2. Guide and control, but do not retard or hurry, delivery.
3. Check for cord around baby's neck and gently remove if found.
4. Suction mouth, then nose with bulb syringe after head is delivered. Keep infant level with perineum.

5. Assess and treat ABCs. Follow ***Neonatal Resuscitation*** protocol, if needed.
***6. Secure protected airway if infant is depressed, perform direct tracheal suction, and then ventilate.
7. Assess infant using APGAR criteria at time of birth and five minutes later. (The Prehospital Care Report should describe infant using criteria rather than giving a numerical score.)
8. Dry infant and place against mother's skin. Cover both with a clean, dry blanket to maintain warmth.
9. If child does not need treatment, place on mother's chest for transport.
10. Gently massage mother's uterus to encourage contraction and prevent excessive bleeding.
11. Transport.
    a. Monitor vital signs of mother and infant en route.
    b. Do not delay transport to deliver the placenta.

B. Abnormal Childbirth:

1. Transport to nearest appropriate hospital.
2. Contact OLMC for advice.
3. **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 the body while the head is delivered.
    b. If the head is not delivered within 3 minutes, suffocation can occur:
        i. Place your gloved hand in the vagina, with your palm toward the baby's face.
        ii. 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.
    c. Place mother in knee-chest position or elevate buttocks on pillows while transporting.
    d. Assess for presence of pulse in umbilical cord, if presenting.
4. **Prolapsed cord:**
    a. Place mother in knee-chest position or elevate buttocks on pillows while transporting.
    b. With a gloved hand, gently attempt to push the baby up the vagina several inches.
    c. Do not attempt to push the cord back.
    d. Assess for presence of pulse in umbilical cord.
5. **Limb presentation:**
    a. The presentation of an arm or leg through the vagina is an indication for immediate transport to the hospital.
    b. Place mother in knee-chest position or elevate buttocks on pillows while transporting.
    c. Assess for presence of pulse in umbilical cord, if presenting.
6. **Abruptio Placentae** occurs in the third trimester of pregnancy when the placenta prematurely separates from the uterine wall leading to intrauterine bleeding.
    a. The patient experiences lower abdominal pain and the uterus becomes rigid.
    b. Shock may develop without significant vaginal bleeding.

Notes and Precautions:

A. Always consider the possibility of ectopic pregnancy in a woman of child-bearing age (15 to 55) with abdominal pain or vaginal bleeding.

B. APGAR Criteria:

Sign	0	1	2
Appearance:	Blue, pale	Body pink, extremities blue	Completely pink
Pulse:	Absent	Slow (less than l00)	Greater than or equal to 100
Grimace:	No response	Grimace	Cough or sneeze
Activity:	Limp	Some flexion	Active motion of extremities
Respirations:	Absent	Slow, irregular	Good, Crying

Pain Management

ACUTE	CHRONIC	PRINCIPLES OF MANAGEMENT
Is a symptom of illness or injury	Is the problem	Pain is best treated early
Serves a biological purpose	Has no biological function	Untreated or under treated pain produces more pain
Is associated with identifiable pathology	May or may not be associated with identifiable pathology	Analgesia and a search for the cause of the pain should happen simultaneously
Is present for less than 6 months	Is present for more than 6 months	Pain scales should be used routinely

Treatment:

For acute pain and uncontrolled chronic pain:

A. Consider oxygen per ***Airway Management*** protocol.

B. Monitor vital signs and level of consciousness, consider ECG monitor.

C. Establish venous access if indicated. Determine location of pain and severity using numeric scale (1-10) or Faces scale.

D. Consider and treat underlying cause of pain.

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

F. Administer pain medication:

- **a.** Fentanyl 50 micrograms IV or IM. Repeat with 25-50 micrograms every 3-5 minutes as needed to a maximum of 200 micrograms.
- **b.** For interfacility transfers for patients already administered morphine, administer morphine 2-5 mg IV or IM every 3-5 minutes to a maximum of 20 mg.
- **c.** Contact OLMC if maximum dose of either medication is reached without adequate pain management.

Do not administer pain medications if any of the following are present:

- **a. Respiratory distress or O2 saturation of < 90%**
- **b. Known allergy to pain medications**
- **c. Altered mental status**
- **d. Systolic blood pressure of < 100 mm/Hg**

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

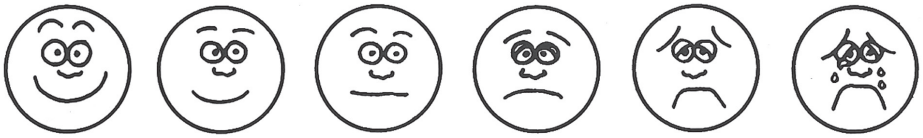
Pediatric Considerations:

A. Fentanyl dose for children is 1 microgram/kg IV or IM. May repeat with 0.5-1 microgram/kg every 3-5 minutes as needed to a maximum of 4 micrograms/kg. Do not exceed adult dosing.

B. For children under 20 kg morphine 0.1mg/kg IV or IM. May repeat every 3-5 min. Do not exceed adult dosing.

C. Contact OLMC if maximum dose of either medication is reached without adequate pain management.

Faces Pain Scale



0	2	4	6	8	10
No Hurt	Hurts Little Bit	Hurts Little More	Hurts Even More	Hurts Whole Lot	Hurts Worst

Poisons and Overdoses

HX	PE	DDX
Type of ingestion or exposure What, when, how much Multiple patients with similar symptoms Reason for ingestion (accidental or intentional) Action by bystanders Previous similar events	LOC Pupils Breath (odor) Temperature (hyper/ hypothermic) Neuro status ECG (rate, rhythm, QRS duration)	See toxidromes

Treatment: **[Consider HAZMAT Response]**

A. Consider use of any of the following protocols:
1. ***Hazardous Materials -- Multiple Toxic Exposure***
2. ***Hazardous Materials Treatment,*** if trained and authorized
3. ***Mass Casualty Incident***
4. ***Staging for High Risk Response***

B. External Contamination:
1. Protect medical personnel.
2. Remove contaminated clothing.
3. Brush off any solid material from the skin.
4. Flush contaminated skin and eyes with copious amounts of water.

C. Internal Ingestion:
1. Assess and support ABCs.
2. Start O_2, follow ***Airway Management*** procedure.

* 3. If ingestion is Aspirin (ASA) and/or Tylenol (APAP) only and is less than 2 hours old, give 1 gm/kg activated charcoal if available.

* 4. For all other ingestions less than 2 hrs. old contact OLMC for consideration of activated charcoal.

5. For ingestions more than 2 hrs old activated charcoal is not indicated.

** 6. Start IV/IO if needed and follow ***Shock*** protocol.

7. If patient is poorly responsive or has depressed respirations:
- **a.** Determine blood glucose and follow ***Altered Mental Status and Coma*** protocol.
- ** **b.** If no IV/IO has been established, administer naloxone 2 mg IM.
- **c.** If IV/IO already established, administer naloxone 0.5 mg IV/IO and observe for improved ventilations, IV/IO dose may be repeated every 2 minutes up to 2 mg.
- **d.** In most instances, a total dose of 2 mg IM or IV/IO will be sufficient to reverse opioid intoxication. In some cases (methadone or designer drugs), larger doses of naloxone may be necessary. In these cases, additional doses of naloxone (2 mg IM or IV/IO every 3-5 minutes) up to a maximum of 8 mg of naloxone may be administered to reverse opioid intoxication.

** **8.** Monitor cardiac rhythm and follow ***Cardiac Dysrhythmia*** protocol.

D. Specific Poisonings:

1. (See toxidrome table).

2. Carbon Monoxide (CO) poisoning:
- **a.** High flow O_2.
- **b.** If patient has suspected cyanide poisoning, consider obtaining SpCO, if available, before administration of Cyanokit™ since the latter will interfere with the carboxyhemoglobin monitor.
- **c.** If CO monitor available and CO reading is ≥ 15, then transport to nearest facility with hyperbaric chamber (unless patient meets burn or trauma center criteria).

	Clinical presentation	**Clinical presentation**	**Clinical presentation**	**Clinical presentation**
Carbon Monoxide	Yes	Yes	Yes	Yes
Burns	No	Yes	No	Yes
Trauma	No	No	Yes	Yes
Destination	Hyperbaric Center	Burn Center	Trauma Center	Trauma Center

Carbon Monoxide = Yes (≥ 15)
Burns = Meets Burn Center criteria
Trauma = Meets Trauma system criteria

Pediatric Considerations: **[Consider HAZMAT Response]**

1. Consider possibility of neglect or abuse.
* 2. Determine blood glucose and follow ***Altered Mental Status & Coma*** protocol.
* 3. Activated charcoal dose is 1 gram/kg.
** 4. Naloxone dose is 0.1 mg/kg., max 2 mg per dose.
** 5. IV/IO Atropine dose, per OLMC, may be very high in children that have orally ingested organophosphate poisons.

Specific Precautions:

A. Inhalation poisoning, **SLUDGE** symptoms (salivation, lacrimation, urination, defecation, gastrointestinal symptoms and emesis), or acid/alkali exposure may be dangerous to rescuers.

B. Do not neutralize acids or alkalis.

Table D.1. - Toxidromes

Toxidrome	*Examples*	*Clinical Features*	*Antidotes*
Sympathomimetic	Cocaine Methamphetamine	Agitation Diaphoresis Hypertension Hyperthermia Dilated pupils Tachycardia	Benzodiazepine (OLMC)
Opioid	Heroin Hydromorphone Methadone Oxycodone	Depressed Mental Status Hypoventilation Constricted pupils	Naloxone
Cholinergic (Anti-cholinesterase)	Pesticides • Carbamates • Organophosphates Nerve agents	Muscarinic[+] Nicotinic[++] Central[+++]	Atropine Pralidoxime (HAZMAT, OLMC)
Sedative-Hypnotic	Barbiturates Benzodiazepines GHB	Depressed Mental Status Hypotension Hypothermia	Supportive Therapy (No antidote)
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	Physostigmine (ED)
Sodium Channel Blockade	Tricyclic Antidepressants Anti-arrhythmics • Type IA agents (quinidine, procainamide) • Type IC agents (flecainide, propafenone)	Altered Mental Status Hypotension Seizures Wide-Complex Tachycardia	Sodium Bicarbonate (OLMC)

[+]Muscarinic:
- Diarrhea
- Urination
- Miosis
- Bradycardia, Bronchospasm, Bronchorrhea
- Emesis
- Lacrimation
- Salivation, Secretions, Sweating

[++]Nicotinic:
- Mydriasis
- Tachycardia
- Weakness
- Hypertension, Hyperglycemia
- Fasciculations

[+++]Central:
- Confusion
- Convulsions
- Coma

Psychiatric and Behavioral Disorders

HX	PE	DDX
Recent crises Behavioral change Suicide/homicidal ideation Past medical, psych history Medications Drugs ETOH	Pupils Orientation Mental status exam appearance, behavior orientation affect/ mood, thought (delusions, illogical etc), hallucinations (visual/auditory) memory (recent/past)	Confusion Metabolic (electrolyte) Infectious (encephalitis, sepsis) Neurologic (CVA, tumor) Medication Drug abuse Psych

Treatment:

A. Immediate danger to medical personnel or patient:
- **1.** Follow ***Staging for High Risk Response*** protocol.
- **2.** Protect yourself and others.
- **3.** Summon law enforcement.

B. No evidence of immediate danger to medical personnel or patient:
- **1.** Assess ABCs. Follow ***Airway Management*** procedure, if needed.
- **2.** Assess orientation and level of consciousness, follow ***Altered Mental Status and Coma*** protocol if indicated.

C. General approach to the patient:
- **1.** Show self-confidence and convey concern for the patient.
- **2.** One EMT should establish rapport and interact with the patient.
- * **3.** Do not stay alone with the patient. Have enough help to restrain the violent patient. See ***Patient Restraint (Physical)*** procedure.
- *** **4.** If chemical restraint is indicated, see ***Patient Restraint (Chemical)*** procedure.

Choice of Destination

A. Voluntary patient:
- **1.** Hospital destination is determined by patient preference.
- **2.** If the patient has no preference, transport to the nearest hospital.

B. Involuntary patient, patients on Police Officer Mental Hold:
- **1.** Patients of 9-1-1 incidents, transported by ambulance, must be evaluated at a licensed hospital Emergency Department.

Respiratory Distress

HX	PE	DDX
Recent illness Fever, chills Cough Chest pain PMH (Asthma/CHF/ COPD)	LOC Skin color Stridor Distended neck veins Breath sounds Peripheral edema	Upper airway obstruction Lung • Bronchitis • Asthma • COPD • Pneumonia • PE CHF/MI / Tamponade Trauma (pneumothorax / flail chest) Toxins (carbon monoxide, cyanide etc) Metabolic acidosis (diabetic ketoacidosis etc) Sepsis

Breath Sounds in Respiratory Distress

Characteristics	Possible Causes
Clear, symmetric	Hyperventilation, MI, metabolic, pulmonary embolus
Crackles, symmetric	Pulmonary edema, extensive pneumonia
Wheezing, symmetric	Asthma, pulmonary edema, COPD
Clear, asymmetric or absent	Pneumothorax, pulmonary embolus, COPD
Crackles, asymmetric	Pneumonia, pulmonary edema
Wheezing, asymmetric	Foreign body, pulmonary embolus, COPD
Stridor	Croup, epiglottitis, foreign body

Treatment:

A. Start O_2, follow ***Airway Management*** procedure, as indicated. Use pulse oximeter.
** **B.** Start IV/IO as needed.
** **C.** Monitor cardiac rhythm and follow ***Cardiac Dysrhythmia*** protocol.
D. Treat underlying cause as follows:
1. Upper Airway (croup, epiglottitis, anaphylaxis, foreign body):
a. Obstructed airway procedures for complete obstruction.
b. Treat anaphylaxis per ***Anaphylaxis and Allergic Reaction*** protocol.
***c.** **Foreign body:** Remove using direct laryngoscopy if complete obstruction.
d. Complete Obstruction: If you cannot effectively ventilate the patient and they are deteriorating, consider cricothyrotomy.

2. Respiratory Distress Unknown Etiology
a. Consider nebulized albuterol (1 unit dose), may repeat as needed.
b. If a second and/or third treatment is needed, add ipratropium (1 unit dose) to albuterol treatment.

3. Pulmonary Edema:
a. Sit patient upright.
b. If BP less than 100 mm/Hg: Treat possible cardiogenic shock. See ***Shock*** protocol.
c. If BP greater than 100 mm/Hg:
i. Nitroglycerine 0.4 mg SL (spray or tablet), repeat nitroglycerine every 3-5 minutes.

NOTES:
Do not administer nitroglycerine without OLMC if patient has taken Viagra® or other similar drugs in the last 24 hours or Cialis® (tadalafil) within last 48 hours.

ii. If the patient remains in severe respiratory distress (e.g., unable to speak more than one or two words, low O_2 saturation [< 90 %], RR > 40) start CPAP if available.
iii. Consider albuterol 2.5 mg by nebulizer. May repeat as needed.
iv. Furosemide (if systolic BP > 100 and fluid overload state [JVD, rales, peripheral edema, hypertension]).
a. If patient is not currently taking furosemide, give 20 mg IV/IO.
b. If patient is taking furosemide, administer 40 mg IV/IO.

4. COPD
- **a.** Nebulized albuterol (1 unit dose) may repeat as needed.
- **b.** If a second treatment is needed, add ipratropium (1 unit dose) to albuterol treatment. If a third (or more) treatment is needed, continue with albuterol treatment only.
- **c.** If patient has severe respiratory distress administer Dexamethasone 10 mg IV, IO, IM, or PO.
- **d.** If the patient remains in severe respiratory distress (e.g., unable to speak more than one or two words, low O_2 saturation (< 90%), RR > 40) administer **CPAP** if available.
- **e.** If continuous nebulized treatment is needed during transport contact OLMC for advice.

5. Asthma:
- **a.** Nebulized albuterol (1 unit dose) may repeat as needed.
- **b.** If a second and/or third treatment is needed, add ipratropium (1 unit dose) to albuterol treatment.
- **c.** If patient has moderate to severe asthma based on the Severity Assessment, administer Dexamethasone 10 mg IV, IO, IM, or PO.
- **d.** If patient is deteriorating and less than 40 years old, give 1:1,000 epinephrine 0.3 mg. SQ/IM. Contact OLMC before giving epinephrine to anyone 40 years, or older.
- **e.** If transport time is prolonged and patient's asthma is severe, contact OLMC for consideration of magnesium sulfate (usual dose is 2 grams over 20 minutes.)
- **f.** If continuous nebulized treatment is needed during transport contact OLMC for advice.

Asthma Severity Assessment:

	Mild	Moderate	Severe
Short of breath when	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
Accessory muscle use	Not usually	Common	Usually
Alertness	Possibly agitated	Usually agitated	Usually agitated

Pediatric Considerations:

*** **1.** In children 6 mos-6 yrs with audible stridor at rest, give 5 mL epinephrine 1:1,000 via nebulizer. May repeat in 20 minutes.

2. 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 the child with a BVM. Only attempt intubation if you cannot ventilate with a BVM.

3. Avoid IV access, if possible.

*[**]**4.** Administer O_2, **[or nebulized medications]** through a familiar object, (e.g., place tubing through the bottom of a paper cup held close to the child's face by the parent or caregiver).

** **5.** Do not dilute or reduce the dose of albuterol. Indication and dosage for albuterol is the same as for adults.

*** **6.** Consider Dexamethasone 0.3 mg/kg (up to 10 mg) in patients with asthma.

Seizures

HX	PE	DDX
Seizure • Onset, duration • Type (grand mal, focal etc) • Fever • Urine / fecal incontinence History • Diabetes • Head trauma • Pregnancy • Previous seizure • Current medications (including compliance) • Other (drug/ETOH, fever) • Toxic exposure	LOC O2 saturation Active seizure (focal / grand mal) Neuro deficits Evidence of trauma	Hypoxia Hypoglycemia Febrile Trauma CNS (CVA, meningitis, tumor) Drugs/OD Idiopathic ETOH withdrawal Electrolyte disturbance Cardiac arrest Eclampsia Shock

Treatment:

A. History of seizure with current altered mental status (postictal) or witnessed seizure lasting less than 2 minutes.

1. Move hazardous objects away from patient and protect head; restrain only if necessary.

2. Start O_2, follow ***Airway Management*** procedure.

3. Place patient on left side for transport.

4. Continue assessment and document level of consciousness every 5 minutes.

** **5.** Monitor cardiac rhythm and follow ***Cardiac Dysrhythmia*** protocol.

B. Medical personnel are often called to assist epileptics who seize in public.

1. Transport may be unnecessary if the patient:

a. Clears completely and is fully oriented within 20 minutes after arrival of EMS responders, and

b. Is taking prescribed medications, and

c. Has a physician, and

d. Is experiencing the usual frequency of seizures.

2. Document patient's mental status and have patient sign an **Information Form**. (See ***Patient Non-Transport*** procedure.)

3. The patient should always be encouraged to contact a physician as soon as possible.

C. Status seizures are defined as: "A continuous seizure with loss of consciousness lasting more than 2 minutes, or repetitive seizures without regaining consciousness." If patient is in status seizures:

1. Proceed as in "A" above, and do the following:

** **a.** Start IV/IO as needed.

*** **b.** Administer midazolam 2.5 mg IV/IO; maximum dose is 5 mg. For seizures lasting more than 5 minutes following medication repeat dose once.

*** **c.** If no IV/IO access, administer midazolam 5 mg IM; maximum dose is 10 mg. For seizures lasting more than 5 minutes following medication, repeat dose once.

d. Monitor patient's respiratory status closely.

2. If additional treatment is necessary, contact OLMC.

D.** Determine blood glucose and follow ***Altered Mental Status and Coma protocol.

Pediatric Considerations:

In pediatric patients, seizures may be caused by high fever. Febrile seizures are generally found in children between the ages of 1 and 6. The patients may have a history of recent illness and fever, and they will likely be tachycardiac with flushed, warm skin upon your arrival. The seizures are usually short in duration. For suspected febrile seizures:

1. Gently support head of child to avoid head trauma.

[***] **2.** Be prepared to support ventilation and oxygenation through BVM or **[ET intubation]** and manual ventilation.

* **3.** Determine blood glucose and follow ***Altered Mental Status and Coma*** protocol.

** **4.** Venous access as needed.

*** **5.** Administer midazolam 0.1 mg/kg IV/IO to a maximum initial dose of 2.5 mg. May repeat to maximum of 5 mg for seizures lasting more than 5 minutes.

*** **6.** If no IV/IO access, administer midazolam 0.2 mg/kg IM to a maximum of 5 mg. May repeat to maximum of 10 mg IM for seizures lasting more than 5 minutes.

7. Contact OLMC for additional medication after administering initial and one repeat of medication.

Specific Precautions:

A. Remember to check for a pulse once a seizure terminates. Seizure activity may be the first sign of cerebral hypoxia or dysrhythmia.

B. New onset seizures in a pregnant woman, especially in the third trimester, may be an indication of toxemia of pregnancy that is life threatening to the mother and fetus.

C. New onset seizures in any patient need medical evaluation.

Shock

HX	PE	DDX
Trauma	Fever	Hypovolemic
Hemorrhage (external / internal)	LOC	Cardiac
Chest pain / SOB	Capillary refill	Septic
Fever / sepsis	Skin appearance (rash, swelling, trauma)	Anaphylactic
Allergy / anaphylaxis	Neck veins	Obstructive (PE/pneumothorax/ pericardial tamponade)
Environmental (e.g. heat)	Lung sounds	Spinal
Dehydration	Abdominal tenderness	
	Pelvis	
	Extremity fracture	
	Neuro	

Treatment:

A. **Do not delay transport.**
B. Start O_2, follow ***Airway Management*** procedure.
C. Frequently monitor and document vital signs and patient status.
** **D.** Start IV/IO as needed.
E. Determine type of shock and treat as follows:
1. Hypovolemic Shock:
a. Stop exsanguinating hemorrhage if present.
b. Place patient in Shock Position or Trendelenberg as tolerated.
** **c.** Start 2 IV/IOs if possible.
** **d.** Give 500 mL fluid challenge.
i. Repeat fluid boluses if continued signs of shock and no pulmonary edema.
ii. For penetrating trauma or suspected AAA, do not over resuscitate. The goal is a systolic pressure of 70-90 mm/Hg.
2. Cardiogenic Shock:
a. If suspected cardiac event follow ***Chest Pain*** protocol.
** **b.** Monitor cardiac rhythm and follow ***Cardiac Dysrhythmia*** protocol.
[***] **c. Administer fluid challenge or continue fluid challenge or **[initiate dopamine]**.
3. Distributive Shock, including anaphylaxis, sepsis, and neurogenic shock.

* **a.** If anaphylaxis is suspected, follow ***Anaphylaxis and Allergic Reaction*** protocol.
** **b.** Give 500 mL fluid challenge, may repeat to total of 1,000 mL.
[***] **c. If shock persists, continue fluid challenge or **[dopamine infusion]**.

4. Obstructive Shock, including suspected cardiac tamponade, tension pneumothorax, dissecting aneurysm, and massive pulmonary embolism.
** **a.** Apply monitor and follow ***Cardiac Dysrhythmia*** protocol.
[***] **b. Administer fluid challenge **or [dopamine infusion].**
*** **c.** Tension Pneumothorax — needle thoracentesis.

*** Dopamine Protocol

Mix dopamine solution as follows, and use a Volutrol® type device, (60 gtts/mL):

Usual Dose: 5 - 20 micrograms/kg/min. for adults and pediatrics.

A. Adult solution:

1. Mix 400 mg in 250 mL NS, **OR,** 800 mg in 500 mL NS.
2. Concentration = 1600 microgram/mL.
3. Take patient weight in **pounds**, drop the last number and use the remaining number for the number of drops per minute to administer.

Example: Pt. wt. = 170 lbs., drop last number = 17 gtts/min = 5 micrograms/kg/min.

B. Pediatric solution:

Rule of Six - for use with premix dopamine that is 400 mg/250 mL.

1. Six times the patient's weight in kg equals the amount of dopamine (# of mg) to add to 100 mL of fluid in a volutrol or soluset type device.
2. Determine how many mL of premix solution contains the amount of dopamine you want to add to the 100 mL.
3. Diluent delivered through soluset device delivers 60 gtts/mL.
4. 1 mL/hr delivers 1 microgram/kg/min.

Example: 5 ml/hr equals 5 micrograms/kg/min or 5 gtts/min via soluset.

Pediatric Considerations:

1. If suspected allergic reaction, follow ***Anaphylaxis and Allergic Reaction*** protocol.
* **2.** Determine blood glucose and follow ***Altered Mental Status and Coma*** protocol.
** **3.** Vascular access. Fluid bolus 20 mL/kg, IV or IO.
** **4.** Administer additional fluid boluses at 20 mL/kg as needed, up to 60 mL/kg.
*** **5.** If suspected cardiogenic or distributive shock, consider dopamine after (total of) 20 mL/kg fluid bolus. **Fluid challenge is 10 mL/kg for newborns, see *Neonatal Resuscitation* protocol.**

Stroke/CVA

HX	PE	DDX
Time onset (or time last known normal) Current symptoms (weakness, speech, inability to walk, coordination) Trauma or surgery in last 3 months Recent seizure Medications (Coumadin, clopidogrel (Plavix®) or Heparin) GI Bleeding Previous stroke / TIA Diabetes Hypertension	LOC Cardiac rhythm Signs of trauma Pupils Neuro exam (see stroke scale)	Hypo/Hyperglycemia Drugs /OD CVA TIA Trauma Seizure (postictal) Hypo/Hyperthermia

Treatment:

A. Start Oxygen per ***Airway Management*** protocol.
B. Monitor vital signs and oxygen saturation.
C. Check CBG and treat per ***Altered Mental Status and Coma*** protocol.
D. Complete **Modified Los Angeles Prehospital Stroke Screen.**
E. Establish IV access (16 – 18 gauge in proximal site if possible).
F. Transport patient in supine position with < 15 degree of head elevation if tolerated.
G. Expedite transport to nearest appropriate stroke hospital.
H. Document serial neurologic examinations.

MODIFIED LOS ANGELES PREHOSPITAL STROKE SCREEN			
1. Age over 45 years	Yes	No	Unknown
2. No prior history of seizure disorder	Yes	No	Unknown
3. New onset of neurologic symptoms in last 24 hours	Yes	No	Unknown
4. Patient was ambulatory at baseline (prior to event)	Yes	No	Unknown
5. CBG between 60 & 400	Yes	No	
Neurological examination	**Normal**	**Abnormal**	
FACIAL SMILE/GRIMACE (ask patient to smile/show teeth) **Normal:** both sides of face move equally well **Abnormal:** one side of face does not move as well as the other	Yes	Right	Left
ARM DRIFT (patient closes eyes and hold both arms out palms up) **Normal:** both arms move the same or do not move at all **Abnormal:** One arm does not move or drifts down compared to other	Yes	Right	Left
HAND GRIP (have patient squeeze both hands simultaneously) **Normal:** equal grip strength **Abnormal:** unequal grip strength	Yes	Right	Left
If questions 1 – 5 are all answered "Yes" or "Unknown" and at least 1 of the 3 neurological examination findings are abnormal and unilateral, notify the nearest appropriate stroke hospital with an "Acute Stroke."			

Specific Precautions:

A. Do not treat hypertension or give aspirin.

B. Acute interventions, if indicated, generally must begin within 4.5 hours of symptom onset. All potential stroke patients should go to an appropriate stroke center.

Submerged Patient

HX	PE	DDX
Events leading to submersion: • MVA • jumping of bridge • swimming • seizure • diving accident Duration of submersion Estimated water temperature at recovery depth	Mental status Oxygenation Estimated core temperature Skin appearance Lung sounds Neurological exam ECG	Trauma (cervical spine) Hypoxia Hypotension Hypothermia Aspiration pneumonia

Treatment:

A. Start O_2, follow ***Airway Management*** procedure**.**
B. Take spinal precautions and consider Trauma System entry.
C. Treat per ***Hypothermia*** protocol, if indicated.
** **D.** Consider IV/IO as needed.
** **E.** Monitor cardiac rhythm and follow ***Cardiac Arrest*** and/or ***Cardiac Dysrhythmia*** protocol, ***except:***

Do not resuscitate patients in cardiac arrest if submerged for more than 30 minutes, with the following exceptions:
Resuscitation may be initiated if the patient is recovered within 60 minutes, if:

1. Child less than 6 years, and water temperature less than 40° F at recovery depth.
2. Patient may have been trapped in an underwater air pocket.
3. Water is less than 40° F at recovery depth and information suggests patient may have been swimming on the surface for at least 15 minutes before becoming submerged.
4. Paramedic discretion, contact OLMC.

Trauma Patient Evaluation and Treatment

HX	PE	DDX
Mechanism of injury Description of scene Initial presentation Loss of consciousness Location of identified injuries	Vital signs GCS Identified injuries or abnormalities	Interventions Control of bleeding Airway Breathing Circulation (IV access) Immobilization Analgesia

Treatment:

Treatment priority should be approached in this order:

- **A.** Control exsanguinating hemorrhage.
- **B.** Airway maintenance (including control of the cervical spine). If unable to establish and maintain an adequate airway, the patient should be transported to the nearest acute care facility to obtain definitive airway control.
- **C.** Breathing.
- **D.** Control of circulation.
- **E.** Treatment of shock.
- **F.** Splinting of fractures.
- **G.** Neurological examinations.
- **H.** Detailed patient assessment.

Procedure:

A. Bleeding Control
  1. Identify hemorrhage:
    a. Apply direct pressure, or indirect pressure.
    b. Apply tourniquet if bleeding from an extremity is not controlled by direct pressure, or indirect pressure.
    c. If bleeding persists or if unable to apply tourniquet apply external clotting agent.

B. Assess and Maintain Airway - Protect Cervical Spine
  1. Support respirations per Airway Management procedure.
  2. When feasible, intubate if GCS < 8.

3. Ventilate patient to maintain $ETCO_2$ between 35-40 mm Hg. If patient exhibits signs of herniation, ventilate to maintain $ETCO_2$ between 30-35 mm Hg.
4. Maintain oxygen saturation > 90%.

C. Breathing
1. Seal open pneumothorax.
2. Start O_2, follow Airway Management procedure.
3. Decompress suspected tension pneumothorax(s) in patients with severe respiratory distress or shock.
4. Perform bilateral chest decompression in patients with witnessed trauma arrest.

D. Circulatory Control
1. Initiate two (2) large bore IVs with Lactated Ringers or Normal Saline during transport. Maintain systolic BP > 90 mmHg in patients with severe head injury. Maintain SBP 70-90 mmHg in patients with suspected thoracic, abdominal, or pelvic hemorrhage.

E. If suspected pelvic fracture, apply pelvic splint or pelvic immobilization device.

F. Perform fracture immobilization per protocol.