

TREATMENT

Abdominal Pain

History:

Pain:

- Nature
- Duration
- Location
- Radiation
- Intensity (1–10)

Associated symptoms:

- Nausea and vomiting (bloody or coffee ground)
- Diarrhea
- Constipation
- Melena (tarry feces)
- Painful or frequent urination
- Fever

Previous abdominal trauma

Abnormal ingestion

Medication/allergies

Surgeries

Menstrual problems:

- Last menstrual period
- Painful menstrual periods

Previous ulcer history

Physical Findings:

Abdominal exam:

- Tenderness
- Guarding
- Masses
- Rigidity
- Bowel sounds
- Distension

Treatment:

- A. Start O₂, 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

History:

Onset and changes in level of consciousness

Recent history:

- Headache

- Blurred vision

- Nausea or vomiting

- Chest pain

- Dyspnea

- Trauma

Mechanism of injury:

 - Protective devices used, such as helmet, seat belts, air bags

 - Exposures or ingestion

Past medical and/or psychiatric history (diabetes, CVA, hypertension)

Seizure history or any witnessed seizure activity

Medications/allergies

Pregnancy

Physical Findings:

Level of consciousness including GCS score

Vital signs including any abnormal respiratory pattern,

- Cheyne-Stokes

- Kussmaul

Pupil size, symmetry, reactivity

Nuchal rigidity

Focal neurological deficits

Evidence of traumatic injury

Any odor on breath

Medical alert tags

Needle marks

Treatment:

- A. Determine level of consciousness.
- B. Start O₂, 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:

Hypoglycemia may present as seizures, coma, behavior problems, intoxication, confusion or focal neurologic deficit, especially in elderly patients.

* Determine whole-blood glucose level using blood glucose meter or colorimetric reagent strips.

If the blood glucose reading is less than 80 mg%:

- 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 glucose if blood glucose remains less than 80 mg% after 10 minutes.
- ** 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 0.4 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 O₂ 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 CO₂ 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 D₅₀, or other glucose containing substance, orally.
 - ** b. If IV/IO established, give D₂₅ 0.5 gm/kg (2 cc/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 .5 mg IM <20 kg and 1 mg IM >20 kg.
- ** 4. If mental status and respiratory effort are depressed, administer Naloxone 0.1 mg/kg, max. 2 mg IV/IO.
 - 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.
 - c. Naloxone may also be given IM or IO.

Anaphylaxis and Allergic Reactions

History:

Symptoms:

- Itching
- Difficulty breathing
- Chest tightness
- Nausea
- Abdominal cramps
- Subjective airway impairment or swelling
- Numbness and tingling

Present history:

- Exposure (orally, IM or IV/IO) during past few hours to allergenic substances.
 - Drugs (antibiotics, allergy shots)
 - Insect bites
 - Toxic substances or foods such as nuts, fish, or fruit

Past history:

- Known allergies
- Prior allergic reactions

Physical Findings:

Vital signs

Level of consciousness

Edema: Generalized or local, particularly of lips, tongue, uvula, and face.

Respiratory:

- Wheezing
- Hoarseness
- Upper airway noises

Skin:

- Generalized itching
- Flushing
- Hives

Vomiting or diarrhea

Treatment:

- A. Not indicated if only hives and itching present.
- B. 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.
- C. Gently scrape to remove injection mechanism if present.
- D. Patient should be supine with legs elevated unless respiratory distress predominates.
- ** E. Start IV/IO as needed. If shock syndrome is present and BP less than 90 mm/Hg, follow *Shock* protocol.
- ** F. Monitor cardiac rhythm and if dysrhythmia is present, follow *Cardiac Dysrhythmia* protocol.
- G. **If signs of progressive anaphylaxis and/or significant respiratory distress:**
 - * 1. With BP greater than 90 mm/Hg: Administer 1:1,000 epinephrine 0.3 mg (0.3 cc) SQ.
 - 2. With shock syndrome present, and BP less than 90 mm/Hg, Give:
 - [*]** a. 1:10,000 epinephrine 0.3 mg IV/IO (3 cc), [1:1,000 epinephrine 0.3 mg IV/IO/IM (0.3cc)]
 - 3. If no improvement noted, repeat epinephrine:
 - ** a. 1:10,000 epinephrine 0.3 mg IV/IO (3 cc)
- **H. Consider diphenhydramine 25 to 50 mg IM or IV/IO for adults.
- *** I. If patient continues to exhibit signs of respiratory distress, administer Solu-Medrol 125 mg IV/IO slowly over 1-2 minutes.
- ** J. 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 cc/kg) SQ, maximum dose of 0.3 mg (0.3 cc). 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 cc/kg) SQ. Maximum dose is 0.3 mg (0.3 cc).
- ** **b.** For diminished perfusion, administer 20 cc/kg fluid bolus NS, IV/IO.
- ** **c.** Administer 1:10,000 epinephrine, 0.01 mg/kg (0.1 cc/kg) IV/IO, maximum dose 0.1 mg (1 cc). Repeat every 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 cc/kg), diluted in 1 to 2 cc 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

History:

Closed space:

For how long

Loss of consciousness

Accompanying explosion, toxic exposure, fumes

Past medical history

Respiratory complaints

Trauma

Physical Findings:

Vital signs

Evidence of respiratory burns:

Lung sounds

Soot or erythema of mouth

Singed nasal hairs

Respiratory distress

Extent of burns:

Description of area involved

Use Rule of Nines

Description of burns:

Superficial: Erythema Only

Significant: Blisters, dry white areas, charring

Associated trauma

Treatment:

- A. If possibility of airway burn or closed space start O₂, 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.
 3. Calculate fluid requirement based on area of significant burn using the formula:
Pt's weight (in kg) divided by 4 times the percentage of burns = cc/hr. (Pt wt (in kg) divided by 4 x % of burns = cc/hr.)
- 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 water. If liquid, flush with copious 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 respiratory arrest, or has persistent hypotension despite fluid resuscitation:
1. Administer Cyanokit® 5 g IV/IO as an infusion over 15 minutes and monitor for clinical response. Contact OLMC for advice regarding second 5 g 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® to the same patient.
 3. Treat other presenting symptoms per appropriate protocol.
 4. Initiate emergent transport to appropriate facility.

Specific Precautions:

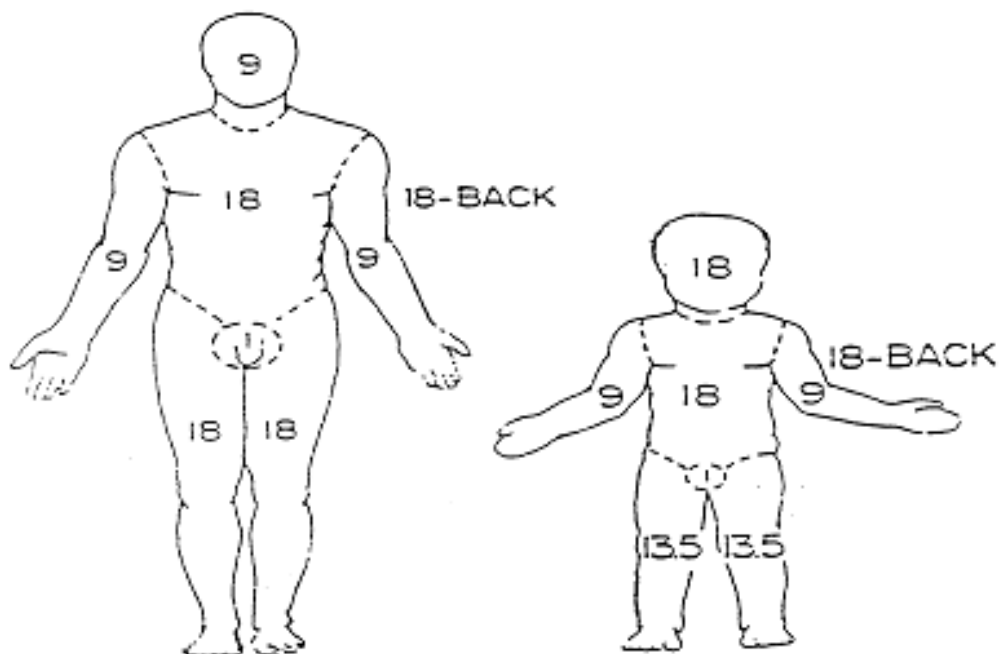
- A. Succinylcholine should be avoided in major burn patients > 48 hours post burn.

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.
3. Contact OLMC for further doses.

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

History:

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.

Physical Findings:

Determine pulselessness and/or apnea
Pupil size and reaction
Lung sounds (document each time the patient is moved)
If present, document:
 Dependent lividity
 Decomposition
 Rigor mortis

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.

*** 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.

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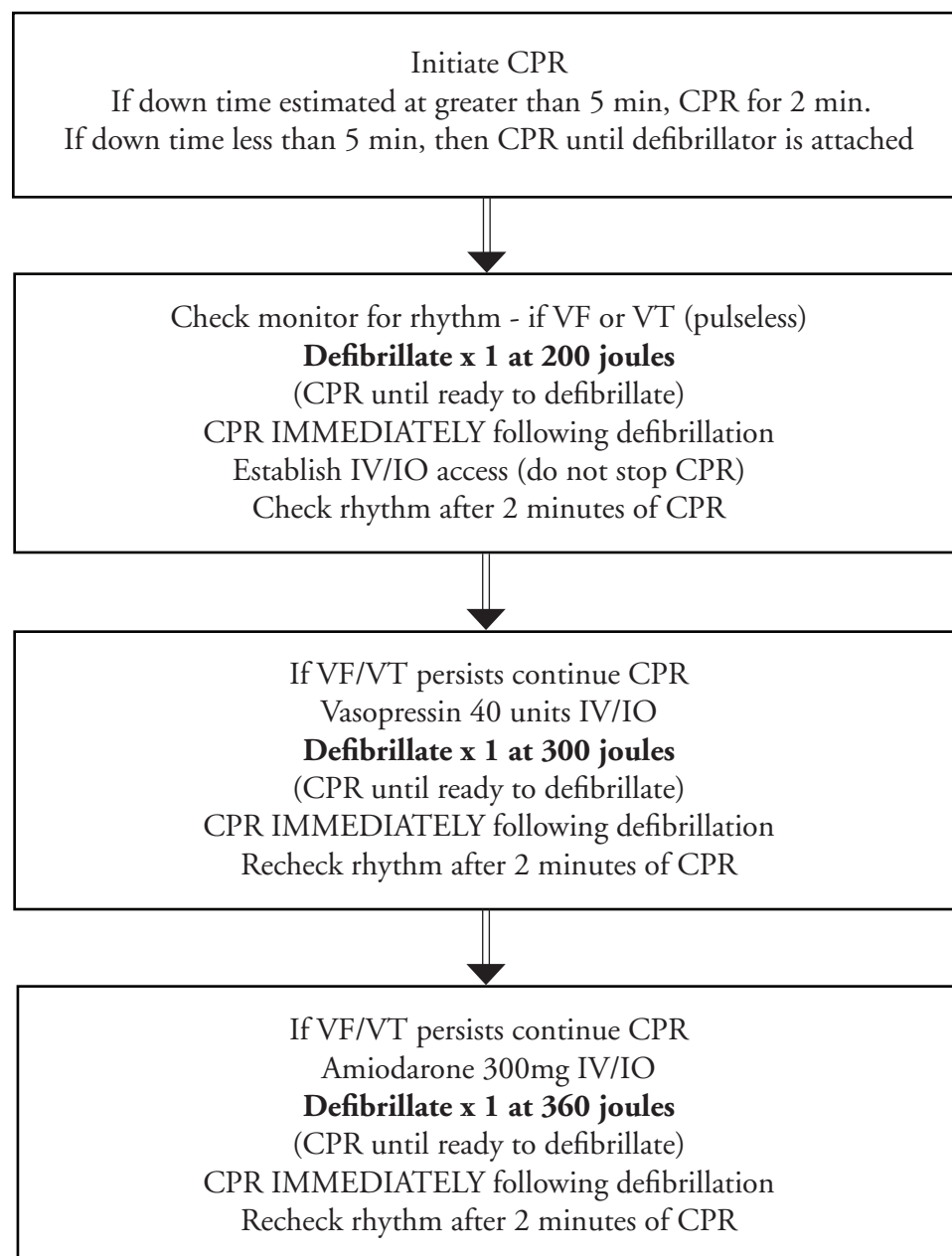
Cardiac Arrest Algorithm

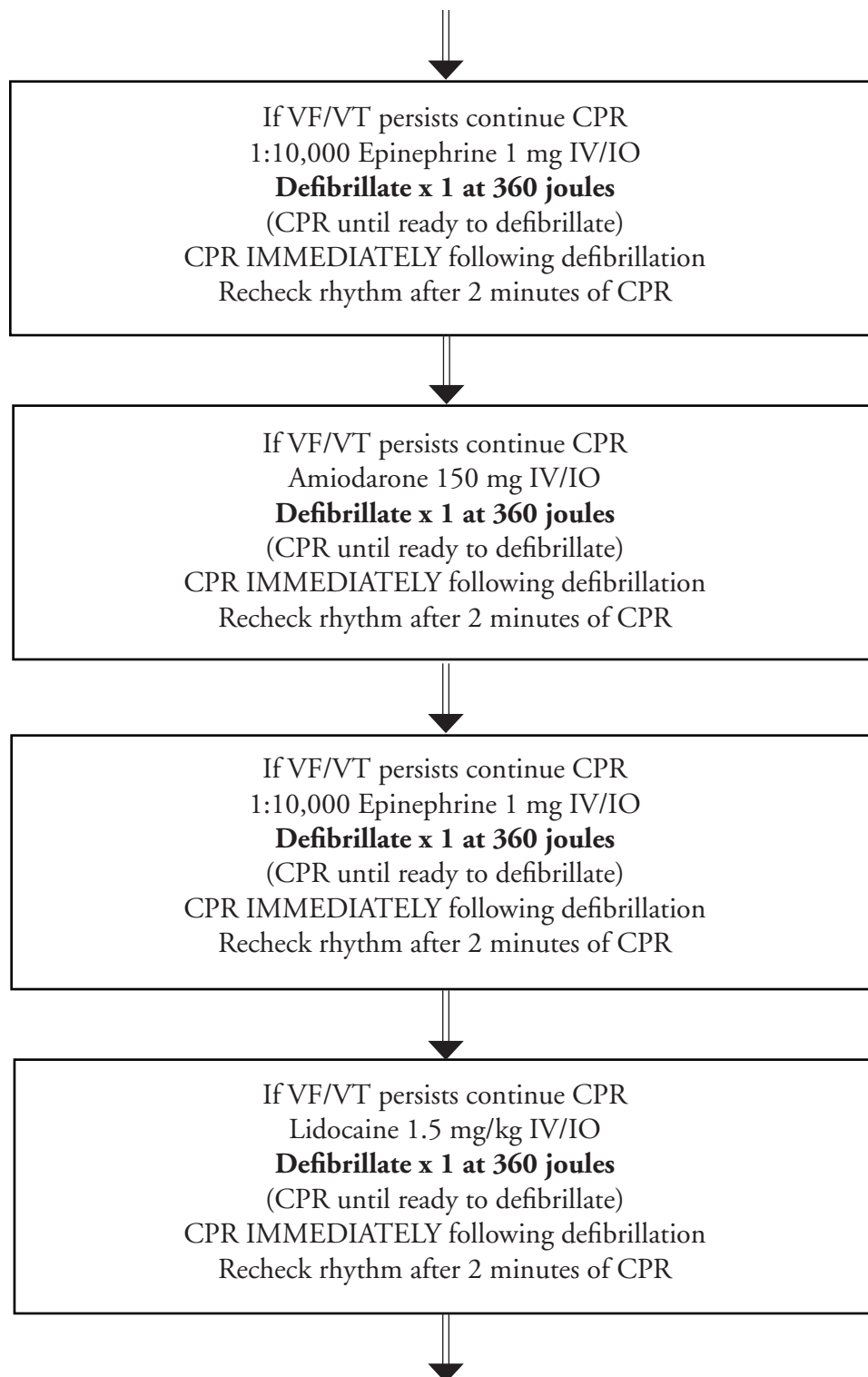
**EMT-Paramedic/Intermediate:

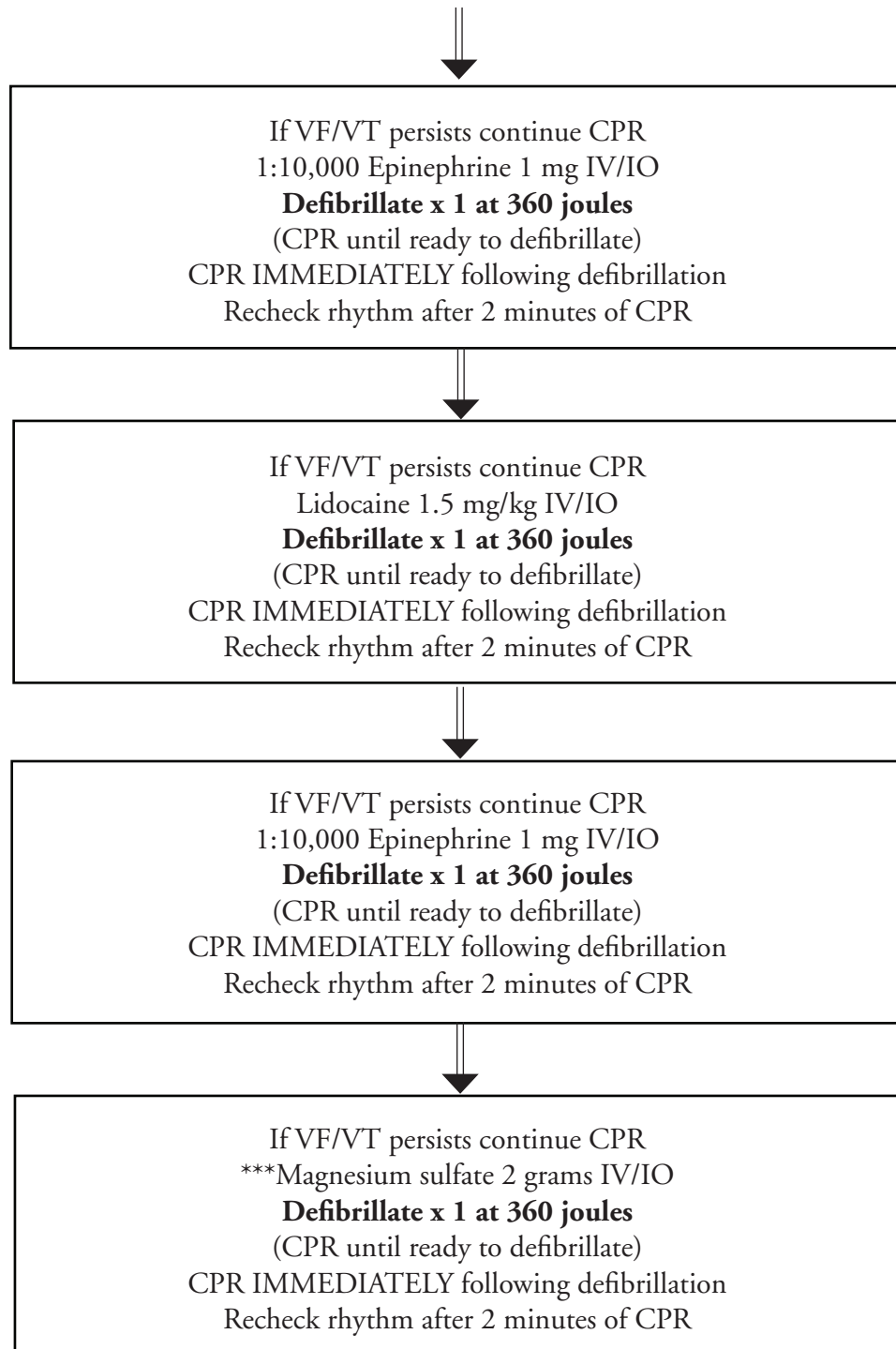
Flow of algorithm presumes that the initial rhythm is continuing. If the rhythm changes, begin the appropriate algorithm.

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

Ventricular Fibrillation and Pulseless Ventricular Tachycardia







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).

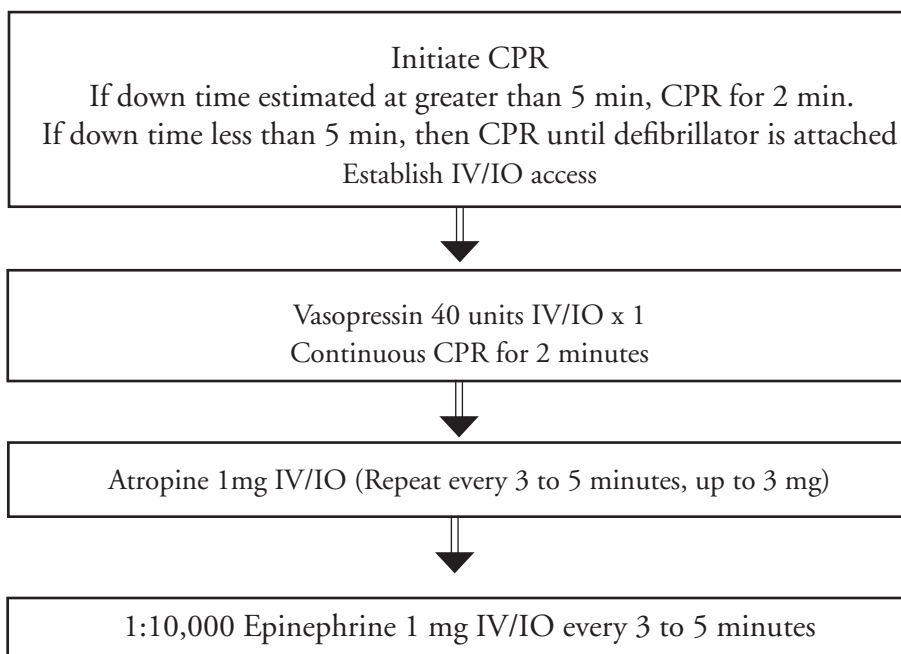
Cardiac Arrest Algorithm

****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:

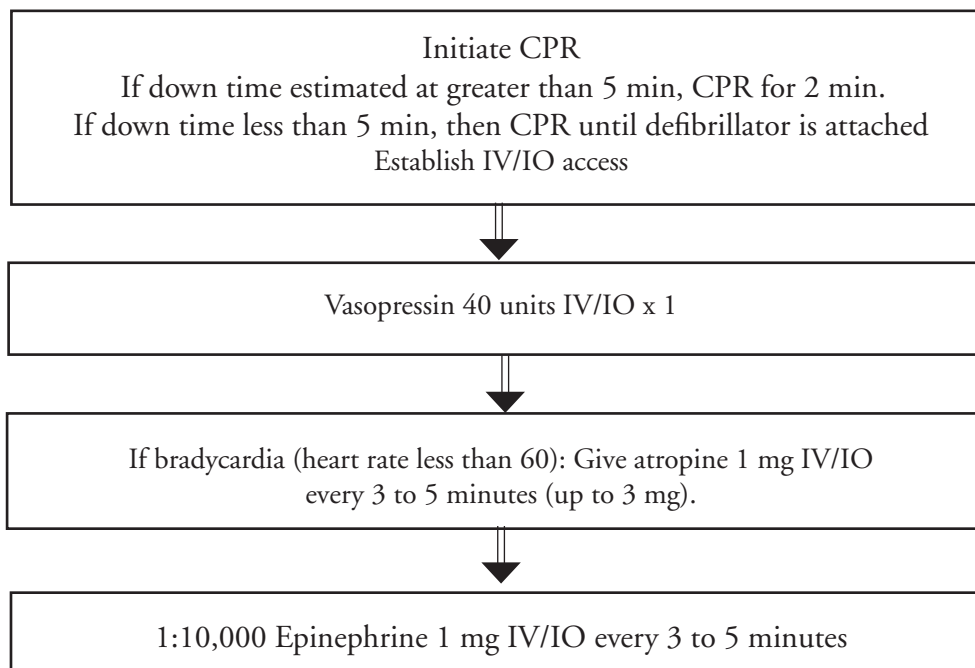
- *** Acidosis — consider sodium bicarbonate 1 mEq/kg IV/IO
Cardiac Tamponade - immediate transport
- *** Cyclic antidepressants - consider sodium bicarbonate 1 mEq/kg IV/IO
- *** Hyperkalemia- consider Calcium gluconate or sodium bicarbonate 1 mEq/kg IV/IO
Hypothermia- see *Hypothermia* protocol
Hypovolemia- 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 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 $\text{ETCO}_2 \geq 20$, 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 cc 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

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 cc/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
** Atropine	Bradycardia	0.1 mg
** Dextrose, 25% (Dilute D ₅₀ by ½ with NS)	Hypoglycemia	0.5 gm/kg (2 cc/kg)
** Epinephrine	Bradycardia, Cardiac Arrest	0.01 mg/kg
*** Sodium Bicarbonate (Dilute by ½ 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 mg. (Do not exceed adult dose)
*** Calcium Gluconate	Antidote for calcium channel blocker OD, HF, iatrogenic magnesium intoxication	0.5 cc/kg IV/IO
** Dextrose, 25%	Hypoglycemia	0.5 gm/kg (2 cc/kg) (Dilute D ₅₀ by ½ 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
** 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 of 2 mg.
*** Sodium Bicarbonate (Dilute by ½ with NS)	Metabolic acidosis, Cyclic antidepressant OD, Hyperkalemia	1 mEq/kg/dose

Note: All pediatric doses maximum at adult doses.

Cardiac Dysrhythmias

History:

- Chief complaint, sudden or gradual onset
- Dizziness
- Chest discomfort
- Syncope
- Shortness of breath
- Palpitations
- Medications/allergies
- Past history

Physical Findings:

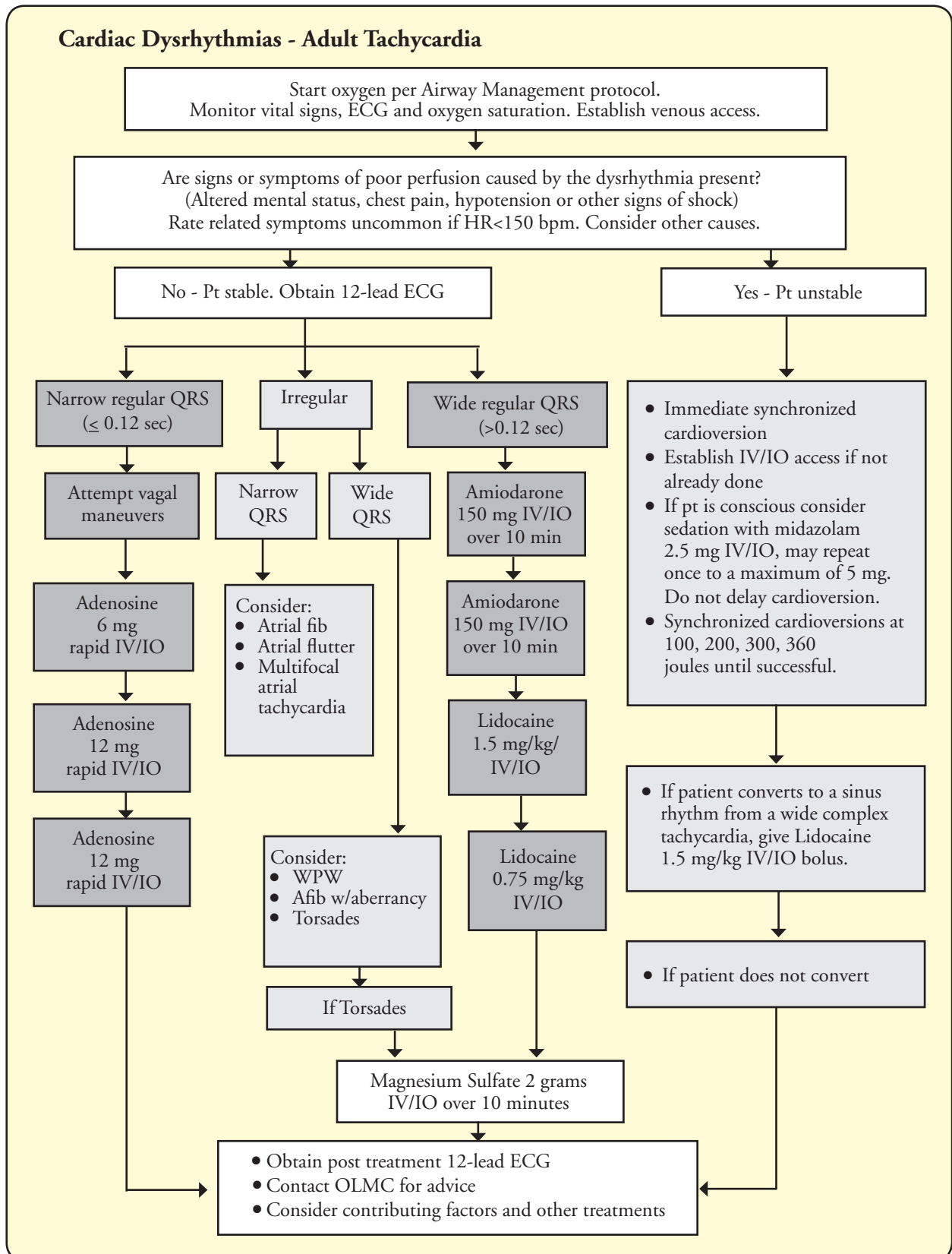
- Vital signs
- Level of consciousness
- Jugular venous distention
- Lung sounds
- Peripheral edema

NOTES:

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

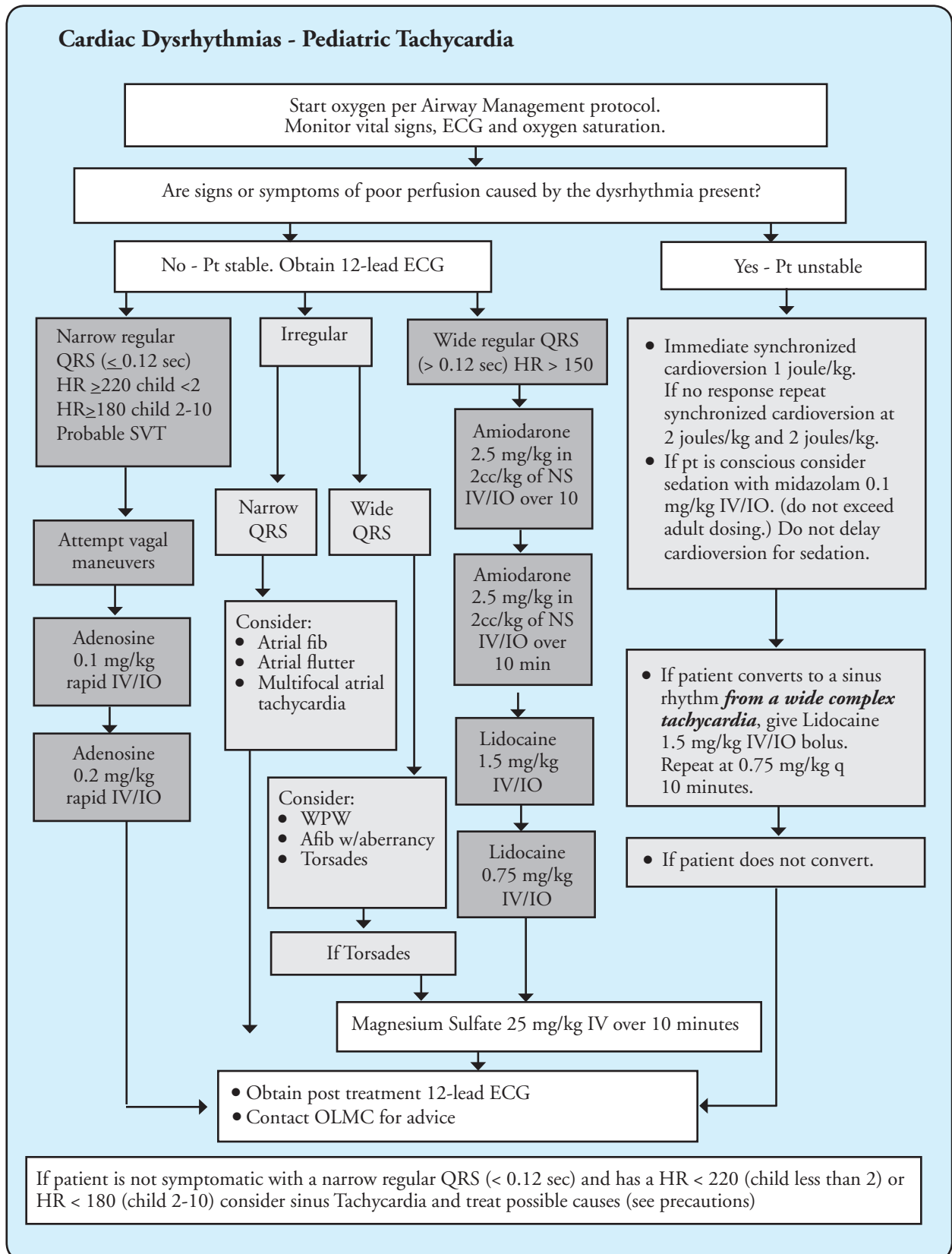
Treatment:

- A. Start O₂, 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:



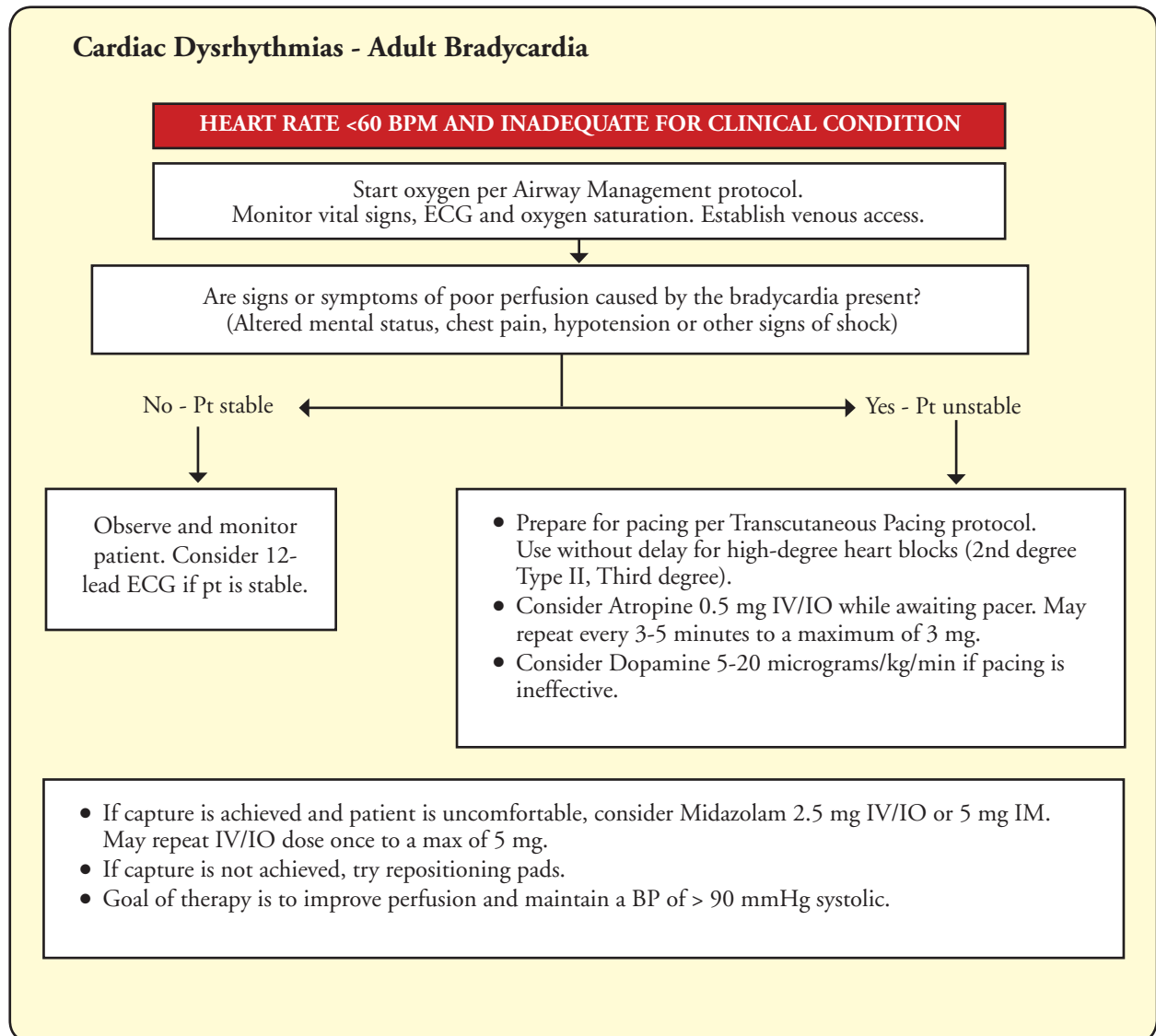
Specific Precautions:

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



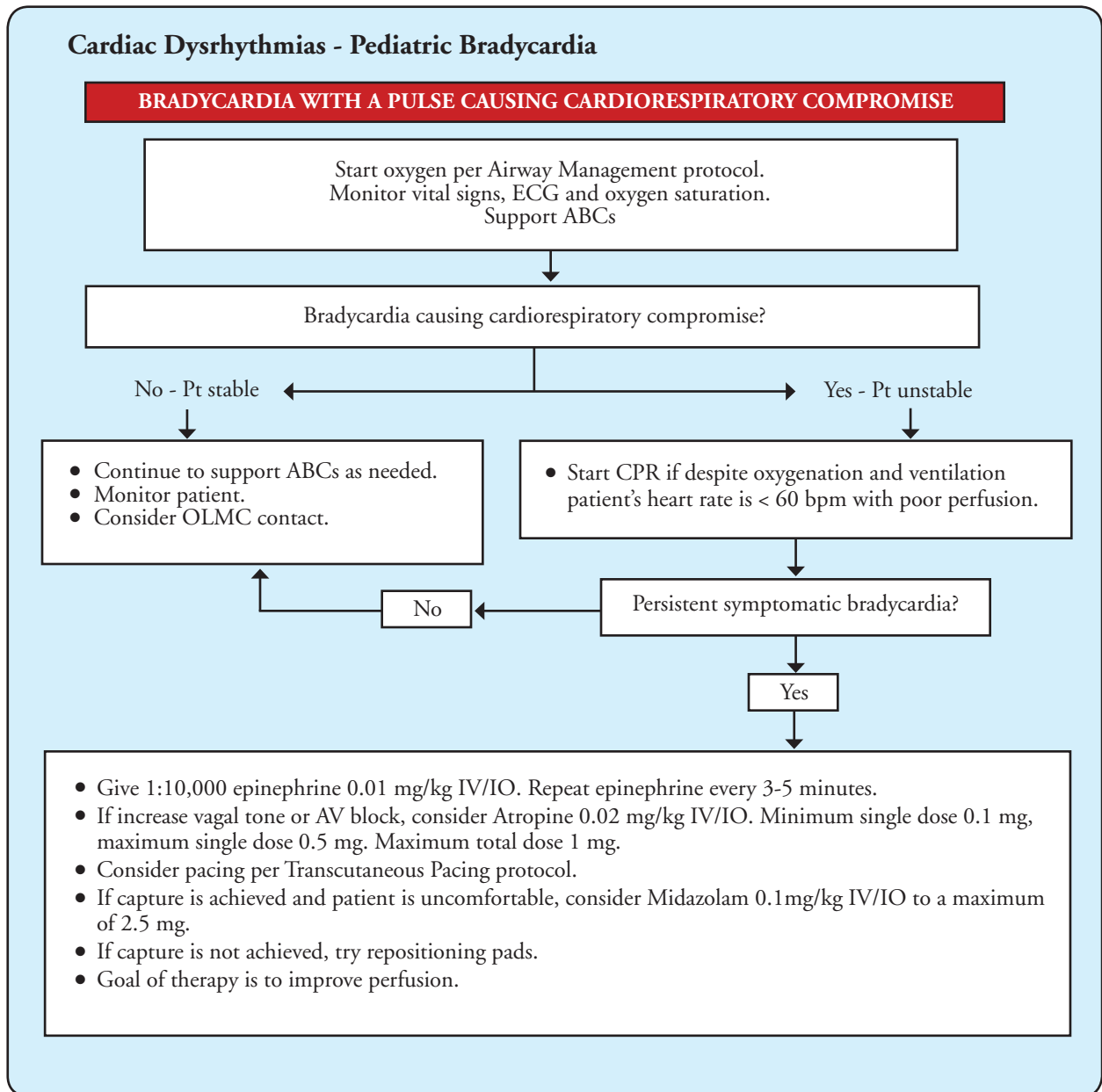
NOTES:

- 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 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 bradycardia, see section on bradycardia.
- ***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 10cc 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 cc) 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

History:

Pain (may be described as discomfort or pressure):

- Onset
- Duration
- Radiation
- Location
- Aggravation
- Alleviation

Associated symptoms:

- Nausea and vomiting
- Diaphoresis
- Shortness of breath

Past history:

- Previous myocardial infarctions
- Angina
- Other cardiac problems, including cardiac surgeries
- Other respiratory problems, including COPD and asthma
- Medications/allergies
- Syncopal episodes

Physical Findings:

Vital signs, every 10 minutes and after each drug intervention

Symmetry of pulses should be recorded at least once

General appearance

Neck vein distension

Peripheral edema

Breath sounds

Chest wall tenderness not associated with trauma

Treatment:

- A. Start O₂, follow *Airway Management* procedure.
- B. Apply pulse oximeter, attempt to maintain O₂ saturation above 95%.
- **C. Start IV/IO prior to administration of nitroglycerin for patients who have never taken nitroglycerin; follow *Shock* protocol if indicated.
- **D. Monitor cardiac rhythm and follow *Cardiac Dysrhythmia* protocol.
- 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 and continue nitroglycerin as above.

NOTES:

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.

- F. If ischemic event suspected, obtain 12-lead ECG if available.

NOTES:

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

- G. Complete the **Thrombolytic Checklist** en route to the hospital.

Specific Precautions:

- A. 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).
- B. 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.
- C. Nitroglycerin may cause a drop in a patient's blood pressure which may indicate a right-sided myocardial infarction.

Thrombolytic Checklist

(Use for Chest Pain or Suspected CVA)

Patient Name: _____ EMS Run Number: _____

Age: _____ Date of Birth: _____ Sex: M F

Time of onset of symptoms: _____

Have you ever had thrombolytic therapy before? Yes No

If yes, when? _____

Do you have hypertension? Yes No

Have you ever been told you have an ulcer? Yes No

Have you ever had bleeding in your stomach or intestine? Yes No

If yes, when? _____

Have you ever had a stroke? Yes No

If yes, when? _____

Have you had any trauma to your head in the past 6 weeks? Yes No

Have you had surgery in the past 6 weeks? Yes No

Have you had any trauma in the past 6 weeks? Yes No

Do you have diabetes? _____

If yes, do you have retinopathy? Yes No

EMT Completing Form: _____ Unit: _____

Signature: _____

Crush Injury

Definition:

Crush injury is associated with severe trauma and most commonly occurs in multiple casualty disasters, such as bombings, earthquakes, building collapse, train accidents and mining accidents. It is the result of prolonged compression or pressure on various parts or all of the human body. Crush injuries may result in fatal injury or severe metabolic abnormalities. Careful monitoring of these patients is essential.

Compartment syndrome is usually due to a crush injury and is a surgical emergency. It occurs most commonly in the forearm and leg, gluteal region, thigh, or lumbar paraspinal muscles. Compartment syndrome may result in ischemic swelling, muscle infarction, nerve injury or permanent loss of extremity function.

History:

Previous medical history
Length of entrapment

Current medications
Estimated length of extrication

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 cc of normal saline fluid bolus, then maintain at 500 cc per hour.

- *** 4. Na Bicarbonate infusion: 1000 cc of D5W + 0.25 normal saline with 100 mEq of sodium bicarbonate administered at 125 cc 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

History:

History of onset

Physical Findings:

Vital signs, including measured temperature, if feasible.

Skin: Presence or absence of sweating.

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 O₂, 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

History:

- A. **Environmental exposure:** Submersion, cool rainy weather, prolonged exposure to freezing temperatures, windchill, prolonged contact with cold surfaces.
- B. **At risk groups:** Trauma victims, alcohol and drug abuse patients, homeless persons, elderly living alone, low income families, infants and small children and entrapped patients.

Physical Findings:

- A. Treatment will vary based upon the following physical findings (A, B, & C).
 - 1. At least 60 seconds may be needed to take vital signs due to slow pulses and slow, shallow breathing.
 - 2. Alternate methods for determining respiratory status may be needed, such as holding polished metal or glass under the nostrils.
 - Patient “A”:** Cold, unconscious, not breathing, no palpable pulses, ECG (if available) shows asystole or agonal rhythm.
 - Patient “B”:** Cold, has an altered level of consciousness, is breathing (may be slow), pulses may not be palpable. ECG (if available) shows an organized rhythm that may be bradycardia.
 - Patient “C”:** Frozen tissue, lifeless, no pulses or electrical activity: These patients may be declared dead in the field, if in doubt, contact OLMC for direction.
- B. Hypothermic patients require rewarming techniques not easily applied in the field.
 - 1. Transport of these patients should be initiated as soon as possible.
 - 2. Consider air transport for long distances.

Treatment:

- A. Start O₂, 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

History:

Mechanism of injury

Location

Time

Loss of consciousness

Past medical history

Medications/allergies

Physical Findings:

Vital signs

Level of consciousness, GCS score

Presence or absence of neck pain

Swelling, discoloration, deformity, crepitus, angulation or amputation

Quality of distal pulses and capillary refill

Paralysis, weakness, numbness, or tingling sensation, incontinence, priapism

Lacerations, contusions or abrasions

Treatment:

- A. Start O₂, if needed; follow *Airway Management* procedure.
- B. **Control bleeding** and follow *Shock* protocol, if indicated.
- C. Immobilize cervical spine and follow *Spinal Immobilization* procedure if:
 1. Major mechanism of injury, **OR**,
 2. Potential for spinal injury and **any** of the following:
 - a. Altered mental status or intoxication.
 - b. Neck pain.
 - c. New neurologic deficits.
 - d. Other major painful injury.
- D. Complete detailed exam. (Index of suspicion for injury should be higher for anyone over age 55.)

If Spinal Injury is Suspected:

- A. **Temporarily immobilize the cervical spine** with rigid extrication collar and continuous manual in-line support.
- B. If the patient has numbness or paralysis in one or more limbs, enter into the Trauma System.
- C. Carefully assess the patient's respiratory status and effort during transport, and loosen straps if necessary to avoid respiratory compromise.
- D. If any immobilization technique causes an increase in pain or neurologic deficit, the patient should be immobilized in position found, or position of greatest comfort.
- E. In third trimester of pregnancy, immobilize patient on a backboard then, if possible, elevate the right side of the backboard.

NOTES:

Extremity injuries benefit from appropriate care, but are of low priority in the patient suffering from multi-system trauma.

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.
- *** 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

History:

Complaints of nausea
Episode(s) of vomiting
Vomiting blood or bile
Abdominal pain
Diarrhea
Pregnancy
Medications/allergies

Physical Findings:

Vital Signs
Level of consciousness
Abdominal exam

Treatment:

- A. Start O₂, follow *Airway Management* procedure, as indicated.
- ** B. Start IV if possible; if shock syndrome is present and BP is less than 90 mm/Hg, follow *Shock* protocol.
- *** C. Give ondansetron (Zofran[®]) 4mg slow IV push over 2 minutes.
- ** D. If patient continues to vomit, administer fluid challenge and consider other causes.
- E. For severe nausea and vomiting consider 4mg IM if unable to start an IV.

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.** Administer 0.1mg/kg via slow IV push over 2 minutes up to a total maximum dose of 4mg. Consider IM at same dose if unable to start IV.

Neonatal Resuscitation

History:

Painful bleeding in mother (suggestive of Abruption Placenta)
Prolonged rupture of membranes
Maternal fever
Maternal hypertension, hypotension, edema, seizures

Physical Findings:

Vital signs
Meconium-stained fluid
Prolapsed cord
APGAR criteria

Treatment:

- A. If time permits contact OLMC for advice and transport to the nearest hospital.
- B. If delivery is imminent, prepare the mother as usual and deliver the baby, trying to prevent suffocation (e.g. in breech or other abnormal presentation) by holding the vaginal wall away from the baby's face or pushing the baby back up a little if a prolapsed cord is present.
- C. If the presentation is a normal vertex (head first) presentation and the amniotic fluid is clear, briefly suction the mouth and then the nose when the head is first delivered before the chest is delivered and before the infant takes the first breath.
 1. If there is no thick or particulate meconium, proceed as in the following paragraph.
 2. If there is thick or particulate meconium, go to *Meconium Aspiration*.
- D. General Resuscitation:
 1. When the newborn is delivered, clamp and cut the cord, holding the infant level with the mother's perineum.
 2. Dry thoroughly, position for optimal airway, suction mouth and then nose.
 3. Evaluate the respirations:
 - a. If the newborn is apneic or gasping:
 - i. Provide 30 to 60 seconds of positive pressure ventilation (PPV) using a bag-valve-mask attached to 100% O₂.
 - ii. Continue 100% O₂ and evaluate heart rate.
 - b. If there are adequate, spontaneous respirations, evaluate heart rate.
 4. Evaluate the heart rate:
 - a. If the heart rate is **greater than 100 beats per minute**, watch for spontaneous respirations:

- i. Discontinue PPV if spontaneous respirations are adequate and color is good.
 - ii. If cyanosis is present, provide supplemental O₂.
 - b. If the heart rate is **less than 80 beats per minute and is increasing with PPV**, continue PPV until heart rate is greater than 100 beats per minute and proceed as above.
 - c. **If the heart rate is less than 80 beats per minute and is not increasing with PPV**, continue PPV and begin chest compressions.
 - d. If heart rate is **less than 60 beats per minute**, begin compressions immediately.
5. If respiratory rate or heart rate remains inadequate, ventilate.
6. Initiate medications if heart rate remains less than 80 beats per minute after 30 seconds of PPV with 100% O₂ and chest compressions or immediately if the heart rate is zero.
- * a. Obtain capillary blood glucose if neonate remains depressed. For glucose less than 40-mg%, follow *Altered Mental Status and Coma* protocol.
 - ** b. 1:10,000 Epinephrine: rapid infusion of 0.01 mg/kg (0.1 cc/kg) IV/IO, or ET (May dilute 1:1 if giving by ET), may repeat every 3 to 5 minutes if needed.
 - ** c. Heart rate should rise to greater than 100 beats per minute within 30 seconds after epinephrine. If heart rate remains less than 100 beats per minute despite repeated epinephrine and if there is evidence of acute blood loss or signs of hypovolemia administer 10 cc/kg of NS.
 - *** d. After effective ventilation has been established and has failed to improve the baby's condition, administer sodium bicarbonate 1 mEq/kg, IV/IO over at least 2 minutes.
 - e. Do not use atropine in neonatal resuscitation.
7. **Remember to keep the infant warm!**

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 10 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

History:

Last menstrual period

Pregnancy:

Single or Multiple

Due date

Contractions:

Timing

Duration

Ruptured membranes (clear or meconium sustained fluid)

Edema

Hypertension

Seizures

Bleeding

Abdominal pain

Past medical and OB/GYN history

Medications/allergies

Physical Findings:

Hypertension, vital signs

Abdominal examination

Vaginal bleeding

If possibility of delivery exists, inspect perineum for bleeding, fluid (note color), crowning or abnormal presentation.

Do not perform digital exam.

Treatment:

1. If multiple, or abnormal birth, consider second transport unit.
2. Start O₂ 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.

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 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 Placenta 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 100)	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

Poisons and Overdoses

History:

Type(s) of ingestion or exposure: (Consider HazMat Response)

What (single or multiple toxic substances)

When

How much

Look for multiple patients with the same signs and symptoms.

Reason for ingestion (accidental or intentional)

Possible pregnancy

Action taken by bystanders

Physical Findings:

Vital signs

Level of consciousness

ECG findings

Breath odor

Neurologic status

Needle marks

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. ***Multiple Patient Scene***
4. ***Mass Casualty Incident***
5. ***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 O₂, 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 O₂.
 - b. Contact OLMC for consideration of transport to hospital with hyperbaric chamber.

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 gm/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 <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Type IA agents (quinidine, procainamide) • Type IC agents (flecainide, propafenone) 	Altered Mental Status Hypotension Seizures Wide-Complex Tachycardia	Sodium Bicarbonate (OLMC)

+++Central:
Confusion
Convulsions
Coma

*Muscarinic:

Diarrhea
Urination
Miosis
Bradycardia, Bronchospasm,
Bronchorrhea
Emesis
Lacrimation
Salivation, Secretions, Sweating

**Nicotinic:

Mydriasis
Tachycardia
Weakness
Hypertension,
Hyperglycemia
Fasciculations

Psychiatric and Behavioral Disorders

History:

Recent crisis
Behavior change
Suicidal/homicidal ideation
Past medical/psychiatric history
Medications/allergies
Drug/alcohol use

Physical Findings:

Vital signs
Size and reactivity of pupils
Orientation

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 ABC's. 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

History:

Fever, chills
Current activity and speed of onset
Cough with sputum production, including recent changes
Recent illness
Past medical history:
 Asthma
 CHF
 COPD
 Pneumonia
Medications/allergies
Chest pain

Physical Findings:

Vital signs
Level of consciousness
Skin color, rashes, and hives
Stridor
Distended neck veins
Breath sounds
Peripheral edema
Signs of trauma

Breath Sounds in Respiratory Distress

Characteristics

Clear, symmetric
Crackles, symmetric
Wheezing, symmetric
Clear, asymmetric or absent
Crackles, asymmetric
Wheezing, asymmetric
Stridor

Possible Causes

Hyperventilation, MI, metabolic, pulmonary embolus
Pulmonary edema, extensive pneumonia
Asthma, pulmonary edema, COPD
Pneumothorax, pulmonary embolus, COPD
Pneumonia, pulmonary edema
Foreign body, pulmonary embolus, COPD
Croup, epiglottitis, foreign body

Treatment:

- A. Start O₂, 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: Contact OLMC en route to 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. Furosemide
 - a) Not currently taking furosemide, give 20 mg IV/IO.
 - b) Currently taking furosemide, give patients normal individual dose, up to 100 mg per dose. Example:
 - 1) 40 mg once daily, give 40 mg.
 - 2) 60 mg twice daily, give 60 mg.
 - c) If the patient takes more than 100 mg per dose: Contact OLMC for higher doses.
- iii. If the patient remains in severe respiratory distress (e.g. unable to speak more than one or two words, low O₂ saturation (<90 %), RR > 40) start CPAP if available.

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 Solu-Medrol, 125 mg IV/IO, slowly over 1-2 minutes.
- d.** If the patient remains in severe respiratory distress (e.g., unable to speak more than one or two words, low O₂ 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 Solu-Medrol, 125 mg IV/IO, slowly over 1-2 minutes.
- 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 gm over 20 minutes.)
- f.** If continuous nebulized treatment is needed during transport contact OLMC for advice. Continuous nebulized treatment is needed during transport (which may be necessary in some pediatric patients), 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 5ml 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 O₂ [**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 Solu-Medrol 2mg/kg in patients with asthma.

Seizures

History:

Current seizure:

Time of onset

Duration.

Type (focal, febrile, grand mal, petit mal, etc.)

Previous history:

Medications and compliance

Head trauma

Pregnancy

Diabetes

Headaches

Drug or alcohol use

Fever

Toxic exposure

Physical Findings:

Vital signs

Active seizure (focal or grand mal)

Neurological examination

Evidence of head trauma and level of consciousness

Incontinence of urine or feces

Treatment:

- A. History of seizure with current altered mental status (post-ictal) or witnessed seizure lasting less than 2 minutes.
 1. Move hazardous objects away from patient and protect head; restrain only if necessary.
 2. Start O₂, 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 seizure 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

Shock is inadequate organ perfusion. Look for and document:

Tachycardia
Hypotension
Mental status
Clammy skin
Other symptoms such as marked thirst, syncope, etc.

Treatment:

- A. **Do not delay transport.**
- B. Start O₂, 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 cc 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 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. Call OLMC for advice, and prepare to intervene with fluid challenge or **[dopamine infusion]**.
 3. Distributive Shock, including anaphylaxis, sepsis, and neurogenic shock.
 - * a. If anaphylaxis is suspected, follow *Anaphylaxis and Allergic Reaction* protocol.
 - ** b. Give 500 cc fluid challenge, may repeat to total of 1,000 cc.
 - **[***] c. If shock persists, contact OLMC for advice about 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. Contact OLMC for advice about 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/cc):

Usual Dose: 5 - 20 micrograms/kg/min, per OLMC direction, 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 mcg/cc.
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 400mg/250ml.

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 cc/kg, IV or IO.
- ** 4. Administer additional fluid boluses at 20 cc/kg as needed, up to 60 cc/kg.
- *** 5. If suspected cardiogenic or distributive shock, contact OLMC and consider dopamine after (total of) 20 cc/kg fluid bolus. **Fluid challenge is 10 cc/kg for newborns, see *Neonatal Resuscitation* protocol.**

Stroke/CVA

History:

Current:

- Time last known normal, or unknown
- Medications
- History of seizure with event today

Previous:

- Diabetes
- Bedridden or wheelchair bound
- Hypertension

Source of “known normal” information:

- Patient
- Identify person, if other than patient

Physical findings:

- Vital signs
- Neurological examination (see stroke scale)
- Level of consciousness
- Skin color
- Signs of trauma
- Incontinence of urine or feces

Pre-Hospital Stroke Scale

	Score
Facial Droop (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 side	 0 1
Arm Drift (patient closes eyes and holds both arms out) Normal: both arms move the same OR both arms do not move at all Abnormal: one arm does not move or one arm drifts down compared to the other.	 0 1
Speech (have the patient say (“you can’t teach an old dog new tricks”)) Normal: patient uses correct words with no slurring Abnormal: patient slurs words, uses inappropriate words or is unable to speak.	 0 1
Total Score	

Treatment:

- A. Place patient on high flow oxygen as per Airway protocol.
- B. Start IV (preferably 16 or 18 gauge AC)
- C. Attach cardiac monitor and pulse oximeter
- * D. Determine glucose and treat per protocol
- E. Treat seizures as per seizure protocol
- F. Complete the pre-hospital stroke scale
- G. Document serial neurologic examinations
- H. Expedite transport to hospital
- I. If tolerated, optimal transport position is 0-15 degree of head elevation.

Specific Precautions:

- A. Consent is normally required prior to administration of thrombolytics. Have family/guardian ride in ambulance to hospital or follow immediately. This is especially important if patient cannot give informed consent.
- B. Do not treat hypertension.
- C. Intervention with thrombolytics, if indicated, must begin within 3 hours of symptom onset.

Submerged Patient

History:

Length of time patient has been submerged

Water temperature at recovery depth (estimated, or from Dive Rescue Team)

Events leading to submersion:

- MVA
- SCUBA
- Diving accident
- Seizure
- Cardiac event

Treatment:

- A. Start O₂, 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.