

PROTOCOLS

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INTRODUCTION TO THE PROTOCOLS

The following protocols are intended to give guidance to the Emergency Medical Responders (EMRs), Emergency Medical Technicians (EMTs), Advanced Emergency Medical Technicians (AEMTs), EMT Intermediates (EMT-I), Paramedics (EMT-P) & Registered Nurses (RNs) working under the auspices of Dufur Ambulance, Mid-Columbia Fire & Rescue, Wamic Rural Fire Protection District, Rufus Ambulance, Sherman County Ambulance, Southern Wasco County Ambulance and Wasco County Search and Rescue. They are not intended to eliminate or discourage consultation with Medical Control, nor to give authority for patient care outside of the State of Oregon Emergency Medical Service Provider scope of practice. Each EMS provider is expected to know their legal and personal limits. The RN designation in the protocols indicates the minimum level of care that RNs working in EMS can perform, however those with additional training may function to the level of their training as licensed with the State of Oregon EMS and Trauma Systems.

These protocols are also not intended, nor can they be expected, to cover every conceivable patient condition or situation that the EMS provider may encounter. Individual judgment must be used and if there is a question, the base Physician should be contacted before questionable treatment is instituted.

While the protocols are separated into Emergency Medical Responders, Emergency Medical Technician, Advanced Emergency Medical Technician and Paramedics levels of care, all EMS providers should follow the guidelines for basic care before proceeding onto a higher level of care.

If treatment is given (or withheld) not in accordance with these written guidelines, the exceptions will be documented on the prehospital care report.

All patient care and prehospital care reports are subject to review by the Supervising Physician and others as may be designated by the Supervising Physician. This review process is not intended to be punitive, but to ensure continuing high-quality patient care.

As Supervising Physician, I approve these protocols, and authorize the EMS providers affiliated with the above listed agencies to operate under them.

Any off duty EMT is authorized to function in all the areas listed above as long as they remain within their scope of practice and follow the appropriate treatment protocol.

Erin Burnham, MD
Supervising Physician

Date

As EMS Provider, I have read and understood these protocols and will operate within the scope of these protocols as a provider for the following agency:

Agency

EMS Provider

Date

GENERAL ORDERS FOR ALL PATIENTS

NOTE:

- ❖ Universal precautions should be observed by all EMS providers

I. INITIAL ASSESSMENT

- Establish responsiveness. If unresponsive:
- Check for pulse. If no pulse, begin chest compressions. See **Cardiac Arrest** Protocol.

II. PRIMARY SURVEY

- Airway** - Identify and correct existing or potential airway obstructions while protecting C-spine in traumatized patients. See **Airway Management** Protocol.
- Breathing** - Identify and correct existing or potential compromising factors. Begin artificial or assisted ventilation as indicated. Include a brief chest examination on trauma patients.
- Circulation** - Control active bleeding.
- Disability** - Determine gross neurological function.
- Expose** - Disrobe patients as necessary to adequately assess and treat. In trauma, specifically examine the head, neck, chest and abdomen for life-threatening injuries, conditions, etc.

III. SECONDARY SURVEY

- Perform a head-to-toe assessment. Obtain and record vital signs, including pulse, blood pressure, respiration, skin color, capillary refill, and level of consciousness (GCS or AVPU).
- Obtain significant history from patient, family, or bystanders.
- Repeat vital signs as indicated by patient condition. Repeat at least LOC, pulse, respiration's, blood pressure and pain level after medication administration.

IV. TREATMENT/RESUSCITATION

- Treat all emergent problems in order of priority and according to protocols.
- Check for patient POLST form for:
 - Elderly in Adult Foster Care, Nursing Homes and living at home.
 - Terminally ill
- Reassure the patient and keep him/her informed of treatment.
- Gloves and eye protection will be worn with all patient contact.
- Masks will be worn when there is a possibility of exposure to airborne fluids.

IV. TRANSPORT

All patients should be evaluated, appropriately treated and prepared for transport without undue delay. While stabilization of medical emergencies should be attempted before transport whenever possible, on-scene time for major trauma patients should be kept to a minimum, preferably less than 10 minutes unless heavy extrication is required. If extended on-scene time is required, keep medical control informed periodically.

V. PATIENT REFUSAL OF CARE AND TRANSPORT

For patient refusal, refer to page 53 of the **PROCEDURES**.

POLST REGISTRY INFORMATION

NOTE: If POLST form not available on scene, you may be able to access information on POLST from POLST FORM REGISTRY at OHSU with the following phone number:

1-888-476-5787

When you call please have:

- Registry ID # (when available)
- Correct spelling on patient's first and last names
- Patient age and/or date of birth
- Gender of patient
- Home address of patient
- Name of care facility for patient (if applicable)
- City, zip code or county of residence
- Last 4 of patient social security number

BE SURE TO DOCUMENT ON PCF:

- Orders relayed for sections A & B
- Date form signed
- Registry ID #
- Health care signers name (if relayed)

AIRWAY MANAGEMENT

NOTE:

- ❖ Proper airway management is the first priority of the EMS Provider
- ❖ Providers will wear eye protection when performing BVM ventilation or PEAD placement and during suctioning.

EMR CARE

- A. Attempt to open the airway using head tilt-chin lift or jaw thrust maneuver.
- B. Oropharyngeal (OPA) or nasopharyngeal (NPA) airways should be used for patients who are unable to maintain their own airway.
- C. Have suction immediately available and use as needed to clear secretions.
- D. Provide supplemental oxygen as indicated. All patients with altered mental status or respiratory distress should receive supplemental oxygen, preferably via non-rebreather mask.
- E. A Bag-Valve-Mask (BVM) should be used when inadequate ventilation is present.
- F. “Blow-by” oxygen should be used for infants & toddlers.

EMT/AEMT/EMT-I/RN CARE

I. PEAD (Pharyngeal Esophageal Airway Device) PLACEMENT

REFER TO COMBI-TUBE OR KING AIRWAY PROCEDURE.

- A. Indications
 - 1. A PEAD may be placed in unconscious patients with no gag reflex.
- B. Cautions:
 - 1. Once placed, it should not be removed until the patient's airway is protected by endotracheal intubation or the patient is conscious enough to protect his/her own airway.
 - 2. Vomiting is likely to follow removal of the PEAD
- C. CONTRAINDICATIONS
 - 1. Conscious or semi-conscious patients
 - 2. Intact gag reflex
 - 3. Airway obstruction
 - 4. Patients under 12 years of age
 - 5. Patients with known or suspected esophageal disease
 - 6. Ingestion of caustic substances
 - 7. Patients with known esophageal varices.
- D. Placement of the PEAD will be confirmed by:
 - 1. auscultation of bilateral breath sounds
 - 2. Absence of breath sounds over the stomach
 - 3. Positive findings of End-Tidal CO₂ detector and/or capnography.

AIRWAY MANAGEMENT (Continued)

NOTE:

- ❖ CPAP will be used as an alternative to endotracheal intubation in selected patients with cardiogenic pulmonary edema, reactive airways disease and chronic obstructive pulmonary disease.
- ❖ This is a method to decrease the incidence of pre-hospital intubations by increasing the patient's oxygenation and decreasing functional residual capacity and the work of breathing.

II. CPAP (Continuous Positive Airway Pressure)

REFER TO CPAP PROCEDURE

- A. Indications: CPAP will be used in acute respiratory distress demonstrated by two or more of the following signs and symptoms.
 1. Retractions
 2. Accessory muscle use
 3. Tachypnea (respiratory rate > 25/min.
 4. Pulse oximetry reading < 90%
 5. Bibasilar or diffuse rales consistent with CHF & pulmonary edema

- B. Contraindications: If any of the following go to **Endotracheal Intubation** or **PEAD**.
 1. Respiratory or cardiac arrest
 2. Altered LOC
 3. Inability to maintain airway patency
 4. Major trauma, especially head injury with increased ICP or significant chest trauma.
 5. Signs and symptoms of pneumothorax.

~~~~~PARAMEDIC CARE~~~~~

III. ENDOTRACHEAL INTUBATION

- A. Indications
 1. Patient's inability to maintain airway.
 2. Hypoventilation, from any cause.
 3. Head trauma GCS \leq 8.
 4. Apnea from any cause except severe hypothermia. **See Environmental Emergency Protocol.**
 5. Cardio-pulmonary arrest.

- B. Orotracheal intubation
 1. Hyperoxygenate the patient before intubation is attempted.
 2. Have suction available.
 3. No single attempt should last longer than 30 seconds.
 4. Correct placement will be confirmed by verifying presence of bilateral breath sounds, absence of abdominal sounds, and through the use of an End-Tidal CO₂ detector or capnography.

AIRWAY MANAGEMENT (Continued)

IV. FOREIGN BODY AIRWAY OBSTRUCTION

EMR/AEMT/EMT/EMT-I/RN CARE

- A. Awake/responsive patient
- B. Ask, "Are you choking? Can you speak?"
- C. Give abdominal thrust maneuver or chest thrusts for pregnant or obese patients¹
- D. Repeat thrusts until effective or patient becomes unresponsive.
- E. Unresponsive adult or child patient:
 - 1. Perform tongue-jaw lift followed by looking for the object and removing it with your fingers..²
 - 2. Attempt to ventilate. If still obstructed, reposition head and try to ventilate again
 - 3. Begin chest compression as in CPR.
 - 4. Repeat steps 1 - 3 until effective or advance life support arrives to relieve you.

PARAMEDIC CARE

- F. If BLS procedures are unsuccessful and the airway remains obstructed, visualize the airway with the laryngoscope and attempt to remove the obstruction using suction and/or Magill forceps.
- G. If all other methods fail and the obstruction is in the upper airway, perform cricothyrotomy or needle jet insufflation.
- H. Contact OLMC to inform them of a blocked airway with cricothyrotomy being preformed.

V. FLU SYMPTOMS WITH RESPIRATORY COMPROMISE

- A. If patient has known flu-like symptoms (cough, fever, vomiting, body aches) EMT's wear surgical mask.³
- B. If distress is mild to moderate, treat with Albuterol MDI and chamber.
- C. If severe distress or patient does not respond to MDI, administer Duoneb Treatment.

¹ In infants < 1 year of age, give up to 5 backblows and 5 chest thrusts.

² In children < 8 years of age, do not perform blind finger sweep. If you see the object, remove it

³ EMT's should wear N-95 or better masks to avoid inhaling mist from neb Tx. On arrival at hospital, stop neb Tx. during transfer from ambulance to room, to avoid exposing staff and other patients to aerosolized virus

CARDIAC ARREST

NOTE: For infants and children, see ACLS - PEDIATRIC CARDIAC ARREST Protocol.

NOTE:

- ❖ Minimal Interruption Cardiac Resuscitation (MICR) has been shown to result in increased survival from primary Cardiac Arrest.
- ❖ If cardiac arrest is witnessed by EMS personnel, proceed as quickly as possible to rhythm analysis and defibrillation if indicated.
- ❖ If cardiac arrest is witnessed by EMS personnel, proceed as quickly as possible to rhythm analysis and defibrillation if indicated.
- ❖ If unwitnessed arrest, perform 2 minutes of high quality CPR prior to initial rhythm analysis and defibrillation.
- ❖ To perform high quality CPR, compress to a depth of at least 2 inches, with full recoil at a rate of 100 - 120/minute & switch compressor at each rhythm check.
- ❖ If there is a history to suggest a different etiology such as trauma, drowning or respiratory arrest, initiate ventilatory support early.
- ❖ Airway interventions should not interrupt chest compressions

Obtain History when possible, but do not delay CPR to obtain information:

- A. Witnessed or unwitnessed collapse
- B. Patient down time
- C. Bystander CPR
- D. DNR status
- E. Previous medical history, medications and allergies
- F. Potential causes:
 1. Airway obstruction
 2. Trauma
 3. MI
 4. CVA
 5. Electrocution
 6. Diabetes

EMR CARE

NOTE:

- ❖ ALS backup should be called for in all Cardiac arrests
- ❖ In infants < 1 year of age, use infant pads with attenuator if available.
- ❖ Do not analyze or shock conscious patients even if AED is prompting you to do so

- A. Establish that patient is unresponsive.
- B. Check for pulse. If no pulse, start compressions only CPR at 100 compressions/minute.
- C. Call for AED & ALS backup.
- D. As soon as AED is available, apply AED.
- E. If down time estimated at greater than 5 min, CPR for 2 min.
- F. If down time less than 5 min, then CPR until defibrillator is attached
- G. Analyze rhythm and defibrillate if indicated. (see AED Protocol)
- H. Apply high flow O₂ (15 L) via nasal cannula when 2nd rescuer arrives or during rhythm analysis
- I. Resume compressions immediately after defibrillation. If patient has perfusing rhythm, check for pulse.
- J. Continue CPR until perfusion is restored.
- K. If patient has large amounts of secretions, suction as necessary to clear the airway
- L. If patient has return of spontaneous circulation, follow ROSC Protocol.

EMT CARE

- M. If patient has ROSC without spontaneous respiratory effort, or does not have ROSC after 6 minutes (3 cycles), place PEAD.

AEMT/EMT-I/RN CARE

- N. After compressions have been initiated and defibrillator pads have been placed, establish a humeral or tibial IO.
- O. After 2 minutes of compressions, check cardiac rhythm and follow appropriate ACLS Algorithm
- P. If no ROSC within 6 minutes (3 cycles) establish advanced Airway via PEAD with capnography.¹
- Q. If patient has ROSC
 1. Continue cardiac ECG Monitoring
 2. Obtain 12-lead EKG if available
 3. IV/IO, BSS, TKO or Saline lock
 4. Initiate therapeutic cooling measures with chilled saline & icepacks in groin and axillae
 5. Transport patient to nearest hospital, or contact aeromedical transport for transfer to closest cath lab if STEMI present.

PARAMEDIC CARE

- R. If no ROSC within 6 minutes (3 cycles), establish advanced airway via ET tube or PEAD with capnography.
- S. If unable to establish IV or IO line, you can give the following down the ET tube:
Epinephrine, Lidocaine, Atropine, and Narcan,
However IV/IO are more effective routes in cardiac arrest.

¹ If sufficient personnel are available, advanced airway may be established earlier if it can be placed without interruption in CPR.

AUTOMATED EXTERNAL DEFIBRILLATION

NOTE:

- ❖ The adult AED pads should be placed on any patient over 8 years old who is unconscious.
- ❖ The pediatric AED leads should be placed on patients <1 year to 8 years of age who are unconscious. (The adult pads may be used if the pediatric pads are unavailable.)

EMR/EMT CARE

If down time estimated at greater than 5 min, perform CPR for 2 minutes

B. If down time less than 5 min, perform CPR until AED is attached

1. Press “analyze”
2. Defibrillate if recommended
3. CPR for 2 minutes
4. Repeat steps 1 - 3
5. If “No shock” recommended, check pulse. Continue CPR if pulseless and support airway as needed.
6. If patient has return of spontaneous circulation, follow **ROSC Protocol**.

Precautions:

- ❖ Be sure patient is dry, not in a puddle of water.
- ❖ Remove medication patches prior to applying pads and defibrillating.
- ❖ Do not analyze with AED while doing CPR, moving the patient, or in a moving ambulance. During transport, the ambulance must pull to the side of the road and come to a complete stop before the patient is analyzed or shocked using the AED.
- ❖ AED may be used on patients with pacemakers or automatic implanted defibrillators, but do not place pads over these devices.

NOTE: For infants, it is recommended to use a manual defibrillator if available, with pediatric pads. If AED is only defibrillator available, use pediatric pads with an attenuator if available. If pediatric attenuator pads not available, use adult pads anteriorly/posteriorly.

RETURN OF SPONTANEOUS CIRCULATION (ROSC)

NOTE: For infants and children, see ACLS - PEDIATRIC CARDIAC ARREST Protocol.

NOTE:

- ❖ If a patient has ROSC post-arrest, initiate post resuscitation care:

EMR CARE

- Manage and support ABC's as necessary.
- Maintain $\text{SaO}_2 \geq 94\%$
- If patient is unresponsive, initiate therapeutic cooling measures with icepacks in axillae, groin neck, & around head wrapped in a light towel.
- Prepare for transport if ALS arrival not eminent

AEMT/EMT-I/RN CARE

- Optimize ventilation and oxygenation
 - Maintain ETCO_2 at 35 – 40 mmhg.
 - Do not hyperventilate; start at 10-12 breaths/minute.
- Treat hypotension ($\text{SBP} < 90$ mm HG)
 - IV/IO bolus 1-2 L BSS
 - If inducing hypothermia, use 4° C fluid
 - If normotensive, TKO or Saline lock
- Consider treatable causes: H's and T's.
 - Continue cardiac ECG Monitoring
 - Obtain 12-lead EKG if available
 - If STEMI present, contact aeromedical transport for transfer to closest cath lab, or
 - Transport patient to nearest hospital

PARAMEDIC CARE

Treat refractory hypotension:

- ❖ Vasopressor infusion: Epinephrine 0.1-0.5 mcg/kg per minute, or Dopamine 5-10 mcg/kg per minute.

**Epinephrine infusion: mix 1 mg in 250mL NS (for 0.1 mcg/kg)

Pts wt (lbs)	44	66	88	110	132	154	176	198	220	242
(kg)	20	30	40	50	60	70	80	90	100	110
Mcg/minute	2	3	4	5	6	7	8	9	10	11
Microdrips	30	45	60	75	90	105	120	135	150	165

ACLS - VF/VT

Shockable rhythm (Ventricular Fibrillation/Pulseless Ventricular Tachycardia):

~~~~~ AEMT/EMT-I/RN CARE ~~~~~

NOTE:

- ❖ Airway should be secured and IV/IO placed with minimal interruption to CPR.
- ❖ All medicines should be given during 2 minutes of CPR without interrupting chest compressions and should be followed by 10 ml NS flush.
- ❖ These instructions assume VF/pulseless VT. If rhythm changes, switch to the appropriate algorithm.
- ❖ Each Cycle of CPR done over 2 minutes includes:
 - **Check Rhythm, CPR & CHARGE, CLEAR, Defibrillate – CPR x 2 minutes -**
- ❖ Rhythm Check and pulse check simultaneously.
- ❖ Immediately resume CPR after defibrillation, rotating compressor each round.
- ❖ If VF/VT:
 - ➔ Defibrillate.
 - ➔ Resume CPR immediately for 2 minutes or 5 cycles after each defibrillation.
 - ➔ Give drugs immediately after defibrillation, at beginning of 2 minutes of CPR.
 - ➔ Prepare next drug while performing 2 minutes of CPR.
- ❖ If Torsades de Pointes identified in rhythm check, use Magnesium Sulfate.

- A. Initiate CPR.
 - 1. For unwitnessed arrest, give 2 min (5 cycles) CPR while placing pads.
 - 2. For witnessed arrest with downtime < 5 minutes, perform CPR while placing pads. Check rhythm as soon as leads applied. Defibrillate as soon as rhythm is determined to be VF/VT.
- B. **Check Rhythm – Defibrillate 200J biphasic – CPR x 2 minutes.**
- C. Establish IV/IO access. Prepare Epinephrine or Vasopressin. Perform good CPR with capnography 20 mmHg or greater.
- D. **Check Rhythm – Defibrillate 300J biphasic – CPR x 2 minutes.**
- E. **Epinephrine 1:10,000 – 1mg IV/IO. Repeat every 3 – 5 minutes.**
(or **Vasopressin 40 U IV/IO** to replace 1st or 2nd dose of Epi.) Prepare Amiodarone.
- F. **Check Rhythm – Defibrillate 360J biphasic – CPR x 2 minutes.**
- G. **Amiodarone¹ 300 mg IV/IO.** Consider reversible causes.
- H. Consider advanced airway with capnography after 3 rounds of CPR
- I. **Check Rhythm – Defibrillate 360J biphasic – CPR x 2 minutes.**
- J. **Epinephrine 1:10,000 – 1mg IV/IO**
- K. **Check Rhythm – Defibrillate 360 J biphasic – CPR x 2 minutes.**
- L. **Amiodarone 150 mg IV/IO.**
- M. **Check Rhythm – Defibrillate 360J biphasic – CPR x 2 minutes.**
- N. **Epinephrine 1:10,000 – 1mg IV/IO.**
- O. **Check Rhythm – Defibrillate 360J biphasic – CPR x 2 minutes.**
- P. Simultaneously at each rhythm check monitor airway and capnography.
- Q. If patient has return of spontaneous circulation, follow **ROSC Protocol.**
- R. Prepare patient for transport as soon as possible. Consider consultation with OLMC.

¹ If Amiodarone is not available, use Lidocaine, initial dose of 1-1.5 mg/kg IV/IO. Repeat if indicated at 0.5 to 0.75 mg/kg IV/IO over 5-10 min. intervals to a max. dose of 3 mg/kg.

**ACLS - VF/VT
(continued)**

~~~~~**PARAMEDIC CARE**~~~~~

- S. For **Torsades de Pointes** give **Magnesium Sulfate** – 2 gm in 16 ml NS, LR, D5W IV/IO over 1-2 minutes.
- T. If no response to amiodarone and no indication for magnesium sulfate, administer lidocaine 1-1.5 mg/kg IV/IO. Repeat if indicated at 0.5 to 0.75 mg/kg IV/IO over 5-10 min. intervals to a max. dose of 3 mg/kg.

**Magnesium Sulfate Drip:** Add 1gm of Magnesium to a 250 ml of BSS and run at 60 gtts/min through a macro drip set or a pump for 1 gm/hr.

- ❖ If patient appears malnourished, alcoholic or rhythm suggests **Torsades de Pointes**, give magnesium sulfate before other antidysrhythmics.
- ❖ If patient converts with magnesium, follow with magnesium sulfate 1 gm/hr gtt.
- ❖ Sodium bicarbonate, 1 mEq/kg should be given early if known or suspected cyclic anti-depressant overdose, or patients with possible hyperkalemia (eg. dialysis patients)

**Amiodarone Rapid Infusion:** Mix 150 mg Amiodarone in 100 ml LR or NS and administer at 150 gtts/min with macro bore set over 10 min. for 15 mg/min. infusion. (37 gtts/15 sec.)

## ACLS - ASYSTOLE/PEA

### Unshockable rhythm (Asystole/Pulseless Electrical Activity)

#### AEMT/EMT-I/RN CARE

##### NOTE:

- ❖ Airway should be secured and IV/IO placed with minimal interruption to CPR.
- ❖ All medicines should be given during 2 minutes of CPR without interrupting chest compressions and should be followed by 10 ml NS flush.
- ❖ These instructions assume Asystole/PEA. If rhythm changes, switch to the appropriate algorithm.
- ❖ Each Cycle of CPR done over 2 minutes includes:

##### - Check Rhythm - CPR x 2 minutes -

- ❖ Rhythm Check and pulse check simultaneously.
- ❖ Immediately resume CPR after defibrillation, rotating compressor each round.
- ❖ If Asystole/PEA:
  - ➔ Resume CPR immediately for 2 minutes or 5 cycles.
  - ➔ Give drugs immediately at beginning of 2 minutes of CPR
  - ➔ Prepare next drug while performing 2 minutes of CPR
  - ➔ Confirm Asystole in two leads; increase gain to rule out fine VF; If any question of possible VF, defibrillate as per VF

- A. Initiate CPR
  1. For unwitnessed arrest, give 2 min (5 cycles) CPR while placing pads.
  2. For witnessed arrest with downtime < 5 minutes, perform CPR while placing pads. Check rhythm as soon as leads applied.
- B. **Check Rhythm – CPR x 2 minutes.**
- C. Establish IV/IO access. Prepare Epinephrine or Vasopressin. Perform good CPR with capnography 20 mmHg or greater.
- D. **Check Rhythm – CPR x 2 minutes.**
- E. **Epinephrine** 1:10,000 – 1mg IV/IO. Repeat every 3 – 5 minutes.  
(or **Vasopressin** 40 U IV/IO to replace 1<sup>st</sup> or 2<sup>nd</sup> dose of Epi.)
- F. If **PEA**, administer **fluid challenge of 500 ml BSS**.
- G. Consider possible causes and treat as indicated:
  1. Hypovolemia: establish 2 large bore IV's/IO's. Run wide open up to 2 L BSS.
  2. Hypoxia: Ensure adequate ventilation
  3. Hydrogen Ion (acidosis): consider Sodium Bicarbonate 1 amp IV/IO (50 mEq).
  4. Hyperkalemia:
    - a. Albuterol, 1 unit dose (3 ml) nebulized
    - b. Sodium Bicarbonate 1 – 2 amps IV/IO (50 mEq).
  5. Hypoglycemia: check blood sugar and treat as indicated.
  6. Hypothermia: (See **HYPOTHERMIA Protocol**)
  7. Tension Pneumothorax: perform unilateral or bilateral chest decompression
  8. Toxins, Tamponade, Thrombosis, Trauma
- H. **Check Rhythm – CPR x 2 minutes.**
- I. **Epinephrine** 1:10,000 – 1mg IV/IO.
- J. Consider advanced airway with capnography after 3 rounds of CPR
- K. **Check Rhythm – CPR x 2 minutes.**
- L. If patient has return of spontaneous circulation, follow **ROSC Protocol**.
- M. Prepare patient for transport as soon as possible.



**ACLS - ASYSTOLE/PEA**  
**(Continued)**

- N. Consider consultation with OLMC and possible termination of resuscitation efforts in field if asystole confirmed in all limb leads after **at least** 3 mg of epinephrine.

~~~~~**PARAMEDIC CARE**~~~~~

- O. For hyperkalemia, consider calcium gluconate 10 - 20 mL IV/IO over 10 - 20 minutes.
(Call OLMC before administering)

ACLS - PEDIATRIC CARDIAC ARREST

PEDIATRIC CONSIDERATIONS:

Intermediate /RN /Paramedic:

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 ((0.1 ml/kg) NMT 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 1.0 mg/kg IV/IO up to 3 mg/kg.
4. Sodium bicarbonate 1 mEq/kg (1 ml/kg) IV/IO then 0.5 mEq/kg for subsequent doses.
5. Magnesium sulfate 25 mg/kg IV/IO NMT 4 gm

Asystole

1. Epinephrine every 3-5 minutes.

Pulseless Electrical Activity

1. Epinephrine every 3-5 minutes.
2. **Consider and treat other possible causes:**
 - a. Acidosis – consider sodium bicarbonate 1 mEq/kg (1 ml/kg) IV/IO.
 - c. Cardiac Tamponade – immediate transport
 - c. Cyclic antidepressants – consider sodium bicarbonate 1 mEq/kg (1 ml/kg) IV/IO.
 - d. Hyperkalemia – consider sodium bicarbonate 1 mEq/kg IV/IO
 - e. Hypothermia – see **Hypothermia** protocol
 - f. Hypovolemia – fluid challenge.
 - g. Hypoxia – oxygenate and ventilate
 - h. Pulmonary Embolism – immediate transport
 - i. Tension Pneumothorax – needle decompression.
3. **Consider therapeutic hypothermia (see ROSC Protocol)**

P. = Paramedic

ACLS - PEDIATRIC RESUSCITATION DRUGS QUICK REFERENCE

Table 1: Neonates – Immediate Postnatal Resuscitation

| Drug | Indication | Dose |
|--|-----------------------------|---|
| (RN/I/P) Dextrose, 12.5%
(Dilute D
dilute by ½ for D | Hypoglycemia | 0.1 - 0.5 gm/kg IV/IO
(0.4 - 2 ml/kg D |
| (RN/I/P) Epinephrine 1:10,000 | Bradycardia, Cardiac Arrest | 0.01 mg/kg (0.1 ml/kg) IV/IO |

RN = Registered Nurse I= Intermediate P= Paramedic

Table 2: Infants and Children

| Drug | Indication | Dose |
|---|--|--|
| (P) Adenosine | PSVT | 0.1 mg/kg; 0.2 mg/kg IV/IO |
| (RN/I/P) 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. |
| (RN/I/P) Atropine | Bradycardia | 0.02 mg/kg IV/IO – may repeat dose
once. Minimum dose: 0.1 mg (Do
not exceed adult dose.) |
| (RN/I/P) Dextrose, 25% | Hypoglycemia | 0.1 - 0.5 gm/kg (0.4 -2 cc/kg)
D _{12.5}
D ₂₅ |
| (P) Dopamine | Low cardiac output | 5 to 20 mcg/kg min. |
| (RN/I/P) Epinephrine
1:10,000 | V-fib, low cardiac output,
cardiac arrest, asystole,
PEA | 0.01 mg/kg (0.1 ml/kg) IV/IO |
| (RN/I/P) Lidocaine | Recurrent Ventricular
Fibrillation, Stable VT | Bolus: 1.5 mg/kg (NMT 3 mg/kg)
Maintenance: 0.75 mg/kg q 10 min.
(No MAX) |
| (P) Midazolam (Versed) | Pacing – V-tach
Seizures | IV/IO: 0.05-0.1 mg/kg, NMT 2.5 mg
IM: 0.2 mg/kg to max 5 mg |
| (P) Magnesium Sulfate | V-fib/ Pulseless V-tach | 25 mg/kg IV/IO NMT 4 gm |
| (RN/I/P) Naloxone (Narcan) | Respiratory depression
secondary to narcotics | 0.1 mg/kg – NMT 2 mg |
| (P) Sodium Bicarbonate
(Dilute by ½ with NS) | Metabolic acidosis, cyclic
antidepressant OD,
Hyperkalemia | 1 mEq/kg (1ml/kg) IV/IO |

ACLS - DYSRHYTHMIAS

NOTE:

- ❖ These protocols refers to spontaneously breathing and perfusing patients.
- ❖ If the patient is asymptomatic, dysrhythmias may not require treatment in the field.
- ❖ The following protocols for specific dysrhythmias assume basic care outlined in this protocol.

- I. Patients with cardiac dysrhythmias should be classified as stable or unstable. An unstable patient is one who presents with (one or more) of these signs or symptoms:
 - A. SBP < 100 mmhg
 - B. Altered mental status
 - C. Pale, cool, diaphoretic skin
 - D. Chest pain
 - E. Shortness of breath
 - F. Feeling of impending doom
 - G. Nausea & vomiting

- II. Obtain the following history:
 - A. Onset and duration of symptoms
 - B. Is there associated chest pain or shortness of breath?
 - C. History of cardiopulmonary disease
 - D. Medications (especially cardiac and Viagra [erectile dysfunction agents])
 - E. Recent illness or trauma
 - F. Substance abuse history
 - G. DNR status

EMR CARE

- A. If patient is unstable, call for ALS backup.
- B. Administer Oxygen
 1. If SOB oxygen at 15 L/m non-rebreather mask
 2. Without SOB oxygen 4-6 L/m NC
- C. Place patient in position of comfort and reassure.
- D. Have AED ready for use and follow AED protocol.
- E. If patient has return of spontaneous circulation, follow **ROSC Protocol**.

EMT CARE

- F. If patient has associated chest pain, give 324mg (4 baby) ASA.
- G. Prepare for transport.
- H. If patient is unable to protect airway, establish airway via PEAD.

ACLS - DYSRHYTHMIAS
(Continued)

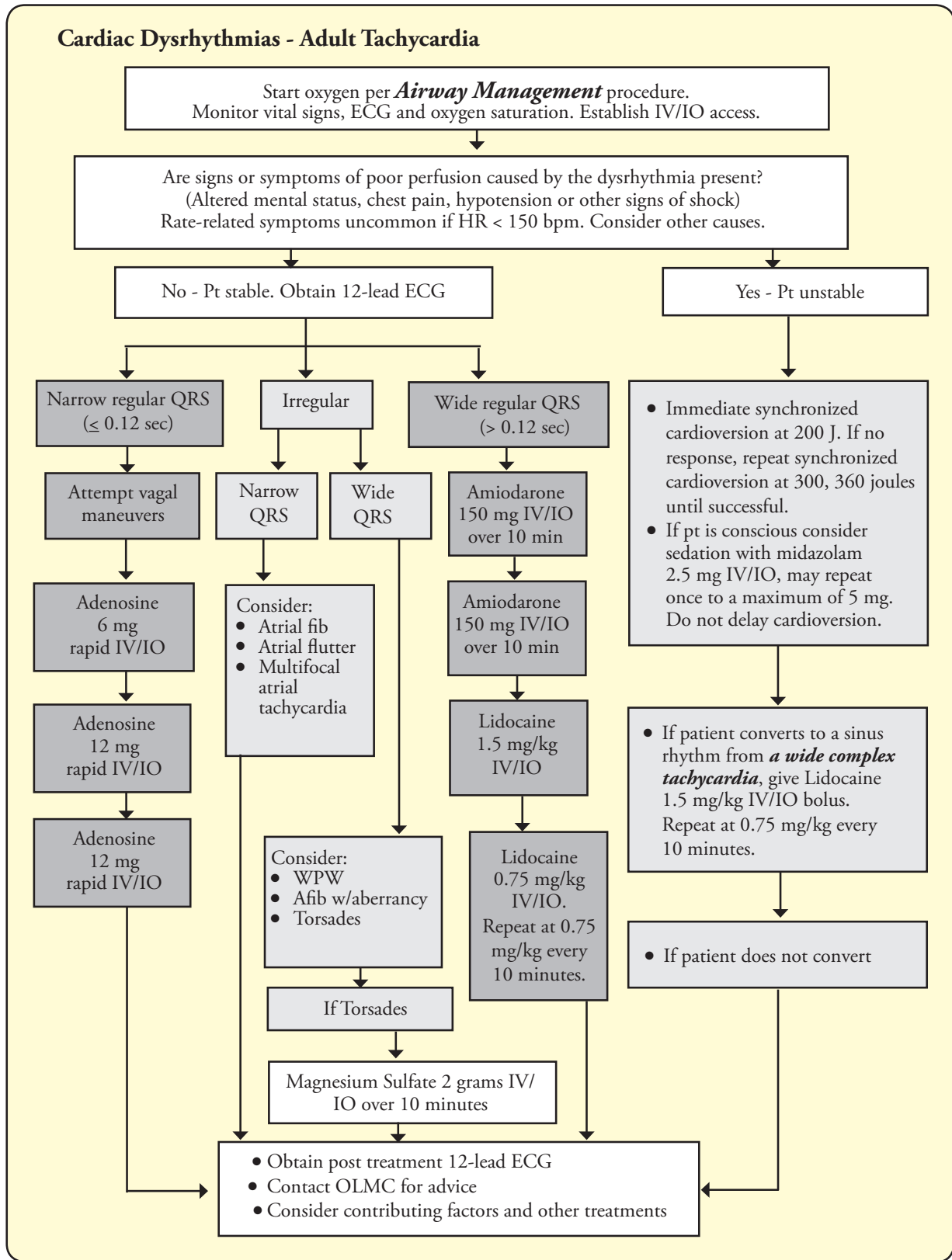
~~~~~ **AEMT/EMT-I/RN CARE** ~~~~~

- I.** Place patient on cardiac monitor.
- J.** Establish IV, BSS, TKO.
- K.** If systolic pressure falls  $\leq 100$  mmHg, administer 250ml BSS bolus and repeat vitals.  
Rebolus with 250 mL BSS as indicated for SBP  $\leq 100$  mmHg
- L.** If patient is having associated chest pain, follow **CHEST PAIN Protocol**.
- M.** If patient is unable to protect airway, establish airway following **AIRWAY MANAGEMENT Protocol**

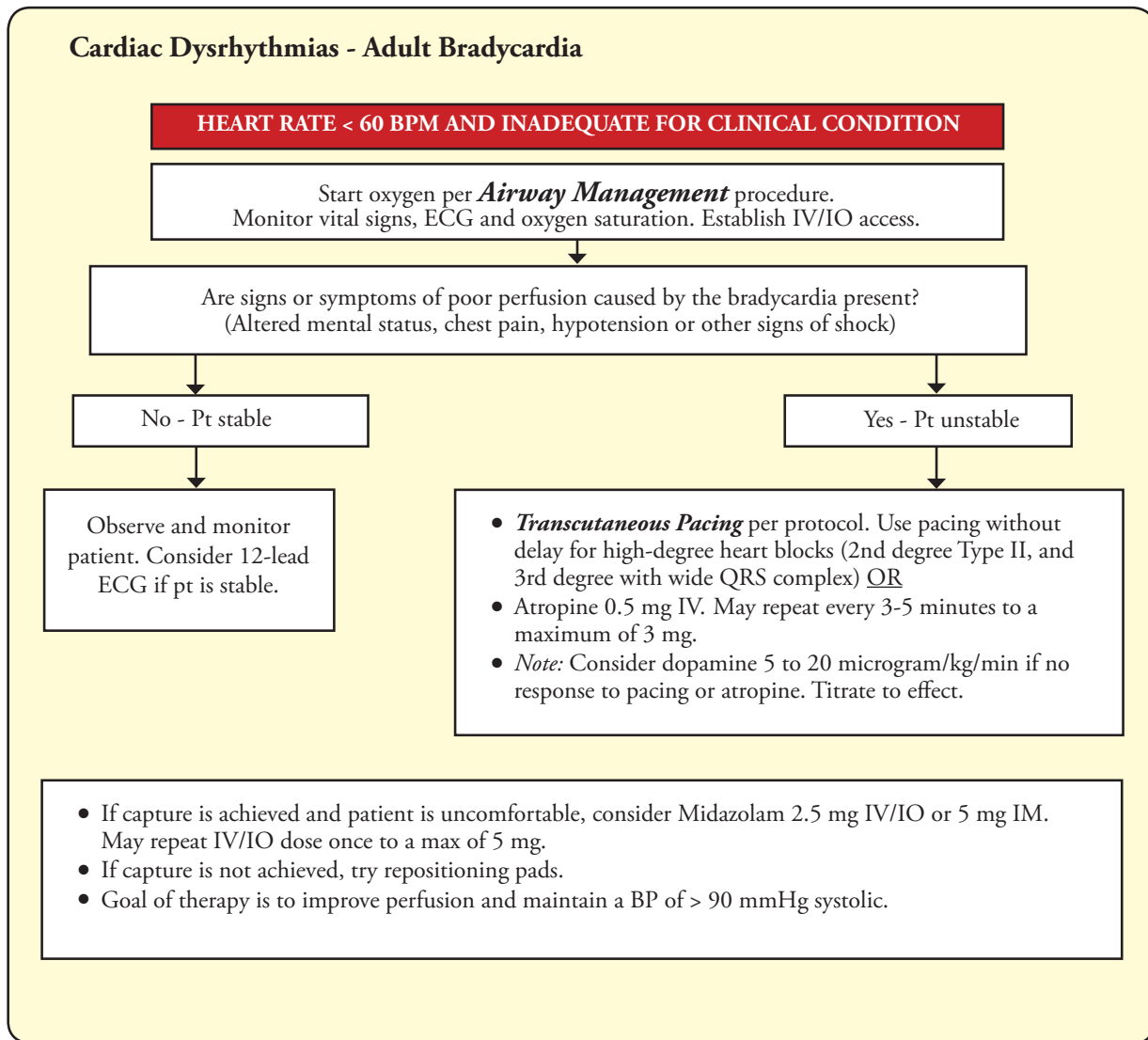
~~~~~ **PARAMEDIC CARE** ~~~~~

- N.** If patient is unable to protect airway, establish airway following **AIRWAY MANAGEMENT Protocol**
- O.** If patient is unstable, prepare for synchronized cardioversion if indicated. Consider premedicating with:
 - 1.** Versed (midazolam) 2 - 5 mg IV/IM or
 - 2.** Ativan (Lorazepam) 0.5 – 2.0 mg IV/IM/IO
- P.** If patient is stable, continue monitoring with frequent re-assessments.
- Q.** See appropriate dysrhythmia algorithm.

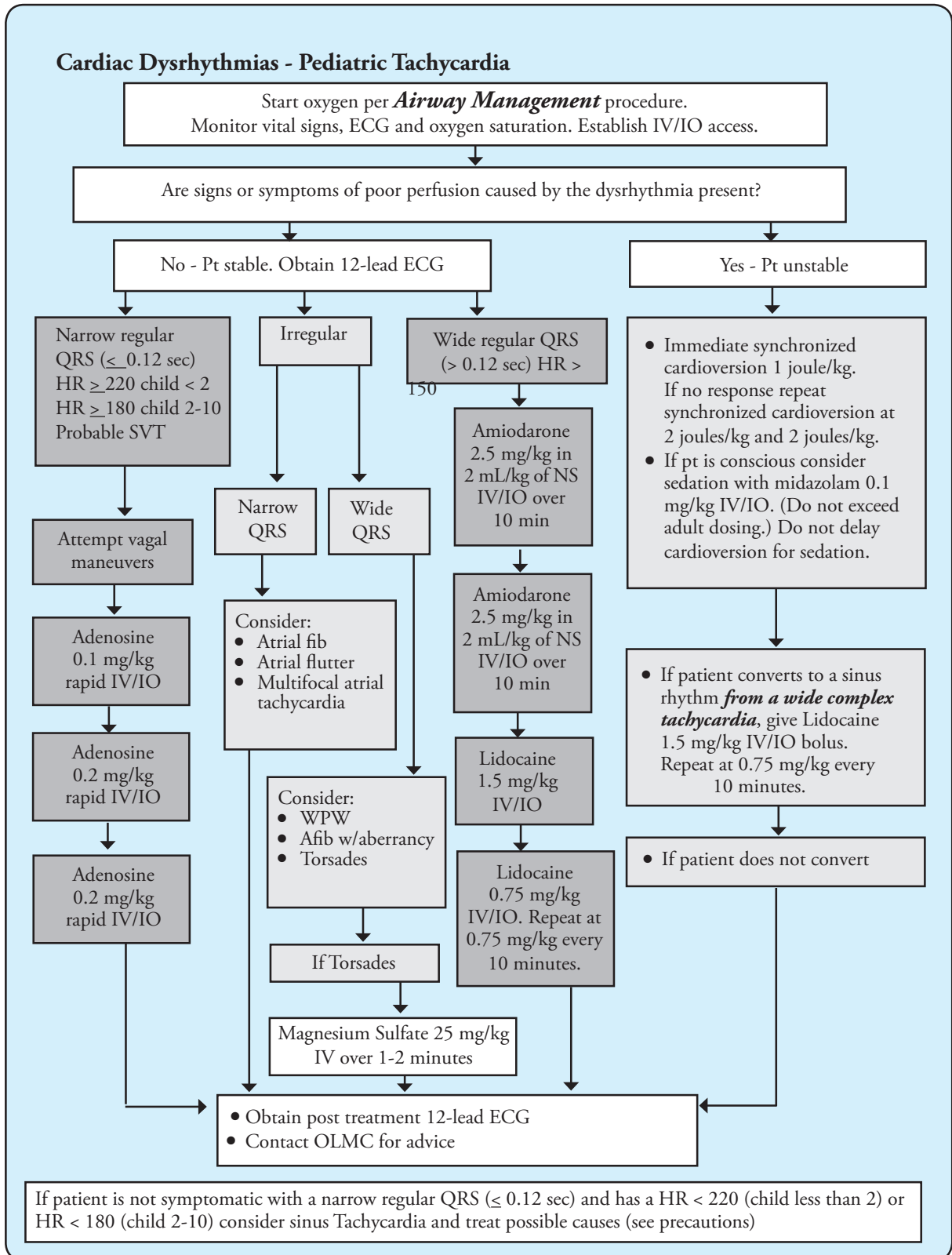
ACLS - ADULT TACHYCARDIA



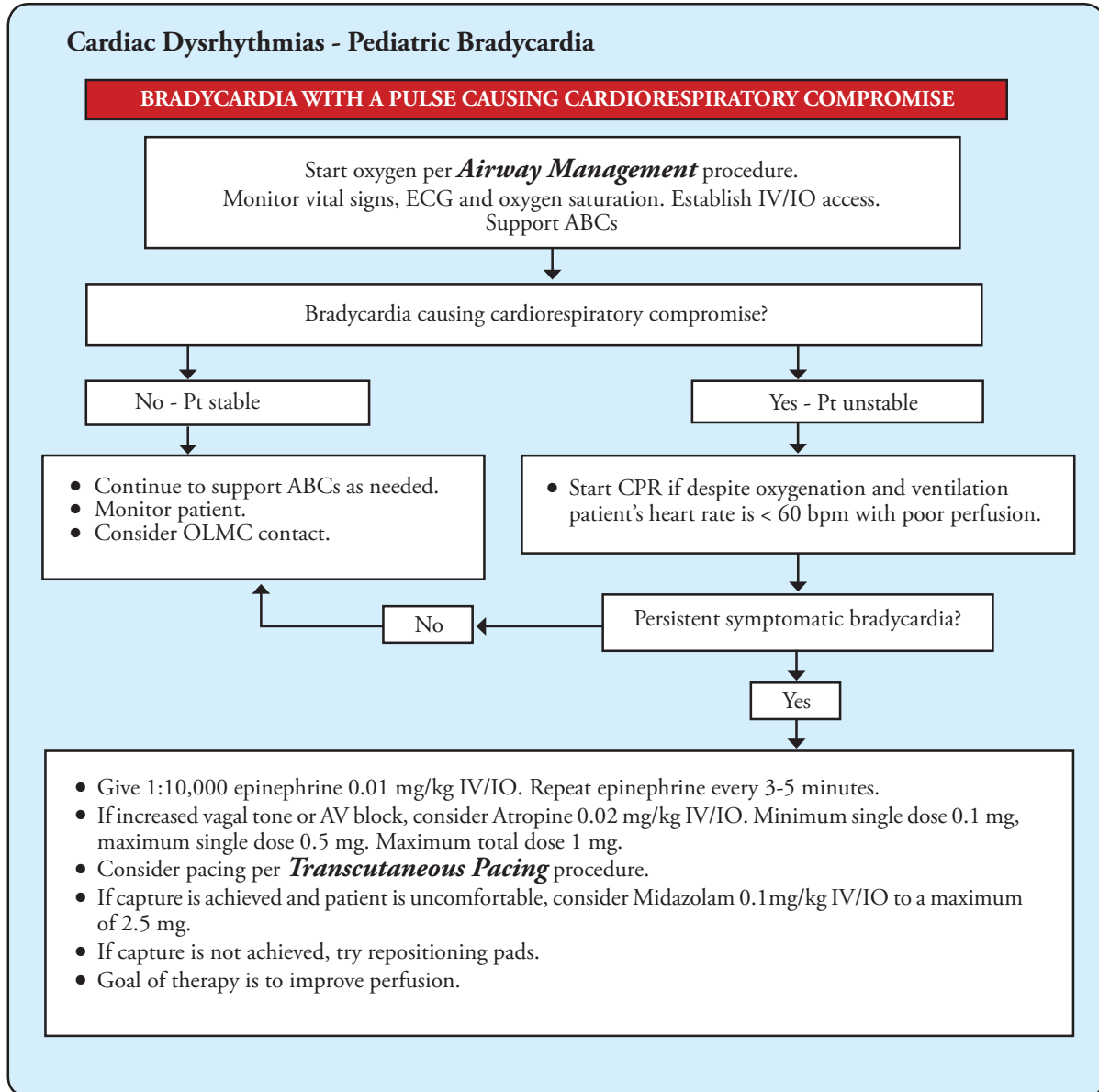
ACLS - ADULT BRADYCARDIA



ACLS - PEDIATRIC TACHYCARDIA



ACLS - PEDIATRIC BRADYCARDIA



ABDOMINAL PAIN

NOTE:

- ❖ Abdominal pain may be the first warning of catastrophic internal bleeding (ruptured aneurysm, liver, spleen, ectopic pregnancy, perforated viscous, etc.)
- ❖ Since the bleeding is not apparent, you must think of volume depletion and monitor the patient closely to recognize shock.

EMR/EMT CARE

- A. Start O2. Follow *Airway Management* protocol.
- B. Place patient in comfortable position.
- C. Do not allow the patient to eat or drink.
- D. Obtain vital signs frequently

AEMT/EMT-I/RN/PARAMEDIC CARE

- A. IV BSS TKO or Saline lock.
- B. Administer fluid bolus if signs or symptoms of shock are present and B/P < 90 mmHg. See *Shock* protocol.
- C. ECG Monitor.
- D. Pain medications may be administered in non-traumatic abdominal pain

ALLERGIC REACTIONS

NOTE:

- ❖ Allergic reactions may be caused by a variety of agents.
- ❖ The intensity of the reaction can range from minimal swelling to anaphylaxis and cardiovascular collapse.
- ❖ Management should be based upon the rapidity of the appearance and the severity of the reaction.

SIGNS/ SYMPTOMS OF ALLERGIC REACTIONS

May include: hives, dyspnea, swelling around mouth, face and/or tongue, hypotension, weak rapid pulse, flushed skin, tightness in the chest, wheezes and abdominal cramping.

EMR CARE

- A. Keep patient calm and provide reassurance that appropriate care is underway.
- B. Evaluate ABC's and start Oxygen therapy.
- C. Administer high flow oxygen for respiratory distress
- D. Provide ventilatory assistance as needed.

EMT CARE

- E. In the case of moderate to severe anaphylaxis (swelling of tongue, face, wheezing, stridor, or evidence of shock) give epinephrine 1:1,000 IM¹, SQ, 0.3 mg (adult), 0.2 mg (pediatric), 0.1mg (infant)² or administer Epi Pen or Epi Pen Jr. as per directions. All doses may be repeated once for a total of two doses. Contact OLMC for additional doses.³
- F. If patient is wheezing or has poor air movement, administer nebulized albuterol 1 unit dose (3 ml)
- G. Prepare for immediate transport.

AEMT/EMT-I/RN

- H. Start IV (BSS) enroute as needed
- I. If B/P less than 90 mm/hg, follow **Shock** Protocol.
- J. Monitor cardiac rhythm
- K. If patient is wheezing or has poor air movement, administer nebulized Duoneb (or mix albuterol (1 unit dose) with Atrovent (1 unit dose). Subsequent treatments shall be Albuterol, repeat as needed.
- L. Give Benadryl 25-50 mg IM/IV/IO for the adult dose; pediatric dose is 1mg/kg.

¹ When administering Epinephrine 1:1,000, IM is preferable to SQ route due to better blood flow during shock. SQ route is acceptable if IM access is limited, e.g: the morbidly obese.

² When using epinephrine 1:1000, the amount in mg is equal to the amount in ml (0.3mg = 0.3 ml). Use 1 ml syringe marked in 0.1 ml increments.

³ If epinephrine is administered, indication must be documented.

ALLERGIC REACTIONS (Continued)

PARAMEDIC CARE

- M. If respiratory distress or stridor is present, consider intubation early.
- N. If the reaction is severe, give epinephrine (see table below)
- O. If respiratory distress is present after epinephrine, give Albuterol/Atrovent.

| Epinephrine Table | Adult | Child >10kg (22 lbs.) | Infant |
|---------------------------|------------------------------------|------------------------|------------------------|
| 1:1,000 IM/SQ | 0.3-0.5 mg/0.3-0.5 ml | 0.2 mg | 0.1 mg |
| 1:10,000 IV/IO or ET Tube | 0.5mg/5ml or 1mg/10 ml via ET tube | 0.01 mg/kg (0.1 ml/kg) | 0.01 mg/kg (0.1 ml/kg) |

Precautions:

- ❖ Epinephrine increases cardiac work and may precipitate angina or MI in susceptible individuals.
- ❖ Common side effects include anxiety, tremors, palpitations, and headache, particularly with IV/IO administration.
- ❖ 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) IM/SQ, NMT 0.3 mg (0.3 ml). May repeat once after 20 minutes, if needed for respiratory distress or persistent wheezing.

EMT follow care listed page 11.

- ** b. If itching is severe, consider diphenhydramine 1 mg/kg IV/IO/IM, NMT 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) IM/SQ NMT 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 NMT 0.1 mg (1 ml). Repeat every 5 minutes PRN 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), flushed with 5 ml NS.

- e. If wheezing is present, follow **Respiratory Distress** protocol.

- ** f. If itching is severe, consider diphenhydramine 1 mg/kg IV/IO or deep IM, NMT 50 mg.

* = Basic ** = Intermediate *** = Paramedic

ALTERED MENTAL STATUS

NOTE:

- ❖ This protocol defines the management of the emergency medical patient who has an altered mental status, i.e., decreased LOC, confusion, disorientation, coma.
- ❖ Care of the trauma patient is outlined in the appropriate trauma protocol.
- ❖ The intranasal administration of Narcan can reduce the risk of needle sticks while delivering effective medication levels.

I. Assessment - ABC's. Use GLASGOW COMA SCALE (GCS) or AVPU to categorize level of consciousness, see page 70. **Check for Medic Alert tag.**

II. Differential diagnosis:

Cardiac event
CVA
Postictal
Shock

Hyperglycemia
Hypoglycemia
Hyperthermia
Hypothermia

Drug Overdose
Other

EMR CARE

- A. Airway management has priority. Insert an oropharyngeal or nasopharyngeal airway and provide ventilatory assistance as appropriate.
- B. Have suction immediately available. All patients with altered mental status should receive supplemental oxygen, preferably via non-rebreather mask or assisted ventilation.
- C. If suspected hypoglycemia and patient is able to protect airway, give oral glucose.
- D. If no response to above treatment or if respirations are depressed, administer 0.4 - 2.0 mg Naloxone Intranasally. Titrate to LOC & respiratory effort. Consider restraining patient before administration of Naloxone (Narcan). Rebolus at 0.4 - 2.0 mg as needed NMT 8 MG. (Pediatric dose 0.1 mg/kg NMT 2 mg.)
- E. **BE PREPARED FOR PROJECTILE VOMITING AND HAVE SUCTION IMMEDIATELY AVAILABLE.**
- F. ****DOCUMENT PATIENT'S RESPONSE TO MEDICATIONS****

EMT CARE

- G. If patient is obtunded, unable to protect airway and has no gag reflex, consider placing PEAD to secure airway.
- H. Determine blood glucose levels (BGL) if time and patient condition permits.
- I. If the BGL is <60, and patient is able to protect airway, give oral glucose paste.
- J. If no response to above treatment or if respirations are depressed, administer 0.4 - 2.0 mg Naloxone IM/MAD. Titrate to LOC & respiratory effort. Consider restraining patient before administration of Naloxone (Narcan). Rebolus at 0.4 - 2.0 mg as needed NMT 8 MG. (Pediatric dose 0.1 mg/kg NMT 2 mg).
- K. If aggressive airway management is not required, place the unconscious patient on their side in the recovery position.

AEMT/EMT-I/RN CARE

- L. Start IV enroute as needed.
- M. If B/P less than 90 mm/hg, follow **Shock** Protocol
- N. If glucose level is <60
 1. Give 25gm D₅₀, IV Push. Repeat once after 10 minutes if needed.
 2. If unable to obtain IV, give Glucagon 1mg IM/SC.

**ALTERED MENTAL STATUS
(Continued)**

~~~~~**AEMT/EMT-I/RN CARE**~~~~~

- O. If no response to above treatment or if respirations are depressed, administer 0.4 - 2.0 mg Naloxone IV/IO/IM/MAD. Titrate to LOC & respiratory effort. Consider restraining patient before administration of Naloxone (Narcan). Rebolus at 0.4 - 2.0 mg as needed NMT 8 MG. (Pediatric dose 0.1 mg/kg NMT 2 mg.)
- P. If glucose level is >300 and there is no evidence of pulmonary edema consider a fluid bolus.
- Q. B/P < 90 mm/hg, consider a fluid bolus - 500 ml up to 60 ml/kg. If B/P >90 mm/hg, consider IV BSS TKO.
- R. Monitor cardiac rhythm and vital signs frequently.

~~~~~**PARAMEDIC CARE**~~~~~

- S. Consider intubation if GCS is <8.
- T. Administer 100 mg of Thiamine IM/IV if history or presentation indicates either ETOH abuse or malnutrition.

PEDIATRIC CONSIDERATIONS:

- A. Consider etiology and appropriate protocol: shock, toxic exposure, head trauma, (consider intentional injury), seizure.
- B. Vascular access
- C. Rapid blood glucose determination.
- D. If glucose is less than 60 mg/dl (less than 40 mg/dl for newborn):
 - 1. Give oral glucose to conscious patient.
 - 2. If no IV/IO established and airway protective reflexes are intact, give D glucose containing substance, orally.
 - 3. If IV/IO established, give D may repeat once. For neonates dilute D-25 to D-12.5, give 0.5 gm/kg (2 ml/kg).
 - 4. If no IV/IO established and airway protective reflexes are not intact, give glucagon 0.1 mg/kg IM/SC NMT 1 mg (1ml).
 - 5. Repeat blood glucose determination and treat if it remains low.
- E. If mental status and respiratory effort are depressed, administer Narcan 0.1 mg/kg IV/IO/IM/SQ/SL/ET/MAD NMT 2 mg IV/IO. May repeat every 5 minutes with strong suspicion of opiate overdose, or if partial response is noted.

Do not give Narcan to newborns.

AMPUTATION

NOTE:

- ❖ Obtain the key history: Time of amputation, mechanism of injury, current medications, bleeding tendencies, problems with any prior surgery.
- ❖ Key Physical Findings: Excessive bleeding, partial amputation, attachment, neurovascular status, and last oral intake.

EMR/EMT CARE

- A. Control bleeding
- B. Administer Oxygen
- C. Remove gross contamination and dress stump
- D. Treat for shock as per shock protocol
- E. Place amputated part in dry plastic bag or wrap in plastic. Place bag in ice water.
- F. Keep amputated part dry.

AEMT/EMT-I/RN CARE

- G. Establish large bore IV / IO, two if possible and treat per shock protocol.
- H. Consider pain management as per the pain protocol.

BEHAVIORAL / PSYCHIATRIC

NOTE:

- ❖ **ALWAYS PROTECT YOURSELF AND YOUR CREW** when managing the patient who is emotionally unstable **and/or** displays behavior that may be dangerous to self and/or others.

EMR/EMT/AEMT/EMT-I/RN CARE

- A. Do not spend time attempting an extensive psychiatric evaluation at the scene.
- B. The major responsibility of EMS personnel is to:
 - 1. Establish whether the patient is a threat to self or others.
 - 2. Quickly assess and provide appropriate treatment for any associated illness, injury, poisoning, or underlying medical conditions.
 - 3. Transport the patient as quickly as possible to the appropriate facility without causing further emotional or physical harm to the patient.
- C. If the patient refuses to be treated or transported, contact dispatch for law enforcement and mental health assistance. Contact OLMC for further instructions.
- D. Always request law enforcement for assistance with any patient who displays violent or suicidal behavior.

PARAMEDIC CARE

- E. Adult patients who are combative and suffering from emotional upset or acute anxiety may be given:
 - 1. Versed (midazolam) 2 - 5 mg IV/IO/IM/IN. Repeat PRN NMT 5 mg or
 - 2. Ativan (Lorazepam), 0.5-2.0 mg IV/IM/IO slow push NMT 4.0 mg.

Pediatric Considerations:

For out of control pediatric, consider OLMC consultation:

Pediatric dose 0.05-0.1 mg / kg of Versed (midazolam) IV/IM/IN.

For child < 6 y/o NMT 2.5 mg.

For child > 6 y/o NMT 5 mg.

BURNS

NOTE:

- ❖ Defined here is the prehospital evaluation and management of major burns.
- ❖ Remember that age (infants and the elderly), underlying medical conditions, smoke inhalation and associated trauma can complicate the condition and care of the acutely burned individual.
- ❖ Evaluation of all major burns should include using the "Rule of Nines" to assess the extent of the burns.

I. GENERAL

EMR/EMT CARE

- A. STOP THE BURNING!
- B. Remove the patient from the source of the burn if you can do so safely.
- C. Remove smoldering or hot clothing, bedding and restricting jewelry if it can be done without removing burned skin.
- D. In the case of an acid or chemical burn, brush any powder material from burn, then flush with water or Normal Saline. Note: Alkali burns (cement, anhydrous ammonia, lye) require flushing with large volumes of water until all the feeling of "soapiness" is gone.
- E. Wrap the disrobed patient in clean, dry sheets and/or dressings. Remember to wrap burned limbs and digits separately so that tissue does not become adherent.
- F. **DO NOT!!!**
 - Do not apply ice directly to the skin.**
 - Do not break blisters.**
 - Do not remove material that firmly adheres to burned skin.**
 - Do not use ointments, creams or sprays on any burn that will require further medical treatment.**
- G. Conserve patient's body warmth with sheet/blankets (avoid cold/ice for large area burns).
- H. Elevate burned extremities.
- I. Give nothing by mouth (NPO).
- J. LOOK FOR ADDITIONAL TRAUMA! Injuries should be treated using other appropriate protocols.
- K. Follow Airway Protocol.
- L. Administer high flow oxygen to:
 - M. Any burned patient with possible respiratory involvement.
 - N. All suspected carbon monoxide poisonings.
 - M. Continually reassess the patient for signs of respiratory distress and treat early.
 - N. Remember that pulse oximeter readings may be falsely high in CO poisonings.
- O. Evaluate risk factors for airway compromise:
 - 1. Closed space fire
 - 2. Burns to face or singed nasal hairs/blackened rim of nares
 - 3. Hoarseness/inspiratory stridor
 - 4. Carbon deposits on tongue/oropharynx
- P. ALL PATIENTS WITH RISK FACTORS RECEIVE HIGH FLOW O₂.

BURNS

-Continued-

AEMT/EMT-I/RN CARE

- Q. Start a minimum of one large bore IV-IO line. Start the line as far from the burn as possible, but if necessary, the IV/IO may be started through the burned tissue.
- R. Run the IV, BSS, wide open if pulmonary edema is not present; monitor lung sounds.
- S. Cardiac Monitoring.
- T. If there is no respiratory compromise, pain relief may be managed with Morphine Sulfate 2.0-5.0mg IV/IO/IM every 3-5 minutes for desired effect. Max. total dose is 20 mg in burn patient. Nubain may be used if patient allergic to MS or MS not available. Dosage same as Morphine. (May consider Fentanyl as alternate to Morphine Sulfate. Start at 25 mcg titrate PRN NMT 200 mcg. Consult OLMC for additional dosage.)
- U. MONITOR RESPIRATORY STATUS CLOSELY

PARAMEDIC CARE

NOTE:

Consider intubation early in high risk patients. See *Rapid Sequence Intubation* Protocol.

II. ELECTRICAL BURNS

NOTE:

❖ **USE CAUTION: PROTECT YOURSELF!**

- A. Electrical burns are frequently more severe than they appear; remember that deep injury is predominant.
- B. All electrical burn patients should have cardiac monitoring and IV, BSS for drug route.

V. CHEMICAL BURNS

NOTE:

❖ **USE CAUTION: PROTECT YOURSELF!**

- A. Unless specifically advised otherwise, all chemicals should be washed with copious amounts of water.
- B. Dry powder chemicals should be brushed off first, then flushed.
- C. Caustic burns of the eye should be immediately rinsed with the cleanest water available.
- D. If available, get MSDS for industrial chemicals; follow MSDS recommended procedure.
- E. Contact poison control at 1-800-222-1222.

BURNS

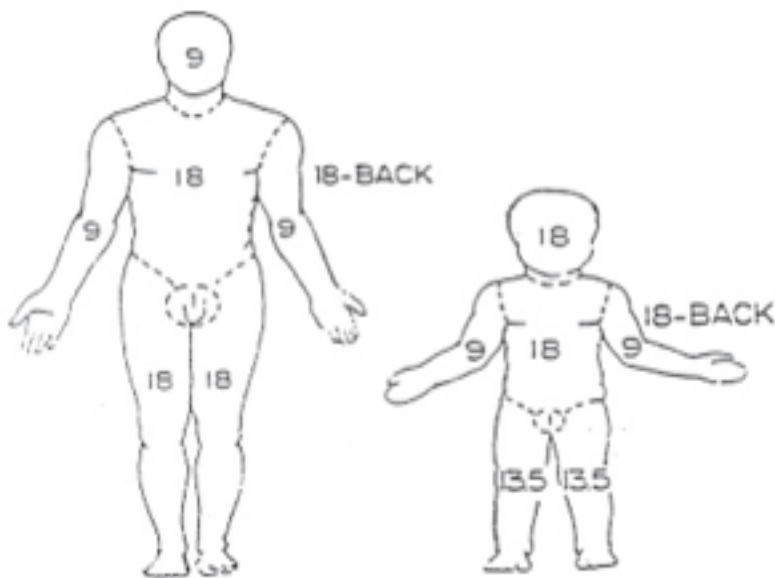
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PEDIATRIC CONSIDERATIONS:

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 1-2 mcg/kg, repeat 0.5- 1 mcg/kg every 3-5 minutes as needed, NMT 4 mcg/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 Nine’s,” 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 Nine’s is modified. In each case, the rule gives a useful approximation of body surface.



Patients palm size represents approximately 1% of body surface. May be used to estimate burn area of a patient.

CHEST PAIN

NOTE:

- ❖ Non-traumatic chest pain in any patient ≥ 40 yo should be treated as cardiac in origin until proven otherwise, and should be considered in patients < 40 yo with typical symptoms.
- ❖ Chest pain associated with shortness of breath, diaphoresis, vomiting, previous cardiac disease, and/or hypotension has a frequent association with myocardial ischemia.
- ❖ For all patients with presumed cardiac chest pain, complete the Chest Pain/STEMI checklist and transfer paperwork with patient.

EMR CARE

- A. Place patient in position of comfort.
- B. Administer supplemental oxygen via nasal cannula at 4 liters/minute.
- C. Give patient 4 (81 mg each) chewable baby aspirin (ASA) if the patient has not already taken ASA today and has no allergies to ASA or NSAIDS.

EMT CARE

- D. Consider additional oxygen by mask if the patient is in respiratory distress, has an irregular pulse, a decreased level of consciousness or oxygen saturation of $<90\%$.
- E. Monitor Oxygen saturation.
- F. EMT-Basics may assist a patient with his/her own nitroglycerin under the following circumstances:
 1. The Nitroglycerin is prescribed to the patient by his/her own doctor. The Basic **cannot** give a patient Nitroglycerin from the ambulance supply.
 2. The patient has taken less than 3 Nitroglycerin with this episode of chest pain.
 3. The patient is conscious and alert
 4. Blood pressure must be >100 systolic.If the chest pain persists and the above circumstances do not change, the EMT may assist the patient with up to a total of 3 Nitroglycerin.
- G. If patient is unstable, or having persistent pain suspicious for acute coronary syndrome, call for intermediate backup.
- H. If available, run 12-lead ECG strip for intercepting EMS unit or transmit to OLMC if so equipped.

AEMT/EMT-I/RN CARE

- I. IV, Balanced Salt Solution TKO or saline lock.
- J. Cardiac Monitor
- K. For agencies with capability, perform 12-lead ECG.
(Target is within 5 minutes of patient contact).
- L. If machine reads:

*****ACUTE MYOCARDIAL INFARCTION*****

or

*****MEETS ST ELEVATION MI CRITERIA*****

Activate Lifelight to initiate STEMI treatment. Consultation with OLMC is not required.

If still suspicious for MI, but EKG does not confirm, contact OLMC, speak directly with on duty physician and relay:

1. Leads with elevation
2. mm of elevation

CHEST PAIN (Continued)

3. Fax or email EKG to OLMC if possible.
 4. If estimated transport time to closest medical facility exceeds 30 minutes, or if directed by OLMC, arrange for intercept with aeromedical transport.
 5. Complete the STEMI checklist.
- M. Check bilateral B/P if suspected dissecting aortic aneurysm.
- N. Nitroglycerin 0.4 mg SL q 5 min PRN NTE 3 doses as long as systolic B/P > 100 *and no history of erectile dysfunction meds in last 48 hours*.
1. Observe the patient closely for hypotension.
 2. If IV attempt is unsuccessful, admin. NTG SL then reattempt IV.
 3. If hemodynamically unstable an IO may be considered.
 4. If systolic B/P remains > 100 and chest pain continues, administer additional doses of nitroglycerin 0.4mg SL^{1,2}
 5. If the chest pain resolves with SL NTG, but SBP remains > 160 mm Hg and/or the DBP is > 100 mm Hg, consider application of 1” of nitropaste to ACW (anterior chest wall).
- O. Morphine: 1 - 2 mg every 5 minutes NMT 10 mg IV/IO for ischemic chest pain relief if systolic B/P remains > 100.

PARAMEDIC CARE

- P. ST segment elevation greater than 1 mm in two or more contiguous leads:

| | | | |
|-----------------|-----------------|----------------------------|----------------------------|
| I
Lateral | aVR
?LMCA | V ₁
Septal | V ₄
Anterior |
| II
Inferior | aVL
Lateral | V ₂
Septal | V ₅
Lateral |
| III
Inferior | aVF
Inferior | V ₃
Anterior | V ₆
Lateral |

Activate Lifeflight to initiate STEMI treatment. Consultation with OLMC is not required.

- A. If Lifeflight is unavailable transport to local ER.
- B. If no ST segment elevation or unable to determine, continue to treat per chest pain protocol and transport to local ER.
- C. Consultation of OLMC ED physician may be utilized at any time if STEMI is a consideration.
- D. If patient is allergic to MS consider equal amount Nubain or 25 – 50 mcg Fentanyl IV/IO.
- E. For hypotension/cardiogenic shock, see Shock protocol

Pediatric Patients:

- Consider Trauma or pleuritic causes
- Contact OLMC for advice if severe pain

¹ Nitroglycerin is indicated for the patient suspected to have cardiac chest pain. If the patient has chest wall tenderness (pain with palpation), or pain with inspiration or expiration (suspicious of chest wall or lung pain), consider not administering Nitroglycerin.

² Nitroglycerin may be given a total of three times at 3-5 minute intervals as long as the B/P remains > 100, determined by obtaining vital signs after each administration.

CEREBROVASCULAR ACCIDENT (CVA)

NOTE:

- ❖ Cerebrovascular accidents (CVA or stroke) are relatively common neurovascular events, which can present with a range of neurologic signs and symptoms.

EMR CARE

- A. Perform primary survey.
- B. If patient has altered mental status, treat per Altered Mental Status Protocol.
- C. Protect airway, as loss of gag reflex is common. If LOC is decreased and injuries don't contraindicate it, place patient on his/her side in the recovery position. If LOC is not decreased, patient can be kept in a seated position. Avoid laying patient flat if possible since this may increase risk of aspiration. Suction as required.
- D. Administer oxygen per nasal cannula 2-4 L/min. Titrate to oxygen saturation > 94%.
- E. Assist ventilation as necessary.
- F. Maintain verbal contact and be reassuring. Although the patient may not be answering, or may appear confused, he/she may comprehend what is happening.
- G. Protect affected limbs from injury.
- H. Allow patient to seek position of comfort.

EMT CARE

- I. Check blood glucose via finger stick. If BG level is <60, treat per Diabetic Emergency protocol. Avoid inducing hyperglycemia as this may worsen injury to brain.
- J. Note and document changes in the patient's level of consciousness and vital signs.
- K. Try to ascertain the time of acute change in neurologic changes.
- L. Perform Cincinnati Prehospital Stroke Screen by assessing:
 - 1. Facial Droop
 - 2. Arm Drift
 - 3. Abnormal Speech
- M. Complete **Thrombolytic Checklist**. (See next page).
- N. If event is less than 3 hours old and a significant event, e.g., hemiparesis, aphasia, then rapid code 3 transport to hospital. If transport time is likely to be over 30 minutes, consider calling for aeromedical transport.
- O. Transport patient with head of bed elevated approximately 30° to prevent aspiration.

AEMT/EMT-I/RN CARE

- O. Start an IV of BSS, TKO or saline lock.
- P. Monitor cardiac rhythm.

PARAMEDIC CARE

- Q. Administer 100 mg Thiamine IM/IV/IO if history or presentation indicates either a history of ETOH abuse or malnutrition.

CVA - 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: _____

DIABETIC EMERGENCIES

NOTE:

- ❖ The EMT should check a blood glucose (BGL) analysis before beginning treatment if time and condition of patient allows.
- ❖ If the EMT is unable to determine whether or not the patient is hypo or hyperglycemic, the hypoglycemia protocol should be followed.
- ❖ Recent research suggests that hyperglycemia may complicate or worsen a number of medical conditions (i.e., myocardial infarction, stroke)

EMR CARE

- Administer oxygen 2 - 4 L/min via nasal cannula, increasing delivery as appropriate.
- If the patient is unconscious but does not require aggressive airway care or ventilation during transport, place him/her in the recovery position; on side, knees drawn up, opposite arm under head. If the patient is conscious, transport in position of comfort.

EMT CARE

- Check the patient's blood glucose level via finger stick.

I. HYPOGLYCEMIA --TREATMENT (BGL < 60)

- If the patient is fully conscious, give oral glucose.

AEMT/EMT-I/RN CARE

- Start a large bore IV, saline lock.
- If the patient has a BGL < 60 administer D₅₀ (50 ml)¹ over 2-3 minutes in a patent, free flowing IV. **Precautions:** Extravasation of dextrose 50% will cause necrosis of tissue.
- If the patient's condition does not improve, or improves but he/she does not become fully conscious, the dextrose may be repeated after 10 minutes if a second glucose level test shows the patient to be hypoglycemic.
- If an IV cannot be established, administer 1 mg Glucagon IM/SC for adults and children weighing over 20 kg (44 lbs.).
- Treat other medical/trauma conditions per protocol.

Pediatric Dosage:

- ❖ **Newborn: Dilute to dextrose 12.5% (0.125 g/mL); give 4 to 8 ml/kg.**
- ❖ **Age > 1 year: Dilute to dextrose 25% (0.25 g/mL); give 2 ml/kg.**

PARAMEDIC CARE

- Dextrose may precipitate Wernicke's encephalopathy in Thiamine deficiency patients. Administer 100 mg Thiamine IM/IV if history or presentation indicates either ETOH abuse or malnutrition.

NOTE:

- ❖ Once treated at the scene, the patient may not wish to be transported. The patient should be encouraged to allow ambulance transport, and if refused, should be encouraged to go to the emergency room or see their private physician. Document well.

¹See Dextrose Medication sheet for alternative dosing of D5 or D10 dextrose solutions

DIABETIC EMERGENCIES
(continued)

I. **HYPERGLYCEMIA--TREATMENT (BGL >300 AND SYMPTOMATIC)**

~~~~~**AEMT/EMT-I/RN CARE**~~~~~

- A. Start a large bore IV, balanced salt solution TKO. If B/P is < 90 mm/hg, systolic give 500 ml fluid challenge.
- B. Treat other medical/trauma conditions per protocol

~~~~~**PARAMEDIC CARE**~~~~~

- C. If BGL is > 300 and there is no evidence of pulmonary edema, consider a fluid bolus.

DROWNING/SUBMERSION

- I. History
 - A. Always consider head or neck injury.
 - B. How long was patient submerged?
 - C. Approximate water temperature?
 - D. Associated Trauma. Did patient jump or dive?
 - E. Pertinent medical history
 - 1. Seizure
 - 2. MI
 - 3. Diabetes
 - 4. Other
 - F. Was incident SCUBA involved?
- II. Physical Exam
 - A. Vital signs. (If absent see Cardiac Arrest Protocol)
 - B. Temperature to monitor for Hypothermia
 - C. Breathing
 - 1. Respiratory distress - tachypnea, increased work of breathing
 - 2. Initial presence of crackles as sign of pulmonary edema
 - 3. Ronchi as sign of aspiration
 - 4. Monitor for changes during transport.
 - D. Head or neck injury
 - E. Neurologic Status: Record and monitor mental status continuously.

III. Treatment

EMR CARE

- A. Clear airway
- B. Unknown or traumatic event; stabilize neck prior to removing patient from water.
- C. If conscious and no respiratory distress administer high flow oxygen.
- D. If unconscious or respiratory distress perform positive pressure ventilation and prepare to aggressively suction
- E. If patient is in cardiac arrest see Cardiac Arrest Protocol
- F. Treat shock per Shock Protocol.
- G. Treat hypothermia per Environmental Emergencies Protocol

EMT CARE

- H. If unconscious consider use of PEAD.
- I. If patient is conscious and in severe distress, consider CPAP.

AEMT/EMT-I/RN CARE

- J. Establish large bore IV, 2 if possible.
- K. Place monitor for ECG.
- L. Treat dysrhythmia per ACLS Dysrhythmia Protocol

PARAMEDIC CARE

- M. Consider use of RSI protocol for intubation.
- N. If patient is intubated place nasal gastric tube per protocol
- O. For prolonged submersion, contact OLMC to consider termination of resuscitation

ENVIRONMENTAL EMERGENCIES

I. COLD INJURIES

A. Frostbite

1. Do not rub affected areas
2. Protect frostbitten areas from further damage.
3. Do not allow re-warming of affected tissue if there is any chance for refreezing. Major extremity frostbite should be re-warmed only at the hospital.

B. Hypothermia

NOTE:

- ❖ The severely hypothermic patient must be handled very gently.

EMR/EMT CARE

1. Perform primary survey and include temperature assessment if possible.
2. Alternative methods for determining respiratory status may be needed, such as holding polished metal or glass under the nostrils.
3. Monitor patient for 60 seconds before determining pulselessness.
4. Provide supplemental oxygen via non-rebreather mask or assisted ventilations.
5. Patient may appear to be lifeless and a pulse may not be felt. If ALS personnel are immediately available, establish EKG monitoring before beginning chest compressions. Support ventilation as necessary.
6. Begin passive external re-warming.
 - b. Remove wet clothing.
 - c. Dry the patient well.
 - d. Wrap patient in warm, dry blankets.
 - e. Give warmed humidified oxygen by mask if available.

AEMT/EMT-I/RN CARE

7. Start IV/IO of balanced salt solution and run wide open unless pulmonary edema is present.

PARAMEDIC CARE

8. Intubate only if LOC is decreased with GCS \leq 8. **Perform intubation gently.**
9. If body temperature is 86-92:
 - a. Follow ALS protocols
 - b. Do not repeat medication.
10. If body temperature is $<$ 86:
 - a. Intubate gently.
 - b. Follow ALS protocols.
 - c. Do not use drugs.
 - d. Begin CPR only if no organized rhythm.
 - e. Defibrillate only 3 times at 200 Joules biphasic, 360 Joules monophasic.

ENVIRONMENTAL EMERGENCIES (continued)

II. HEAT INJURIES

A. Heat Exhaustion/Heat Cramps

EMR/EMT CARE

1. Perform primary survey and include temperature assessment if possible.
2. Move patient to cool environment. Remove excess clothing, apply cool compress to extremities and forehead. Open windows, fan patient, etc. Do not cool the patient to the point of shivering.
3. Give cool liquids orally if the patient is fully conscious and alert.

AEMT/EMT-I/RN/EMT-P CARE

4. Apply cardiac monitor.
5. If patient is unable to take liquids orally or if signs of shock are present, start IV of balanced salt solution and run wide open. Monitor the patient for signs of pulmonary edema.

Firefighter Dehydration in the field treatment:

A firefighter who becomes dehydrated in the field may be administered up to 2 liter Normal Saline intravenously while vitals, LOC, cardiac monitoring and temperature are monitored. If no improvement is noted, transport immediately. If the patient remains stable, they are to be seen in the hospital emergency room for evaluation as soon as time permits.

B. Heat Stroke

EMR/EMT CARE

1. Perform primary survey and include a temperature assessment if possible.
2. Manage airway as needed. Give oxygen by mask; increase oxygen if indicated by patient's respiratory status or SaO₂. Manual ventilation if indicated.
3. Move patient to cool environment. Remove excess clothing. Begin aggressive cooling measures including covering the patient with wet sheets, utilizing fans or open windows to circulate air and applying wrapped cold packs to axilla and groin.
4. If unconscious, treat per *Altered Mental Status* Protocol.

AEMT/EMT-I/RN CARE

5. Apply cardiac monitor.
6. Start IV/IO of Balanced Salt Solution.

PARAMEDIC CARE

7. Treat seizures as per the seizure protocol.

FRACTURES AND DISLOCATIONS

NOTE:

- ❖ Patient may have fracture without loss of function.
- ❖ At a multiple injury scene, fractures have low priority
- ❖ Do not give narcotic pain medications to trauma patients with head or abdominal injuries.
- ❖ Pelvic fractures may be associated with severe shock

- I. History:
 - A. History of trauma
 - B. Mechanism of injury
 - C. Time of last oral intake.
- II. Physical Findings:
 - A. Localized pain, tenderness
 - B. Swelling, discoloration
 - C. Angulation, deep lacerations, exposed bone fragments
 - D. Crepitus
 - E. Loss of function, limitation of motion, guarding
 - F. Quality of distal pulses, sensation and motion

EMR/EMT CARE

- A. Assure airway, breathing, circulation, control hemorrhage
- B. Vital signs
- C. C-spine precautions.
- D. Check distal neuro/vascular status
- E. Splint
 1. Axial stabilization as needed
 2. Splint joint above and below fracture
 3. Splint where it lays unless compromised neuro or vascular status, then move to anatomical position.

AEMT/EMT-I/RN CARE

- F. Establish large bore IV, two (2) if possible.
- G. Consider pain medication per Pain Protocol.

PARAMEDIC CARE

- H. Consider pain medication per Pain Protocol.

PEDIATRIC CONSIDERATIONS:

1. Small children may require extra padding under the shoulders.
2. Fentanyl dose for children***:
 - a. < 40 kg: initial dose 1 mcg/kg, repeat with 0.5-1 mcg/kg every 3-5 minutes, NMT 4 mcg/kg.
 - b. > 40 kg use adult dosing.

***= Paramedic

GYNECOLOGICAL EMERGENCIES

NOTE:

- ❖ Gynecological emergencies described here are limited to those not involving pregnancy or childbirth.
- ❖ Refer to Obstetric protocols for emergencies involving pregnancy/childbirth.

I. Rape

- A. No need to examine, especially the vagina.
- B. Be sensitive to patients' fears; have female present if possible during treatment and transport.
- C. Don't allow the patient to wash, douche or go to the bathroom
- D. Transport gently and quietly unless patient's injuries indicate the need for more aggressive care.
- E. The EMT doesn't need to investigate the incident; limit questioning to that needed to determine your course of treatment.
- F. DOCUMENT WELL WHAT IS SAID AND WHAT IS SEEN.

II. Vaginal bleeding (other than during pregnancy/childbirth)

- A. Treat for shock/potential shock if indicated. (See **Shock** protocol.)
- B. Treatment may include oxygen, and IV therapy. (See **Shock** protocol.)
- C. Do not insert anything into the vagina; pads may be applied to the vaginal opening to absorb blood.
- D. Be sure and ask the patient about the possibility of being pregnant.

HEREDITARY ANGIOEDEMA

NOTE:

- ❖ Hereditary Angioedema (HAE) is a rare but potentially life threatening condition
- ❖ This protocol applies only to patients who have known diagnosis of HAE and have a supply of ecallantide (Kalbitor) in their possession that can be administered by EMT-P.

I. Background:

- A. HAE is a hereditary condition caused by low levels of the plasma protein C-1 inhibitor (C1-INH).
- B. Deficiencies of C1-INH allow unchecked activation of biochemical systems including the classic complement pathway and plasma kallikrein. This results in recurrent episodes of swelling in the hands, feet, face, gastrointestinal tract, genitals and larynx (throat) that can last from two to five days.
- C. Symptoms of potentially life-threatening HAE attacks include:
 1. Dizziness or fainting
 2. Hoarse voice or laryngitis
 3. Throat swelling
 4. Lip, tongue or facial swelling
 5. Shortness of breath
 6. Whistling or wheezing when breathing
- D. These symptoms do not respond to medications such as benadryl, epinephrine or steroids that are used to treat allergic angioedema.
- E. Medications used to treat these attacks involve administration of C1-INH concentrate (Berinert) or blockage of kallikrein.
- F. Ecallantide (Kalbitor) is a kallikrein inhibitor that can be effective in treating life threatening HAE. Potentially serious hypersensitivity reactions, including anaphylaxis have occurred in 3% of patients treated with ecallantide. These reactions occurred within the first hour after dosing. Symptoms of serious reaction may include chest discomfort, flushing, pharyngeal edema, pruritus, rhinorrhea, sneezing, nasal congestion, throat irritation, urticaria, wheezing and hypotension. Other reactions include pruritus (5%), rash (3%) and urticaria (2%).

II. Prehospital care of patients with HAE involves monitoring and emergent management of acute airway obstruction.

EMR/EMT/AEMT/EMT-I/RN CARE

- A. If evidence of airway compromise, follow AIRWAY PROTOCOL.
- B. Monitor vital signs and oxygen saturation.
- C. Transport immediately to closest medical facility
- D. Consider Paramedic intercept for unstable patient or prolonged patient transport times (>30 minutes)

PARAMEDIC CARE

- E. If patient has signs & symptoms of laryngeal edema, administer ecallantide (Kalbitor)
 1. Three 10 mg (1 mL) subcutaneous injections should be given a minimum of 2" apart, in non-effected area - eg. thigh, arm, abdomen
- F. Monitor closely for signs of anaphylaxis or serious allergic reaction to ecallantide.
- G. If allergic reaction to ecallantide is noted, follow ALLERGIC REACTIONS protocol.
- H. Transport to closest medical facility to monitor for signs of serious allergic reaction

HYPERTENSIVE EMERGENCY OR CRISIS

NOTE:

- ❖ Hypertensive emergency or crisis is defined as hypertension in conjunction with end organ injury, such as pulmonary edema, neurologic deficit, chest pain, or coma.
- ❖ Rapid lowering of the blood pressure is not indicated and may in some cases be harmful
- ❖ Treatment is aimed at producing moderate decrease in BP, not in normalizing BP

I. General Care

~~~~~ **EMR/EMT CARE** ~~~~~

- A. Administer oxygen via nasal cannula at 4 liters per minute.
- B. Increase oxygen delivery if patient has respiratory distress, decreased level of consciousness, irregular pulse, or if  $\text{SaO}_2 \leq 90$ .
- C. Transport patient with the head elevated.
- D. If patient has chest pain, follow Chest Pain Protocol
- E. If patient has neurologic deficits, follow CVA Protocol
- F. If patient is short of breath, follow Respiratory Emergencies Protocol

~~~~~ **AEMT/EMT-I/RN/EMT-P CARE** ~~~~~

- F. Cardiac Monitor
- G. IV, BSS TKO or initiate a saline lock

HYPERTENSIVE EMERGENCY/AUTONOMIC DYSREFLEXIA (AD)

NOTE:

- ❖ Autonomic dysreflexia is an acute, life-threatening syndrome of uncontrolled sympathetic discharge that occurs in patients with spinal cord injury at T6 or higher.
- ❖ This results in increased blood pressure, often accompanied by severe headache
- ❖ AD is under-recognized and difficult to treat even in a hospital setting.

II. Autonomic dysreflexia (AD)

A. Common causes:

1. Bladder - distended, spasming, UTI, stones, urinary catheter insertion
2. Bowel - constipation, fecal impaction, gaseous distension, rectal irritation
3. Skin - ingrown toenail, burns, pressure area, tight clothing
4. Other - any irritating stimulus, i.e.. fracture, menstrual cramping, intercourse, labor

B. Common Signs and Symptoms:

1. Sudden hypertension (20 - 40 mmHg increase above patients normal BP)
2. Headache
3. Bradycardia
4. Flushing/blotching of skin above the spinal injury level
5. Profuse sweating above the spinal injury level
6. Chills without fever
7. Nasal congestion
8. Blurred vision (2° dilatation of pupils)
9. Shortness of breath, sense of apprehension or anxiety
10. Irritability or combative behavior (especially in patients with impaired cognitive or communication skills).

EMR/EMT CARE

- A. Ask patient or caregiver if they suspect a cause.
- B. Elevate patients head and lower legs. Keep head elevated while moving to cot.
- C. Loosen any constrictive clothing such as an abdominal binder or compressive stocking.
- D. Check urinary catheter for kinks, plugs or overfull bag.
- E. Monitor BP every 5 minutes.
- F. Apply oxygen as needed.
- G. Avoid pressing over the bladder.
- H. Transport patient to nearest hospital.

AEMT/EMT-I/RN/EMT-P CARE

- I. Cardiac Monitor
- J. IV, BSS TKO or initiate a saline lock.
- K. If SBP > 150 with above measures, apply 1” of nitropaste to ACW (anterior chest wall).
- L. Continue to monitor BP frequently.

NAUSEA / VOMITING

EMR/EMT CARE

- A. Protect patients airway at all times.
- B. Administer Oxygen PRN.
- C. Have suction ready and available
- D. If possible, place patient in position of comfort.
- E. If patient is on back board, roll patient and backboard onto side.
- F. Monitor vital signs as possible.

AEMT/EMT-I/RN CARE

- A. Consider IV, BSS TKO or saline lock.
- B. Administer anti-emetic:
 1. Zofran (ondansetron):
4 mg IM or slow IV over 2 min or
4 mg Zofran (odt) quick dissolving tablet placed on tongue.
Repeat in 15 min if no relief.

PARAMEDIC CARE

If no relief of nausea after 10-15 min. may administer:

2. Phenergan (Promethazine)
12.5 – 25 mg IV (on average adult)
6.25 mg for adults > 60 YO

NOTE: Before administering Phenergan IV, hang NS bag and slowly administer through tubing port farthest from IV site with the IV free flowing.

PEDIATRIC DOSAGES:

**Ondansetron (Zofran)

1. If ≥ 2 years of age
4 mg ondansetron (Zofran) orally dissolving tablet or
2. If < 2 months of age
0.1 mg IV/IO/IM to max dose of 4 mg

**Intermediate/RN/Paramedic

NEUROLOGICAL TRAUMA

NOTE:

- ❖ This protocol covers the usual considerations in management of the known or suspected head or spinal injury patient and is to be used in conjunction with other applicable Trauma Protocols.
- ❖ Most neurologic trauma is associated with other system trauma and should be assessed and managed in light of all known or suspected injuries.
- ❖ **Assume that all head injuries have associated spinal injuries** and stabilize appropriately prior to transport.
- ❖ Hypotension in a closed head injury should be assumed to have another cause. Remember that spinal injuries can result in hypotension when no obvious source of bleeding is found.

- I. Management strategy:
- A. ABC's with spinal stabilization
 - B. Neurologic assessment (GCS or AVPU)
 - C. Prevent or reduce increasing intracranial pressure
 - D. Prevent further spinal cord injury

EMR CARE

- A. Evaluate ABC's and start Oxygen therapy. Consider assisting ventilation's with BVM.
 1. Follow Respiratory and Trauma Protocols as indicated. Do not hyperventilate patient.
- B. Maintain spinal precautions.
 1. Maintain manual stabilization of the neck while the torso is secured to the board **BEFORE** securing the head.
 2. Transport using a backboard along with an extrication collar, head stabilizers and tape, ties or straps to maintain axial control of spinal column.
 3. Always use padded backboard or vacuum mattress to prevent pressure ulcerations.
- C. All neurological trauma patients should be evaluated using GCS or AVPU at 5 minute intervals.

EMT CARE

- D. If unable to maintain airway, consider PEAD placement.

AEMT/EMT-I/RN CARE

- E. Start two large bore (#14 or 16) IV's/IO's enroute, BSS.¹
- F. Give fluid resuscitation, if indicated, in challenges of 20 ml/kg for children or 500 cc for adults²
- G. Titrate fluid to systolic B/P of 100 and improved skin signs.³

PARAMEDIC CARE

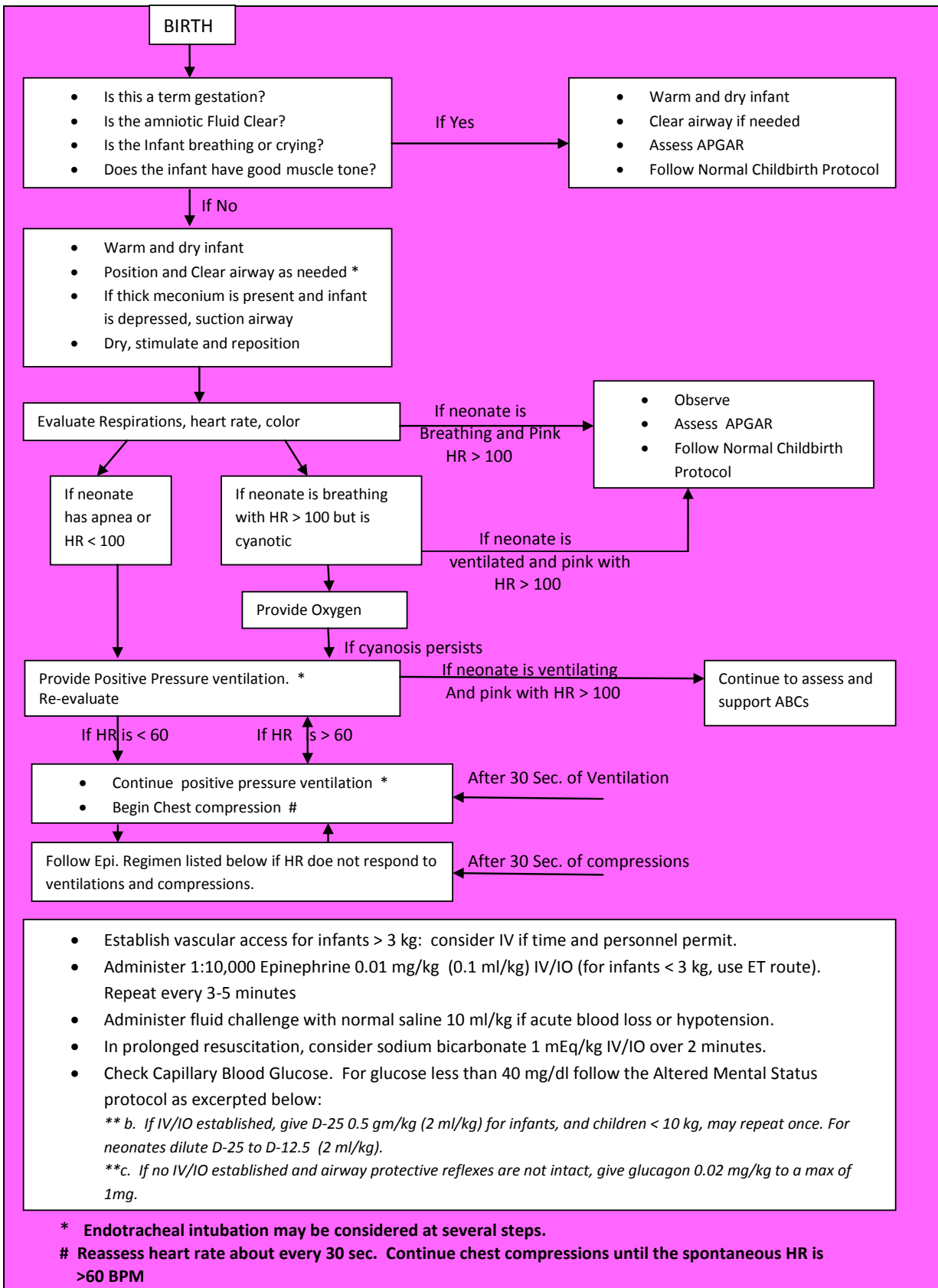
- H. Consider intubation if unable to protect airway.

¹ More than two IV's can be established if the patient is in shock and ABC's are being taken care of. Do not delay transport to start IV's.

² Maximum fluid resuscitation is 60cc/kg unless physician order to exceed that amount is received.

³ Some patients may need a higher systolic B/P than 100mHg to improve their status.

NEONATAL RESUSCITATION



NEONATAL RESUSCITATION

-Continued-

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.

- With all infants who have passed meconium, as soon as the baby's head is delivered (before delivery of the shoulders), using a 10 fr. Or larger suction catheter, suction the mouth, pharynx and nose.
- After delivery, proceed with intubation for all infants who are depressed and have passed meconium or any infant passing thick, particulate meconium.
 - Check blood glucose and follow **Altered Mental Status** protocol.
 - Procedure:
 - ☒ * Suction the mouth, nose and posterior pharynx, using a 10 fr. Or larger catheter hooked to machine suction, when the head is delivered and again after the rest of the infant has been delivered.
 - ☒ *** 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.
 - ☒ Suctioning should not last more than 3 to 5 seconds.
- 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.

* = Basic, Intermediate, RN *** = Paramedic

OBSTETRIC EMERGENCIES

NOTE:

- ❖ Obstetric emergencies are those, which are directly related to pregnancy, labor and immediate postpartum care.
- ❖ External perineal exam should be performed when appropriate, but no vaginal exam should be performed.

HISTORY:

- A. Estimated gestational age (EGA)
- B. Estimated due date. (EDC)
- C. Last menstrual period (LMP)
- D. Previous pregnancies (gravida x).
- E. Number of births, include any fetus carried longer than 20 weeks, even if "born dead" (para x, includes each of twins, triplets, etc.)
- F. If previous births, were they natural births or C-sections?
- G. Were there any complications with previous pregnancies or deliveries?
- H. If currently under medical care and by whom.
- I. When did she last see her physician?
- J. Any known problems with this pregnancy.
- K. Any recent trauma.
- L. Last oral intake

I. NORMAL CHILDBIRTH

NOTE:

- ❖ Labor and delivery is rarely an event requiring active intervention by EMS personnel. Calm, supportive care is usually all that is required.

EMR CARE

- A. Place patient in L. lateral decubitus position
- B. Administer Oxygen

EMT CARE

- C. Use sterile or clean technique
- D. If the patient is about to deliver, remove clothing from the mother's lower body.
- E. The EMT should wear eye protection and sterile gloves.
- F. Place a sterile sheet under the patient's buttocks with patient in semi-fowler's position.
- G. Delivery may be considered imminent if contractions are consistent and < 2 minutes apart, the mother feels a need to move her bowels, or if crowning is occurring. If the mother says the baby is coming, believe her.
- H. Guide and control, but do not retard or hurry delivery.
- I. When head is delivered, check for cord around baby's neck, and gently remove if found.
- J. Suction mouth, then nose, with bulb syringe after head is delivered.
- K. When body is delivered, keep infant level with perineum.
- L. Clamp and cut umbilical cord.
- M. Assess and treat ABC's. Follow Neonatal Resuscitation Protocol if indicated.
- N. Dry infant with sterile towel. If child does not need treatment, place next to skin on mother's chest for transport. Cover both with a clean, dry blanket to maintain warmth.
- O. Document APGAR findings at time of birth and five minutes later.
- P. Gently massage mothers' lower abdomen to encourage uterine contraction and prevent excessive bleeding.

**OBSTETRIC EMERGENCIES
(Continued)**

APGAR Scoring

| Score | 0 | 1 | 2 |
|----------------------|-------------|-----------------------------|-----------------|
| Appearance: | Blue, pale | Body pink, extremities blue | Completely pink |
| Pulse: | Absent | Slow (< 100) | ≥ 100 |
| Grimace: | No response | Grimace | Cough or sneeze |
| Activity: | Limp | Some flexion of extremities | Active motion |
| Respirations: | Absent | Slow, irregular | Good, crying |

~~~~~ **AEMT/EMT-I/RN CARE** ~~~~~

- Q. Establish IV, BSS, TKO.
- R. Treat mother for shock per shock protocol
- S. Place monitor
- T. Monitor for signs of eclampsia and treat per Eclampsia protocol

~~~~~ **PARAMEDIC CARE** ~~~~~

- U. If bleeding is heavy to moderate give 500 ml fluid challenge
- V. If bleeding is severe, and mother shows signs of shock, consider
 - 1. Oxytocin - Dose: 10 USP units (20 mg) IM.
- W. Transport
 - 1. Monitor vital signs of mother and infant en route.
 - 2. Do not delay transport to deliver the placenta.

II. ABNORMAL CHILDBIRTH

~~~~~ **EMT CARE** ~~~~~

- A. GENERAL
  - 1. Transport immediately.
  - 2. Administer high flow Oxygen to the mother.
  - 3. Elevate the mother's hips or place her in a knee-chest position for transport.
  - 4. Contact OLMC for advice.
- B. PROLAPSED CORD:
  - 1. With a gloved hand, gently push the baby up the vagina enough to relieve the pressure the baby's head exerts on the cord.
  - 2. **DO NOT ATTEMPT TO PUSH THE CORD BACK**
  - 3. Assess for the presence of pulse in the umbilical cord.
  - 4. Cover the exposed cord with a moist dressing.

(continued on next page)

## **OBSTETRIC EMERGENCIES** **(cont'd)**

### **C. BREECH PRESENTATION (buttocks first)**

1. 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.
2. As the body delivers, the head may become lodged in the cervical opening. If the head does not deliver within 1-2 minutes of the body being delivered, the EMT should insert two fingers of a gloved hand into the vaginal opening, providing an airway for the baby.
3. Transport in the knee chest position or with hips elevated.
4. Notify the hospital as early as possible.

### **D. LIMB PRESENTATION**

1. A limb presentation is an indication for immediate transport to the hospital. Delivery should not be attempted in the field.
2. Place the mother in knee-chest position or with hips elevated.

## **III. COMPLICATIONS NOT ASSOCIATED WITH DELIVERY**

### **A. VAGINAL BLEEDING DURING PREGNANCY**

1. Treat for shock as needed
2. Transport patient in a position of comfort (if treatment needs don't contraindicate) or on her left side with her knees bent.
3. Use trauma pads to absorb the bleeding, but do not place anything inside the vagina.
4. Evaluate for potential emergency delivery

### **B. PLACENTA PREVIA**

1. Definition: The placenta is implanted on the uterine wall near or covering the opening (os) of the uterus
2. Presentation:
  - a. May not be painful
  - b. May cause severe vaginal bleeding, but the blood may be contained inside the uterus.
3. Treatment:
  - a. Treat for shock as needed.
  - b. Transport patient in a position of comfort if treatment needs don't contraindicate or on her left side with her knees bent.
  - c. Use trauma pads to absorb bleeding, but do not place anything inside the vagina.

### **C. ABRUPTIO PLACENTA**

1. Definition: The placenta tears away from the wall of the uterus
2. Presentation:
  - a. Abdominal pain
  - b. May cause severe vaginal bleeding, but the blood may be contained inside the uterus.
3. Treatment:
  - a. Treat for shock as needed.
  - b. Transport patient in a position of comfort if treatment needs don't contraindicate or on her left side with her knees bent.
  - c. Use trauma pads to absorb bleeding, but do not place anything inside the vagina.

(continued on next page)



## OBSTETRIC EMERGENCIES

-Continued-

### D. ECTOPIC PREGNANCY:

1. Definition: Attachment of the fertilized egg is outside of the uterus. This may be in the fallopian tubes, the ovaries or the pelvic cavity.
2. Presentation:
  - a. Abdominal pain
  - b. Vaginal bleeding (may or may not be present)
  - c. Shock may occur if ruptured
  - d. Usually occurs in 1st trimester, and patient may not be aware of pregnancy
3. Treatment:
  - a. Oxygen, cardiac monitor and emergency transport
  - b. Treat for shock as needed.
  - c. Use trauma pads to absorb bleeding, but do not place anything inside the vagina

### E. SPONTANEOUS ABORTION:

1. Definition: Expulsion of the products of conception from the uterus before the fetus is viable.
2. Presentation:
  - a. Abdominal pain
  - b. Vaginal bleeding
  - c. Shock may occur if ruptured
3. Treatment:
  - a. Oxygen, cardiac monitor and emergency transport
  - b. Treat for shock as needed.
  - c. Use trauma pads to absorb the bleeding, but do not place anything inside the vagina.
4. Transport any fetal tissue to the hospital with mother.

## IV. TRAUMA DURING PREGNANCY:

### NOTE:

- ❖ Treat the mother first. The best way to keep fetus viable is to keep mother viable.
- ❖ All pregnant trauma patients should be transported.

### A. Standard trauma care including:

1. Oxygen
2. Cardiac monitor
3. Treat for shock as indicated
4. Transport patient in a position of comfort if treatment needs don't contraindicate or on her left side with her knees bent.
5. If vaginal bleeding occurs, use trauma pads to absorb the bleeding, but do not place anything inside the vagina.
6. Evaluate for potential emergency delivery

(continued on next page)

## OBSTETRIC EMERGENCIES

-Continued-

### V. ECLAMPSIA/PRE-ECLAMPSIA

- A. Definition:
  - 1. Hypertension  $\pm$  seizures which may occur in second half of pregnancy or immediate post-partum period.
  - 2. Also known as Toxemia of Pregnancy.
- B. Presentation - may include any of following:
  - 1. Hypertension
  - 2. Edema
  - 3. Headache
  - 4. Visual disturbance
  - 5. Seizures
  - 6. Hyperreflexia
  - 7. RUQ abdominal pain
- C. Treatment:

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#### EMT CARE

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- 1. Oxygen, cardiac monitor and emergency transport
- 2. Treat for shock as needed.
- 3. An ALS crew should transport any patient having a seizure during a pregnancy. Call for intercept if available.

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#### AEMT/EMT-I/RN CARE

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- 4. Start large bore IV, two (2) if possible.
- 5. Rapid transport with early notification to OLMC

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#### PARAMEDIC CARE

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- 6. Magnesium:
  - a. Indicated in patient with seizures and hypertension in late pregnancy
  - b. 2-4 gm bolus IV/IO of 10% magnesium solution
  - c. Followed with Magnesium drip at 1gm/hour:  
Add 1gm (2ml) of Magnesium to a 250cc bag of BSS and run at 60 gtts/min through a macro drip set or a pump.
- 7. Benzodiazepines:
  - a. Indicated for:
    - i. Seizures refractory to magnesium bolus
    - ii. Patient with known seizure disorder
    - iii. Primary treatment if IV/IO access is unavailable
  - b. Versed (midazolam) 2 - 5 mg IV/IM/IO, repeat in 5 min PRN NMT 10 mg.
  - c. Ativan (lorazepam) 0.5 – 2.0 mg IV/IM slow push, repeat in 5 min NMT 4.0 mg.

## PAIN CONTROL

### NOTE:

- ❖ This protocol is aimed at controlling acute, non-cardiac pain.
- ❖ With the exception of patients who are terminally ill, patients with chronic or frequently recurring pain should not be treated with narcotics in the prehospital setting. Contact OLMC if you have questions.
- ❖ For presumed cardiac pain, see the Chest Pain Protocol.

### EMR/EMT CARE

- A. If not contraindicated, place the patient in the position of comfort.
- B. Splint and immobilize suspected fractures
- C. **Use non-pharmacological pain management whenever possible (i.e., hot/cold pack, elevation, padding, wound care, therapeutic calming and communication).**

### AEMT/EMT-I/RN CARE

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

- ❖ Respiratory distress or O<sub>2</sub> saturation of < 90%
- ❖ Known allergy to pain medications
- ❖ Altered mental status
- ❖ Systolic blood pressure of < 100 mm/Hg

- D. Have Narcan (naloxone) immediately available and be prepared to assist ventilations if respiratory depression occurs.
- E. Use reduced dosage in elderly.
- F. Determine location of pain and severity using numeric scale (1-10) or Faces scale.
- G. Obtain a full set of vital signs and pain scale rating prior to and after each administration of pain medication.
- H. Pain levels greater than 4/10 can be treated as follows
  1. Morphine 2.0 mg IV/IO/IN every 3-5 minutes titrated to pain NMT 10 mg
  2. Fentanyl (Sublimaze) 25 - 50 micrograms IV/IM/IO/IN (1 mcg/kg). Repeat with 25-50 micrograms every 3-5 minutes PRN NMT 200 micrograms.  
**CAUTION: Fentanyl is approximately 80 times more potent than morphine.**
- I. Call OLMC for approval if adequate pain control is not achieved with maximum dosage.

#### **PEDIATRIC DOSAGES:**

- A. Fentanyl (Sublimaze)  
1 microgram/kg IV/IM/IO/IN. May repeat with 0.5-1 microgram/kg every 3-5 minutes PRN NMT 4 micrograms/kg. Do not exceed adult dosing.
- B. For children under 20 kg morphine 0.1mg/kg IV/IO/IM. May repeat every 3-5 min. For children over 20 kg, refer to adult dosages. Do not exceed adult dosing.

### PARAMEDIC CARE

- J. Nubain (nalbuphine) for patients allergic to morphine or a long distance to supply. Dosage is the same as Morphine. 2.0-10 mg, IV/IO, every 5-30 minutes PRN NMT 10 mg.
- K. For isolated hip injuries and back spasms, consider a combination of 2 - 4 mg MS with 0.5-1.0 mg Ativan (lorazepam) or 1.0 - 2 mg Versed (midazolam), NMT 10 mg MS and 1.0 mg Ativan (lorazepam) or 10 mg MS and 2 mg Versed (midazolam).

## PATIENT RESTRAINT

### NOTE:

- ❖ Restraint is used to protect the safety of patients and responders.
- ❖ Patient restraint should be utilized only if the patient is exhibiting behavior that is a danger to self or others.
- ❖ These patients may include but are not limited to the following:
  1. Alcohol and drug intoxicated patients
  2. Combative, head injury patients
  3. Patients that have previously been intubated and are now combative.

### EMR/EMT/AEMT/EMT-I/RN CARE

#### I. Physical Restraint

Before applying restraints the Senior EMT must assure that there is adequate manpower available to complete the task safely. Police assistance should be available.

- A. Place patient face up on backboard, NOT PRONE. Closely monitor the patient's respiratory status.
- B. Secure ALL extremities to backboard. Try to restrain lower extremities first using flexcuffs around both ankles. Next, restrain the patient's arms at his/her sides.
- C. If necessary, utilize cervical spine precautions (tape, foam bags, etc.) to control violent head or body movements.
- D. Secure the backboard onto gurney using additional straps if necessary. Secure additional straps to the upper part of the gurney to avoid restricting the wheeled carriage.
- E. Evaluate the patient's respiratory and cardiac status to ensure that no airway compromise exists. Monitor SpO2 if possible.
- F. DO NOT tighten chest straps to the point that they restrict breathing.
- G. Once applied, physical restraints should be left in place throughout transport unless removal is necessary for patient treatment. As with application, the restraints should not be removed until there is adequate manpower available to handle the patient.

### PARAMEDIC CARE

#### II. Chemical Restraint

Sedative agents may be used to provide a safe method of restraining the violently combative patient who presents a danger to themselves or others and to prevent the violently combative patient from further injury while secured by physical restraints.

- A. Assess the possibility of using physical restraints first. Evaluate the personnel needed to safely attempt restraining the patient.
- B. Have sedative medications prepared for injection.
- C. Prepare for and frequently monitor for possible side effects including:
  1. Hypotension
  2. Respiratory depression.
- A. Titrate medication to effect:
  1. Midazolam (Versed) 2 - 10 mg IM/IV/IO/IN
  2. Lorazepam (Ativan) 0.5 – 2.0 mg IM/IV/IO, slow push NMT 4.0 mg
- B. Document time of administration and indications for chemical restraint.
- C. Establish IV if not already available.
- D. Consider and treat medical causes of combativeness (hypoxia, head injury, hypoglycemia).
- E. OLMC required for all pediatric patients.

## POISONING

### NOTE:

- ❖ Consider your personal safety! Consider patient decontamination!
- ❖ If the airway/ventilation status of the overdose patient is compromised, consider intubation early. (Paramedics see **Rapid Sequence Intubation** protocol)
- ❖ Refer to other protocols as appropriate.

### I. ASSESSMENT

- A. ABC's
- B. Determine product and route of exposure (topical, inhalation, ingestion, injection, etc.). Bring containers and/or product with patient to the hospital if possible.
- C. Establish time of incident or exposure.
- D. Determine or estimate amount of exposure or ingestion.
- E. Establish patient's medical history.
- F. Evaluate severity of patient condition and estimate potential changes.

### I. MANAGEMENT

#### A. GENERAL

1. After brief assessment, treat according to appropriate protocol (eg. Coma, Respiratory, Shock).
2. Contact OLMC or Poison Control at 1-800-222-1222.

- B. TOPICAL EXPOSURE (e.g., alkalis, acids, cyanides, hydrocarbons, caustics, pesticides).

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### EMR CARE

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### PROTECT YOURSELF, WEAR PERSONAL PROTECTIVE EQUIPMENT

1. Wash the contaminated area with large amounts of water. Dry powder agents must be brushed off before washing (see burn protocol).
2. Remove patient's clothing as appropriate **while** washing. Clean patient thoroughly; hair, ears, groin, umbilical area, fingernails, and toenails--but do not abrade skin. Continue flushing for at least 10 minutes.
3. Eyes: Flush continuously and gently with saline or water using a large pouring vessel or an IV bag and administration set for a minimum of 15 minutes. Flushing may continue during transport.
4. Persons handling contaminated patients should take appropriate precautions to protect self, such as disposable gloves, apron or turnouts.
5. Put all contaminated clothes, sheets etc., in a plastic bag, label and transport with patient.
6. Notify the receiving hospital that you are transporting a decontaminated patient. Give them as much pertinent information about the containment and exposure as possible.

**CONSIDER FURTHER INFORMATION FROM TABLE OF TOXIDROMES. Page 62**

## POISONING (Continued)

### A. INGESTION

1. Contact OLMC or Poison Control at 1-800-222-1222.

#### EMT CARE

1. ACTIVATED CHARCOAL, may be administered on the order of medical control or if advised by Poison Control.
  - a. Adults-----50gm PO
  - c. Pediatric-----1gm/kg PO NMT 50 gm

Activated charcoal is not effective in the treatment of poisoning from mineral acids, strong bases, fluoride, iron, lithium, potassium, methanol, ethanol or ethylene glycol.

#### AEMT/EMT-I/RN CARE

3. Consider starting a large bore IV if:
  - a. A large area of skin affected, start IV and treat as per burn protocol.
  - b. Organophosphates are involved, start an IV and EKG monitoring.
4. Specific antidotes:
  - a. **Opiates**: Narcan (naloxone) 0.4-2.0 mg IV/IO/IM/SQ/SL/ET Repeat per NMT 8 mg See Altered Mental Status Protocol.
  - e. **Organophosphates/Insecticides**: Atropine, IM/IV/IO
    - i. Adult dose 2.0 mg;
    - ii. Children 0.01 - 0.02 mg/kg (0.1-0.2 ml/kg).
    - iii. Repeat every 5 - 10 minutes until symptoms subside.
    - iv. Contact OLMC.

#### PARAMEDIC CARE

5. Specific antidotes (cont):
  - f. **Tricyclic Antidepressants**: Sodium bicarbonate - 1 mEq/kg IV/IO for severe arrhythmias (wide complex tachycardias).
  - g. **Nerve Agents (GA, GB, GC, GF, VX)**: Use Mark I Autoinjector Kit
    - a. Atropine 2 mg IM
    - b. Pralidoxime chloride 600 mg IM
    - c. Treat seizures with benzodiazepines per seizure protocol
  - h. **Cyanide**: Amyl Nitrite, one capsule (0.3ml) inhale for 30 seconds of every minute.

#### Pediatric Considerations:

1. Consider possibility of neglect or abuse.
- \* 2. Determine blood glucose and follow *Altered Mental Status* Protocol.
- \* 3. Activated charcoal dose is 1 gm/kg NMT 50 gm.
- \*\* 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.

\*= Basic    \*\*= Intermediate / RN    \*\*\*= Paramedic

## POISONING

### TABLE OF TOXIDROMES

**Special Precautions:**

1. Inhalation poisoning, **SLUDGE** symptoms (salivation, lacrimation, urination, defecation, gastrointestinal symptoms and emesis), or acid/alkali exposure may be dangerous to rescuers.
2. Do not attempt to neutralize acids or alkalis.

**Table 1 Toxidromes:**

| <b>Toxidrome</b>                     | <b>Examples</b>                                                                                                                           | <b>Clinical Features</b>                                                        | <b>Antidotes</b>                             |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------|
| Sympathomimetic                      | Cocaine<br>Methamphetamine                                                                                                                | Agitation<br>Diaphoresis<br>Hypertension<br>Hyperthermia<br>Tachycardia         | Benzodiazapine                               |
| Opioid                               | Heroin<br>Hydromorphone<br>Methadone<br>Oxycodone                                                                                         | Depressed Mental Status<br>Hypoventilation<br>Constricted pupils                | Naloxone (Narcan)                            |
| Cholinergic<br>(Anti-cholinesterase) | Pesticides<br>• Carbamates<br>• Organophosphates<br>Nerve agents                                                                          | Muscarinic *<br>Nicotinic **<br>Central ***<br>(see below)                      | Atropine<br>Pralidoxime<br>(HAZMAT,<br>OLMC) |
| Sedative-Hypnotic                    | Barbiturates<br>Benzodiazepines<br>GHB                                                                                                    | Depressed Mental Status<br>Hypotension<br>Hypothermia                           | Supportive Therapy<br>(NO antidote)          |
| Cardiotoxic Drugs                    | Beta-blockers<br>Calcium Channel Blockers                                                                                                 | Bradycardia<br>Conduction issues<br>Hypotension                                 | Glucagon (OLMC)<br>Calcium (OLMC)            |
| Anticholinergic                      | Atropine<br>Jimson Weed<br>Scopolamine<br>Diphenhydramine                                                                                 | Delirium<br>Hyperthermia<br>Tachycardia<br>Warm Dry Skin                        | Physostigmine<br>(ED)                        |
| Sodium Channel Blockade              | Tricyclic Antidepressants<br>Anti-arrhythmics<br>• Type 1A agents (quinidine, Procainamide)<br>• Type 1C agents (Flecainide, propafenone) | Altered Mental Status<br>Hypotension<br>Seizures<br>Wide-Complex<br>Tachycardia | Sodium Bicarbonate<br>(OLMC)                 |

*\*Muscarinic symptoms:*

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

*\*\*Nicotinic symptoms:*

Mydriasis  
Tachycardia  
Weakness  
Hypertension  
Hyperglycemia  
Fasciculations

*\*\*\*Central symptoms:*

Confusion  
Convulsions  
Coma

## RATTLESNAKE BITES

### NOTE:

- ❖ Approximately 25% of rattlesnake bites are dry bites with no envenomation.
- ❖ Most envenomations result in only localized reactions.
- ❖ Prehospital care of patients who have sustained rattlesnake envenomation is supportive.
- ❖ Although still marketed, snakebite extraction kits have been shown to be ineffective and are likely to cause harm to the patient.
- ❖ Oral suctioning of venom is not indicated and may contribute to secondary infection.
- ❖ Subjective findings may include localized pain at site of bite, metallic or rubber taste, thirst, blurry vision, weakness, dizziness or lightheadedness.

### EMR CARE

- A. STAY CALM and reassure the victim.
- B. Make sure the responsible snake(s) have been appropriately contained and out of danger of inflicting more bites.
- C. Lay patient flat and avoid excessive movements.
- D. If patient has to walk out, proceed as calmly as possible avoiding unnecessary exertion to help slow circulation of venom.
- E. Remove any tourniquets which are causing limb ischemia.
- F. Remove any constrictive clothing, jewelry or watches.
- G. Clean the wound, control bleeding and apply a clean dressing.
- H. Immobilize the bitten extremity at or below the level of the heart.
- I. Document the estimated time of envenomation.
- J. Assess the area around the bite for evidence of fang marks or localized reaction which is evidenced by edema and/or erythema. If localized reaction is visible, mark and time the proximal edge of reaction.

### EMT CARE

- K. Closely monitor vital signs and assess for hypotension.
- L. Transport immediately and rapidly.
- M. Frequently reassess area around bite for evidence of localized reaction. Mark and time edge of advancing edema/erythema if present.
- N. Call for intercept if patient is demonstrating signs of significant envenomation or shock.

### AEMT/EMT-I/RN CARE

- O. Establish IV, BSS, TKO.
- P. Place monitor.
- Q. Treat for shock per shock protocol.
- R. Treat pain as indicated.

### DO NOT:

- ❖ Incise the wound
- ❖ Apply suction if not already in place
- ❖ Apply tourniquets, ice, electricity or heat
- ❖ Attempt to catch, kill or handle live or dead snakes
- ❖ Remove previously placed devices or venous tourniquets if not causing limb ischemia



## RAPID SEQUENCE INTUBATION

### NOTE:

- ❖ RSI is to be used when the Paramedic is unable to intubate without paralytic medications because of patient trismus, combativeness or difficult airway problems due to head injury, altered mental status, OD, status epilepticus, etc.
- ❖ Contraindications to RSI include:
  - ❖ Total upper airway obstruction
  - ❖ Total loss of facial/oropharyngeal landmarks
- ❖ A surgical airway is indicated if the above contraindications exist

### PARAMEDIC CARE

#### PREOXYGENATION:

1. Administer oxygen via nasal cannula.
2. Administer 100% oxygen via nonrebreather mask for 3 - 5 minutes.
3. If possible, have patient take 8 vital capacity breaths of 100% oxygen.
4. Assist ventilation with BVM only if needed to maintain SaO<sub>2</sub> ≥ 90%.

#### PREPARATION:

1. Confirm that intubation equipment is available and functioning.
2. Have suction immediately available.
3. Establish an IV/IO and secure well.
4. Have needle cricothyrotomy equipment available.
5. Attach cardiac monitor, pulse oximetry and have capnometry in place.
6. Assess for difficult airway.
7. Consider contraindications to medications, and prepare medications for administration.

#### PROTECTION AND POSITIONING:

1. Apply cricoid pressure and/or BURP until intubation is successful and ET tube cuff is inflated.
2. Place towels under patients head or shoulders to align external auditory meatus with sternal notch

#### PRETREATMENT:

1. Consider pre-medication with the following drugs if time permits:

##### Lidocaine - to attenuate increase in ICP and airway resistance

| Adult                | Pediatric     |
|----------------------|---------------|
| 1.0 -1.5 mg/kg IV/IO | 1 mg/kg IV/IO |

##### Atropine - to prevent or treat bradycardia

| Adults with bradycardia | Pediatric <1 years old                                                             |
|-------------------------|------------------------------------------------------------------------------------|
| 0.5 mg IV/IO            | 0.02 mg/kg IV/IO (minimum dosage of 0.1 mg) given 3 min. prior to Succinylcholine. |

## RAPID SEQUENCE INTUBATION (continued)

### PARALYSIS WITH INDUCTION:

(IV/IO administration is preferred; use IM route only if IV cannot be established.)

- Administer one of the following rapidly-acting induction agents:

#### **Etomidate - preferred in trauma patients or hypotensive patients**

| Adult           | Pediatric < 6 years old |
|-----------------|-------------------------|
| 0.3 mg/kg IV/IO | Same as Adult           |

#### **Ketamine - useful in patients with bronchospasm or during pregnancy**

| Adult                       | Pediatric < 6 years old |
|-----------------------------|-------------------------|
| 2 mg/kg IV/IO<br>4 mg/kg IM | Same as Adult           |

#### **Versed - useful for elderly septic patient or patient with adrenal suppression. (Consider lower dose (0.2 mg/kg) in patients over 60 yo)**

| Adult              | Pediatric < 6 years old |
|--------------------|-------------------------|
| 0.3 mg/kg IM/IV/IO | 0.2 mg/kg IM/IV/IO      |

- Administer neuromuscular blocking agent:

#### **Succinylcholine - contraindicated in penetrating eye trauma, hyperkalemia, neuromuscular disorders or known sensitivity to succinylcholine.**

| Adult                                   | Pediatric < 6 years old               |
|-----------------------------------------|---------------------------------------|
| 1.5 mg/kg IV/IO push or<br>2.5 mg/kg IM | 2 mg/kg IV/IO push or<br>4.0 mg/kg IM |

#### **Rocuronium Bromide (zemuron) - if contraindications to succinylcholine**

| Adult                                                                 | Pediatric < 6 years old                                               |
|-----------------------------------------------------------------------|-----------------------------------------------------------------------|
| 1 mg/kg IV/IO push over 5 sec;<br>Rebolus 0.1 - 0.3 mg/kg q 20-30 min | 1 mg/kg IV/IO push over 5 sec;<br>Rebolus 0.1 - 0.3 mg/kg q 20-30 min |

### PLACEMENT WITH PROOF:

- Administer high flow O<sub>2</sub> via nasal cannula (15 L/min)
- After the fasciculation's stop, perform intubation.
- Visualize the ET tube passing through the vocal cords.
- If relaxation in 60-120 seconds is inadequate, repeat dose of neuromuscular blocking agent and reattempt intubation.
- If 2 attempts at intubation are unsuccessful, attempt to place PEAD.
- If unable to place PEAD, ventilate with BVM until spontaneous respirations return (usually 6-10 minutes).
- If unable to ventilate patient, perform cricothyrotomy. See cricothyrotomy protocol.
- Upon successful intubation, confirm ET tube placement, by 5-point auscultation and end tidal CO<sub>2</sub> detector/capnometry, and secure well.

## RAPID SEQUENCE INTUBATION (continued)

### POST-INTUBATION MANAGEMENT:

1. Monitor capnometry frequently to assess adequacy of ventilation.
  - a. Maintain CO<sub>2</sub> levels of 35 - 40 mmHG in most patients
  - b. In patients with signs of increased ICP (unilateral pupil dilatation, posturing, focal neurologic findings) maintain CO<sub>2</sub> between 30 -35.
  - c. Avoid aggressive hyperventilation!
2. Use bite block if patient becomes conscious after intubation.
3. If the patient becomes agitated or combative, treat pain with Morphine Sulfate or Fentanyl.

#### Morphine

| Adults:         | Pediatric < 6 years old |
|-----------------|-------------------------|
| 1 - 20 mg IV/IO | 0.1 – 0.2 mg/kg IV/IO   |

#### Fentanyl

| Adults:                                                                 | Pediatric < 6 years old                                |
|-------------------------------------------------------------------------|--------------------------------------------------------|
| 25 - 100 mcg (0.5-1 mcg/kg) IV/IO/IM/IN slowly over 1-2 min NMT 200 mcg | 1 - 2 mcg/kg IV/IO/IM slowly over 1-2 min NMT 4 mcg/kg |

4. If patient continues to be agitated or combative administer a sedative dose of Versed (midazolam).

#### Versed (midazolam)

| Adults:               | Pediatric < 6 years old |
|-----------------------|-------------------------|
| 0.1 – 0.2 mg/kg IV/IO | 0.1 – 0.2 mg/kg IV/IO   |

5. If patient continues to be combative despite adequate analgesia and sedation, consider paralysis with Rocuronium Bromide (zemuron) or Vecuronium (norcuron).

#### Rocuronium (zemuron)

| Adults:                             | Pediatric < 6 years old |
|-------------------------------------|-------------------------|
| Rebolus 0.1 - 0.3 mg/kg q 20-30 min | Same as Adult           |

#### Vecuronium (norcuron)

| Adults:                               | Pediatric < 6 years old |
|---------------------------------------|-------------------------|
| Rebolus 0.01 mg/kg IV/IO q 30-40 min. | Same as adult           |

## RESPIRATORY EMERGENCIES

### NOTE:

- ❖ Recognition and treatment of airway and respiratory dysfunction assumes priority over all other conditions in the initial evaluation and treatment of the patient in the field.

### EMR CARE

#### I. GENERAL

- Support the head and neck as appropriate to patient's condition. Perform head and or jaw maneuvers as required and appropriate to patient's condition to secure and maintain a patent airway.
- Supply supplemental oxygen at concentrations appropriate to the patient's condition. Use mouth-to-mask or bag-valve-mask with supplemental oxygen to ventilate patient's who are apneic or have inadequate respirations.
- Use oral or nasal airways to facilitate airway maintenance. Soft nasal airways may be lubricated with water soluble ointment.
- Suction the oropharynx as needed to remove secretions, blood and / or vomitus.

#### II. UPPER AIRWAY OBSTRUCTION (FOREIGN BODY) SEE AIRWAY PROTOCOL

- Follow current AHA guidelines for foreign body airway obstruction.

#### III. ASTHMA/BRONCHOSPASM/COPD

##### 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 in both phases |
| Accessory muscle use | Not usually            | Common                  | Usually                |
| Alertness            | Possibly agitated      | Usually agitated        | Usually agitated       |

- Transport in the most comfortable position; typically with the head elevated.
- Supplemental oxygen via nasal cannula or mask.
- The COPD patient may be sensitive to oxygen flows greater than 2-4 liters per minute. Do not withhold oxygen from any patient in respiratory distress, but if more O<sub>2</sub> is given to the COPD patient be prepared to manage respiratory depression or respiratory arrest.

### EMT CARE

- If patient is wheezing or has poor air movement, administer nebulized albuterol (1 unit dose). May repeat in 10 minutes if inadequate response. Contact OLMC for additional dosing considerations.
- If available and patient still has severe distress, consider CPAP.

## RESPIRATORY EMERGENCIES

(Continued)

### AEMT/EMT-I/RN CARE

- D. Cardiac Monitor.
- E. Medications may include:
  - 1. Duoneb (Mix Albuterol and Atrovent) for initial dose if already taking albuterol treatments.
  - 2. Epinephrine – With upper airway Stridor, consider 1-1,000 (3 mg nebulized).  
*Use with caution if patient is 50 years or older or has history of heart disease. Consider OLMC consult before administration.*

### PARAMEDIC CARE

- F. For severe COPD or moderate to severe asthma, based on the Severity Assessment, administer
  - 1. Dexamethasone 10mg IV/IO/IM/PO.
- G. If not responding to above measures, consider the following in adults:
  - 1. Epinephrine
    - 0.1 - 0.5 mg SC/IM of 1:1000 solution or
    - 0.1 - 0.25 mg IV/IO of 1:10,000 solution or
    - 1 mg ET of 1:10,000 solution

*Use with caution if patient is 50 years or older or has history of heart disease. Consider OLMC consult before administration.*

#### **Asthma Pediatric Considerations:**

- \*\*\* 1. In children 6 months to 6 yrs. With audible stridor at rest, give 3 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/IO access if possible.
- \* 4. Administer 0 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 is the same as for adults.
- \*\* 6. If needed, the second treatment may be Albuterol/Atrovent mix or Duoneb the same as adult dosage.
- 7. Consider Dexamethasone 0.6 mg/kg (NMT10mg) in patients with asthma.
- 8. For severe bronchospasm not responding to above consider:  
Epinephrine 0.01 mg/kg 1:10,000 IV/IM/IO (0.1 ml/kg).

\* = Basic    \*\* = Intermediate / RN    \*\*\* = Paramedic

## Respiratory Emergencies

-continued-

### IV. CONGESTIVE HEART FAILURE / PULMONARY EDEMA

#### EMR CARE

- A. Transport in the most comfortable position that allows appropriate treatment, typically sitting upright, possibly with feet dangling.
- B. Supplemental oxygen via nasal cannula or mask. Administer high flow oxygen via non-rebreather mask if pulmonary edema is present.
- C. Assist patients having severe breathing difficulty with BVM at 100% FIO<sub>2</sub> / 15 l/min.

#### EMT CARE

- D. If available and patient still has severe distress, start patient on CPAP and monitor breathing.

#### AEMT/EMT-I/RN CARE

- E. IV BSS TKO or Saline Lock.
- F. Cardiac ECG Monitor.
- G. In addition to above, consider:
  - 1. Nitroglycerin (Nitrostat) 0.4 mg SL q 5 min PRN NTE 3 doses.
  - 2. CPAP. (BVM assisted breathing if CPAP not available.)
  - 3. Duoneb or Albuterol (1 unit dose) nebulized if wheezing is present
  - 4. Lasix (furosemide) 40-80 mg IV/IO should be given only if SBP is > 100 and patient has signs or symptoms of volume overload:  
(eg. Recent weight gain, peripheral edema, hepatomegaly, JVD).
- H. If the above measures fail, and patient has signs of impending respiratory failure, consider PEAD.

#### PARAMEDIC CARE

- I. Administer Captopril 12.5 mg SL  
**NOTE:** Captopril may be given simultaneously with NTG.
- J. If the above measures fail, and patient has signs of impending respiratory failure, consider endotracheal intubation.

ADVANCED AIRWAY TECHNIQUES: CPAP, PEAD AND ENDOTRACHEAL INTUBATION  
See *Airway* and *Rapid Sequence Intubation* protocols.

## SEIZURES

### NOTE:

- ❖ The goal of seizure management is to identify and treat any immediately reversible causes, to prevent injury from seizure activity, and to stop prolonged seizures (status epilepticus).
- ❖ Initial history and physical assessment should identify potentially reversible causes such as:
  - ❖ Fever
  - ❖ Anoxia/hypoxia
  - ❖ Hypoglycemia (history of diabetes?)
  - ❖ Poisoning
  - ❖ Cardiac dysrhythmias
  - ❖ Toxemia in third trimester pregnancy

### EMR CARE

- A. AIRWAY, BREATHING, CIRCULATION.
- B. Protect patient from injury.
- C. Oxygen via nasal cannula or mask depending on patient's level of consciousness.

### EMT CARE

- D. Check blood glucose levels and treat if indicated.
- E. Basic care for the patient with prolonged seizures or with 2 or more seizures without a period of consciousness between (status epilepticus) is early and rapid transport to the hospital.
- F. Check temperature.

### AEMT/EMT-I/RN CARE

If seizure is persistent, recurrent, or if patient has prolonged postictal period:

- H. IV BSS TKO or Saline lock.
- I. ECG Monitor.
- J. Medications may include (depending on the etiology of the seizure):
  1. Dextrose, 25 gm IV push (obtain glucose level first if possible). (Pediatric dose is D<sub>25</sub>, 0.5 – 1.0 gm/kg). Flush the IV line after administration.
  2. Narcan (naloxone) 0.4 - 2.0 mg IV/IO/IM/SQ/SL/ET titrated to respirations and LOC NMT 8 mg. (Pediatric dose 0.1 mg/kg NMT 2 mg.)

### PARAMEDIC CARE

3. Versed (midazolam) 2 – 5 mg IV/IO/IM/IN  
May repeat in 5 min NMT 10 mg total
  4. Ativan (lorazepam), 0.5 – 2.0 IV/IO/IM slow push  
May repeat in 5 min NMT 4.0 mg total
  5. Thiamine, 100mg IV / IM before dextrose administration if patient shows signs of malnutrition or if there is a history of ETOH abuse.
- J. If status epilepticus is present, consider early intubation. If intubation is hampered by seizures that have been uncontrolled by other measures, consider rapid sequence intubation.

**NOTE:** New onset seizures in any patient needs medical evaluation.

## SEIZURES (Continued)

### Pediatric Considerations:

In pediatric patients, seizures may be caused by high fever. Febrile seizures are generally found in children between the ages of 1 & 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* protocol.
- \*\* 4. Venous access as needed.
- \*\*\* 5. Administer midazolam (Versed) 0.05- 0.1 mg/kg IV/IO to maximum initial dose of 2.5 mg. May repeat to maximum of 5 mg for seizures lasting more than 5 minutes. Ativan (Lorazepam) may be used 0.1 mg/kg IM/IV/IO. For IV/IO dilute 1:1 in NS.
- \*\*\* 6. If no IV/IO access, administer midazolam (Versed) 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.

\*= Basic    \*\*= Intermediate / RN    \*\*\*= Paramedic



## SEPSIS

- ❖ Sepsis is when a patient has an infection plus signs of end-organ hypo-perfusion.
- ❖ Early identification and aggressive fluid resuscitation can improve survival in patients with septic shock & may decrease time to administration of antibiotics in the ED
- ❖ When patient is identified as possibly septic, initiate Code Sepsis:  
Rapid treatment and transport and early notification to Emergency Department staff

See next page for special pediatric considerations

### Sepsis should be considered in patients with the following risk factors:

- ❖ Recent infection/treatment with antibiotics
- ❖ Recent hospitalization/surgery
- ❖ Conditions likely associated with chronic immunosuppression:
  - Steroid use
  - HIV/AIDS
  - Transplant
  - Cancer treatment

### Signs & symptoms which may occur with serious infection include:

- ❖ Rigors (shaking chills)
- ❖ Respiratory symptoms including coarse breath sounds.
- ❖ Abdominal pain; urinary symptoms.
- ❖ Severe vomiting/diarrhea.
- ❖ Unusual headache, neck/back pain.
- ❖ Unusual rashes/bruising/mottling.

### Initiate Code Sepsis with Temp > 100.4 or < 96.8 (> 38 or < 36°C) & any of following:

- ❖ Pulse > 90
- ❖ SBP < 90
- ❖ Respiratory Rate > 20
- ❖ GCS < 13
- ❖ ETCO<sub>2</sub> < 32 mmHG

### EMR CARE

- A. Assess and support ABC's
- B. Obtain vital signs every 5-10 minutes to monitor for shock. Assess temperature early.
- C. Passive cooling if temperature > 101
- D. Oxygen therapy - titrate to SaO<sub>2</sub> ≥ 96%

### EMT CARE

- E. Place monitor.
- F. Transport immediately and rapidly. Notify hospital of positive Sepsis screen.
- G. Call for intercept if patient is demonstrating signs or symptoms of shock.

### AEMT/EMT-I/RN CARE

- H. Establish IV, BSS rapid fluid bolus of 1 - 2 Liter NS to achieve SBP > 90.

### PARAMEDIC CARE

- I. If SBP < 90 after 2 LNS, consider initiating vasopressor therapy to achieve SBP > 90
  - 1. Dopamine 5 mcg/kg/min
  - 2. Epinephrine 2 - 10 mcg/min
- J. Early intubation and mechanical ventilation should be considered for patients with persistent hypotension, and/or signs of shock despite above measures.

**SEPSIS  
(Continued)**

**Pediatric Considerations:**

- \* 1. Initiate Pediatric Code Sepsis with fever & infection if patient has:
  - a. Poor perfusion
  - b. Ill appearance
  - c. Altered Mental Status
  - d. Any of following abnormal VS:

**Pediatric Sepsis Vital Signs**

| Age     | T         | P        | R       | Systolic BP      |
|---------|-----------|----------|---------|------------------|
| 0m–3m   | <36 >38   | <80 >205 | <30 >60 | <60              |
| 3m–1y   | <36 >38.5 | <75 >190 | <30 >60 | <70              |
| 1y–6y   | <36 >38.5 | <60 >140 | <22 >35 | <70 +<br>2 x age |
| 6y–10y  | <36 >38.5 | <60 >140 | <18 >30 | <70 +<br>2 x age |
| 10y–18y | <36 >38.5 | <60 >100 | <12 >16 | <90              |

**Pediatric Considerations:**

- \* 2. Determine blood glucose early in pediatric patients with possible Sepsis. Correct hypoglycemia (see below)
  - \*\* 3. Obtain vascular access. Administer fluid bolus 20 ml/kg. IV/IO over 10 minutes. May repeat boluses up to 60 ml/kg.
  - \* 4. Re-check VS frequently
  - \*\*\* If VS do not normalize after (total of) 60 ml/kg fluid boluses, consider dopamine.
- Fluid challenge is 10 ml/kg for newborns, see *Neonatal Resuscitation* protocol.**

**Pediatric Dextrose Dosage:**

- ❖ Newborn: Dilute to dextrose 12.5% (0.125 g/mL); give 4 to 8 ml/kg.
- ❖ Age > 1 year: Dilute to dextrose 25% (0.25 g/mL); give 2 ml/kg.

\*= EMT    \*\*= AEMT/EMTI/RN    \*\*\*= Paramedic

## SHOCK

### NOTE:

- ❖ Shock is the body's inability, regardless of the cause, to provide every part of the body with sufficient perfusion of blood and oxygen to carry out normal function.
- ❖ Signs and symptoms of inadequate perfusion include:
  - ❖ Altered mental status
  - ❖ Syncope
  - ❖ Marked thirst
  - ❖ Clammy skin / delayed capillary refill
  - ❖ Tachycardia
  - ❖ Hypotension

### I. GENERAL MANAGEMENT

#### EMR/EMT CARE

- A. Maintain patent airway and support ventilation as required.
- B. Administer high flow supplemental oxygen, via non-rebreather mask.
- C. Provide ventilatory assistance as indicated.
- D. If the patient does not have a head injury or cardiogenic shock, place in head down (Trendelenburg) position.
- E. Treat suspected cause.
- F. Frequently monitor and document vital signs and patient status

### NOTE:

- ❖ If cardiogenic shock, difficulty breathing or head injury is present and patient condition permits, use the modified trendelenburg, with feet elevated 20-25 degrees and head also elevated approximately 15 degrees.
- ❖ Monitor closely for worsening condition.

#### AEMT/EMT-I/RN CARE

- G. Start 2 large bore IV's if possible.
- H. If unable to establish IV, place IO and infuse fluids with 60 ml LL syringe or pressure infusion.
- H. Bolus with BSS to achieve target SBP of 90 mmHg
  - 1. Adult - give 500 ml fluid bolus. May repeat to maximum of 3 L NS
  - 2. Pediatric - 20 ml/kg up to 60 ml/kg
  - 3. Neonate - 10 ml/kg if less than 6 months old
- I. Repeat fluid boluses if continued signs of shock and no signs of pulmonary edema.
- J. ECG Monitor.

### NOTE:

- ❖ All patients in shock should be treated as above.
- ❖ In patients with suspected cardiogenic edema, give fluids cautiously and monitor closely for signs of pulmonary edema.
- ❖ For additional interventions based on class of shock see below

**SHOCK  
(Continued)**

**II. ANAPHYLACTIC SHOCK (See also *Allergic Reactions Protocol*)**

~~~~~ **EMR CARE** ~~~~~

- A. Keep patient calm and provide reassurance that appropriate care is under way.
- B. Oxygen by NRM or assist ventilations with BVM and 100% oxygen.

~~~~~ **AEMT/EMT-I/RN CARE** ~~~~~

- C. In the case of moderate to severe anaphylaxis:
  - 1. Epinephrine 1:1,000 SQ, 0.3mg (adult); pediatric dose 0.2mg; infant dose 0.1mg or
  - 2. Use Epi Pen or Epi Pen Jr.
  - 3. Adult and pediatric dosage may be repeated once after 5 minutes PRN.
  - 4. Contact OLMC for any additional doses.

~~~~~ **PARAMEDIC CARE** ~~~~~

- D. If reaction is severe, may give epinephrine 1:10,000 IV in increments of 0.3 - 0.5 mg (3.0 - 5.0 ml). Pediatric dose 0.01 mg/kg (0.1ml/kg) at 5 minute intervals PRN.
- E. If respiratory distress/stridor is present, consider intubation early.
- F. Benadryl (diphenhydramine HCL) 25-50 mg IM/IV.

III. CARDIOGENIC SHOCK

~~~~~ **AEMT/EMT-I/RN CARE** ~~~~~

- A. IV Balanced salt solution TKO or saline lock; limit fluids
- B. May consider bolus of 500ml BSS in hypotensive patient if no signs of pulmonary edema are present.
- C. If patient is having chest pain, treat per Chest Pain Protocol

~~~~~ **PARAMEDIC CARE** ~~~~~

- D. Consider Dopamine GTT @ 5 mcg/kg/min, titrate to a BP \geq 90 Systolic.
May increase in increments NMT 20 mcg/kg/min.
- E. Treat dysrhythmias per ACLS protocol.

IV. HYPOVOLEMIC / HEMORRHAGIC SHOCK

~~~~~ **AEMT/EMT-I/RN/EMT-P CARE** ~~~~~

- A. Do not over-resuscitate. Bolus with BSS to achieve target SBP of 70 - 90 mmHg

**V. NEUROGENIC SHOCK**

~~~~~ **EMR/EMT CARE** ~~~~~

- A. Protect the spine.

~~~~~ **PARAMEDIC CARE** ~~~~~

- B. Consider intubation if GCS is less than 8.

**See next page for special pediatric considerations**

## SHOCK (continued)

### **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. Obtain vascular access. Administer fluid bolus 20 ml/kg. IV/IO. May repeat bolus up to 60 ml/kg.
- \*\*\* 4. 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.**

\*= Basic    \*\*= Intermediate / RN    \*\*\*= Paramedic

## SUSPENSION TRAUMA

### NOTE:

- ❖ Vertical entrapment without the ability to be placed supine may result in Orthostatic Intolerance
- ❖ Patients suspended in fall arrest harness for protracted period of time are at risk.
- ❖ Whenever possible, avoid laying patient flat or immobilizing in supine position.

### I. Mechanism of Injury:

- A. With vertical suspension for greater than 10 minutes, blood pools in legs.
- B. Lack of blood flow to brain leads to syncope and cerebral ischemia
- C. Loss of normal circulation results in acidosis and other metabolic derangements.
- D. Although evidence for this is limited, rapid deterioration might ensue if the patient is laid supine.
- E. Patients may sustain significant injuries during the fall (eg. head injuries, spinal cord injuries, pelvis fractures, chest or abdominal injuries) that may cause hypotension and may contraindicate treating the patient in sitting position.
- F. If patient is unconscious or in cardiac arrest, they should be placed supine to improve cerebral perfusion.
- G. Patients cannot be transported in a helicopter in sitting position, but should attempt to elevate the head unless this is contraindicated.

### II. Signs & Symptoms:

- A. Syncope or near syncope
- B. Altered mental status or unconsciousness
- C. Visual disturbances
- D. Loss of pulses in feet; pain in the legs
- E. Hypotension and signs of shock
- F. Arrhythmias including peaked T-waves and QRS prolongation

### III. Management:

#### EMR CARE

- A. Coordinate rescue and harness release with rescue personnel.
- B. Maintain body temperature during rescue if possible.
- C. **If suspended for greater than 10 minutes and patient is conscious, avoid laying patient flat or immobilizing in supine position unless other injuries necessitate supine positioning.**
- D. Lower the patient down on rope. Do not let the patient's feet touch the ground. Keep patient with thighs horizontal and head and torso vertical.
- E. For C-spine immobilization, place KED behind patient for support.
- F. Cut away Fall Arrest Harness before securing KED. Secure abdomen straps, then leg straps with head immobilized last.
- G. Patient should remain in sitting or semi-sitting position for at least 30 minutes following release from harness if possible.
- H. If patient is unconscious, place in supine position.
- I. If patient is in cardiac arrest, place supine on long back board. Begin CPR.
- J. Evaluate ABC's and start high flow oxygen via NRM.
- K. Airway control with spinal immobilization if indicated.
- L. Treat other injuries following Trauma Protocols.

#### EMT CARE

- M. Consider PEAD placement if indicated.

**SUSPENSION TRAUMA**  
**(continued)**

~~~~~**AEMT/EMT-I/RN CARE**~~~~~

- N. Start a minimum of one large bore (#14 or 16) IV's enroute.
- O. Minimal IV fluid unless patient is hypotensive. BSS if indicated, in challenges of 20 ml/kg for children or 500 ml for adults. Titrate fluid to systolic B/P of 100 and improved signs of skin perfusion and mental status.
- P. Monitor EKG.

~~~~~**PARAMEDIC CARE**~~~~~

- Q. Intubate if indicated by inadequate respirations or compromised airway.
- R. If suspension exceeds 20 minutes, consider:
  - 1. **Sodium Bicarbonate** – 1 Ampule of 50 ml (50mEq) admin. over 10 min. May repeat x 2 PRN.
  - 2. **Lasix** 40 mg IV slowly.
  - 3. **Fentanyl** 50 – 100 mcg IV/IO/IM PRN pain control.
  - 4. **Albuterol** (1 unit dose) nebulized. May repeat prn
- S. Rapid transport to the closest medical facility.

## TRAUMA

**NOTE:**

- ❖ This protocol is designed to give the EMT guidance in treating the trauma patient and to specify which trauma patients should be entered into the trauma system.
- ❖ The seriously injured trauma patient should receive spinal and airway stabilization before transport, but transport of the multi-system patient should not be delayed for full assessments, IV's, limb splinting, etc.
- ❖ On-scene time with the multi-system patient should be less than 10 minutes and treatment on scene should be limited to spinal and airway stabilization.

### I. SPINAL STABILIZATION

- A. For actual or suspected penetrating trauma of the spine, then spinal immobilization is indicated.
- B. For blunt trauma with mechanism for spinal cord injury, then spinal immobilization if any of the following are answered “yes”:

#### Spinal Immobilization Criteria (SIC)                      Yes                      No

|                                                                                                                                                                        |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Altered mental status or loss of consciousness                                                                                                                         |  |  |
| Significant mechanism of injury, such as:<br>high speed motor vehicle crash<br>axial loading<br>rollover motor vehicle crash<br>fall from greater than standing height |  |  |
| Evidence of intoxication                                                                                                                                               |  |  |
| Distracting injury, such as<br>significant fracture or laceration                                                                                                      |  |  |
| Neurological deficit                                                                                                                                                   |  |  |
| Midline spine pain (subjective)                                                                                                                                        |  |  |
| Midline spine tenderness (objective)                                                                                                                                   |  |  |
| EMT suspects spinal cord injury based on mechanism, history or exam findings.                                                                                          |  |  |
| Pain with active neck rotation or<br>active ROM of neck rotation limited to < 45°                                                                                      |  |  |

**If any answer is “yes”, then spinal immobilization indicated.**

**NOTE:**

- ❖ If the patient is > 5 months or otherwise obviously pregnant, place a pillow or blanket roll under the right side of the backboard to help move the fetus to the left. Otherwise, the fetus can lay on the inferior vena cava and impede blood return to the heart.



**TRAUMA**  
-Continued-

## II. TRAUMA SYSTEM CRITERIA

**NOTE:**

- ❖ EMT'S will activate the trauma system whenever a patient falls within the state trauma system criteria. (See Trauma System Entry Procedure)
- ❖ Early notification will allow more time for the hospital to prepare for the patient.
- ❖ If there is a question as to whether or not to activate the system, contact OLMC.

## III. TRAUMA PATIENT WRIST BANDS

Any patient who is entered into the Oregon Trauma System (either alert or activation) will be given a Trauma Band. The number on the trauma band will be entered on the pre-hospital report in the space provided.

## IV. TREATMENT

**NOTE:**

- ❖ Treatment of minor trauma should follow traditionally accepted guidelines of care (i.e., splinting suspected fractures, controlling bleeding, etc.)
- ❖ The following protocols apply specifically to major or multi-system trauma patients and, except for airway and breathing control and spinal stabilization, treatment should be done en route to avoid extended on-scene times.

~~~~~ **EMR CARE** ~~~~~

- A. Evaluate scene for safety and ensure safety of rescue personnel.
- B. Evaluate ABC's and start Oxygen therapy. Airway control with spinal immobilization.
- C. Check breathing - examine for and treat open chest wounds, flail chest, and significant rib fractures as indicated. Administer oxygen at 10 l/m or greater by non-rebreather mask. Consider assisting ventilation's with BVM.
- D. Check pulse -- control hemorrhage with direct pressure. Control major hemorrhage.
- E. When possible, disrobe the patient to determine extent of injuries. Remember that the trauma patient is susceptible to hypothermia.
- F. Maintain spinal precautions. Spinal immobilization may be with LBB or Vacuum mattress.
- G. Control bleeding with direct pressure using a sterile dressing.
- H. Activate Trauma System ASAP if patient meets criteria.
- I. Extricate, if necessary. Prepare for immediate transport.

~~~~~ **EMT CARE** ~~~~~

- J. Consider PEAD placement if not contraindicated. See PEAD Procedure
- K. Consider Tourniquet placement for uncontrolled bleeding. See Tourniquet Procedure.

## TRAUMA

Continued-

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### AEMT/EMT-I/RN CARE

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- L. Start two large bore (#14 or 16) IV's or IO's enroute.<sup>1</sup> Fluid resuscitate with BSS if indicated, in challenges of 20 ml/kg for children or 500 ml for adults.<sup>2</sup>
- M. Titrate fluid to systolic BP of 90 and improved signs of skin perfusion and mental status.<sup>3</sup>

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### PARAMEDIC CARE

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- N. Intubate as indicated by the absence of respiration's or compromised airway.
- O. Paramedic's may decompress tension pneumothorax by placing a large bore catheter in the second intercostal space, mid-clavicular line.
- P. Perform bilateral chest decompression in patients with witnessed trauma arrest.

---

<sup>1</sup> More than two IV's can be established if the patient is in shock and ABC's are being taken care of. Do not delay transport to start IV's. Volume expander fluid = Balanced Salt Solution.

<sup>2</sup> Maximum fluid resuscitation is 40ml/kg unless physician order to exceed that amount is received

<sup>3</sup> Some patients may need a higher systolic B/P than 90 mmHg to improve their status.

## GLOSSARY OF TERMS AND ABBREVIATIONS

|                  |                                                              |
|------------------|--------------------------------------------------------------|
| 1°               | Primary, first degree                                        |
| 2°               | Secondary, second degree                                     |
| 3°               | Tertiary, third degree                                       |
| <                | Less than;                                                   |
| >                | Greater than                                                 |
| =                | equals                                                       |
| <b>ABC</b>       | Airway, breathing and circulation                            |
| <b>Abd.</b>      | Abdomen                                                      |
| <b>a/c</b>       | antecubital                                                  |
| <b>ADD</b>       | Attention Deficit Disorder                                   |
| <b>AED</b>       | Automatic external defibrillator                             |
| <b>AEMT</b>      | Advanced Emergency medical technician                        |
| <b>AIDS</b>      | Acquired immune deficiency syndrome                          |
| <b>Admin.</b>    | Administer(ed)                                               |
| <b>A fib</b>     | Atrial fibrillation                                          |
| <b>Alcohol</b>   | Alcohol                                                      |
| <b>ALS</b>       | Advanced Life Support                                        |
| <b>AMI</b>       | Acute Myocardial Infarction                                  |
| <b>amp</b>       | Ampule                                                       |
| <b>Amp.</b>      | Amputation                                                   |
| <b>amt.</b>      | Amount                                                       |
| <b>ant</b>       | Anterior                                                     |
| <b>APAP</b>      | Acetaminophen (Tylenol)                                      |
| <b>APE</b>       | Acute pulmonary edema                                        |
| <b>ASA</b>       | Aspirin                                                      |
| <b>ASAP</b>      | As soon as possible                                          |
| <b>ATAB</b>      | Area Trauma Advisory Board                                   |
| <b>ATF</b>       | Arrived To Find                                              |
| <b>AVPU</b>      | Alert, verbal, painful, unresponsive                         |
| <b>BGL</b>       | Blood glucose level                                          |
| <b>Bilat, B.</b> | Bilateral                                                    |
| <b>BLS</b>       | Basic Life Support                                           |
| <b>B/P</b>       | Blood pressure                                               |
| <b>bpm</b>       | beats per minute                                             |
| <b>BSS</b>       | Balanced salt solution such as normosol, normal saline, etc. |
| <b>C-1</b>       | Code 1                                                       |
| <b>C-3</b>       | Code 3                                                       |

|                |                                                    |
|----------------|----------------------------------------------------|
| <b>CA</b>      | Cancer                                             |
| <b>CABG</b>    | Coronary artery bypass graft (“cabbage”)           |
| <b>CAD</b>     | Coronary Artery Disease                            |
| <b>CAO</b>     | Conscious, Alert, Oriented                         |
| <b>CBG</b>     | Capillary Blood Glucose                            |
| <b>CC</b>      | Chief Complaint                                    |
| <b>CHF</b>     | Congestive heart failure                           |
| <b>CO</b>      | Carbon Dioxide                                     |
| <b>c/o</b>     | Complains of                                       |
| <b>COPD</b>    | Chronic obstructive pulmonary disease or emphysema |
| <b>CPR</b>     | Cardio-Pulmonary resuscitation                     |
| <b>CSF</b>     | Cerebral spinal fluid                              |
| <b>CVA</b>     | Cerebrovascular accident                           |
| <b>CX</b>      | chest                                              |
| <b>CPAP</b>    | Continuous Positive Air Pressure                   |
| <b>D/C</b>     | Discontinue                                        |
| <b>Dig.</b>    | Digitalis                                          |
| <b>Disloc.</b> | Dislocated                                         |
| <b>D5W</b>     | Dextrose 5% in water                               |
| <b>dl</b>      | Deciliter (1/10 of a liter: 100ml)                 |
| <b>DM</b>      | Diabetes Mellitus                                  |
| <b>DNR</b>     | Do not resuscitate                                 |
| <b>DT’s</b>    | Delirium tremens                                   |
| <b>Dx</b>      | Diagnosis                                          |
| <b>ECG</b>     | Electrocardiogram                                  |
| <b>ED</b>      | Emergency Department                               |
| <b>EKG</b>     | Electrocardiogram                                  |
| <b>EMS</b>     | Emergency medical services                         |
| <b>EMT</b>     | Emergency medical technician                       |
| <b>EMT-I</b>   | Emergency medical technician - Intermediate        |
| <b>EMT-P</b>   | Emergency medical technician - Paramedic           |
| <b>Epi.</b>    | Epinephrine                                        |
| <b>ET</b>      | Endotracheal                                       |
| <b>ETCO</b>    | End tidal carbon dioxide detector                  |
| <b>Exam</b>    | Examination                                        |
| <b>F</b>       | Female                                             |
| <b>F°</b>      | Fahrenheit                                         |
| <b>Fx</b>      | fracture                                           |

|              |                                |
|--------------|--------------------------------|
| <b>GCS</b>   | Glasgow Coma Score             |
| <b>g, gm</b> | gram                           |
| <b>GI</b>    | gastrointestinal               |
| <b>gr</b>    | grain                          |
| <b>gtt</b>   | drops                          |
| <b>H/A</b>   | headache                       |
| <b>HCTZ</b>  | hydrochlorothiazide            |
| <b>HIV</b>   | Human immunodeficiency virus   |
| <b>HRFD</b>  | Hood River Fire Department     |
| <b>HTN</b>   | Hypertension                   |
| <b>Hx</b>    | History                        |
| <b>ICP</b>   | Intracranial pressure          |
| <b>ICS</b>   | Incident command system        |
| <b>IM</b>    | Intra-muscular                 |
| <b>IN</b>    | Inranasal                      |
| <b>IO</b>    | Intraosseous                   |
| <b>IV</b>    | Intra-venous                   |
| <b>IVP</b>   | IV push                        |
| <b>KCL</b>   | Potassium chloride             |
| <b>kg</b>    | kilogram                       |
| <b>L</b>     | liter                          |
| <b>LBB</b>   | Long back board                |
| <b>LUQ</b>   | Left upper quadrant            |
| <b>LLQ</b>   | Left lower quadrant            |
| <b>LMC</b>   | Last Menstrual Cycle           |
| <b>LOC</b>   | Level of consciousness         |
| <b>L/S</b>   | Lung sounds                    |
| <b>LVAD</b>  | Left ventricular assist device |
| <b>M</b>     | male                           |
| <b>MAE</b>   | Moves all extremities          |
| <b>MAS</b>   | Movement and sensation         |
| <b>MCFR</b>  | Mid-Columbia Fire & Rescue     |
| <b>mcg</b>   | microgram                      |
| <b>mEq</b>   | milliequivalent                |
| <b>mg</b>    | milligram (1/1,000 of 1 gram)  |
| <b>MCI</b>   | Multi-casualty incident        |
| <b>ME</b>    | Medical examiner               |
| <b>MI</b>    | Myocardial Infarction          |

|                     |                                                |
|---------------------|------------------------------------------------|
| <b>min</b>          | Minute                                         |
| <b>ml</b>           | Milliliter – (1/1,000 of 1 liter)              |
| <b>mmHG</b>         | Millimeters of mercury                         |
| <b>MS</b>           | Mental status                                  |
| <b>MSO4</b>         | Morphine Sulfate                               |
| <b>MSDS</b>         | Material safety data sheets                    |
| <b>N&amp;V</b>      | Nausea and vomiting                            |
| <b>NAD</b>          | No acute distress, no apparent distress        |
| <b>NC</b>           | Nasal canula                                   |
| <b>NG</b>           | nasogastric                                    |
| <b>NKMA</b>         | No known medical allergies                     |
| <b>NMT</b>          | Not More Than. Indicates maximum total dosage. |
| <b>NPA</b>          | Nasopharyngeal airway                          |
| <b>NPO</b>          | Nothing by mouth (per os)                      |
| <b>NR</b>           | Normosol-R                                     |
| <b>NS</b>           | Normal saline                                  |
| <b>NSAIDS</b>       | Non-steroidal anti-inflammatory medications    |
| <b>NTG</b>          | nitroglycerin                                  |
| <b>N&amp;V, N/V</b> | nausea and vomiting                            |
| <b>O2</b>           | Oxygen                                         |
| <b>OD</b>           | Overdose                                       |
| <b>OLMC</b>         | On-line medical control                        |
| <b>OPA</b>          | Oropharyngeal airway                           |
| <b>PASG</b>         | Pneumatic anti-shock trousers                  |
| <b>PEAD</b>         | Pharyngeal esophageal airway device            |
| <b>PEARL</b>        | Pupils equal and reactive to light             |
| <b>PCR</b>          | Pre-hospital Care Report                       |
| <b>PDW</b>          | Pink, Warm, Dry                                |
| <b>RUQ</b>          | Right upper quadrant                           |
| <b>RLQ</b>          | Right lower quadrant                           |
| <b>PMHx</b>         | Past medical history                           |
| <b>Pn.</b>          | Pain                                           |
| <b>PO</b>           | By mouth, orally                               |
| <b>POLST</b>        | Physician Orders for Life-Sustaining Treatment |
| <b>prn</b>          | As needed                                      |
| <b>PR</b>           | per rectum; rectally                           |
| <b>RSI</b>          | Rapid sequence intubation                      |
| <b>PSVT</b>         | Paroxysmal supraventricular tachycardia        |

|             |                                |
|-------------|--------------------------------|
| <b>Pt.</b>  | patient                        |
| <b>RL</b>   | Ringers Lactate                |
| <b>Rx</b>   | prescribed for, used for       |
| <b>SAO2</b> | Oxygen saturation              |
| <b>SL</b>   | sublingual                     |
| <b>SOB</b>  | Shortness of breath            |
| <b>SQ</b>   | subcutaneous                   |
| <b>s/s</b>  | Signs & Symptoms               |
| <b>SW</b>   | Sterile water                  |
| <b>sx</b>   | surgery                        |
| <b>Sz</b>   | seizure                        |
| <b>TB</b>   | tuberculosis                   |
| <b>TCA</b>  | Tricyclic antidepressant       |
| <b>TIA</b>  | Transient ischemic attack      |
| <b>Torr</b> | Millimeters mercury (mm/Hg)    |
| <b>TKO</b>  | To keep open IV fluid infusion |
| <b>U</b>    | unit                           |
| <b>UKA</b>  | Unknown allergies              |
| <b>URI</b>  | upper respiratory infection    |
| <b>UTI</b>  | urinary tract infection        |
| <b>VF</b>   | Ventricular Fibrillation       |
| <b>VT</b>   | Ventricular Tachycardia        |
| <b>w/</b>   | with                           |
| <b>w/o</b>  | without                        |
| <b>y/o</b>  | years old                      |

**Poison Control at OHSU: 1-800-222-1222**

**GLASCOW COMA SCORE**

| <b>Eye Opening</b> |   | <b>Best Verbal Response</b> |   | <b>Best Motor Response</b> |   |
|--------------------|---|-----------------------------|---|----------------------------|---|
| Spontaneously      | 4 | Oriented                    | 5 | Obeys Commands             | 6 |
| To Commands        | 3 | Confused                    | 4 | Localizes Pain             | 5 |
| To Pain            | 2 | Inappropriate               | 3 | Withdraws from Pain        | 4 |
| No Response        | 1 | Incomprehensible            | 2 | Flexion (decorticate)      | 3 |
|                    |   | No Response                 | 1 | Extension (decereb)        | 2 |
|                    |   |                             |   | No Response                | 1 |

**GCS < 8**

**Intubate**

**Totals** \_\_\_\_\_