

# **PROTOCOLS**

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## INTRODUCTION TO THE PROTOCOLS

The following protocols are intended to give guidance to the First Responders, EMT's and RN's working under the auspices of Arlington Ambulance, 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 EMT/ First Responder scope of practice. Each EMS provider is expected to know their legal and personal limits. 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 First Responder, Basic, Intermediate and Paramedic 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 EMS Medical Director and others as may be designated by the Medical Director. This review process is not intended to be punitive, but to ensure continuing high-quality patient care.

As EMS Medical Director, I approve these protocols, and authorize the EMT's to operate under them.

Any off duty EMT is authorized to function in all the areas listed above.

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Erin Burnham, MD  
EMS Medical Director

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Date

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

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Agency

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EMT

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Date

## **EMT – INTERMEDIATE SPECIFIC PROTOCOLS**

EMT-Intermediates associated with Erin Burnham, MD are authorized to operate under the following protocols and to the limit of their scope of practice as defined by OAR Chapter 847, Division 35. When an Intermediate is operating with a Paramedic, the Paramedic is ultimately responsible for patient care.

EMT-Intermediates under the auspices of Erin Burnham, MD will be allowed to attend patients requiring cardiac monitoring regardless of the level of other personnel present as long as the patient is stable and is not receiving, nor is expected to require treatment that is outside the scope of the EMT-Intermediate in the State of Oregon. If a Paramedic is on-board during the transport, he/she is ultimately responsible for patient care.

Nothing in these protocols is intended to encourage or allow the EMT-Intermediate to practice outside their scope of practice as defined by OAR Chapter 847, Division 35. As stated in the introduction to these protocols, each EMT is expected to know their legal and personal limits and to not exceed those limits.

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Erin Burnham, MD

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Date

## GENERAL ORDERS FOR ALL PATIENTS

### NOTE:

- ❖ Universal precautions should be observed by all EMR's , RN's & EMT's

#### I. PRIMARY SURVEY

1. **Airway** - Establish immediate control of the airway. Identify and correct existing or potential airway obstructions while protecting C-spine in traumatized patients.
2. **Breathing** - Identify and correct existing or potential compromising factors. Begin artificial or assisted ventilation as indicated. Include a brief chest examination on trauma patients.
3. **Circulation** - Begin chest compressions if pulseless. Control active bleeding.
4. **Defibrillation** – after the first 2 minutes of CPR. See **AED** and **Cardiac Arrhythmia** Protocols.
5. **Disability** - Determine gross neurological function.
6. **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.

#### I. SECONDARY SURVEY

1. 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).
2. Obtain significant history from patient, family, or bystanders.
3. Repeat vital signs as indicated by patient condition. Repeat at least LOC, pulse, respiration's, blood pressure and pain level after medication administration.

#### I. TREATMENT/RESUSCITATION

1. Treat all emergent problems in order of priority and according to protocols.
2. Check for patient POLST form for:
  - a. Elderly in Adult Foster Care, Nursing Homes and living at home.
  - b. Terminally ill
2. Reassure the patient and keep him/her informed of treatment.
3. Gloves and eye protection will be worn with all patient contact.
4. 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 37 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)

## 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.

### ~~~~~EMERGENCY MEDICAL RESPONDER & EMT BASIC 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

### ~~~~~EMT INTERMEDIATE/ 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



## AIRWAY MANAGEMENT

### NOTE:

- ❖ Proper airway management is the first priority of the EMR/EMT/Paramedic.
- ❖ EMR/EMT's will wear eye protection when performing BVM ventilation or PEAD placement and during suctioning.

### ~~~~~EMERGENCY MEDICAL RESPONDER 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 BASIC/INTERMEDIATE / RN CARE~~~~~

#### I. PEAD (Pharyngeal Esophageal Airway Device) PLACEMENT **REFER TO COMBI-TUBE OR KING AIRWAY PROCEDURE.**

- A. A PEAD may be placed in unconscious patients with no gag reflex. 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. Vomiting is likely to follow removal of the PEAD.
- B. CONTRAINDICATIONS FOR PEAD
  - 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.
- C. Placement of the PEAD will be confirmed by auscultation of bilateral breath sounds, absence of breath sounds over the stomach and positive findings of End-Tidal CO<sub>2</sub> detector and / or capnography.

## AIRWAY MANAGEMENT (CONTINUED)

- ❖ 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.

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### EMT PARAMEDIC CARE

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### 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.
  
- C. Correct placement will be confirmed by verifying presence of bilateral breath sounds, absence of abdominal sounds, and through the use of an End-Tidal CO<sub>2</sub> detector or capnography.

## AIRWAY MANAGEMENT (CONTINUED)

### IV. FOREIGN BODY AIRWAY OBSTRUCTION

#### ~EMERGENCY MEDICAL RESPONDER, EMT BASIC & INTERMEDIATE/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 patients<sup>1</sup>
- 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..<sup>2</sup>
  - 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.

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#### EMT PARAMEDIC CARE

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- 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.<sup>3</sup>
- 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.

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

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

<sup>3</sup> 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

## 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.

### ~~~~~EMERGENCY MEDICAL RESPONDER 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 BASIC 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 IM<sup>1</sup>, SQ, 0.3 mg (adult), 0.2 mg (pediatric), 0.1mg (infant)<sup>2</sup> 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.<sup>3</sup>
- F. Continue appropriate respiratory and cardiac support.
- G. Prepare for immediate transport.

### ~~~~~EMT INTERMEDIATE/RN~~~~~

- H. Start IV (BSS) enroute as needed
- I. If B/P less than 90 mm/hg, follow **Shock** Protocol.
- J. Monitor cardiac rhythm
- I. 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.
- K. Give Benadryl 25-50 mg IM/IV/IO for the adult dose; pediatric dose is 1mg/kg .

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<sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> If epinephrine is administered, indication must be documented.

## ALLERGIC REACTIONS (Continued)

### EMT PARAMEDIC CARE

- L. If respiratory distress or stridor is present, consider intubation early.
- M. If the reaction is severe,

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 cc via ET tube	0.01 mg/kg (0.1 ml/kg)	0.01 mg/kg (0.1 ml/kg)

- N. If respiratory distress is present after epinephrine, give Albuterol / Atrovent.

#### Precautions:

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

#### Pediatric Considerations:

##### 1. Mild:

- \* a. Administer 1:1,000 epinephrine, 0.01 mg/kg (0.01 ml/kg) IM or SQ, maximum dose of 0.3 mg (0.3 ml). May repeat once after 20 minutes, if needed for respiratory distress or persistent wheezing. **EMT Basic follow care listed page 11.**

- \*\* b. If itching is severe, consider diphenhydramine 1 mg/kg IV/IO or IM, maximum dose of 50 mg.

##### 2. Severe:

- \* a. If there is no vascular access or ET tube, give epinephrine (1:1,000), 0.01 mg/kg (0.01 ml/kg) IM or SQ. Maximum dose is 0.3 mg (0.3 ml).

- \*\* b. For diminished perfusion, administer 20 ml/kg, fluid bolus NS, IV/IO.

- \*\* c. Administer 1:10,000 epinephrine, 0.01 mg/kg (0.1 ml/kg) IV/IO, maximum dose 0.1 mg (1 ml). Repeat every 5 minutes as needed for respiratory distress or diminished perfusion.

- \*\*\*d. If child is intubated and there is no vascular access, give 1:1,000 epinephrine by ET, 0.1 mg/kg (0.1 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, maximum dose of 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.

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:

- |                  |  |
|------------------|--|
| 1. Cardiac event | 7. Trauma                                      |
| 2. Hyperglycemia | 8. Postictal (2 <sup>o</sup> to hypoglycemia?) |
| 3. Hypoglycemia  | 9. Shock                                       |
| 4. Hyperthermia  | 10. Drug Overdose                              |
| 5. Hypothermia   | 11. Other                                      |
| 6. CVA           |  |

III. Therapy

### ~~~~~EMERGENCY MEDICAL RESPONDER 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.

### ~~~~~EMT BASIC CARE~~~~~

- C. If patient is obtunded, unable to protect airway and has no gag reflex, consider placing PEAD to secure airway.
- D. Determine blood glucose levels (BGL) if time and patient condition permits.
- E. If the BGL is <60, and patient is able to protect airway, give oral glucose paste.
- F. If aggressive airway management is not required, place the unconscious patient on their side in the recovery position.

### ~~~~~EMT INTERMEDIATE / RN~~~~~

- A. Start IV enroute as needed.
- B. If B/P less than 90 mm/hg, follow **Shock** Protocol
- C. If glucose level is <60
  - 1. Give 25gm D<sub>50</sub>, IV Push. Repeat once after 10 minutes if needed.
  - 2. If unable to obtain IV, give Glucagon 1mg IM.
- D. If no response to above treatment or if respirations are depressed, administer 0.4 - 2.0 mg Naloxone IV/IM. Titrate to LOC & respiratory effort. Consider restraining patient before administration of Naloxone (Narcan). Rebolus at 0.4 - 2.0 mg as needed.
- E. **BE PREPARED FOR PROJECTILE VOMITING AND HAVE SUCTION IMMEDIATELY AVAILABLE.**
- F. **\*\*DOCUMENT PATIENT'S RESPONSE TO MEDICATIONS\*\***
- G. If glucose level is >300 and there is no evidence of pulmonary edema consider a fluid bolus.
- H. 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.
- I. Monitor cardiac rhythm and vital signs frequently.

**ALTERED MENTAL STATUS  
(Continued)**

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

- A. Consider intubation if GCS is <8.
- B. 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<sub>50</sub>, or other glucose containing substance, orally.
  - 3. If IV/IO established, give D<sub>25</sub>, 0.5 gm/kg (2 ml/kg) for infants and children < 10 kg, 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 0.5 mg IM.
  - 5. Repeat blood glucose determination and treat if it remains low.
- F. If mental status and respiratory effort are depressed, administer Narcan 0.1 mg/kg, max. 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.**

## AUTOMATED EXTERNAL DEFIBRILLATION

### NOTE:

- ❖ ALS backup should be called for in all Cardiac arrests
- ❖ AED is not recommended in infants < 1 year of age
- ❖ Do not analyze or shock **conscious** patients even if AED is prompting you to do so

~~~~~Emergency Medical Responder/EMT-Basic~~~~~

ABC's

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

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

- 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.)
1. Press "analyze"
  2. Defibrillate if recommended
  3. CPR for 2 minutes
  4. Repeat sequence
  5. If "No shock" recommended, check pulse. Continue CPR if pulseless and support airway as needed.

### 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.



## 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.

~~~~~**EMERGENCY MEDICAL RESPONDER & EMT BASIC 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.

~~~~~**EMT INTERMEDIATE / RN CARE / PARAMEDIC 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.

### ~EMERGENCY MEDICAL RESPONDER, EMT BASIC AND INTERMEDIATE/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.

### ~~~~~EMT PARAMEDIC CARE~~~~~

- E. Adult patients who are combative and suffering from emotional upset or acute anxiety may be given Versed (midazolam), 2mg-10mg IV/IM/IN. Repeat as needed to a total maximum dose of 10 mg Or Ativan (Lorazepam), 0.5-2.0 mg IV/IM slow push to a max dose of 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 the max dose is 6 mg.
- For child > 6 y/o the max dose is 10 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

#### ~~~~~EMERGENCY MEDICAL RESPONDER AND EMT BASIC 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:

Any burned patient with possible respiratory involvement.

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 O<sub>2</sub>.**

## BURNS

-Continued-

### EMT INTERMEDIATE / 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 to desired effect. Max dose 200 mcg. Consult OLMC for additional dosage.)
- U. MONITOR RESPIRATORY STATUS CLOSELY

### EMT 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**

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

## BURNS

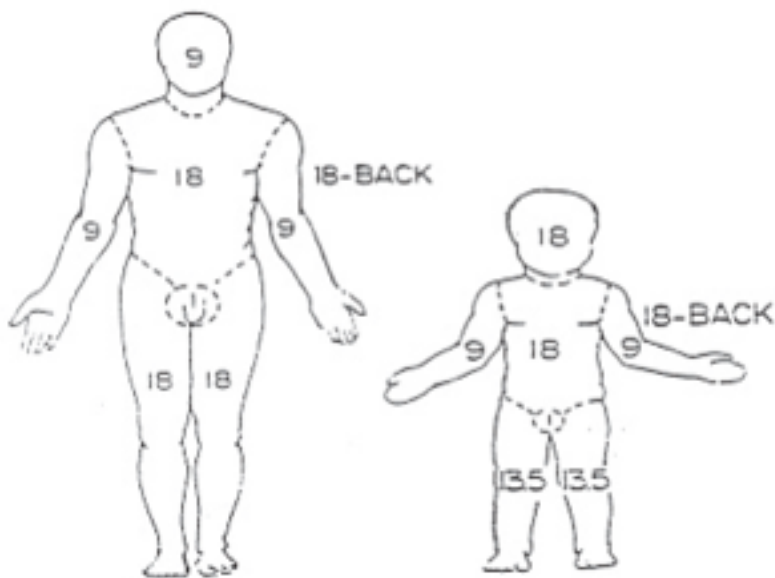
-continued-

### 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, maximum 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.

## ACLS-Dysrhythmias

### NOTE:

- ❖ This protocol refers to spontaneously breathing and perfusing patients.
- ❖ 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

### ~~~~~EMERGENCY MEDICAL RESPONDER~~~~~

- 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.

### ~~~~~EMT BASIC CARE~~~~~

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

**ACLS Dysrhythmias**  
**(continued)**

~~~~~**EMT INTERMEDIATE / RN CARE**~~~~~

- I.** Establish IV, BSS, TKO.
- J.** Place patient on cardiac monitor.
- K.** If systolic pressure falls  $\leq 100$ , administer 250ml BSS bolus and repeat vitals.
- L.** If patient is having associated chest pain, follow Chest Pain Protocol.
- M.** If patient is unable to protect airway, establish airway via PEAD.

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

- N.** If patient is unable to protect airway, establish airway via ETT or PEAD.
- O.** If patient is unstable, prepare for synchronized cardioversion if indicated. Consider premedicating with:
  - 1.** Versed (midazolam) 5 – 10 mg IV/IM or
  - 2.** Ativan (Lorazepam) 0.5 – 2.0 mg IV/IM
- P.** If patient is stable, continue monitoring with frequent re-assessments.
- Q.** See appropriate dysrhythmia algorithm.

**ACLS Dysrhythmias  
Bradycardia**

**I. Stable Bradycardia: Heart rate < 60, but without unstable signs or symptoms.**

~~~~~**EMT INTERMEDIATE/RN CARE**~~~~~

- A. After basic measures performed, prepare patient for transport.
- B. Continue monitoring with frequent re-assessments.
- C. 12-Lead ECG if available, do not delay therapy.

**II. Unstable Bradycardia: Heart rate < 60 with unstable signs or symptoms.**

- Hypotension?
- Acutely altered mental status?
- Signs of shock?
- Ischemic chest discomfort?
- Acute heart failure?

~~~~~**EMT INTERMEDIATE / RN CARE**~~~~~

- A. Administer Atropine 0.5 mg IV/IO.
- B. Re-evaluate patient. If still symptomatic and heart rate is less than 60 BPM, repeat atropine 0.5 mg IV/IO up to a max dose of 3.0 mg (6 doses total).
- C. Prepare patient for transport as soon as possible
- D. Consider calling for Paramedic backup.

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

- E. Consider transcutaneous pacing Consider premedicating with:
  - 1. Versed (midazolam) 5 – 10 mg IV/IM or
  - 2. Ativan (Lorazepam) 0.5 – 2.0 mg IV/IM
- F. Consider Dopamine infusion, 2 – 10 mcg/kg/min. or
- G. Consider Epinephrine IV infusion, 2 – 10 mcg/min.
- H. Consider expert consultation.



## ACLS Dysrhythmias Pediatric Bradycardia

### Pediatric Bradycardia Considerations

#### BRADYCARDIA WITH A PULSE CAUSING CARDIORESPIRATORY COMPROMISE.

- Most pediatric Bradycardia is due to hypoxia. Maximize oxygenation and ventilation.
  - o Administer Oxygen as indicated
  - o Monitor vital signs, ECG and SaO<sub>2</sub>.

Is Bradycardia causing cardiorespiratory compromise?

- NO – Patient stable;
  - o Continue to support ABC's as needed.
  - o Monitor patient.
  - o Consider OLMC consultation.
- YES – Patient unstable
  - o Start CPR if oxygenation and ventilation does not increase patients' heart rate above 60 BPM and poor perfusion is noted.
  - o If patient remains persistently bradycardic;
    - Epinephrine 0.01 mg/kg (0.1 ml/kg) of 1:10,000 IV/IO. Repeat epinephrine every 3-5 minutes.
    - If increase in Vagal tone or AV block, consider Atropine 0.02 mg/kg IV/IO.
    - Minimum single dose 0.1 mg, maximum single dose 0.5 mg. Max total dose 1 mg.
    - Consider pacing per Transcutaneous Pacing protocol.
    - If capture is achieved and patient is uncomfortable, consider Midazolam (Versed) 0.1 mg/kg IV/IO to a maximum of 2.5 mg.
    - If capture is not achieved, try repositioning pads.
    - Goal of therapy is to improve perfusion.

**ACLS Dysrhythmias**  
**Atrial Fibrillation/Flutter**

**I. Stable A-fib/flutter: Heart rate > 150, but without unstable signs or symptoms.**

~~~~~**EMT INTERMEDIATE / RN CARE**~~~~~

- A. After basic measures performed, prepare patient for transport.
- B. Continue monitoring with frequent re-assessments.

**II. Unstable A-fib/flutter: Heart rate > 150, with unstable signs or symptoms.**

~~~~~**EMT INTERMEDIATE / RN CARE**~~~~~

- A. Consider calling for Paramedic backup.
- B. Prepare patient for immediate transport.

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

- C. Consider IV sedation with Versed (midazolam) 5 mg or Ativan (Lorazepam) 0.5-2 mg.
- D. Synchronized cardioversion at 200 J monophasic or 120 J biphasic.

**III. If no response:**

- A. Synchronized cardioversion at 300 J monophasic or 200 J biphasic.  
If no response:
- B. Synchronized cardioversion at 360 J monophasic or 300 J biphasic.  
If no response:
- C. Synchronized cardioversion at 360 J monophasic or 360 J biphasic.  
If no response:
- D. Prepare patient for immediate transport.
- E. Consider call in for additional medication orders and expert consultation.

## ACLS Dysrhythmias PSVT

### I. Stable Paroxysmal Supraventricular Tachycardia: Heart rate > 150, but without unstable signs or symptoms.

#### ~~~~~EMT INTERMEDIATE / RN CARE~~~~~

- A. Attempt Vagal maneuvers such as having patient perform Valsalva.<sup>1</sup>
- B. After basic measures performed, prepare patient for transport.
- C. Continue monitoring with frequent re-assessments.
- D. [If available, consider 12-Lead ECG.](#)

#### ~~~~~EMT PARAMEDIC CARE~~~~~

- E. Administer Adenosine (Adenocard) 6 mg rapid IV/IO followed by 10 ml NS flush. If no response:
- F. Administer Adenosine (Adenocard) 12 mg rapid IV/IO followed by 10 ml NS flush. If no response:
- G. Prepare patient for immediate transport.
- H. Continue to monitor patient frequently for signs/symptoms of instability.

### **Pediatric Tachycardia Considerations: Stable Narrow complex**

Patient stable, obtain 12-lead ECG

- Narrow regular QRS (0.8 sec), HR > 220 in child < 2 years or HR > 180 in child 2-10 years, Probable SVT.
- Attempt vagal maneuvers
- Admin. Adenosine 0.1 mg/kg rapid IV/IO; 6 mg MAX. If no change;
- Admin. Adenosine 0.2 mg/kg rapid IV/IO; 12 mg MAX. If no change;
- Admin. Adenosine 0.2 mg/kg rapid IV/IO; 12 mg MAX. If no change,

Obtain post treatment 12 lead ECG and contact OLMC for advise

<sup>1</sup> Valsalva: Bearing down while holding ones breath.  
3/19/13

## ACLS DYSRHYTMIA

### PSVT

-Continued-

#### II. Unstable Paroxysmal Supraventricular Tachycardia: Heart rate > 150, with unstable signs or symptoms.

##### ~~~~~EMT INTERMEDIATE / RN CARE~~~~~

- A. Consider calling for Paramedic backup.
- B. Prepare patient for immediate transport.
- C. If available, consider 12-Lead ECG.

##### ~~~~~EMT PARAMEDIC CARE~~~~~

- D. Consider IV sedation with Versed (midazolam) 5 mg or Ativan (Lorazepam) 0.5-2 mg.
- E. Synchronized cardioversion at 50 J monophasic or 50 J biphasic.  
If no response:
- F. Synchronized cardioversion at 100 J monophasic or 100 J biphasic.  
If no response:
- G. Synchronized cardioversion at 150 J monophasic or 150 J biphasic.  
If no response:
- H. Synchronized cardioversion at 200 J monophasic or 200 J biphasic.  
If no response:
- I. Prepare patient for immediate transport.
- J. Consider call in for additional medication orders.

#### **Pediatric Considerations – Unstable Narrow Tachycardia, PSVT**

Patient showing signs of shock or unconscious.

- QRS (0.08 sec.) narrow, rate not variable (regular);
- Heart rate > 220 (often 240-300)
- IV/IO in place, admin. Adenosine 0.1 mg/kg rapid; 6 mg max. If no change:
- Admin. Adenosine 0.2 mg/kg rapidly, 12 mg max. May repeat X 1. If no change:
- Synchronized Cardioversion 1 J/kg. If no change:
- Synchronized Cardioversion 2 J/kg. If no change:
- Synchronized Cardioversion 2 J/kg. If no change:
- Sedate if possible, but do not delay cardioversion.
- Contact OLMC, consult expert. May be directed to administer asynchronized defibrillation.

Adults and Pediatrics: Consider H's T's.

ACLS Dysrhythmias  
**Wide-complex Tachycardia**

**III. Ventricular Ectopy: For malignant PVC's (frequent, coupled, multifocal or close coupled) associated with signs or symptoms of instability**

**NOTE:** There is no evidence that Amiodarone or Lidocaine is helpful in this situation, and some evidence exists that they may be detrimental. If the patient has signs or symptoms of instability with frequent, coupled or multifocal PVC's, monitor the patient closely, and call in for additional orders if the patient deteriorates.

**IV. Stable V-Tach: Ventricular tachycardia with a pulse, and without unstable signs or symptoms. Wide QRS? Approx. > 0.12 sec.**

~~~~~**EMT INTERMEDIATE / RN CARE**~~~~~

- A. IV and 12-Lead ECG if available.
- B. Consider calling for Paramedic backup.
- C. Prepare patient for immediate transport.

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

- D. Consider adenosine only if regular and monomorphic.
- E. Amiodarone 150 mg rapid IV/IO infusion over 10 min. at 15 mg/min. In persistent or recurrent VT, consider repeat dose of 150 mg rapid IV/IO infusion in 10 minutes. If patient converts with Amiodarone, start maintenance infusion of 1 mg/min. Max cumulative dose 2.2 g /24 h. If no response to second dose of Amiodarone, consider:
- F. Consider Magnesium Sulfate, 2 gm slow IV/IO push over 1-2 minute for polymorphic VT. (For 10% solution: mix 2 gm Mag with 16 ml Normal Saline.)
- G. Consider expert consultation.
- H. Prepare patient for transport as soon as possible.

**Pediatric Considerations Stable Wide complex Tachycardia**

Patient stable, obtain 12 lead ECG

- Wide regular QRS (>0.12 sec) HR > 150
- Amiodarone, 2.5 mg/kg in 2 ml/kg of NS, IV/IO over 10 min.
- Or Lidocaine 1.5 mg/kg IV/IO, Repeat 0.75 mg/kg IV/IO
- Consider Mag. Sulfate 25 mg/kg IV/IO over 1-2 minutes.

## ACLS Dysrhythmias

(Continued)

**Unstable V-Tach: Ventricular tachycardia with a pulse, but with unstable signs or symptoms.**  
**Heart rate > 150 beats/min.**

**Persistent tachyarrhythmia causing:**

- **Hypotension?**
- **Acutely altered mental status?**
- **Signs of shock?**
- **Ischemic chest discomfort?**
- **Acute heart failure?**

### ~~~~~EMT INTERMEDIATE / RN CARE~~~~~

- A. Call for Paramedic backup.
- B. Prepare patient for immediate transport.
- C. **IV and 12-Lead ECG if available.**

### ~~~~~EMT PARAMEDIC CARE~~~~~

- D. Consider IV sedation with Versed (midazolam) 5 mg or Ativan (Lorazepam) 0.5-2 mg.
- E. Synchronized cardioversion at **200 J** monophasic or **100 J** biphasic.  
If no response:
- F. Synchronized cardioversion at **300 J** monophasic or **150 J** biphasic.  
If no response:
- G. Synchronized cardioversion at **360 J** monophasic or **200 J** biphasic.  
If no response:
- H. Synchronized cardioversion at **360 J** monophasic or **300 J** biphasic  
If no response **may go to 360 J biphasic, then proceed to antiarrhythmic:**
- I. Amiodarone 150 mg rapid infusion over 10 minutes. In persistent or recurrent VT, consider repeat dose of 150 mg rapid infusion in 10 minutes. **Maintenance infusion of 1 mg/min for first 6 hours.**
- J. Prepare patient for immediate transport.
- K. Consider call in for additional medication orders **and expert consultation.**
- L. Consider treatable H's & T's.

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

### **Pediatric Tachycardia Considerations: Unstable, Wide Complex**

Initiate oxygen per Airway protocol, monitor vital signs, ECG / 12 lead if indicated, and SP02 saturation.

1. Immediate synchronized cardioversion @ 1 joule/kg.
2. If no response synchronized cardioversion @ 2 joules/kg
3. If no response synchronized cardioversion @ 2 joules/kg
4. If pt. is conscious, consider Midazolam (Versed) 0.1 mg/kg IV/IO. (Do not exceed adult dose). Do not delay cardioversion for sedation.
5. If patient converts to sinus rhythm from a wide complex tachycardia, give Lidocaine 1.5 mg/kg IV/IO bolus. Repeat at 0.75 mg/kg q 10 min.
6. If patient does not convert:
7. Obtain post treatment 12-lead ECG
8. Contact OLMC for advice.

## ACLS-CARDIAC ARREST

### I. Obtain History of:

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

### II. Non-Traumatic Cardiac Arrest

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#### EMERGENCY MEDICAL RESPONDER

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- A. Call for ALS backup
- B. Suction as necessary to clear the airway
- C. Ventilate initially with 100% O<sub>2</sub> using oral airway and BVM system.
- D. Perform CPR until AED is available or perfusion is restored.
- E. Defibrillation should be initiated after two minute of CPR by AED (see AED Protocol).
- F. If a pulse is present manage and support ABC's as necessary.
- G. Prepare for transport if ALS arrival not eminent

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#### EMT BASIC CARE

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- H. If no spontaneous respiratory effort, place PEAD.

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#### EMT INTERMEDIATE /RN /CARE

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- I. Cardiac ECG Monitoring
- J. IV/IO, BSS, TKO or Saline lock
- K. Check cardiac rhythm and follow appropriate ACLS Algorithm
- L. Establish advanced Airway via PEAD [with capnography](#).

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#### PARAMEDIC

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- M. Establish advanced airway via ET tube or PEAD [with capnography](#).
- N. If no IV is established, place IO and administer meds thru IO. You can give the following down the ET tube: Epinephrine, Lidocaine, Atropine, and Narcan, but is not highly recommended in cardiac arrest.

## 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; maximum 1 mg (10 ml 1:10,000 IV/IO).
2. Amiodarone 5 mg/kg IV/IO repeat once with 2.5 mg/kg
3. Lidocaine 1.0 mg/kg IV/IO up to 3 mg/kg.
4. Sodium bicarbonate 1 mEq/kg IV/IO then 0.5 mEq/kg for subsequent doses.
5. Magnesium sulfate 25 mg/kg IV/IO.

#### Asystole

1. Epinephrine every 3-5 minutes.

#### Pulseless Electrical Activity

1. Epinephrine every 3-5 minutes.
2. **Consider and treat other possible causes:**
  - a. Acidosis – consider sodium bicarbonate 1 mEq/kg IV/IO.
  - c. Cardiac Tamponade – immediate transport
  - c. Cyclic antidepressants – consider sodium bicarbonate 1 mEq/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.

P. = Paramedic



## QUICK REFERENCE TO PEDIATRIC RESUSCITATION DRUGS

**Table 1: Neonates – Immediate Postnatal Resuscitation**

| Drug   | Indication                  | Dose                         |
|--|-----------------------------|------------------------------|
| (RN/I/P) Dextrose, 12.5%<br>(Dilute D <sub>50</sub> by ½ for D-25, then dilute by ½ for D12.5 with NS) | Hypoglycemia                | 0.5 gm/kg<br>(2 ml/kg) IV/IO |
| (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<br><br>V-tach with pulse           | 5 mg/kg IV/IO<br>Repeat once with 2.5 mg/kg<br>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 – may repeat dose once.<br>Minimum dose: 0.1 mg (Do not exceed adult dose.)                                     |
| (RN/I/P) Dextrose, 25%                          | Hypoglycemia   | 0.5 gm/kg (2 cc/kg)<br>(D-12.5 , Neonates, D-25 infants, children)   |
| (P) Dopamine                                    | Low cardiac output   | 5 to 20 mcg/kg min.  |
| (RN/I/P) Epinephrine<br>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 (3 mg/kg MAX)<br>Maintenance: 0.75 mg/kg q 10 min. (No MAX)   |
| (P) Midazolam (Versed)                          | Pacing – V-tach<br>Seizures                                | IV/IO: 0.05-0.1 mg/kg, to max 2.5mg<br>IM: 0.2 mg/kg to max 5 mg   |
| (P) Magnesium Sulfate                           | V-fib/ Pulseless V-tach                                    | 25 mg/kg IV/IO   |
| (RN/I/P) Naloxone (Narcan)                      | Respiratory depression secondary to narcotics              | 0.1 mg/kg – MAX of 2 mg  |
| (P) Sodium Bicarbonate<br>(Dilute by ½ with NS) | Metabolic acidosis, cyclic antidepressant OD, Hyperkalemia | 1 mEq/kg/dose  |

**ACLS  
VF/VT**

~~~~~EMT INTERMEDIATE / RN / PARAMEDIC CARE~~~~~

**III. Shockable rhythm (Ventricular Fibrillation/Pulseless Ventricular Tachycardia):**

**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.
- These instructions assume VF/pulseless VT. If rhythm changes from VF/VT, switch to the appropriate algorithm.

**“Check Rhythm, CPR & CHARGE, CLEAR, Defibrillate – CPR x 2 minutes”**

- Each Cycle of CPR **done over 2 minutes** includes:
- Rhythm Check **and pulse check simultaneously.**
- 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 Mag. 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, defibrillate as soon as rhythm is determined to be VF/VT. **CPR until pads placed.**
- B. **Check Rhythm – Defibrillate 200J biphasic – CPR x 2 minutes.**
- C. **Consider advanced** airway, capnography, & establish IV/IO access. **Ready Epi or Vasopressin.** Good CPR with capnography 20 mmhg or greater.
- D. **Check rhythm – Defibrillate 300J biphasic – CPR x 2 min.**
- E. **Epinephrine 1:10,000 – 1mg IV/IO. Flush, 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.) **Ready 300 mg Amiodarone.**
- F. **Check Rhythm – Defibrillate 360J biphasic – CPR x 2 minutes.**
- G. **Amiodarone<sup>1</sup> 300 mg IV/IO. Flush, Consider reversible causes.**
- H. **Check Rhythm – Defibrillate 360J biphasic – CPR x 2 minutes.**
- I. **Epinephrine 1:10,000 – 1mg IV/IO Flush**
- J. **Check Rhythm – Defibrillate 360 J biphasic – CPR x 2 minutes.**
- K. **Amiodarone 150 mg IV/IO. Flush.**
- L. **Check Rhythm – Defibrillate 360J biphasic – CPR x 2 minutes.**
- M. **Epinephrine 1:10,000 – 1mg IV/IO. Flush**
- N. **Check Rhythm – Defibrillate 360J biphasic– CPR x 2 minutes.**
- O. **Simultaneously at each rhythm check monitor airway and capnography.**
- P. **Contact OLMC for consultation, ready transport or call in field.**

~~~~~EMT PARAMEDIC CARE~~~~~

- P. **Magnesium Sulfate – 2 gm in 16 ml NS, LR, D5W IV/IO over 1-2 minutes**
- Q. **Refer to item P above if code proceeds to this level.**

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<sup>1</sup> 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.

NOTE: EMT Intermediate / Paramedic

- **ROSC**, initiate post resuscitation care:
- **Optimize ventilation and oxygenation**
  1. Maintain ETCO<sub>2</sub> at 35 – 40 mmHg.
  2. Maintain SPO<sub>2</sub> ≥94%, do not hyperventilate, start at 10-12 breaths/minute.
- **Treat hypotension (SBP <90 mm Hg)**
  1. IV/IO bolus, 1-2 L NS, if inducing hypothermia, use 4 deg. C fluid.
  2. Vasopressor infusion: Epinephrine 0.1-0.5 mcg/kg per minute, or Dopamine 5-10 mcg/kg per minute.
  3. Consider treatable causes, H's and T's.
  4. Obtain a 12-Lead ECG
  5. If patient is unresponsive, initiate therapeutic hypothermia protocol, placing ice packs in axilla, groin, neck, & around head wrapped in a light towel. Initiate 4 deg. C Normal saline drip for therapeutic hypothermia.

\*\*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 |

~~~~~EMT PARAMEDIC CARE~~~~~

- ❖ If patient converts with magnesium, follow with magnesium sulfate 1 gm/hr gtt.
- ❖ If patient appears malnourished, alcoholic or rhythm suggests **Torsades de Pointes**, give magnesium sulfate before other antidysrhythmics. If patient converts, 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)

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

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

ACLS  
ASYSTOLE/PEA

**IV. Unshockable rhythm (Asystole/Pulseless Electrical Activity)**

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.
- ❖ These instructions assume Asystole/PEA. If rhythm changes switch to the appropriate algorithm.

**“Check Rhythm - CPR x 2 minutes”**

- ❖ Each Cycle of CPR includes:
- ❖ Rhythm Check.
- ❖ 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.

~~~~~EMT INTERMEDIATE /RN/ PARAMEDIC CARE~~~~~

- A. Initiate CPR
  - 1. For unwitnessed arrest, give 2 min (5 cycles) CPR while placing pads.
  - 2. For witnessed arrest with downtime < 5 minutes, check rhythm as soon as leads applied.
- B. **Epinephrine** 1:10,000 – 1mg IV/IO. **Flush**. 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.)
- C. **Consider advanced** airway, **capnography** & establish IV/IO Access.
- D. Check Rhythm – CPR x 2 minutes.
- E. **Repeat Epinephrine**.
- F. Check Rhythm – CPR x 2 minutes.
- G. If PEA, administer **fluid challenge of 500 ml BSS**.
- H. 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 1 amp Sodium Bicarbonate (50 mEq).
  - 4. Hyperkalemia:
    - a. Albuterol, 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
- I. Prepare patient for transport as soon as possible, **call code in field, or if ROSC, go to post arrest treatment**.

## CHEST PAIN

### NOTE:

- ❖ Non-traumatic chest pain should be treated as cardiac in origin until proven otherwise.
- ❖ 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 chest pain, complete the Chest Pain/STEMI checklist and transfer paperwork with patient.

### EMERGENCY MEDICAL RESPONDER 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 BASIC 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.

### EMT INTERMEDIATE/RN CARE

In addition to the above and as appropriate:

- 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).**
- M. If machine reads:

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

or

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

**Activate Lifeflight** 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
  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.
- N. Check bilateral B/P if suspected dissecting aortic aneurysm.

**CHEST PAIN  
(Continued)**

- O. Nitroglycerin 0.4 mg SL 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 <sup>1,2</sup>
- P. Morphine: 1 - 2 mg every 5 minutes up to maximum dose of 10 mg IV/IO for ischemic chest pain relief if systolic B/P remains > 100.

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

In addition to the above and as appropriate:

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

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

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

- A. If Lifeflight is unavailable
- 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

<sup>1</sup> 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.

<sup>2</sup> 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.

### EMERGENCY MEDICAL RESPONDER

- 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. 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 BASIC 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.

### EMT INTERMEDIATE/RN CARE

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

### EMT PARAMEDIC CARE

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

## 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)

### EMERGENCY MEDICAL RESPONDER CARE

- A. Administer oxygen 2 - 4 L/min via nasal cannula, increasing delivery as appropriate.
- B. 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 BASIC CARE

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

### I. HYPOGLYCEMIA --TREATMENT (BGL < 60)

#### EMT BASIC CARE

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

#### EMT INTERMEDIATE/RN CARE

- A. Start a large bore IV, saline lock.
- B. If the patient has a BGL < 60 administer D<sub>50</sub> (50 ml)<sup>1</sup> over 2-3 minutes in a patent, free flowing IV. **Precautions:** Extravasation of dextrose 50% will cause necrosis of tissue.
- C. 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.
- D. If an IV cannot be established, administer 1 mg Glucagon IM for adults and children weighing over 20 kg (44 lbs.).
- E. 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.**

#### EMT PARAMEDIC CARE

- H. 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.

## DIABETIC EMERGENCIES

(continued)

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

~~~~~**EMT INTERMEDIATE/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

~~~~~**EMT 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?
  
- I. 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.

### I. Treatment

~~~~~**EMERGENCY MEDICAL RESPONDER 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 BASIC CARE**~~~~~

- H. If unconscious consider use of PEAD.

~~~~~**EMT INTERMEDIATE/RN CARE**~~~~~

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

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

- L. Consider use of RSI protocol for intubation.
- M. If patient is intubated place nasal gastric tube per protocol
- N. 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.**

### ~~~~~EMERGENCY MEDICAL RESPONDER/EMT BASIC 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.

### ~~~~~EMT INTERMEDIATE/RN CARE~~~~~

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

### ~~~~~EMT 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

~~~~~**EMERGENCY MEDICAL RESPONDER/EMT BASIC 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.

~~~~~**EMT INTERMEDIATE/RN AND PARAMEDIC 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

~~~~~**EMERGENCY MEDICAL RESPONDER/EMT BASIC 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 SaO<sub>2</sub>. 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.

~~~~~**EMT INTERMEDIATE/RN CARE**~~~~~

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

~~~~~**EMT 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 Morphine Sulfate to any patient 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. Specific 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
- III. Treatment

### ~~~~~EMERGENCY MEDICAL RESPONDER/EMT BASIC 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.

### ~~~~~EMT INTERMEDIATE / RN CARE~~~~~

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

### ~~~~~EMT PARAMEDIC CARE~~~~~

- A. 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, maximum 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.

## 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

### ~~~~~EMERGENCY MEDICAL RESPONDER/EMT BASIC CARE~~~~~

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

### ~~~~~EMT INTERMEDIATE/RN/PARAMEDIC CARE~~~~~

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

**Note: If the patient has chest pain, go to the chest pain protocol.**



## NAUSEA / VOMITING

### EMERGENCY MEDICAL RESPONDER/EMT BASIC 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.

### EMT INTERMEDIATE / 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
    - 4mg Zofran (odt) quick dissolving tablet placed on tongue.
    - Repeat in 15 min if no relief.

### EMT PARAMEDIC CARE

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

1. 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  $\geq 2$  years of age
  - 4 mg ondansetron (Zofran) orally dissolving tablet or

1. If > 2 month 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
- II. Treatment

### EMERGENCY MEDICAL RESPONDER 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 BASIC CARE

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

### EMT INTERMEDIATE / RN CARE

- E. Start two large bore (#14 or 16) IV's/IO's enroute, BSS.<sup>1</sup>
- F. Give fluid resuscitation, if indicated, in challenges of 20 ml/kg for children or 500 cc for adults<sup>2</sup>
- G. Titrate fluid to systolic B/P of 100 and improved skin signs.<sup>3</sup>

### EMT PARAMEDIC CARE

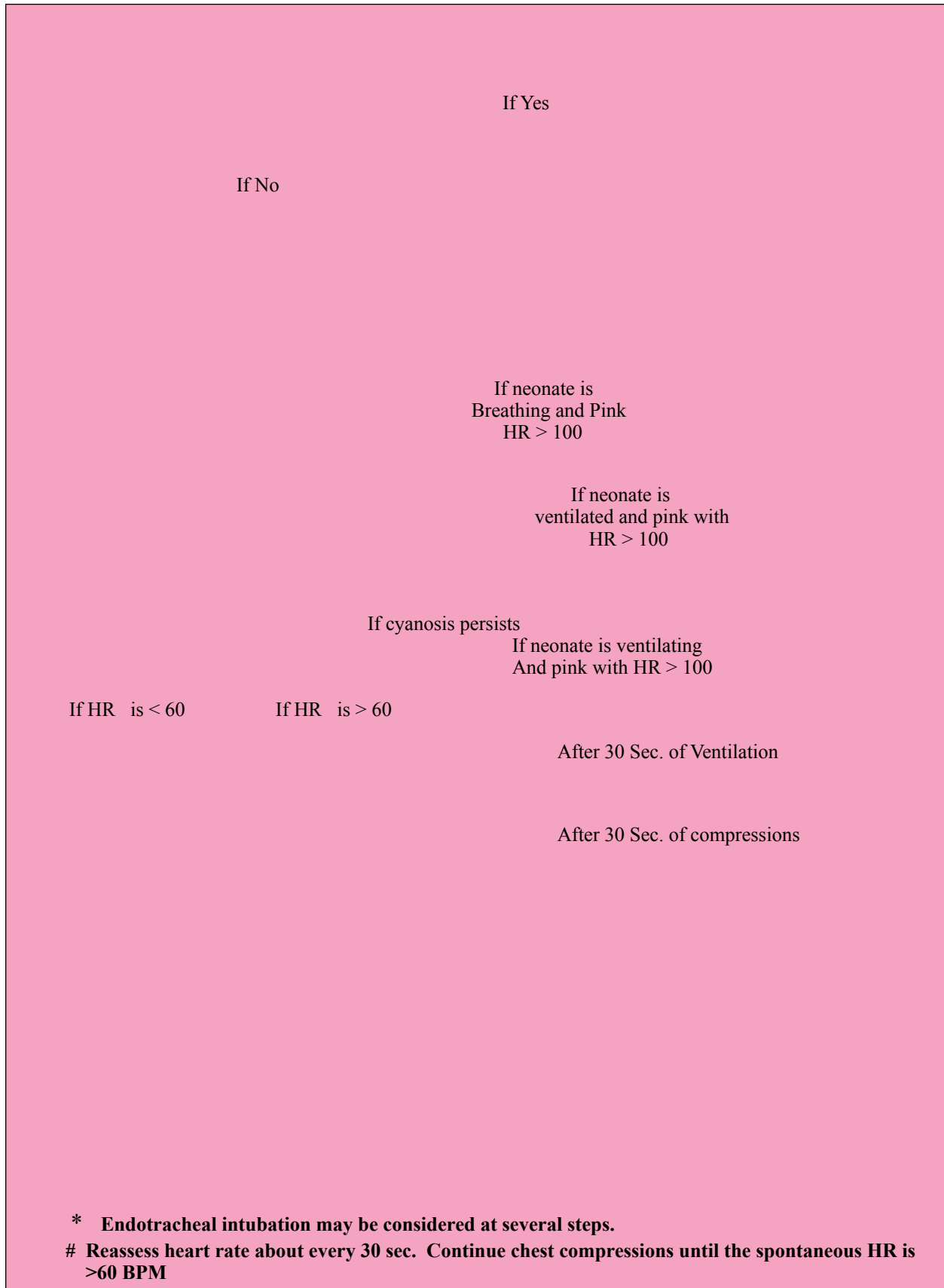
- H. Consider intubation if unable to protect airway.

<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.

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

<sup>3</sup> Some patients may need a higher systolic B/P than 100mmHg to improve their status.

## NEONATAL RESUSCITATION



\* Endotracheal intubation may be considered at several steps.

# Reassess heart rate about every 30 sec. Continue chest compressions until the spontaneous HR is >60 BPM

## 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.

### ~~~~~EMERGENCY MEDICAL RESPONDER~~~~~

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

### ~~~~~EMT BASIC CARE~~~~~

- A. Use sterile or clean technique
- B. If the patient is about to deliver, remove clothing from the mother's lower body.
- C. The EMT should wear eye protection and sterile gloves.
- D. Place a sterile sheet under the patient's buttocks with patient in semi-fowler's position.
- E. 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.
- F. Guide and control, but do not retard or hurry delivery.
- G. When head is delivered, check for cord around baby's neck, and gently remove if found.
- H. Suction mouth, then nose, with bulb syringe after head is delivered.
- I. When body is delivered, keep infant level with perineum.
- J. Clamp and cut umbilical cord.
- K. Assess and treat ABC's. Follow Neonatal Resuscitation Protocol if indicated.
- L. 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.
- M. Document APGAR findings at time of birth and five minutes later.
- N. Gently massage mothers' lower abdomen to encourage uterine contraction and prevent excessive bleeding.

(continued on next page)

**OBSTETRIC EMERGENCIES  
(Continued)**

**APGAR Scoring**

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

~~~~~**EMT INTERMEDIATE / RN CARE**~~~~~

In addition to the above and as appropriate:

- A. Establish IV, BSS, TKO.
- B. Treat mother for shock per shock protocol
- C. Place monitor
- D. Monitor for signs of eclampsia and treat per Eclampsia protocol

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

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

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

**II. ABNORMAL CHILDBIRTH**

**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.

## **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.
1. 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.
2. Use trauma pads to absorb the bleeding, but do not place anything inside the vagina.
3. 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. Treatment - 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 ± 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:

~~~~~EMT BASIC CARE~~~~~

- 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.

~~~~~EMT INTERMEDIATE / RN CARE~~~~~

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

~~~~~EMT PARAMEDIC CARE~~~~~

- 1. 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.
- 2. 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) 2-10 mg IV/IM/IO, or
  - c. Ativan (lorazepam) 0.5 – 2.0 mg IV/IM slow push to a maximum dose of 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 cardiac pain, see the Chest Pain Protocol.

### EMERGENCY MEDICAL RESPONDER/EMT BASIC 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).**

### EMT INTERMEDIATE / 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 or IN every 3-5 minutes titrated to pain to a maximum of 10 mg
  2. Fentanyl (Sublimaze) 25 - 50 micrograms IV, IM, IO or IN (1 mcg/kg). Repeat with 25-50 micrograms every 3-5 minutes as needed to a maximum of 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 or IN. May repeat with 0.5-1 microgram/kg every 3-5 minutes as needed to a maximum of 4 micrograms/kg. Do not exceed adult dosing.
- B. For children under 20 kg morphine 0.1mg/kg IV, IO or IM. May repeat every 3-5 min. For children over 20 kg, refer to adult dosages. Do not exceed adult dosing.

### EMT 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 to a maximum of 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), not to exceed a total maximum dose of 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.

## ~~~~~EMT BASIC, INTERMEDIATE, RN, AND PARAMEDIC 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 SpO<sub>2</sub> 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.
- H. Document circulatory status of restrained extremities every 15 minutes.

## ~~~~~EMT 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.
- D. 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 to a maximum dose of 4.0 mg
- E. Document time of administration and indications for chemical restraint.
- F. Establish IV if not already available.
- G. Consider and treat medical causes of combativeness (hypoxia, head injury, hypoglycemia).
- H. 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).

### ~~~~~EMERGENCY MEDICAL RESPONDER CARE~~~~~

### 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 1 (Toxidromes).

## POISONING (Continued)

### A. INGESTION

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

#### ~~~~~EMT BASIC CARE~~~~~

2. 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

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

#### ~~~~~EMT INTERMEDIATE / 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 IM/IV/IO; repeat as needed. 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 minutes until symptoms subside.
    - iv. Contact OLMC.

#### ~~~~~EMT PARAMEDIC CARE~~~~~

5. Specific antidotes (cont):
  - f. **Tricyclic Antidepressants:** Sodium bicarbonate - 1 mEq/kg IV/IO for severe arrhythmia's (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 pearl (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.
- \*\* 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  
Bronshorrhhea  
Emesis  
Lacrimation  
Salivation, Secretions  
Sweating

*\*\*Nicotinic symptoms:*

Mydriasis  
Tachycardia  
Weakness  
Hypertension  
Hyperglycemia  
Fasciculations

*\*\*\*Central symptoms:*

Confusion  
Convulsions  
Coma

## RATTLESNAKE BITE PROTOCOL

### 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.

### ~~~~~FIRST RESPONDER 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 is reaction is visible, mark and time the proximal edge of reaction.

### ~~~~~EMT BASIC 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.

### ~~~~~EMT INTERMEDIATE / RN CARE~~~~~

In addition to the above and as appropriate:

- 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

### ~~~~~EMT 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  $SaO_2 \geq 90\%$ .

#### 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**

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

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

| <b>Adults with bradycardia</b> | <b>Pediatric &lt;1 years old</b>  |
|--------------------------------|---|
| 0.5 mg IV/IO                   | 0.02 mg/kg with a 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.)

1. 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 IM/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**

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

2. 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 mg/kg q 20-30 minutes | 1 mg/kg IV/IO push over 5 sec;<br>Rebolus 0.1 mg/kg q 20-30 minutes |

**PLACEMENT WITH PROOF:**

1. Administer high flow O2 via nasal cannula (15 L/min)
2. After the fasciculation's stop, perform intubation.
3. Visualize the ET tube passing through the vocal cords.
4. If relaxation in 60-120 seconds is inadequate, repeat dose of neuromuscular blocking agent and reattempt intubation.
5. If 2 attempts at intubation are unsuccessful, attempt to place PEAD.
6. If unable to place PEAD, ventilate with BVM until spontaneous respirations return (usually 6-10 minutes).
7. If unable to ventilate patient, perform cricothyrotomy. See cricothyrotomy protocol.
8. Upon successful intubation, confirm ET tube placement, by 5-point auscultation and end tidal CO2 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 administer a sedative dose of Versed (midazolam), and/or treat pain with Morphine Sulfate.

Versed (midazolam)

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

1. Morphine

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

2.

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

Rocuronium (zemuron)

| Adults:                                    | Pediatric < 6 years old |
|--|-------------------------|
| Rebolus 0.1 mg/kg IV/IO q<br>20-30 minutes | Same as Adult           |

1.

2. Vecuronium (norcuron)

| Adults:                                  | Pediatric < 6 years old |
|--|-------------------------|
| Rebolus 0.01 mg/kg IV/IO q<br>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.

### EMERGENCY MEDICAL RESPONDER/EMT BASIC 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:

|                      | <b>Mild</b>            | <b>Moderate</b>         | <b>Severe</b>          |
|----------------------|------------------------|-------------------------|------------------------|
| 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.

## RESPIRATORY EMERGENCIES

(Continued)

### EMT INTERMEDIATE / RN CARE

- D. Cardiac Monitor.
- E. Medications may include:
  1. Duoneb (Mix Albuterol and Atrovent) for initial dose if already taking albuterol treatments. (If patient is known to be taking Spiriva (Tiotropium), Atrovent is not indicated and should be withheld.)
  2. Albuterol for subsequent doses.
  3. Epinephrine – With upper airway Stridor, consider 1-1,000 (3 mg nebulized).  
No requirement for OLMC request to treat patient over 40 years or older.

### EMT PARAMEDIC CARE

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

***Epinephrine should be given with caution or avoided in older patients, those with cardiac disease, and those with a history of hypertension.***

If patient is 40 years or older contact OLMC before administering SC/IM/IV/IO epinephrine.

#### **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 O<sub>2</sub> [**or nebulized medications**] through a familiar object, (e.g., place tubing through the bottom of a paper cup held close to the child's face by the parent or caregiver.
- \*\* 5. Do not dilute or reduce the dose of albuterol. Indication and dosage 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 (up to 10mg) 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

#### ~~~~~EMERGENCY MEDICAL RESPONDER/EMT BASIC 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. **If available, start patient on CPAP and monitor breathing.**
- D. Assist patients having severe breathing difficulty with BVM at 100% FIO<sub>2</sub> / 15 l/min.

#### ~~~~~EMT INTERMEDIATE / 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.
  - 2. CPAP. (BVM assisted breathing if CPAP not available.)
  - 3. Duoneb or Albuterol 2.5 mg nebulized if wheezing is present
  - 4. Lasix (furosemide) 40-80 mg IV 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.

#### ~~~~~EMT PARAMEDIC CARE~~~~~

- I. Administer Captopril 12.5 mg SL. With the above additional considerations.  
**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

### EMERGENCY MEDICAL RESPONDER 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 BASIC 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.

### EMT INTERMEDIATE / 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/ IM titrated to respirations and LOC. (Pediatric dose 0.01 mg/kg slow bolus, if no response increase dose to 0.1 mg/kg).

### EMT PARAMEDIC CARE

3. Versed (midazolam), 2.0 – 10mg IV - 15 mg IM.
  4. Ativan (lorazepam), 0.5 – 2.0 IM / IV slow push with a maximum dose of 4.0 mg
  5. Thiamine, 100mg IV / IM before dextrose administration if patient shows signs of malnutrition or if there is a history of ETOH abuse.
- K. 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

## 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

#### ~~~~~EMERGENCY MEDICAL RESPONDER/EMT BASIC 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.

#### ~~~~~EMT INTERMEDIATE / 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.
- I. 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*)**

~~~~~**EMERGENCY MEDICAL RESPONDER 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.

~~~~~**EMT BASIC / INTERMEDIATE / 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 0.1 mg 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.

~~~~~**EMT 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**

~~~~~**EMT INTERMEDIATE / 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

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

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

**IV. HYPOVOLEMIC / HEMORRHAGIC SHOCK**

~~~~~**EMT INTERMEDIATE / RN / PARAMEDIC CARE**~~~~~

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

**V. NEUROGENIC SHOCK**

~~~~~**EMERGENCY MEDICAL RESPONDER/EMT BASIC CARE**~~~~~

- A. Protect the spine.

~~~~~**EMT 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:

#### ~~~~~EMERGENCY MEDICAL RESPONDER 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 BASIC CARE~~~~~

- M. Consider PEAD placement if indicated.

**SUSPENSION TRAUMA  
(continued)**

~~~~~**EMT INTERMEDIATE /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.

~~~~~**EMT 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 PRN pain control.
  - 4. **Albuterol** 2.5 mg nebulized. May repeat prn
- S. Rapid transport to the closest medical facility.

## TASER REMOVAL PROTOCOL

### NOTE:

- ❖ Do not forget to assess for potential trauma that may have occurred before or after the patient was hit by the taser.
- ❖ Remember that the process of removing a Taser probe is not a time-critical emergency. Calm and decisive actions by the EMS provider will deliver the best patient care and help prevent biohazard exposure.

### ~~~~~EMT BASIC/INTERMEDIATE/RN/PARAMEDIC CARE~~~~~

#### I. DESCRIPTION:

EMS may be called by police after a TASER has been used on a suspect. EMS personnel may be requested to remove probes from skin. Once probes have been removed, paramedics are not required to transport.

#### II. INDICATIONS:

When TASER darts have been deployed by law enforcement officers to subdue adult suspects.

#### III. CONTRAINDICATIONS:

As listed under procedure

#### IV. PRECAUTIONS:

- A. Patients should be in police custody and monitored by law enforcement for the safety of medical personnel.
- B. Do not remove Taser Barbs from the face, neck, or groin area, or imbedded in the bone. These patients must be seen at the Emergency Department
- C. Tasers emit two barbs. Make sure both are removed. Treat all barbs as a bio-hazard and dispose as you would any other sharps. Some law enforcement agencies may direct you to place the probe back into the cartridge as evidence.
- D. Where both implanted barbs and wires are still connected to the Taser Gun, shock can still be delivered.

#### V. PROCEDURE:

Removing TASER Darts in the Field without Transport to an Acute Care Facility

- A. Once a TASER has been used against a suspect and the scene has been secured, a medical evaluation is required to ensure the suspect is safe to be taken into custody.
- B. If patients meet refusal of transport criteria, have their darts removed, and do not request transport to the hospital, they may be released into police custody, without hospital attendance.
- C. TASER dart removal in the field should proceed only if ALL criteria for refusal of transport are met:
  1. Patient must have a GCS of 15
  2. Patient must have a heart rate of <110 bpm, respiratory rate >12, O2 saturation >94%, systolic blood pressure >100mmHg and <180mmHg
  3. No dart has penetrated the eye, face, neck, breasts (females), axilla or genitals
  4. Patient has no other acute medical or psychiatric condition requiring medical evaluation, such as:
    - a. Traumatic injury sustained in TASER induced fall or law enforcement encounter
    - b. Hypoglycemia
    - c. Acute psychiatric disturbance or agitated delirium
    - d. No titanic muscle contractions
    - e. Patient is not requesting transport to hospital
    - f. Patient is 17 years of age or older
    - g. All darts which have been deployed are accounted for
- D. Patients with altered mental status, suspected drug abuse, barb related injury, injury related to fall, pregnancy or complaints of chest pain/shortness of breath must be transported to closest facility

## **TASER REMOVAL PROTOCOL (continued)**

- E. If all of the above criteria are met, the following steps may be followed for TASER dart removal:
1. Ensure that the TASER device is no longer applying electrical charge prior to contacting the patient, darts, or wires
  2. Use scissors to cut the wire at the base of each dart cylinder to disconnect the dart(s) from the TASER cartridge
  3. Wearing gloves, make an “L” with your non-dominant hand and stabilize the extremity or area in the general proximity of the probe, keep your hand several inches away from the probe itself, and do not attempt to stretch the skin immediately around the probe
  4. Grasp the cylinder of the TASER dart between the thumb and index finger of one hand, remove dart with a quick firm pull directed perpendicular to the skin surface. Dispose of the dart in a sharps container, being careful not to poke oneself with the barb. Repeat this step for the next barb.
  5. Cleanse each dart wound and the surrounding skin with saline-soaked gauze or alcohol pad
  6. Cover each area with a band-aid or other sterile dressing. Inform the patient and police that this may be removed in 24 – 48 hours
  7. Ask the patient if they would like to be taken to the hospital. If the patient refuses, document the patient’s refusal as per guideline. If the patient wishes to transport to the hospital, then transport is to be initiated
  8. If the patient refuses transport, instruct the patient to seek medical attention immediately, if he/she develops any signs of infection around one or more of the wounds (fever, increased pain, redness, heat, swelling, purulent discharge).

### **I. DOCUMENTATION REQUIREMENTS:**

The following information must be documented on the patient care report:

- A. Patient’s presenting signs and symptoms, including vital signs, level of consciousness and oxygen saturation
- B. Indications for protocol use
- C. Time of removal
- D. Location (anatomic) of dart embedment
- E. Findings / results of dart removal
- F. Repeat assessment, including vital signs, level of consciousness, and oxygen saturation as indicated
- G. Changes from baseline, if any, that occur during treatment or transport
- H. Documentation of refusal of transport with witnessed signature

## 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,<br>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-

### I. TRAUMA SYSTEM CRITERIA

**NOTE:**

- ❖ EMT'S will activate the trauma system whenever a patient falls within the state trauma system criteria.
- ❖ 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.

### II. 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.

### III. 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.

#### ~~~~~EMERGENCY MEDICAL RESPONDER 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 BASIC CARE~~~~~

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

#### ~~~~~EMT INTERMEDIATE / RN CARE~~~~~

- 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>

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<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 60ml/kg unless physician order to exceed that amount is received  
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## TRAUMA

-Continued-

M. Titrate fluid to systolic BP of 90 and improved signs of skin perfusion and mental status.<sup>1</sup>

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### EMT 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.

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<sup>1</sup> Some patients may need a higher systolic B/P than 90 mmHg to improve their status.  
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## 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>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>CC</b>               | Chief Complaint                                    |
| <b>CHF</b>              | Congestive heart failure                           |
| <b>CO<sub>2</sub></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>Epi.</b>             | Epinephrine  |
| <b>ET</b>               | Endotracheal                                       |
| <b>ETCO<sub>2</sub></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>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\_\_\_\_\_**