



# ***MALHEUR COUNTY EMS PROTOCOLS***

(December 2007)

Malheur County EMS Medical Director  
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## Contents

<b>INTRODUCTION</b> .....	<b>4</b>
<b>TREATMENT STANDARDS</b> .....	<b>5</b>
ABDOMINAL PAIN .....	6
ALTERED MENTAL STATUS & COMA .....	7
ANAPHYLAXIS .....	8
BURNS.....	9
CARDIAC ARREST (General Approach) .....	10
CARDIAC ARREST (Asystole) .....	11
CARDIAC ARREST (Pulseless Electrical Activity)(PEA).....	12
CARDIAC ARREST (V-Fib or Pulseless V-Tach) .....	13
ACUTE CORONARY SYNDROME (Cardiac Chest Pain) .....	15
CARDIAC DYSRHYTHMIAS (Bradycardia) .....	16
CARDIAC DYSRHYTHMIAS (Paroxysmal Supraventricular Tachycardia) (PSVT/SVT) .....	17
CARDIAC DYSRHYTHMIAS (Premature Ventricular Contractions) (PVCs).....	18
CARDIAC DYSRHYTHMIAS (Ventricular Tachycardia with pulse) .....	19
CHILD BIRTH.....	20
CRUSH INJURY/ENTRAPMENT .....	21
HYPERKALEMIA .....	22
HYPERTHERMIA .....	23
HYPOTHERMIA.....	24
MUSCULOSKELETAL INJURIES (Fractures, Dislocations and Amputations).....	25
SPINAL INJURY & IMMOBILIZATION .....	26
NAUSEA & VOMITING.....	27
NEONATAL RESUSCITATION.....	28
POISONING & OVERDOSE .....	29
RESPIRATORY DISTRESS.....	32
SEIZURES .....	34
SHOCK.....	35
STROKE/CVA.....	36
SUBMERGED PATIENT .....	37
<b>PROCEDURES</b> .....	<b>38</b>
AIRWAY MANAGEMENT (Combitube®) .....	39
AIRWAY MANAGEMENT (Cricothyrotomy- Quick Trach®).....	40
AIRWAY MANAGEMENT (End Tidal CO2 Monitoring) .....	41
AIRWAY MANAGEMENT (Endotracheal Intubation).....	42
AIRWAY MANAGEMENT (Intubation with Neuromuscular blocking agents).....	43
AIRWAY MANAGEMENT (King LTD Airways®).....	44
AIRWAY MANAGEMENT (Tracheal Tube Inducer) .....	45
INTRAOSSEOUS INFUSION .....	46
IV MANAGEMENT (IV Access & Infusions) .....	48
NASOGASTRIC TUBE PLACEMENT .....	49
TRANSCUTANEOUS PACING.....	50
PELVIC SLING (Suspected Pelvic Fracture) .....	51
PELVIC WRAP (Suspected Pelvic Fracture) .....	52
RESTRAINING OF PATIENTS (Physical and Chemical Restraints).....	53
SUCTIONING.....	54
TAZER® BARB REMOVAL.....	55
TENSION PNEUMOTHORAX (Chest Decompression) .....	56

<b>OPERATIONS</b> .....	<b>57</b>
ADVANCED DIRECTIVES (Do Not Resuscitate) .....	58
CRIME SCENE RESPONSE .....	60
DEATH IN THE FIELD .....	61
DOCUMENTATION .....	62
GRIEVING PEOPLE .....	63
HAZARDOUS MATERIALS MEDICAL RESPONSE .....	64
INFECTION CONTROL PRACTICES .....	66
MEDICAL CONTROL OF SCENE .....	67
REFUSAL & INFORMED CONSENT .....	69
REPORTING SUSPECTED CHILD ABUSE .....	71
REPORTING SUSPECTED ELDER ABUSE .....	72
STAGING FOR HIGH RISK RESPONSE .....	73
TRAUMA PATIENTS-SYSTEM GUIDELINES .....	74
<b>MEDICATIONS</b> .....	<b>76</b>
ACTIVATED CHARCOAL .....	77
ADENOSINE .....	78
ALBUTEROL .....	79
AMMONIA INHALANTS .....	80
ASPIRIN .....	81
ATROPINE SULFATE .....	82
CALCIUM CHLORIDE .....	83
DEXTROSE 50% .....	84
DIAZEPAM .....	85
DILTIAZEM .....	86
DIPHENHYDRAMINE .....	87
DOPAMINE .....	88
EPINEPHRINE .....	89
ETOMIDATE .....	90
FLUMAZENIL .....	91
FUROSEMIDE .....	92
GLUCAGON .....	93
HYDROXYZINE .....	94
LIDOCAINE .....	96
METHYLPREDNISOLONE .....	98
METOPROLOL .....	99
NITROGLYCERIN .....	103
NITROGLYCERIN PASTE .....	104
ORAL GLUCOSE .....	105
OXYGEN .....	106
SODIUM BICARBONATE .....	107
SUCCINYLCHOLINE .....	108
THIAMINE .....	109
VECURONIUM .....	110

## **INTRODUCTION**

The patient care protocols contained within go into effect December 2007 for EMTs and Paramedics operating in Malheur County. Where evidence has been available, the Malheur County Protocol Development Committee has diligently evaluated the material and drafted protocols that will assist us in providing excellent patient care. Where evidence is lacking, we have relied on industry consensus and expert advice, and at times, we have developed the protocol or procedure through exhaustive reviews of research, patient care trends, and our own local experience.

Remember that protocols are guidelines. No specific patient care matrix can be developed that will cover every type of injury, illness, and complicating circumstance that EMTs and Paramedics encounter while providing on-scene care. As we've stated in the Documentation guideline, EMS is performed in a stressful environment with time-critical decisions, and these decisions often have to be made without the benefit of a lengthy risk-benefit analysis. Given these situations, it is expected that we, as individuals and as teams may make mistakes. Our quality assurance/improvement (QA/QI) process is designed to be non-punitive, and clinical or operational problems that are reported in a timely, honest, and complete manner will be evaluated according to the following criteria:

- System Issues (e.g., protocols, procedures, equipment, etc.)
- Education or Training Issues
- Circumstances Leading to an Unusual Operational Decision
- Negligent Behavior

EMS Operations has the obligation to identify system and educational problems and plan effective changes, ensuring that the results are measured through the QA/QI process so that the desired improvement is achieved. Circumstances that lead to difficult scenes will be evaluated for their educational value. The case will be "blinded", and the information shared with other EMT's and Paramedics. Negligent behavior will be carefully evaluated as to its context (intentional or non-intentional), and appropriate improvement plans will be developed. Thanks to everyone who has provided assistance in protocol development and review. Anything that is complex and includes detail is prone to error. Please review these protocols carefully, and route any potential errors, unclear directions, or suggestions for improvement to your EMS Office.

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Robert R. Dickinson  
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Malheur County Emergency Medical Services

Date: \_\_\_\_\_

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Morris H. Smith, MD  
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Malheur County Emergency Medical Services

Date: \_\_\_\_\_

# ***TREATMENT STANDARDS***

## **ABDOMINAL PAIN**

### TREATMENT:

- Oxygen (via PRB if respiratory distress), IV, ECG Monitor.
- Assist patient to position of comfort.
- Monitor vital signs.
- If shock present, follow shock protocol & rapid transport.

### PRECAUTIONS:

- If suspected AAA, titrate IV to SBP of 90 mm/Hg.
- If history of traumatic event with BP < 90, enter into Trauma System.

### KEY CONSIDERATIONS:

- Inferior MI - AAA - Ruptured spleen or liver
- Ectopic pregnancy - Perforated viscous - Emesis (type/amount)
- Recent trauma - Bowel movements - Urinary output
- Last meal - GI Bleed - Abnormal vaginal bleeding

### Pediatric Patients

- Consider non-accidental trauma.
- Closely monitor vitals, BP may drop suddenly.

## **ALTERED MENTAL STATUS & COMA**

### **TREATMENT:**

- Oxygen (via PRB or BVM if respiratory distress), IV, ECG Monitor.
- Monitor vital signs and oxygen saturation.
- Determine capillary blood glucose level. If < 80mg%:
  - Give oral glucose (if able to protect own airway) otherwise give 12.5g – 25g of D50% via IV/IO.
  - If no IV can be established, give Glucagon 1mg, IM.
- If respirations are depressed, consider Narcan® 0.4 mg IV/IO. Repeat q 2 minutes up to 2 mg titrate to respiratory rate. If no improvement, continue with 2 mg increments up to a total of 8 mg if opiate intoxication is still suspected . If no IV/IO access or delayed access: give 2 mg IM, q-5 minutes up to 8mg.
- If patient combative:
  - Protect airway.
  - Consider sedation with Versed or Valium per Patient Restraint Protocol.
  - If suspected CVA, consider stroke protocol.
- If suspected poisoning or known OD, use Poisoning and Overdose Protocol.

### **PRECAUTIONS:**

- If patient is disoriented, think of medical causes.
- If suicidal, do not leave patient alone.
- All patients in restraints must be monitored closely, to include pulse oximeter.

### **KEY CONSIDERATIONS:**

- Previous Psych disorders - Medication reactions
- Breath odors - Possible poisoning (inhaled/contact/ingest)
- Medic alert tags - Needle tracks
- ETOH or drug intoxication - Recent head trauma
- Recent emotional crisis - Suicidal ideas
- Dysrhythmias - Hot/cold emergencies

### **Pediatric Patients – Child <= 14 years old**

Determine capillary blood glucose. If < 60mg%:

- Patients over 10kg, 1cc/kg of D50% slow IV/IO. May repeat once. MAX 50 cc's.
- If no IV/IO established, and child is able to protect airway, give oral glucose.
- If no IV/IO established, and airway protective reflexes not intact give Glucagon 0.02 mg/kg IM. Do not exceed adult dose.
- If mental status and respirations are depressed, give:
  - Narcan 0.1 mg/kg IV/IO. Maximum single dose 2.0 mg.
  - Repeat every 5 minutes if opiate OD strongly suspected to a max of 8.0 mg.

### **Pediatric Patient - <= 1 month or infant <= 1 year**

- Determine capillary blood glucose. If  $\leq$  40mg%:
  - All patients <10kg, administer 2cc/kg of **D25%** slow IV/IO. May repeat once.
  - Patients > 10kg, use Child guidelines above.
- Follow Child guidelines above for use of Glucagon.

# ANAPHYLAXIS

## TREATMENT:

- Oxygen (via PRB or BVM if respiratory distress), IV, ECG Monitor.
- Monitor vital signs and oxygen saturation.
- Mild respiratory distress:
  - Epinephrine 0.3 mg 1:1000 SQ or IM
  - Consider Albuterol 2.5 mg via nebulizer.
- Severe respiratory distress and/or shock syndrome present with BP < 90:
  - Epinephrine 0.3 mg 1:1000 SQ or IM, OR Epinephrine 0.3 mg 1:10,000 IV/IO. Repeat q-5 min as needed.
  - Treat with fluid challenge per Shock Protocol if BP remains <90.
  - Consider Albuterol, 2.5 mg via nebulizer. If patient intubated, or being assisted with BVM, use in-stream administration set.
  - If patient continues to exhibit signs of respiratory distress, administer Solu-Medrol® 125 mg IV/IO, slowly over 1-2 minutes.
- Diphenhydramine 1 mg/kg deep IM/IV/IO, to a maximum of 50 mg.
- Be prepared for more aggressive treatment including cricothyrotomy.

## PRECAUTIONS:

- Epinephrine increases cardiac workload and may cause angina or AMI.
- Normal side effects: Anxiety, palpitations, headache, vomiting.
- Allergic reactions, even systemic in nature, are not necessarily anaphylaxis.

## KEY CONSIDERATIONS:

- Toxic exposure - Recent exposure to allergen, last meal
- Insect bites - Known allergies
- Dyspnea or hives - Chest/throat tightness
- Abdominal cramps - Swelling, numbness, tingling

## Pediatric Patients

- Mild respiratory distress:
  - If wheezing: Nebulized Albuterol 2.5 mg using a mask/spacer.
  - If child unable to benefit from (or cooperate with) inhalation: Epinephrine 0.01 mg/kg of 1:1000 SQ. Max single dose 0.3 mg.
- Severe respiratory distress:
  - Epinephrine 0.01 mg/kg (1:10,000) IV or IO. Repeat q-5 minutes as needed.
  - Solu-Medrol® 2 mg/kg slow IV/IO over 1-2 minutes.
  - If child intubated, Epinephrine 0.02 mg/kg (1:1000 diluted in 4cc NS) ET.
  - If no IV/ET/IO access, Epinephrine 0.01 mg/kg (1:1000) SQ. Max dose 0.3 mg.
  - If wheezing is present, administer Albuterol 2.5 mg via nebulizer. If patient is intubated or being assisted with BVM, use in-stream administration set.
- If shock present, consider fluid challenge per shock protocol.
- If itching severe: Diphenhydramine, 1 mg/kg IM/IV/IO to a maximum of 50 mg.

## **BURNS**

### TREATMENT:

- Oxygen (via PRB mask if respiratory distress), Intubate early to protect airway if needed.
- Monitor vital signs, oxygen saturation, & ECG if electrical burn.
- Start IV/IO, give fluids as follows: Patient's weight in kg ÷ 4, x percent of burn = cc/hr.
- Morphine. Titrate up to 10 mg IV/IM/IO as long as BP remains greater than 100 mmHg systolic. Contact OLMC if more than 10 mg is needed for pain control. Nubain. 5mg IV up to 10 mg. Contact OLMC if more is needed.
- Cool burned area (less than 10 min for large burns), then cover large burns with dry dressings. Discontinue cooling if patient begins to shiver.
- If chemical burn, **protect yourself from contamination FIRST!** Carefully brush off dry chemical or flush with large amounts of water. See also Decontamination protocol.
- If eyes are involved, flush continuously with NS.
- Transport Guidelines – Closest hospital
  - Total burn that is 15% or more of body surface area.
  - Full thickness burn that is 5% or more of body surface area.
  - Burns with inhalation injuries, severe trauma, or in poor risk patients:
    - Pediatrics
    - Elderly
    - Those with history of significant cardiovascular or respiratory problems.
  - Facial burns, genital burns, burns to hands and feet, or circumferential burns.

### PRECAUTIONS:

- Protect patient from hypothermia. Do not leave wet dressings on patient.
- Use ring cutters to remove constricting bands/rings ASAP.
- For firefighters, consider the potential for other traumatic injury or MI.
- Be prepared to use Rapid Sequence Intubation early to control airway if necessary.

### KEY CONSIDERATIONS:

- Was patient in enclosed space - Probability of inhaled toxins
- Past medical history - Explosion (traumatic internal injuries)
- Entry/exit wounds with electricity - CO/cyanide poisoning

### Pediatric Patients

- Morphine dose for children: 0.1 to 0.2 mg/kg IV, IO, IM, or SQ.
- In children, consider the possibility of non-accidental cause.

## **CARDIAC ARREST (General Approach)**

### TREATMENT:

- START CPR for 2 minutes prior to defibrillation (If downtime is >5 minutes).
- Place Defibrillator/Monitor pads - if suspected VF or pulseless VT, Defibrillate.
  - ALL DEFIBRILLATION DOSES SHOULD BE AT THE MANUFACTURERS RECOMMENDED SETTINGS FOR THE MACHINE IN USE.
- Proceed with managing the airway. After advanced airway placement (ETT or Rescue Airway):
  - Carefully check tube placement with 5-point auscultation.
  - Use end-tidal CO2 detector on all intubated patients.
  - Mark and record tube depth at teeth.
  - Check/record tube depth and 5-point check after every patient move.
  - If patient's condition deteriorates, always check tube placement.
- Start IV or IO.
- Consider assigning an EMT to charting duties.
- It may be helpful to push the "Mark" button at each intervention and to write the intervention on the ECG strip itself.

### PRECAUTIONS:

- If contagious disease is suspected, protect yourself with splash kits.
- If traumatic arrest from blunt trauma, consider declaring death in the field.

### KEY CONSIDERATIONS:

- Past medical history - Medications
- Bystander CPR - Evidence of toxic exposure/ingestion
- Recent trauma - Hypothermia
- Down time

### Pediatric Patients

- Most pediatric arrests are due to respiratory causes. Intubate early & carefully assess ET tube placement after every patient movement or change in condition.
- Carefully check scene for evidence of trauma or child abuse.
- Consider contagious disease precautions.

## **CARDIAC ARREST (Asystole)**

### TREATMENT:

- Follow guidelines in Death in the Field Protocol if applicable. If not, or you are unsure:
- Start CPR. Interruptions in CPR should be avoided. When necessary, interruptions should be < 10 seconds.
- Quick-look ECG, confirm in 3 leads and increase gain, if rhythm unclear and possibly VF, defibrillate as for VF.
- Start IV/IO
- Intubate. Airway should be addressed with **minimal interruption to CPR**. Ventilation rate should be 8-10 breaths per minute.
- Administer the following medications:
  - Epinephrine 1.0 mg (1:10,000) IV/IO *every 3-5 minutes during asystole*
    - If no IV/IO, Epinephrine 2.0 mg ETT
  - Atropine 1.0 mg IV/IO every 3-5 minutes after Epinephrine, to a maximum of 3 mg
    - If no IV/IO, Atropine 2.0 mg ETT (Maximum 2 doses, or 4.0 mg)
  - Consider Sodium Bicarbonate 1 mEq/kg IV/IO in patients with hyperkalemia, tricyclic antidepressant overdose, or significant acidosis.
- Consider possible causes: Hypoxia, hyperkalemia, hypokalemia, acidosis, OD, hypothermia.

### PRECAUTIONS:

- If unwitnessed arrest, unknown down-time, and no obvious signs of death, proceed with resuscitation and get further information from family.
- Contact OLMC for advice on continuing resuscitation.
- If history of traumatic event, consider death in the field.

### KEY CONSIDERATIONS:

- Preceding symptoms - Bystander CPR
- Cardiac history - Medications
- Drug overdose - Evidence of toxic exposure/ingestion
- History of traumatic injury - History of renal disease (increased K+)

### Pediatric Patients

- CPR, aggressive airway management and intubation.
- Gain IV/IO access.
- Epinephrine: IV/IO—0.01 mg/kg (1:10,000). ETT— 0.1 mg/kg (1:1,000) in 4ccs NS.
  - Note: ETT Epinephrine in pediatric patients should be considered a **LAST RESORT** after attempts at IV/IO have failed.
- Atropine 0.02 mg/kg IV/IO/ET, minimum single dose 0.1 mg, maximum single dose 1.0 mg. May repeat once.

## **CARDIAC ARREST (Pulseless Electrical Activity)(PEA)**

### TREATMENT:

- Start CPR. Interruptions in CPR should be avoided. When necessary, interruptions should be < 10 seconds.
- Start IV/IO
- Intubate. Airway should be addressed with **minimal interruption to CPR**. Ventilation rate should be 8-10 breaths per minute.
- Consider and treat possible causes:
  - *Hypoxia*—Intubate and oxygenate.
  - *Hypovolemia*—Fluid challenge and rapid transport.
  - *Acidosis*—Ventilate and consider Sodium Bicarbonate 1 mEq/kg.
  - *Tension Pneumothorax*—Needle decompression.
  - *Cardiac Tamponade*—Rapid transport.
  - *Cyclic antidepressant OD*—Consider Sodium Bicarbonate 1 mEq/kg per Poisoning & Overdose protocol, ventilate, transport.
  - *Hypothermia*—See hypothermia protocol.
  - *Hyperkalemia*—Consider Sodium Bicarbonate 1 mEq/kg per hyperkalemia protocol.
- Administer the following medications:
  - Epinephrine 1.0 mg (1:10,000) IV/IO *every 3-5 minute*.
    - If no IV/IO, Epinephrine 2.0 mg ETT.
  - If bradycardic:
    - Atropine 1.0 mg IV/IO every 3-5 minutes after Epinephrine, to a maximum of 3 mg. If no IV/IO, Atropine 2.0 mg ET (Max ET dose of 4 mg).

### PRECAUTIONS:

- If mechanism of injury is penetrating trauma (stab, gunshot, etc.), consider fluid challenge and rapid transport to Trauma Center.

### KEY CONSIDERATIONS:

- Preceding symptoms - Bystander CPR
- Cardiac history - Medications
- Drug overdose - Evidence of toxic exposure/ingestion
- History of traumatic injury - Renal failure (hyperkalemia)

### PEDIATRIC PATIENTS

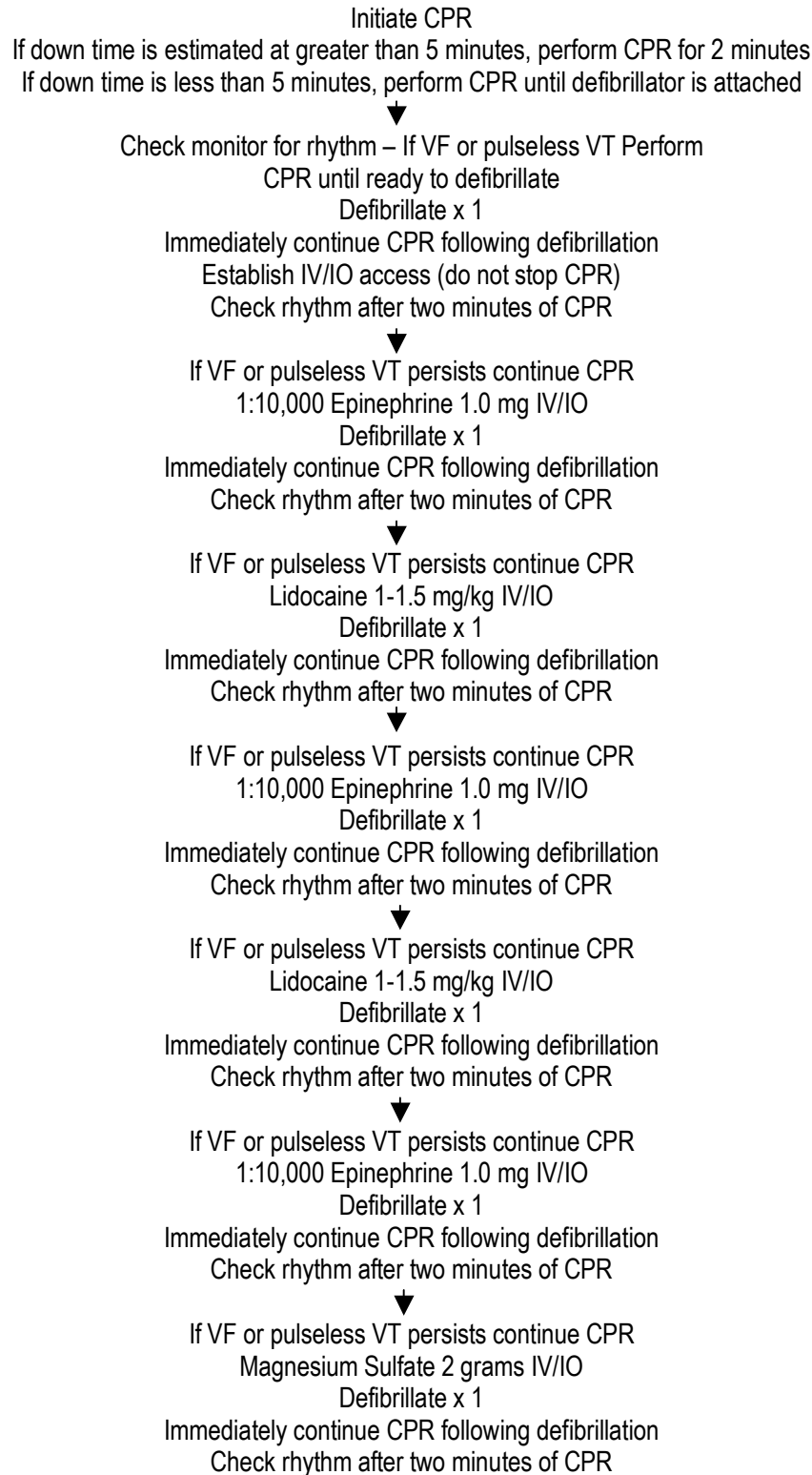
- CPR, aggressive airway management and intubation.
- Gain IV/IO access.
- Epinephrine: IV/IO—0.01 mg/kg (1:10,000). ETT— 0.1 mg/kg (1:1,000) in 4ccs NS.
  - Note: ETT EPI in pediatric patients should be considered a **LAST RESORT** after attempts at IV/IO have failed.
- If bradycardic, first consider hypoxia as a cause. If patient fails to improve with assisted ventilation then:
  - Atropine 0.02 mg/kg IV/IO/ET, minimum dose 0.1 mg, maximum 1.0 mg. May repeat once.

# CARDIAC ARREST (V-Fib or Pulseless V-Tach)

PAGE 1 OF 2

## TREATMENT:

- Flow of algorithm presumes that the initial rhythm is continuing. If the rhythm changes, begin the appropriate algorithm. **Follow Manufacturer's recommendations for defibrillation settings.** Interruptions in CPR should be avoided. When necessary, interruptions should be < 10 seconds.



## **CARDIAC ARREST (V-Fib or Pulseless V-Tach)-CONTINUED**

PAGE 2 OF 2

### PRECAUTIONS:

- Airway should be addressed with **minimal interruption to CPR**. Ventilation rate should be 8-10 breaths per minute.
- If the initial rhythm is Torsades de Pointes, give magnesium sulfate 2 grams IV/IO.
- After successful resuscitation:
  - **With no antidysrhythmic** – Give Lidocaine bolus 1.5 mg/kg and begin IV infusion at 2-4 mg/min.
  - If Lidocaine or Magnesium was the last antidysrhythmic given – Give Lidocaine infusion at 2-4 mg /min.
- Be cautious with the administration of Lidocaine if any of the following:
  - Systolic BP is less than 90 mmHg
  - Heart rate is less than 50 beats per minute
  - Periods of sinus arrest
  - Any A-V block is present
- Sodium Bicarbonate is not recommended for the routine cardiac arrest sequence but may be considered in a dose of 1 mEq/kg after prolonged arrest. Half of the original dose may be repeated every 10 minutes if it is used.
- Sodium Bicarbonate should be used early in cardiac arrest of known cyclic antidepressant overdose or in patients with possible hyperkalemia.

### PEDIATRIC PATIENTS

- Follow Adult algorithm, use the following dosing:
  - Defibrillation
    - First shock 2 j/kg
    - Repeat at 4 j/kg as needed.
  - Epinephrine
    - IV/IO (1:10,000) 1.0 mg/kg
    - ETT (1:1,000) 0.1 mg/kg in 4ccs NS.
      - Note: ET Epinephrine in pediatric patients should be considered a *LAST RESORT* after attempts at IV/IO have failed.
  - **Lidocaine** – Follow adult dosing as outlined above.

## **ACUTE CORONARY SYNDROME (Cardiac Chest Pain)**

### **TREATMENT:**

- Oxygen (via NRB if respiratory distress), IV, ECG Monitor.
- Monitor vital signs and oxygen saturation. Repeat frequently.
- If no contraindications, Nitroglycerin 0.4 mg SL. Repeat every 5 minutes until pain relief if effective and BP remains > 100 systolic or until 3 doses have been given without effect.
- If evidence of STEMI is present, start a second large-bore IV if this can be accomplished without delaying transport.
- Aspirin 324 mg (Have patient chew 4 baby aspirin) if no contraindications:
  - Patient must not be allergic or have sensitivity to ASA.
  - Patient has no history of an active bleeding disorder.
  - Patient is not suspected of having an aortic dissection.
  - If pain unrelieved by Nitroglycerin, and BP > 100 mmHg systolic, titrate Morphine up to 10mg IV.
- Treat any malignant arrhythmias (multiple PVCs, bradycardia, tachycardia) that are believed to be associated with patient's cardiac chest pain or decreased perfusion.

### **PRECAUTIONS:**

- NTG is *contraindicated* in patients who have recently taken Viagra<sup>®</sup>(sildenafil citrate), or Levitra<sup>®</sup> (vardenafil HCl) within 24 hours or Cialis<sup>®</sup> (tadalafil) within 48 hours. Contact OLMC for direction.
- Start IV prior to nitroglycerin in patients who do not currently take nitroglycerin, or who have a potential for hemodynamic instability.
- NTG can produce precipitous hypotension in a patient with a right-sided MI. Use extreme caution in these patients.

### **KEY CONSIDERATIONS:**

- Past history - SOB, diaphoresis
- Medications - Palpitations
- Fever or recent illness
- Pain evaluation:
  - **O—Onset:** What were you doing at onset?
  - **P—Provoke:** What makes the pain worse? Better?
  - **Q—Quality:** Quality of the pain, i.e. sharp, dull, burning, stabbing, crushing, etc.
  - **R—Radiation:** Does the pain go from one area to another? E.g. arm, jaw, etc.
  - **S—Severity:** on a 1-10 scale.
  - **T—Time:** Constant or intermittent. Have you had it before? When did it start?
    - Consider any sudden onset of weakness, nausea, abdominal pain, SOB as a cardiac event particularly in the elderly until proven otherwise.

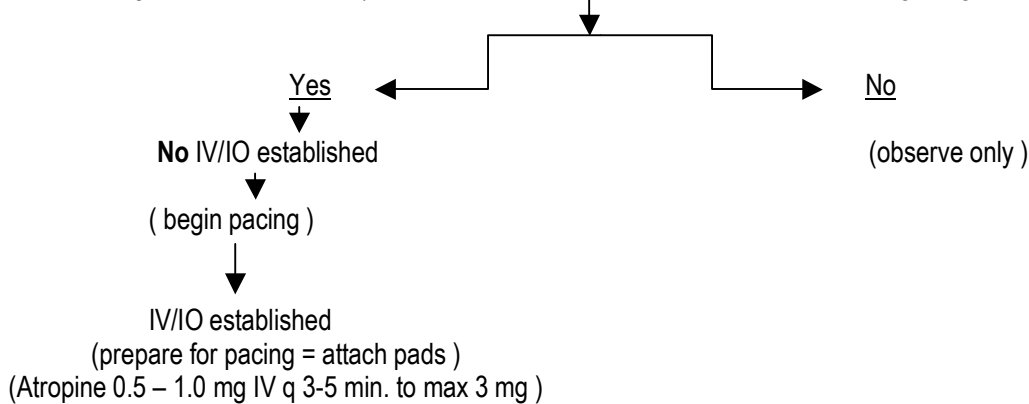
### **PEDIATRIC PATIENT**

- Consider pleuritic causes, trauma.
- Monitor ECG for ectopy. Some children may have congenital disease or palpitations due to very rapid tachycardia. Contact OLMC for advice.

## CARDIAC DYSRHYTHMIAS (*Bradycardia*)

### TREATMENT:

- Oxygen via PRB mask, IV/IO, ECG Monitor.
- Monitor vital signs and oxygen saturation.
- If the patient is in a wide complex bradycardia with a history of renal failure/dialysis, muscular dystrophy, paraplegic/quadruplegic, crush injury, or patients who have sustained serious burns > 24 hours previously. (See hyperkalemia protocol).
- **Are serious symptoms present?** (HR < 40 with Chest pain or < 60 with SOB, AMS, high degree heart block, CHF, shock)



Goal of treatment is to improve perfusion & maintain BP > 90.

- If mechanical capture achieved, follow transcutaneous pacing protocol.
- If mechanical capture is NOT achieved, try repositioning pads.
  - If patient is uncomfortable, give, Versed® 2.5-5.0 mg slow IV/IO (repeat x 1 if needed, to a Max. of 10mg) or if no IV 5.0 mg IM.

### PRECAUTIONS:

- Bradycardia may be protective in the setting of cardiac ischemia and should ONLY be treated if associated with serious signs or symptoms of hypoperfusion.
- Renal failure may elevate blood potassium levels (hyperkalemia) causing bradycardia. If patient is on dialysis and bradycardic see hyperkalemia protocol.

### KEY CONSIDERATIONS:

- Speed of onset - Angina - Drug overdoses
- Medications (BETA Blockers) - History of MI - Palpitations, syncope

### Pediatric Patients

- **Most pediatric bradycardia is due to hypoxia.** If despite oxygenation and ventilation heart rate < 60/min in an infant or child with poor perfusion, start CPR, intubate, and hyperventilate. Special considerations may apply in the hypothermic child.
- Establish IV or IO access.
- If no IV/IO access, start pacing per transcutaneous pacing protocol. Pediatric Versed®, 0.1 mg/kg IV to a Max of 2.5 mg, or 0.2 mg/kg IM to a Max of 5 mg.
- If IV/IO access give Epinephrine 0.01 mg/kg (1:10,000). ETT— 0.1 mg/kg (1:1,000) in 4ccs NS. q 5 minutes PRN
  - Note: ETT Epinephrine in pediatric patients should be considered a *LAST RESORT* after attempts at IV/IO have failed.
- Atropine 0.02 mg/kg IV/IO, (minimum single dose 0.1 mg, max single dose 1.0 mg). May repeat once.

## CARDIAC DYSRHYTHMIAS (*Paroxysmal Supraventricular Tachycardia*) (PSVT)

### TREATMENT:

- Oxygen via NRB mask, IV using a proximal site, ECG Monitor.
- Monitor vital signs and oxygen saturation.
- Run an ECG strip to verify PSVT diagnosis. Use calipers if necessary to verify regularity.

#### **Unstable** (Signs of Hypoperfusion)

- Synchronous Cardioversion
- Synchronous Cardioversion
- Synchronous Cardioversion
- Synchronous Cardioversion

#### **Stable**

- Valsalva maneuvers
- Adenosine, 6 mg, rapid IVP
- Adenosine, 12 mg, rapid IVP
- Adenosine, 12 mg, rapid IVP

- Call OLMC -If no conversion call OLMC

- Follow Adenosine with 20 cc fluid bolus of Normal Saline.
- Wait 1 to 2 minutes between doses of Adenosine.
- If SVT recurs, repeated electrical conversion is NOT indicated.
- If time, prior to cardioversion, sedate with Versed® 2.5-5.0 mg IV. May be repeated x1 to a max of 10mg. If no IV, Versed® 5 mg IM.

### PRECAUTIONS:

- Think V-Tach in older patients with underlying heart disease.
- A-fib, A-flutter, and PSVT are often hard to differentiate. If the patient is perfusing well and has no signs of hypoperfusion (pain, low BP, AMS), no treatment is needed.
- If dysrhythmia is resulting in a hemodynamically unstable patient, immediate cardioversion should be performed. **Be prepared for full resuscitation.**
- Think VT if wide complex rhythm. It may be helpful to check in more than one lead. A wide complex tachycardia is VT until proven otherwise.

### KEY CONSIDERATIONS:

- Palpitations - Chest pain (quality, level, etc.)
- Medications (verapamil vs. digoxin) - Past history
- Speed of onset - SOB

### Pediatric Patients

- If child has normal perfusion:
  - Attempt vagal maneuvers:
  - Ice water to face for children < 6 years old
  - Valsalva in older children.
  - Adenosine 0.1 mg/kg, may repeat twice at 0.2 mg/kg if no response to initial dose.
- If child shows diminished perfusion and poor responsiveness:
  - Consider Versed®, 0.1 mg/kg IV to a Max of 2.5 mg, or 0.2 mg/kg IM to a Max of 5 mg
  - Deliver synchronous cardioversion at 0.5 joules/kg. If no response, repeat at 1 joule/kg, 2 joules/kg and at 4 joules/kg.

## **CARDIAC DYSRHYTHMIAS (Premature Ventricular Contractions) (PVCs)**

### TREATMENT:

- Oxygen (via PRB if respiratory distress), IV, ECG Monitor.
- Monitor vital signs and oxygen saturation.
- Lidocaine loading bolus: 1-1.5 mg/kg slow IV push over 1-2 minutes. Then: Lidocaine 0.5-0.75 mg/kg IV q 5 minutes, as needed to a maximum of 3 mg/kg.
- Lidocaine maintenance dose: 2-4 mg/min. IV gtt.

### PRECAUTIONS:

- Be cautious with the administration of Lidocaine if any of the following are present:
  - Systolic BP is < 90.
  - HR is < 50 bpm.
  - ECG shows periods of sinus arrest.
  - ECG shows second or third degree heart block.
- Only treat PVCs if associated with the following:
  - Runs of VT.
  - R on T.
- If PVCs abate, maintain Lidocaine **maintenance dosing**.

### KEY CONSIDERATIONS:

- Past medical history - Medications
- Angina - SOB
- Palpitations - Does pulse match ECG?

## **CARDIAC DYSRHYTHMIAS (Ventricular Tachycardia with pulse)**

### TREATMENT:

- Oxygen (via PRB if respiratory distress), IV, ECG monitor.
- Monitor vital signs and oxygen saturation.
- If Patient is Unstable (signs of hypoperfusion):
  1. Consider Versed 2.5-5.0 mg slow IV or 5.0 mg IM (unless hypotensive, pulmonary edema, or unconscious).
  2. Synchronous Cardioversion (up to 4 times as needed per manufacturer's recommendations for energy settings)
  3. Lidocaine 1-1.5 mg/kg IV.
  4. Repeat Cardioversion
  5. Lidocaine 0.5-0.75 mg/kg IV.
  6. Repeat Cardioversion
  7. Lidocaine 0.5-0.75 mg/kg IV.
  8. If cardioversion is achieved with Lidocaine, begin Lidocaine infusion at 2-4 mg/min.
- If Patient is Stable
  - Lidocaine 1-1.5 mg/kg as needed followed by 0.5-0.75 mg/kg q 3-5 minutes until VT resolves or to a total of 3 mg/kg.
  - Lidocaine maintenance infusion at 2-4 mg/min.
  - If no conversion contact OLMC.

### PRECAUTIONS:

- If patient remains unstable (signs of hypoperfusion) after second bolus of Lidocaine, consider contacting OLMC and prepare patient for transport.

### KEY CONSIDERATIONS:

- Medications - Past medical history
- Chest pain - SOB

### Pediatric Patients (V-Tach: Rate > 150 bpm with Diminished perfusion)

- If child is poorly responsive:
  - Cardiovert 1 joule/kg. If no conversion:
  - Repeat cardioversion at 2 joule/kg and 4 joule/kg.
  - Consider Versed®, 0.1 mg/kg IV to a Max of 2.5 mg, or 0.2 mg/kg IM to a Max of 5 mg.
- Follow Lidocaine dosing per Treatment C. above.

### Pediatric Patients (V-Tach: Rate > 150 bpm, with normal perfusion)

- Follow Lidocaine dosing Under Treatment D. above.

## CHILD BIRTH

### TREATMENT:

- Oxygen (via PRB if respiratory distress), IV, ECG Monitor.
- Monitor vital signs and oxygen saturation.
- If in third trimester and delivery not imminent, transport in left lateral decubitus position.
- If birth is imminent, follow guidelines below. After delivery, follow Neonate Resuscitation protocol.
  - Normal Birth:

Guide/control, but do not retard or hurry delivery. Check for cord around neck and remove gently. Suction mouth, then nose with bulb syringe after head is delivered. Keep infant level with mother's heart until cord is cut. Assess APGAR at one minute and again at five minutes. Clamp & cut cord, dry infant, and if no treatment needed place on mother's chest and cover to maintain warmth. Massage uterus to encourage contraction and prevent bleeding. Do not delay transport to deliver placenta.
  - Meconium:

Transport to nearest hospital. If thick meconium present, use meconium aspirator to suction mouth, pharynx, and nose. Tracheal suction via ETT if needed. Follow normal childbirth procedure. See Suctioning procedure.
  - Breech Presentation:

(Buttock 1st): If delivery is imminent, prepare the mother as usual and allow the buttocks and trunk to deliver spontaneously. Support the body while the head delivers. If the head does not deliver within 3 minutes, suffocation can occur. Place a gloved hand into the vagina to keep the vaginal wall away from baby's face. Inserting a finger into the infant's mouth and gently tilting the head toward the chest can sometimes ease delivery. Transport mother in knee-chest position.
  - Prolapsed Cord:
    - Place mother in knee-chest position or with hips elevated on pillows. With a gloved hand gently attempt to push the baby's head back up the vagina several inches. Initiate transport. Do not attempt to push cord up.
  - Arm or Leg Presentation:
    - Place mother in knee-chest position, immediately transport to the nearest hospital. **Call OLMC early.**

### PRECAUTIONS:

- Toxemia of pregnancy is a life threatening maternal condition of hypertension that can lead to seizures (eclampsia). Consult OLMC for the use of Magnesium Sulfate.
- Abruptio Placenta and Placenta Previa occur in the third trimester. Shock and fetal distress may develop without significant vaginal bleeding in Abruptio Placenta.

### KEY CONSIDERATIONS:

- Due date, regular prenatal care
- Gravida/Para (# of pregnancies/live births)
- Last menstrual period
- Multiple births
- Medications & allergies
- Edema, hypertension, or pain
- Recent trauma
- Fetal heart tones, movement
- Membrane rupture
- Vaginal bleeding
- Past medical history including premature births, abortions/miscarriages.

## **CRUSH INJURY/ENTRAPMENT**

### **TREATMENT:**

- Oxygen (via PRB if respiratory distress), IV, ECG Monitor.
- Monitor vital signs and oxygen saturation.
- Prepare for prolonged extrication.
  - Begin warming methods to prevent hypothermia.
    - Warm blankets, heated air with blower, warm IV fluids.
    - Protect patient from environment (rain, snow, direct sun...)
  - Plan extrication activities to allow for periodic patient assessment.
    - Plan for occasional extrication equipment "shut down" to assess vitals.
    - Carefully track vitals, IV fluids, and medications during extrication.
  - Evaluate degree of entrapment and viability of extremities.
    - Carefully assess collateral injuries that may have occurred during event.
    - Look for signs of circulation or absence of circulation if limb entrapment.
      - **Absent pulse.**
      - **Blanched Skin.**
      - **Capillary refill.**
      - **Diminished sensation.**
      - **Extremely cold to the touch.**
    - If extrication of a limb will be prolonged, direct mechanical crush injuries are present (tissue is crushed), and patient's condition is deteriorating, strongly consider calling OLMC to arrange on-scene amputation.
  - If one or more extremities are trapped and circulation is compromised or absent consider the placement of constricting bands to inhibit rapid venous return to the central circulatory system of potassium, lactic acid, and myoglobin upon extrication. Contact Trauma Physician through OLMC for direction.
  - If patient is trapped in a heavy dust environment, consider methods to provide filtered oxygen to the patient. If patient is in respiratory distress, consider dust impaction injuries and prepare to administer nebulized albuterol per OLMC direction.
  - During extrication of a severely trapped patient who is at risk for crush syndrome, administer 1000 - 2000 cc IV bolus, then maintain at 500 cc/hr.
  - Consider the administration of Sodium Bicarbonate prior to release to buffer acid release from anaerobic metabolism. Contact OLMC for advice.

### **PRECAUTIONS:**

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

### **KEY CONSIDERATIONS:**

- Previous medical history
- Current medications
- Length of entrapment
- Estimated length of extrication
- Use Technical Rescue
- Develop alternative treatment plans

## **HYPERKALEMIA**

### TREATMENT:

- Treatment is going to be based upon patient history. Renal failure may elevate blood potassium levels (hyperkalemia) causing bradycardia, hypotension, weakness, weak pulse and shallow respirations. Other patients who are predisposed to hyperkalemia are those who have muscular dystrophy, paraplegic/quadruplegic, crush injury, or patients who have sustained serious burns > 48 hours previously.
- Oxygen (via PRB mask if respiratory distress), IV, ECG Monitor.
- Monitor vital signs.
- ECG changes that may be present with hyperkalemia include:
  - Peaked T-waves.
  - Prolonged PR interval (> 0.20 seconds or 5 small boxes).
  - Second degree AV block.
  - Widened QRS.
- If Hyperkalemia is suspected, contact OLMC and prepare to:
  - Administer 10cc of Calcium Gluconate 10% solution slow IV over 5-10 minutes in a proximal port.
  - If no change in rhythm and *transport time is prolonged*, consider alternative therapy as per OLMC contact:
    - Glucose and regular insulin if available.
    - High Dose Albuterol (10 mg by nebulizer).
    - Sodium Bicarbonate 50 mEq IV.

### PRECAUTIONS:

- **NOTE:** Do not mix Sodium bicarbonate solutions with calcium preparations. Slowly flush remaining calcium gluconate from the catheter prior to administering sodium bicarbonate.

### KEY CONSIDERATIONS:

- Previous medical history
- Medications & allergies

## ***HYPERTHERMIA***

### TREATMENT:

- Oxygen (via PRB mask if respiratory distress), IV, ECG Monitor.
- Monitor vital signs.
- Begin cooling measures that maximize evaporation.
- Remove clothing
- Wipe down with cool (not cold) water
- Use fans for evaporation.
- Start fluid resuscitation per Shock Protocol if needed.

### PRECAUTIONS:

- If patient begins to shiver, stop cooling measures.
- Wet sheets over patient without good airflow tend to increase temperature.
- Do not let cooling measures in the field delay transport.

### KEY CONSIDERATIONS:

- Speed of onset
- Type of activity prior to onset
- Previous medical history
- History of hyperthermia
- Recent infection, sepsis?
- Medications & allergies

### Pediatric Patients

- Use tepid, not cold water.
- Closely monitor vitals, airway, and temperature.
- Consider sepsis and/or contagious disease.
- Examine for rashes or blotches on the skin and nuchal rigidity.

## **HYPOTHERMIA**

### **TREATMENT:**

- Oxygen PRN, ECG Monitor.
- Carefully assess vital signs. At least 60 seconds may be needed to confirm vitals due to slow pulse and respirations. Consider holding polished metal or glass (e.g. laryngoscope handle or blade), under the nostrils to determine if patient is breathing.
- Carefully remove wet clothing and move patient into a warm environment ASAP.
- Establish IV/IO, infuse warmed fluids (99°F - 104°F) if possible.
- Use the following guidelines for resuscitation:
  - If patient has an organized ECG (may be bradycardia, with or without pulses) handle gently.
  - If patient is in VF, VT, or asystole, do CPR and follow Cardiac Arrest Protocols. Contact OLMC prior to administering medications.
  - If patient has frozen tissue, is lifeless, with no pulses or electrical activity, declare patient dead. If in doubt, contact OLMC.

### **PRECAUTIONS:**

- In the profoundly hypothermic patient, medications may not be effective until circulation is adequately restored. - - Repeat dosages of cardiac medications may not be advised.
- Patients who are profoundly hypothermic may require pump re-warming.
- Rescue teams may need to use protocols that apply to their specific environment. It is recognized that they may not be able to contact OLMC when stated in the protocol.

### **KEY CONSIDERATIONS:**

- Environmental exposure: (submersion, cool rainy weather, wind chill, prolonged exposure)
- At risk patients: (trauma, alcohol and drug abuse, homeless, elderly, infants, low income, and entrapped patients).

## **MUSCULOSKELETAL INJURIES (Fractures, Dislocations and Amputations)**

### TREATMENT:

- Oxygen (via PRB mask if respiratory distress), IV.
- Monitor vital signs.
- Check for pulses, sensation, and movement (PSM) in affected extremity, if appropriate.
- If fracture or dislocation, splint the extremity and--
  - Control external bleeding.
  - Immobilize in place if PSM are intact.
  - If no PSM distal to injury, consider applying gentle traction and move limb into normal position of alignment. Recheck PSM and immobilize.
  - For femur fractures (**open or closed**), use a traction splint.
  - For other extremity fractures, if bone is protruding, cover with moist dressing. Splint in place unless total ischemia (no PSM) is present distal to the fracture.
  - For pelvic fractures, splint utilizing pelvic sling and secure patient to a backboard to minimize movement and internal blood loss.
- If amputation, cover stump with moist pressure dressing. To treat the amputated part:
  - Wrap in sterile dressing, place in plastic bag and keep dry.
  - Place bag in ice-water bath, if available.
  - If extrication is prolonged, consider sending amputated part ahead to be surgically prepared for re-implantation.
- To control severe pain:
  - **Morphine – 2-10 mg** IV/IM. Contact OLMC if more than 10mg is needed for pain control. Demerol – up to 100mg IV/IM. Contact OLMC if more than 100mg is needed for pain control. Nubain 5mg IV up to 10 mg total.
- Consider Promethazine for nausea as well as an agent to potentiate the effect of given narcotics.
- If two or more proximal long-bone fractures, enter patient into the Trauma System.

### PRECAUTIONS:

- Total ischemia is demonstrated by pallor, pulselessness, paralysis, and/or decreased temperature.
- Always check (and record) presence of PSM distal to injury before and after immobilization.
- Do not reduce dislocations in the field. If total ischemia present, contact OLMC.
- Use caution when administering narcotics in patients with multi-system injuries. Maintain BP > 100 systolic.
- Use caution when administering narcotics, as they can cause respiratory depression or hypotension..
- Repeat vital signs often.

### KEY CONSIDERATIONS:

- Mechanism of injury - Previous medical history
- Time of injury - Medications & allergies
- Do not soak amputated part in water or saline solution.

### PEDIATRIC PATIENTS

- Follow pediatric doses for narcotics.
- Consider non-accidental trauma (child abuse) as a cause of injury.
- Attempt to gain consent from parent or guardian for transport and treatment in all pediatric patients. Do not delay treatment to contact parent/guardian in life threatening cases.

## SPINAL INJURY & IMMOBILIZATION

### TREATMENT:

- Spinal immobilization is indicated in patients with a mechanism having the potential for causing spinal injury and who have ANY of these clinical criteria:
  - Altered mental status.
  - Evidence of intoxication
  - Distracting injury (e.g. extremity fracture, communication barrier, situation, emotional distress, drowning, etc.)
  - Neurological deficit of extremity (numbness, tingling, paralysis).
  - Spinal pain
  - Spinal tenderness
- Oxygen (via NRB mask if respiratory distress), IV/IO and/or ECG Monitor **if needed**.
- Immobilize cervical spine using manual in-line stabilization.
  - Place a rigid cervical collar, sized to patient, as soon as possible.
  - Immobilize patient to a long board with straps in proper sequence.
  - Use a short-spine device such as KED™ or OSS™ if the patient exhibits significant neck pain, neuro-deficits, or crepitus and/or deformity are noted. Time of application should not significantly interfere with trauma resuscitation or transport.

### PRECAUTIONS:

- In third trimester pregnancy or any obviously pregnant patient, elevate the right side of the backboard 6 inches.
- Carefully assess the patient's respiratory status during transport. Loosen straps if necessary to avoid respiratory compromise.
- Consider leaving helmet and shoulder pads (if pertinent) in place.
- If any immobilization techniques cause an increase in pain or neuro deficits immobilize the patient in position found, or position of greatest comfort.
- Complete neurological exam before and after full immobilization. ( document findings ).
- Comorbid age factor (<12 or >60) may impact the EMT's ability to assess the patient's perception and communication of pain. **A conservative approach to immobilizing these patients is recommended.**

### KEY CONSIDERATIONS:

- Mechanism of injury
- Any loss of consciousness
- Previous medical history
- PMS before and after immobilization
- Neuro deficits, pain, tenderness
- Medications & allergies
- Document clinical criteria on patient care form

### Pediatric Patients

- Children may require extra padding under upper torso to maintain neutral cervical alignment.
- Movement on the backboard can be minimized by using dense, soft support material on both sides of the patient prior to securing the straps on the backboard. Consider using a short-spine device such as KED™ to immobilize the patient prior to placing on a backboard. If using a fire department backboard, leave the straps attached, but thread them through the holes in the board that are closer to the center, prior to placing patient on the board.
- Children are very susceptible to respiratory compromise from straps that are too tight. Continually monitor the child's respiratory status, and loosen straps if needed.

## **NAUSEA & VOMITING**

### **TREATMENT:**

- Oxygen (careful using mask), IV.
- Monitor vital signs.
- Consider fluid challenge per shock protocol.
- Give Promethazine 12.5 – 25 mg IV/deep IM or Anzemet 12.5 mg IV for vomiting or severe nausea.
- If patient continues to vomit consider other causes.

### **PRECAUTIONS:**

- Do not administer Promethazine or Anzemet in the following situations:
  - Children under 2 years of age.
  - In patients with a hypersensitivity to the drug.

### **KEY CONSIDERATIONS:**

- Abdominal pain
- Vomiting blood or bile
- Pregnancy
- Any recent abdominal or head trauma
- Diarrhea
- Orthostatics

### **Pediatric Patients**

- Do not administer to patients < 2 years of age.
- See pediatric dose.

# NEONATAL RESUSCITATION

< 1 Month Old (See also Childbirth Protocol)

## TREATMENT:

- Assess respiratory effort, heart rate, and skin color.
- Dry thoroughly and keep warm.
- Suction mouth, then nose as needed. Keep neck in neutral position.
- If meconium is present, use a meconium aspirator attached to an ETT to suction mouth, pharynx, and nose. Tracheal suction via ETT if indicated.
- Evaluate the respirations. If apneic or gasping:
  - Provide 30-60 seconds of oxygen using an infant BVM.
  - If no improvement, intubate.
- If there are adequate respirations, evaluate heart rate (HR):
  - If HR > 100, and color improving, monitor vitals.
  - If HR < 80 and increasing, assist ventilations with 100% O2 until HR > 100.
  - If HR < 80 and NOT increasing:
    - Ventilate, intubate, CPR, IO/IV
    - Epinephrine IO/IV—0.01 mg/kg (1:10,000). ET— 0.1 mg/kg (1:1,000) in 2ccs NS. Repeat every 3-5 mins.
      - Note: ET Epinephrine in pediatric patients should be considered a *LAST RESORT* after attempts at IO/IV have failed.
    - If no change, give 10 cc/kg of Normal Saline.
- Check CBG
- If still no change after ventilation, Epinephrine, and fluids, administer Sodium Bicarbonate 1 mEq/kg IO/IV over at least 2 minutes.
- Maintain warmth, monitor vital signs and oxygen saturation
- NOTE: Do not use atropine in neonatal resuscitation.

## PRECAUTIONS:

- An infant may need resuscitation if intrapartum risk factors for asphyxia are present:
  - Meconium stained fluid
  - Maternal fever
  - Prolapsed cord
  - Multiple births
  - Painful bleeding (abruptio placenta)
  - Abnormal presentation
  - Prolonged rupture of membranes
  - Hypertension, hypotension, seizure

## KEY CONSIDERATIONS:

- Fetal presentation - Any recent trauma
- Maternal health/risk factors - Maternal medications
- APGAR - Previous births/difficulties

<b>APGAR SCORE</b>	<b>0 Point</b>	<b>1 Point</b>	<b>2 Points</b>
<b>Appearance (color)</b>	Blue, pale	Blue and Pink	Fully Pink
<b>Pulse</b>	Absent	<100 bpm	>100 bpm
<b>Grimace (irritability)</b>	No response	Grimace	Vigorous/Crying
<b>Activity (muscle tone)</b>	Limp	Some flexion of extremities	Active motion
<b>Respirations</b>	Absent	Slow/regular	Good/Crying

# **POISONING & OVERDOSE**

PAGE 1 OF 3

## **TREATMENT:**

(Always decontaminate patient prior to treatment and transport if necessary).

- Oxygen (via PRB mask if respiratory distress), IV, ECG Monitor.
- Monitor vital signs and oxygen saturation.
- If patient is poorly responsive or has decreased respirations:
  - Narcan® 0.4 mg IV repeated q 2 minutes up to 2 mg. If no improvement and opiate intoxication still suspected, give 2 mg dosages to a total of 8 mg (titrate to normal respiratory rate). If no IV or IV is delayed give IM, or ET 2 mg repeat every 5 minutes, maximum 8 mg.
  - Determine blood glucose. If <80 mg/dl, administer 12.5 – 25 Gm of D50%. If no IV site available, give Glucagon 1.0 mg IM.
- If overdose includes a cyclic antidepressant:
  - Hyperventilate patient if possible & contact OLMC.
  - Treat hypotension per shock protocol.
  - Administer 1 mEq/kg of Sodium Bicarbonate IV for arrhythmias or QRS widening.
- If organophosphate poisoning has occurred and patient has SLUDGE symptoms:
  - Protect yourself from contamination.
  - Prepare to handle copious secretions.
  - Atropine 1-2 mg IVP until symptoms improve (Call OLMC for frequency).
- If Carbon Monoxide poisoning has occurred:
  - Do not enter poisonous atmosphere without appropriate respiratory protection.
  - Oxygen 100% via mask
  - Consider intubation.
  - Consult OLMC regarding transport to hyperbaric chamber.
- Other ingested or inhaled toxin:
  - Take isolation precautions, provide supportive care, contact Poison Control.
  - For all ingested poisons, if prolonged transport is expected, contact OLMC regarding administration of Activated Charcoal 1 gm/kg.
- Beta Blocker Overdoses:
  - If hypotensive follow Shock Protocol.
  - Contact OLMC for consideration of Glucagon.
- Calcium Channel Blocker Overdoses:
  - If hypotensive, follow Shock Protocol.
  - Contact OLMC for consideration of administration of Calcium Gluconate, 10cc of 10% solution over 5-10 minutes.
- Aspirin (ASA) or acetaminophen (APAP) ingestions:
  - If less than 2 hours since ingestion administer 1 gram/kg of activated charcoal via PO to a MAX of 50 grams.
  - If ingestion involves more than just ASA or APAP **OR** if more than 2 hours post ingestion, Contact OLMC for consideration of charcoal administration.
- Extrapyrmidal Symptoms (EPS)/Dystonias:
  - If patient exhibits EPS and has a history of phenothiazine consider using diphenhydramine.
  - Consider stroke, altered mental status protocols.
- Benzodiazepine overdose :
  - If altered mentation and depressed respiratory drive, give Romazicon 0.2 mg IV slow up to 1 mg. Titrate to respiratory effects.

## ***POISONING & OVERDOSE (continued)***

PAGE 2 OF 3

### PRECAUTIONS:

- DO NOT neutralize acids or alkalis.
- Inhaled poisons and contact poisons are a danger to rescuers. Use proper precautions.
- Consider HazMat Team activation if airborne or spilled poisons is present.

### KEY CONSIDERATIONS:

- Type of poisoning: Inhalation, ingestion, absorption
- Previous medical history.
- Medications & allergies.
- Suicidal intent
- Drug, ETOH, or child abuse
- How much ingested, contacted
- Multiple patients
- Psychiatric history
- "Antidote" given

### Pediatric Patients

- Determine capillary blood glucose. Follow Altered Mental Status protocol.
- Activated Charcoal dose, 1 gm/kg orally if indicated per OLMC contact.
- Sodium Bicarbonate dose, 1 mEq/kg, IV/IO if indicated per OLMC.
- Atropine dose, 0.02 mg/kg IV/IO if indicated (Minimum single dose 0.1, max single dose 0.1 mg, may be increased in organophosphate poisoning)
- Naloxone dose is 0.1 mg/kg IV/IO. **DO NOT USE IN NEONATES.**

**POISONING & OVERDOSE (continued)**

PAGE 3 OF 3

<b>Toxidrome</b>	<b>Examples</b>	<b>Clinical Feature</b>	<b>Antidotes</b>
Sympathomimetic	Cocaine Methamphetamine	Agitation Diaphoresis Hypertension Hyperthermia Dilated pupils Tachycardia	Midazolam (OLMC)
Opioid	Heroin Hydromorphone Methadone Oxycodone	Depressed Mental Status Hypoventilation Constricted pupils	Naloxone
Cholinergic (Anticholinesterase)	Pesticides Carbamates Organophosphates Nerve Agents (Neostigmine)	Muscarinic* Nicotinic** Central***	Atropine (Haz-Mat, OLMC)
Sedative-Hypnotic Benzodiazepines	Barbituates GHB	Depressed mental status Hypothermia Hypoventilation	Romazicon for Benzodiazepine Overdose
Cardiotoxic Drugs	Beta-Blockers Calcium Channel Blockers	Bradycardia Conduction Issues Hypotension	Glucagon (OLMC) Calcium (OLMC)
Anti-cholinergic	Atropine Jimson Weed Scopolamine Diphenhydramine	Delirium Hyperthermia Tachycardia Warm Dry Skin	
Extrapyramidal Symptoms (EPS)	Antipsychotic (Halperidol, Droperidol, Phentothiazine)	Torticollis Laryngospasm Oculogyric Crisis	Diphenhydramine
Sodium Channel Blockade	Tricyclic Anti-Depressants Anti-arrhythmics Type IA agents (quinidine, procainamide) Type IC agents (flecainide, propafenone)	Altered mental status Hypotension Seizures Wide-Complex Tachycardias	Sodium Bicarbonate (OLMC)

<b>*Muscarinic Effects*</b>	<b>**Nicotinic Effects**</b>	<b>***Central Effects***</b>
Diarrhea Urination Miosis Bradycardia Bronchospasm Emesis Lacrimation Salivation Secretions Diaphoresis	Mydriasis Tachycardia Weakness Hypertension Hyperglycemia Fasciculations	Confusion Convulsions Coma

# RESPIRATORY DISTRESS

PAGE 1 OF 2

## TREATMENT:

- Oxygen via NRB mask, IV, ECG Monitor.
- Monitor vitals, carefully assess lung sounds, monitor oxygen saturation.
- Treat patient per clinical impression:

## Upper Airway

- Croup & epiglottitis: Transport in position of comfort, monitor airway. (see Peds section)
- Anaphylaxis: See anaphylaxis protocol.
- Foreign body: Remove using direct laryngoscopy if complete obstruction. If unable to remove, attempt to advance FBAO to right mainstem bronchus and ventilate left lung.
  - NOTE: Less volume of air will be needed when ventilating one lung \*

## Pulmonary Edema

- Sit patient upright.
- If systolic BP > 100 mm/Hg:
  - Nitroglycerine 0.4 mg SL q 5 minutes if BP remains > 100mm/Hg.
  - Furosemide 40 mg IV if patient is not currently taking Furosemide.
  - If patient takes Furosemide, give a single dose equal to the patient's largest individual daily dose, to a maximum of 100 mg IV. (Example: Patient taking 60mg twice daily, give 60 mg)
- If BP < 100 mm/Hg: consider Dopamine drip per Cardiogenic Shock Protocol.
- Contact OLMC for additional medication orders.

## Asthma/COPD

- Nebulized Albuterol, 2.5 mg, repeat as needed. Monitor cardiac rate.
- If second and/or third dose of Albuterol is needed, **add** one unit dose of ipratropium (Atrovent® 0.5 mg) to the Albuterol in the nebulizer and administer the combined medications. Xoponex 1.25 mg nebulized for Paramedics.
- If patient has Moderate to Severe asthma based on severity, administer Solu-Medrol® 125 mg IV, slowly over 1-2 minutes.
- If patient is deteriorating and < 40 years old, give epinephrine 0.3 mg SQ. Contact OLMC for additional doses or if patient is >40 years old.
- If transport time is prolonged and asthma is Severe, contact OLMC for consideration of Magnesium Sulfate. (Usual dose is 2 grams over 20 min)
- If continuous nebulized treatment is needed during transport (which may be necessary in some pediatric patients), contact OLMC for advice.
- Atropine 0.5 – 1 mg ETT in severe cases where intubation is necessary.

## PRECAUTIONS:

- Aggressive airway management, including early intubation, is appropriate for the patient who does not respond to treatment or is rapidly deteriorating.
- Hyperventilation may be a response to an underlying medical problem. Do not treat hyperventilation by rebreathing CO<sub>2</sub>, and look carefully for specific causes (i.e. pulmonary embolus).
- The best indicator for the cause of respiratory distress is past history (recent and long-term). Consider medications, environment, trauma (surgeries), & symptoms.
- Stop Albuterol treatment if ventricular ectopy occurs or heart rate increases by 20 BPM.

## RESPIRATORY DISTRESS (continued)

PAGE 2 OF 2

### KEY CONSIDERATIONS:

- Speed of onset - Type of activity prior to onset - Pain or paresthesia
- Previous medical history - Fever, chills, productive cough - Hx of asthma
- Recent infection, illness - Medications & allergies

### ASTHMA SEVERITY ASSESSMENT GUIDE

<b>Severity:</b>	<b>Mild</b>	<b>Moderate</b>	<b>Severe</b>
Short of breath when:	Walking	Talking	At rest
Able to speak in:	Sentences	Phrases	Words
Heart rate	<100 bpm	100-120 bpm	>120 bpm
Respiratory Rate	Elevated	Elevated	>30/min
Lung Sounds	End expiratory Wheezes	Full expiratory wheezes	Wheezes both phases or absent
EtCO <sub>2</sub>	20-30 mmHg	30-40 mmHg	>50 mmHg

### PEDIATRIC PATIENTS

- In a patient age 6 months to 6 years **with audible stridor at rest**, consider administration of epinephrine, 5 cc of 1:1000 via nebulizer.
- Treat the pediatric asthma patient as outlined above under Adult COPD/Asthma. Do not reduce or dilute the dose of Albuterol in pediatric patients.
- If no improvement, start IV, Administer Solu-Medrol® 2 mg/kg slowly over 2 minutes
- Try to transport parent with patient.
- Consider sepsis and/or contagious disease.
- The usual cause of respiratory arrest in children with croup, epiglottitis, or laryngeal edema is exhaustion, not obstruction.
- Pediatric dose of epinephrine is 0.01 mg/kg of 1:1000 SQ to a maximum of 0.3 mg

## SEIZURES

### TREATMENT:

- Oxygen (via PRB mask or BVM if respiratory distress), IV (IO if indicated), ECG Monitor.
- Monitor vital signs and oxygen saturation.
- Protect head and place patient in lateral decubitus position for airway management.
- Quickly try to determine cause of seizures:
  - Cardiac Dysrhythmia:
    - Manage airway and follow appropriate Cardiac Dysrhythmia Protocol.
  - Head Injury:
    - Consider stroke or trauma protocol.
  - Hypoglycemia: (Verified by glucometer per standards in AMS Protocol)
    - Follow Altered Mental Status Protocol for doses of Dextrose and Glucagon.
  - Hypoxia:
    - Aggressive airway management, follow Airway Management Procedure.
  - Status grand mal seizures: (Continuous or repetitive seizures, without regaining consciousness)
    - Administer Valium 5 mg IV/IO.
    - If patient continues to exhibit seizure activity for more than 5 minutes, repeat Valium 5 mg IV/IO or ***If further doses are needed, contact OLMC.***

### PRECAUTIONS:

- Transport may be unnecessary if patient regains orientation after a postictal period, is taking anti-seizure medication, has his/her own physician, and is experiencing the usual frequency of seizures. Document the patient's mental status prior to having them sign release form.
- Severe respiratory depression can occur after administration of benzodiazepines, and it may be delayed if given via the IM route. Always prepare to support the patient's airway and monitor ventilation and oxygenation carefully.
- New onset seizures in pregnant women, especially during the third trimester, may indicate toxemia of pregnancy, which is life threatening to both mother and fetus.
- **ALL** first time seizures require emergency evaluation.
- Seizures in patients > 50 years old are frequently caused by arrhythmias.

### KEY CONSIDERATIONS:

- |                                    |                           |
|------------------------------------|---------------------------|
| - Type (focal, febrile, grand mal) | - Length of seizure       |
| - Previous medical history         | - Previous trauma         |
| - Drug, ETOH, or toxin exposure    | - Medications & allergies |
| - Hx of diabetes or headaches      | - Pregnancy               |

### PEDIATRIC PATIENTS

- First time seizures should be considered sepsis and/or meningitis until proven otherwise.
- Febrile seizures are generally found between the ages of 1-6 years, and are usually short in duration (< 15 minutes).
- Always test Blood Glucose in pediatric seizures. If hypoglycemic, follow Altered Mental Status Protocol.
- Administer Versed® 0.1 mg/kg IV/IO to a maximum initial dose of 2.5 mg. May repeat once in 5 minutes if patient still seizing. **OR:**
- *If no IV/IO access*, administer Versed® 0.2 mg/kg IM, to a maximum initial dose of 5.0 mg. May repeat once (for a maximum of 10 mg total) in 5 minutes if patient still seizing. For repeat doses, contact OLMC.
- Administer Valium 0.1 – 0.3 mg/kg /IV/IO. 0.5 mg/kg rectally. Max dose < 5 y/o = 5 mg. > 5 y/o = 10 mg.

# SHOCK

## TREATMENT:

- Oxygen (via PRB mask or BVM if respiratory distress), IV/IO, ECG Monitor.
- Monitor vital signs and oxygen saturation.
- Prepare patient for rapid transport.
- Determine shock category:
  - Hypovolemic Shock:
    - Give 500 cc fluid bolus, repeat if needed if no signs of pulmonary edema.
    - For penetrating trauma, do not cause fluid overload. Goal is systolic BP of 90.
  - Cardiogenic Shock:
    - Follow appropriate cardiac dysrhythmia protocol.
    - Consider fluid challenge.
    - Dopamine infusion. Start at 5 mcg/kg/min, increase in 5 mcg/kg/min increments every five minutes to a maximum of 20 mcg/kg/min, or until systolic BP is at least 90 mm/Hg and signs of shock are alleviated.
  - Distributive Shock: (Including anaphylaxis, sepsis, neurogenic)
    - Give 500cc fluid bolus. Check lung sounds. May repeat to a total of 1000 cc.
    - If possible, treat underlying causes (e.g., anaphylaxis).
    - If shock persists, contact OLMC for advice regarding additional fluid or dopamine.
  - Obstructive Shock: (Including cardiac tamponade, tension pneumo, aneurysm, PE)
    - For tension pneumothorax, follow needle decompression procedure.
    - Consider 500 cc fluid challenge or dopamine infusion.

## PRECAUTIONS:

- Closely observe patient's respiratory status and vital signs. Avoid fluid overload.
- Signs and symptoms of shock are those of inadequate tissue perfusion: Confusion, restlessness, altered LOC, moist skin, apathy, and hypotension.
- For penetrating trauma and suspected AAA, do not fluid overload the patient.

## KEY CONSIDERATIONS:

- Medical history - Medications
- Mechanism of injury - Recent illness

## PEDIATRIC PATIENTS

- Hypovolemic Shock:--Fluid bolus:
  - Infants ( up to 1 yrs ) 10 cc/kg,
  - Children 20 cc/kg
- Cardiogenic and Obstructive Shock:
  - Fluid bolus as in Hypovolemic Shock, **maximum 20 cc/kg**.
  - Contact OLMC and consider Dopamine drip.
- Distributive Shock:
  - Fluid bolus as in Hypovolemic Shock, maximum 500cc.
  - If anaphylaxis, follow Anaphylaxis Protocol.
  - Contact OLMC and consider Dopamine drip.

# STROKE/CVA

## TREATMENT:

- Oxygen (via PRB mask or BVM if respiratory distress), large bore (16-18 gauge) proximal IV, ECG Monitor.
- Check Blood Glucose and follow guidelines in Altered Mental Status Protocol.
- Determine time of onset of symptoms.
- Determine Cincinnati Prehospital Stroke Score (CPSS):
- Patient should be transported supine with not greater than 15° head elevation.

### CINCINNATI PRE-HOSPITAL STROKE SCALE (CPSS)

<b>FACIAL DROOP SCORE</b>	Score
Normal: both sides of face move equally well	0
Abnormal: one side of face does not move as well as the other side	1
<b>ARM DRIFT</b> (Have patient close eyes and holds both arms out with palms up)	
Normal: both arms move the same OR both arms do not move at all	0
Abnormal: one arm does not move or one arm drifts down compared with the other	1
<b>SPEECH</b> (Have the patient say "It never rains in Oregon")	
Normal: Correct words with no slurring	0
Abnormal: Words slurred, inappropriate words or is unable to speak	1
<b>TOTAL SCORE</b>	

## PRECAUTIONS:

- Do not treat Hypertension in these patients.
- Do not give aspirin to these patients.
- 3 hours from onset of symptoms is the optimum time for the patients to receive definitive treatment in the hospital.

## KEY CONSIDERATIONS:

- Medical history
- Bleeding disorders
- Recent trauma
- Medications

## ***SUBMERGED PATIENT***

### **TREATMENT:**

- Oxygen (via PRB mask or BVM if respiratory distress), IV, ECG Monitor.
  - Monitor vital signs and oxygen saturation.
  - Treat hypothermia per Hypothermia Protocol.
  - Do not resuscitate patient in cardiac arrest if submerged more than 30 minutes.
- Exceptions where you may consider resuscitation with up to 60 min of submersion:
- Children less than 6 years old, with water temperature at recovery depth of < 40°F.
  - Patients who may have been trapped in an underwater air pocket.
  - Water temp at recovery depth is < 40°F, and information suggests that patient may have been swimming on the surface for at least 15 minutes prior to becoming submerged.
  - Paramedic discretion (Contact OLMC)

### **PRECAUTIONS:**

- If patient is still in the water, it is recommended that rescue be performed by properly trained and equipped personnel only.
- It is common to underestimate trauma injuries in near-drowning events. If there is any doubt as to mechanism of injury, or a known traumatic event preceded submersion, fully immobilize patient and enter into the Trauma System.
- Be prepared for vomiting.
- Even if patient initially appears fine, delayed pulmonary edema is likely to occur.

### **KEY CONSIDERATIONS:**

- Water temp at recovery depth - Activity prior to drowning event
- Previous medical history - Length of time patient submerged
- Medications & allergies

### **PEDIATRIC PATIENTS**

- See resuscitation exceptions above for patients < 6 years old.

# ***PROCEDURES***

## **AIRWAY MANAGEMENT (Combitube®)**

### **DEFINITION:**

- The Combitube® is a two-tube system similar to the PTL, EOA or EGTA airways. However, the Combitube® has combined the lumens of an endotracheal and esophageal tubes. The device is inserted blindly, entering the esophagus (approx. 90% of the time) or the trachea (approx. 10% of the time). Depending on which structure it enters it will function as an esophageal or endotracheal ventilation device. The Combitube® may be used by EMT-Paramedics and EMT-Intermediates who have received the appropriate training.

### **INDICATIONS:**

- Immediate intubation is not available or cannot be performed.
- Access to the patient's head is inhibited due to entrapment.
- Direct visualization of the larynx is inhibited.

### **CONTRAINDICATIONS:**

- Patient less than 16 years of age.
- Patient under five (5) feet tall.
- Patient who has an intact gag reflex.
- Patient with known esophageal disease (i.e. varices, cancer.)
- Patient who has ingested a caustic substance.

### **PROCEDURE:**

1. Pre-oxygenate.
2. Place head in neutral position.
3. Insert device using a jaw-lift maneuver to the depth indicated by the marking on the tube. The black rings on the tube should be positioned between the patient's teeth (or gums if patient has no teeth).
4. Inflate the pharyngeal (large) cuff with 100cc of air.
5. Inflate the distal (small) cuff with 15cc of air.
6. Ventilate through longer blue connector (number 1) tube.
7. Listen for sounds in both lungs and stomach.
  - If you hear breath sounds instead of gastric sounds, continue ventilation through tube number 1.
  - If you hear gastric sounds and no lung sounds, begin ventilation through shorter (number 2) clear tube.
8. Confirm lung sounds with 5-point auscultation.
9. Ventilate with 100% oxygen.
10. Secure using ETT securing device.
11. Apply ETCO2 detection device.

## **AIRWAY MANAGEMENT (Cricothyrotomy- Quick Trach®)**

### INDICATIONS:

- This technique is to be used only when other attempts to establish an airway have been unsuccessful (i.e., you are unable to intubate or ventilate using BVM) and respiratory obstruction exists. Such conditions are most likely to be found with foreign-body obstruction; facial and laryngeal trauma; inhalation, thermal, or caustic injury to the upper airway; angioneurotic edema; upper airway bleeding; epiglottitis; and severe croup.

### PROCEDURE:

- Place the patient in a supine position with support under the shoulders and mild hyperextension of the neck. Palpate the neck in the midline and locate the slight depression just below the notch of the thyroid cartilage. This is the position of the cricothyroid membrane.

### QuickTrach

1. Locate the cricothyroid membrane.
2. Palpate the cricothyroid membrane with gloved hand.
3. Firmly hold the device and puncture the cricothyroid membrane at a 90 degree angle. No incision is necessary. **\* may use scalpel to make incision ( vertical ) through skin to assist in placement \***
4. After puncturing the cricothyroid membrane, check entry of the needle into the trachea by aspirating air through the syringe.
5. If air is aspirated the needle is in the trachea.
6. Change the angle of the needle to 60 degrees and advance the device forward into the trachea to the level of the stopper.
7. Remove the stopper being careful not to advance the device further into the trachea with the needle still attached.
8. Hold the needle and syringe firmly and slide only the plastic cannula along the needle into the trachea until the flange rests on the neck.
9. Carefully remove the needle and syringe.
10. Secure the device to the neck.
11. Apply the connecting tube to the device and ventilate.
12. Consider sedation with Versed as with RSI if not already given.

### PRECAUTIONS:

- Hazards in performing this procedure are primarily those of damage to nearby structures – major vessels to either side of the midline, to the vocal cords if the puncture is made too high, or a through and through injury of the trachea if the puncture is made too deeply. The latter is more commonly seen in infants and children whose tracheas may be deceptively narrow.

## **AIRWAY MANAGEMENT (End Tidal CO2 Monitoring)**

### INDICATIONS:

- To measure effectiveness of ventilation by measuring the amount of carbon dioxide in exhaled air.

### PROCEDURE:

- Manage airway according to appropriate Airway Management Procedure.
- Apply ETCO2 monitor, if available. Maintain ETCO2 output between 35-40 mmHg.
  - The following approximates the degree of ventilation:
    - > 40 mmHg = Hypoventilation
    - 35 – 40 mmHg = Normal ventilation
    - 30 – 35 mmHg = Hyperventilation
    - < 30 mmHg = Aggressive hyperventilation should be avoided!!
- Patients who are posturing, or who have other clinical presentations indicative of herniation (blown pupil, focal motor findings) should have **hyperventilation** initiated.

### PRECAUTIONS:

- **Remember, pulse oximetry does not equate ventilation.** You can have a poorly ventilated patient displaying an oxygen saturation of 100%. Excessively high PaCO2 levels can be detrimental to your patient's outcome.
- A sudden drop in CO2 output from normal (35-40 mmHg) to 15-20 mmHg and an obvious change in waveform is indicative of tube displacement, most likely into the hypopharynx. Reassess tube placement immediately and take corrective action.
- **DO NOT** rely on pulse oximetry or ETCO2 monitoring solely to determine the efficacy of intubation.

## **AIRWAY MANAGEMENT (Endotracheal Intubation)**

### INDICATIONS:

- Respiratory insufficiency or arrest.
- Airway obstruction.
- Brain injury (GCS < 8).
- Unconsciousness or altered mental status with airway compromise.
- Situations that require positive pressure ventilation.

### PROCEDURE:

1. Open airway and pre-oxygenate with cricoid pressure.
2. Assemble and check all equipment, including cardiac monitor, suction, and pulse oximeter.
3. Intubate in a controlled, but timely manner.
4. Verify placement with ETCO<sub>2</sub> detection device and a careful five-point check. Watch for chest expansion; use continual ETCO<sub>2</sub> monitoring and pulse oximetry to confirm patient status.
5. Secure the tube utilizing ETT securing device. Record ET Tube depth at the teeth or gum line.
6. Ventilate and monitor patient's vital signs including SpO<sub>2</sub>.
7. Administer *Versed*® 0.1 mg/kg IVP up to a maximum of 2.5 mg as needed for agitation.
8. Administer *Vecuronium* 0.1 mg/kg as needed for combativeness and long transport.

### PRECAUTIONS:

- Recheck tube placement with every major movement of the patient, movement of equipment, or if a significant change in vital signs occurs.
- DO NOT rely solely on monitoring equipment to determine the efficacy of intubation. Auscultate for lung sounds and/or re-visualize with laryngoscope.

### DOCUMENTATION:

- The following items should be documented in the PCR:
  - Visualization of the cords (if applicable).
  - Number of attempts.
  - 5-point check and equal chest expansion.
  - Any other devices/ techniques used.
  - ETCO<sub>2</sub> device used/reading.
  - Any changes during patient contact.
  - Reconfirmation of placement after patient movement.

## **AIRWAY MANAGEMENT (Intubation with Neuromuscular blocking agents)**

### INDICATIONS:

- Patient meets criteria described previously under "Intubation," **and** patient has any of the following:
  - Clenched jaw.
  - Active gag reflex.
  - Uncontrollable combative behavior.
  - Clinical condition requiring airway protection.

### PROCEDURE:

1. Open airway and pre-oxygenate while maintaining cricoid pressure.
2. Assemble airway equipment including suction and alternative airway devices and attach required monitoring equipment (ECG, pulse oximeter). Initiate IV/IO.
3. Administer Lidocaine 1.5 mg/kg as a pre-treatment agent.
4. Continue cricoid pressure and maintain until ET tube is in place, verified and secured.
5. Administer Succinylcholine 1.5 mg/kg IV for patients >6 years and 2 mg/kg for patients < 6 years.
6. If inadequate paralysis exists after 1 minute, check patency of IV/IO line. Repeat succinylcholine with same dose.
7. Treat bradycardia with ventilation first. If bradycardia persists, administer Atropine 0.5 mg in an adult patient. 0.02 mg/kg IV for children < 2 years old. Minimum dose is 0.1 mg. Do not exceed adult dose.
8. Intubate in a controlled but timely manner when patient becomes relaxed.
9. Verify placement with ETCO<sub>2</sub> detection device and a careful five-point check. Watch for chest expansion; use continual ETCO<sub>2</sub> monitoring and pulse oximetry to confirm patient status.
10. Secure the tube using ETT securing device. Record ET tube depth at the teeth.
11. Ventilate and monitor patient's vital signs including ETCO<sub>2</sub> and SpO<sub>2</sub>.
12. If intubation attempts fail, ventilate with BVM. Consider Combitube®, King, or cricothyrotomy to secure airway if needed.
13. Administer Versed® 2.5 - 5 mg IV/IO if systolic BP is >100 mmHg this may be repeated once. (Pediatric dose is 0.1 mg/kg up to 2.5 mg).
14. If additional paralysis is needed in the event of long scene time or transport, administer Vecuronium 0.1 mg/kg IV/IO. Dose may be repeated once if needed.
15. Contact OLMC if additional sedation or paralysis is needed.

### PRECAUTIONS:

- Recheck tube placement with every major movement of the patient, movement of equipment, or if a significant change in vital signs occurs.
- Check IV/IO patency if the first dose of Succinylcholine does not appear to be effective in paralyzing the patient.
- In most situations, the number of intubation attempts per paramedic should be limited to 2 (with a maximum of 4 attempts prior to transport).
- **DO NOT** rely solely on monitoring equipment to determine the efficacy of intubation. Auscultate for lung sounds.
- Succinylcholine does not affect the level of consciousness.
- Succinylcholine may cause a significant rise in serum potassium. This may be critical for patients who may be hyperkalemic (i.e. renal failure or significant burns >48 hours since occurrence).
- Succinylcholine should not be used in patients with certain neuromuscular diseases (e.g. multiple sclerosis, muscular dystrophy, or myasthenia gravis).

## **AIRWAY MANAGEMENT (King LTD Airways®)**

### **DEFINITION:**

- The KING LT-D is a disposable supraglottic airway created as an alternative to tracheal intubation or mask ventilation. The KING LT-D is designed for positive pressure ventilation as well as for spontaneously breathing patients.

### **INDICATIONS:**

- Use of the King LTD airway is indicated if endotracheal intubation can not be performed and the patient needs a secure airway.

### **CONTRAINDICATIONS:**

- Intact gag reflex
- Airway obstruction.
- Patients under 4 feet in height (until pediatric sizes are available)
- Known or suspected caustic ingestion.
- Known esophageal disease.

### **PROCEDURE:**

- Attach pulse oximeter and monitor oxygen saturation.
- Ventilate with BVM to optimize oxygen saturation prior to King LTD intubation especially if several endotracheal intubations were attempted.
- Estimate patient's height (for sizing of King LTD airway) and place head in neutral position.
- Use for both pediatric and adult patients:
  - Size 3 (4 – 5 feet tall; Yellow)
  - Size 4 (5 – 6 feet tall; Red)
  - Size 5 (6 – 7 feet tall; Purple)
- Ensure that both balloons are completely deflated.
- Lubricate distal end of King LTD airway.
- Insert King LTD into mouth posteriorly against the hard palate and in the midline. Advance gently until the proximal cuff is just visible under the base of the tongue. Inflate the cuffs using the supplied color-coded syringe. The King LTD may rise as it seats itself in the airway.
- Attach BVM to the tube and ventilate patient. Evaluate breath sounds and air movement over stomach. Monitor oxygen saturation, chest rise, and attach continuous ETCO2 monitor.
- Unlike the Combitube, the King LTD device is not designed to ventilate the patient if placed in the trachea. If unable to ventilate the patient after placement deflate balloons and adjust depth of tube to optimize ventilation.
- After successful placement, continue to monitor for adequate ventilations and possible displacement or balloon failure.

## **AIRWAY MANAGEMENT (Tracheal Tube Inducer)**

### INDICATIONS

- To aid endotracheal intubation where visualization of anatomical landmarks such as the epiglottis or vallecula is difficult. The inducer is intended to be used as an adjunct prior to the Combitube®. A common scenario would be a patient that is difficult to intubate due to anterior anatomy, short neck, receded jaw or traumatic injuries to the head, chest and or throat. **This is a two-person technique.**

### PROCEDURE

1. Open airway and pre-oxygenate with cricoid pressure.
2. Assemble and check all equipment, including cardiac monitor, suction, and pulse oximeter. Consider lubrication of the distal end of the ET tube.
3. Perform direct laryngoscopy using current methods to identify the larynx or vocal cords if possible.
4. Attempt to identify the tip of the epiglottis and slide the device past the epiglottis along the anterior aspect of the trachea through the vocal cords. The tracheal rings should be felt if you are in the appropriate position.
5. Once the tracheal rings are felt, stop advancing the device and thread ET tube. If you don't feel the rings then you should advance until you are met with resistance at the carina or the device rotates indicating you are in the bronchus.
6. Leave the laryngoscope in place while the assistant threads the lubricated tracheal tube over the introducer. Slide the tracheal tube through the larynx and into the trachea to the appropriate depth.
7. If resistance is met, rotation may be helpful.
8. Hold the tracheal tube in place and gently withdraw the introducer.
9. Remove the laryngoscope, connect to ET tube to the BVM.
10. Verify placement with ETCO2 detection device and a careful five-point check. Watch for chest expansion; use continual ETCO2 monitoring and pulse oximetry to confirm patient status.
11. Secure the tube utilizing ETT securing device. Record ET Tube depth at the teeth or gum line.
12. Ventilate and monitor patient's vital signs including SpO2.

# **INTRASOSSEOUS INFUSION**

PAGE 1 OF 2

## Definition:

- Intraosseous cannulation is an alternative technique for establishing IV access in critical adult and pediatric patients when peripheral IV access is difficult or time-sensitive.

## Indications:

- Intraosseous infusion is indicated in emergency situations when life-saving fluids or drugs should be administered and IV cannulation is difficult, impossible or too time-consuming to perform.
- If a peripheral IV cannot be established after two attempts or within 60–90 seconds of elapsed time *and* in:
  - Adult and pediatric patients, within the proper weight range, who present with one or more of the following clinical conditions:
    - Cardiac arrest.
    - Hemodynamic instability (BP <90 mmHg and clinical signs of shock).
    - Imminent respiratory failure.
    - Status epilepticus with prolonged seizure activity greater than 10 minutes, and refractory to IM anticonvulsants.
    - Toxic conditions requiring immediate IV access for antidote.
- IO placement may be considered prior to peripheral IV attempts in cases of cardiopulmonary or traumatic arrest, in which it may be obvious that attempts at placing an IV would likely be unsuccessful and or too time consuming, resulting in a delay of lifesaving fluids or drugs.

## PEDIATRIC PROCEDURE

- Equipment.
  - Approved bone marrow type needles 15 and 18 gauge size
  - Betadine swabs
  - Two 5 cc syringes
  - 60 cc Luer-lock syringe
  - Flush solution
  - Sterile gauze pads and tape
- Site Selection: Proximal tibia.
- Site Preparation: Palpate the landmarks and note the entry point that is the anteromedial flat surface 1–3 cm below the tibial tuberosity. Then prep the surface with Betadine and dry with a sterile gauze pad.
- Insert Needle: Insert at the proximal tibial site, directing the needle caudally. The needle should penetrate the skin and subcutaneous tissue and be pushed through the cortex of the bone using rotation (avoid rocking the needle!), until a “pop” or loss of resistance is felt. Placement in the marrow should then be confirmed by:
  - Firm fixation of the needle and either removal of the stylet with free aspiration of marrow/blood or:
  - Infusion of 2–3 cc of sterile solution, palpating for extravasation or noting significant resistance. If extravasation should occur, further attempts at the site and extremity should be avoided.
  - Note: it is not always possible to aspirate, but the line may be working.
- Tape and secure the IO needle firmly in place.
- Start Infusion:
  - Pressurized infusions (using 60 cc syringe or infusion pump) may be needed during resuscitation.
  - When infusing medications via IO route, pressure must be applied to the fluid bag in order to maintain flow rates.
  - Continually monitor the rate of infusion.

## **INTRAOSSEROUS INFUSION (CONTINUED)**

PAGE 2 OF 2

### Contraindications (all ages):

- Fracture of the bone selected for IO insertion (consider alternate site).
- Previous *significant* orthopedic procedures (IO within 24 hours; prosthesis).
- Infection at the site selected for insertion (consider alternate site).
- Excessive tissue at insertion site, with absence of anatomical landmarks (consider alternate site).

### Precautions & Possible Complications:

- Osteomyelitis, growth plate injury (in pediatric patients), and extravasation of fluid with compression of popliteal vessels or the tibial nerve may occur.
- Airway and breathing should be established first in accordance with other protocols.
- Do not perform more than one attempt in each tibia.
- Any ALS medication may be administered IO.
- Do not use hypertonic saline through an IO.

## **IV MANAGEMENT (IV Access & Infusions)**

### INDICATIONS:

- Normal Saline is indicated for replacement of fluid volume losses such as in trauma, burns, dehydration, or shock.
- An IV lock may be substituted for an IV line in all situations, except where IV fluid is the therapy of choice for volume replacement.

### PROCEDURE for IV Access:

- IV access:
  - 1) Establish IV access and prepare NS.
  - 2) Connect a blood tubing set between the IV hub and the solution bag if patient is a Trauma System entry or is suspected to need blood. All IVs will be started using macrodrips, unless otherwise indicated.
- IV access with an IV lock:
  1. Establish IV access.
  2. Connect male adapter plug to IV hub.
  3. After placement, the line should be flushed with normal saline.
  4. If the IV lock system is used for the administration of medication, the line must be flushed after each administration.

### PROCEDURE for IV Medication Infusions:

- Using a Volutrol® or Soluset® type device:
  1. Establish IV access and prepare solution. (Do not use an extension set)
  2. Connect the Volutrol® between the solution bag and the IV hub.
  3. Place one hour's solution into the Volutrol® and close the connection between the Volutrol® and the solution bag.  
**Note: The number of microdrops/minute=the number of ccs/hour.**
  4. Begin infusing solution at the appropriate rate.
  5. If desired, additional solution may be placed in the Volutrol®. The Volutrol® should never contain more than one hour of solution.
- Using an infusion pump:
  1. Establish IV access and prepare solution.
  2. Connect IV tubing to infusion pump according to manufacturer's directions.
  3. Begin infusing solution at the appropriate rate.

### PRECAUTIONS:

- NS should be used with caution in patients with renal impairment (hyperkalemia), cardiac and respiratory disorders (fluid overload), or extremes of age.

## **NASOGASTRIC TUBE PLACEMENT**

### **INDICATIONS:**

- To alleviate gastric distention which is inhibiting effective ventilation in an intubated patient.

### **PROCEDURE:**

- 1) Assemble equipment:
  - Proper size Gastric Tubes (12 or 18 french), lubricant, 30 or 60 cc syringe, suction unit.
- 2) Measure tube length from nose to tip of earlobe and then to xiphoid process.
- 3) Select nostril.
- 4) Lubricate end of tube (6-8 inches)
- 5) Position head in slightly flexed position if no spinal precautions.
- 6) Gently insert and advance toward posterior nasopharynx and into stomach.
- 7) Confirm location by:
  - Aspirating gastric contents
  - Placing stethoscope over epigastrium and auscultate while inserting 20-30 cc of air into the tube.
  - Secure tube in place with tape.
  - Mark and document tube size and depth.

### **PRECAUTIONS:**

- Do not use in patients with obvious skull fracture or severe head/facial injuries with suspected skull fracture.
- Do not use in patients with known esophageal varicies or who have had caustic substance ingestion.

### **RATIONALE :**

- During assisted ventilation, it is common to inflate the stomach, as well as the lungs, with air. Gastric inflation with air slows downward movement of the diaphragm and decreases tidal volume – making ventilation more difficult and necessitating higher inspiratory pressures. In addition, inflation of the stomach with air increases the risk that the patient will vomit and aspirate. Gastric intubation with an NG or OG tube decompresses the stomach and makes assisted ventilation easier.

## **TRANSCUTANEOUS PACING—CARDIAC**

### DEFINITION:

- Transcutaneous pacing is the technique of electronic cardiac pacing accomplished by using skin electrodes to pass repetitive electrical impulses through the thorax.

### INDICATIONS:

- Transcutaneous pacing should be considered in bradycardia with evidence of inadequate perfusion, (e.g., hypotension, altered mental status).

### PROCEDURE:

- 1) Ensure ECG pads are attached and monitor displays a rhythm.
- 2) Attach pacing electrodes to anterior and posterior chest just to the left of the sternum and spinal column, respectively. Alternatively pads may be placed in the standard anterior and lateral position as with defibrillation. If there is difficulty in obtaining capture, try alternative position.
- 3) Begin pacing at a heart rate of 80 beats per minute and 30mA current output.
- 4) Increase current by increments of 10mAs while observing monitor for evidence of electrical capture. Confirm mechanical capture by checking pulses and BP.
- 5) If patient is comfortable at this point, continue pacing. If patient is *uncomfortable*, administer Versed® 2.5 mg – 5 mg slow IV push or if no IV, 5.0 mg IM. Repeat x 1 if needed.
- 6) If patient still complains of pain, repeat dose of Versed® and contact OLMC.
- 7) If the patient remains unconscious during pacing, assess capture by observing the monitor and evaluating pulse and blood pressure changes. In the event of electrical capture and no pulses, follow PEA protocol.

### PRECAUTIONS:

- Transcutaneous pacing should not be used in the following settings:
  - Asystole.
  - Patients meeting death in the field criteria.
  - Patients in traumatic cardiac arrest.

### PEDIATRIC PATIENTS

- Use above guidelines except:
  - Give Versed 0.1 mg/kg IV to a MAX of 2.5mg. (May repeat once after 5 minutes.) If still more needed, call OLMC.
  - Use anterior/posterior pad placement first for patients less than 1 year.
  - Begin pacing at smallest mA output.
- Increase current in increments of 10 mAs while observing monitor for evidence of electrical capture. Confirm mechanical capture by checking pulses and BP.

## ***PELVIC SLING (Suspected Pelvic Fracture)***

### INDICATIONS:

- For pelvic instability in the presence of trauma.
- For pelvic pain without instability as a comfort measure.
- Consider placing prior to extrication from a vehicle (if feasible).

### PROCEDURE:

- 1) Place the Pelvic Sling underneath the pelvis, centered on the greater trochanters. Assure that the sling is smooth. Note: Assure the patient's pockets are empty so that you do not place pressure on the objects.
- 2) Move the adjustable strap so that it will allow enough tension to be made.
- 3) Place the strap through the buckle and pull tension until the buckle makes a popping sound. (This indicates sufficient tension has been achieved.)
- 4) Secure the strap, by the Velcro, to the side of the splint.

### PRECAUTIONS:

- Blood loss in a pelvic fracture can be significant. Monitor closely and treat per **shock** protocol. **The pelvic sling is contraindicated for isolated hip fractures.**

## ***PELVIC WRAP (Suspected Pelvic Fracture)***

### INDICATIONS:

- For pelvic instability in the presence of trauma.
- For pelvic pain without instability as a comfort measure.
- Consider placing prior to extrication from a vehicle (if feasible).

### PROCEDURE:

- 1) Fold the sheet smoothly lengthwise to about 9 inches wide (do not roll) and apply it underneath the pelvis, centered on the greater trochanters. **Note: Assure the patient's pockets are empty so that you do not place pressure** on the objects.
- 2) Tighten the sheet around the pelvis and adjust the tension to try to return the pelvis to normal anatomic position.
- 3) Secure using a knot or clamps if available.

### PRECAUTIONS:

- Blood loss in a pelvic fracture can be significant. Monitor closely and treat per shock protocol.

## **RESTRAINING OF PATIENTS (Physical and Chemical Restraints)**

### **PURPOSE:**

- Patient restraints should be utilized only when necessary and in those situations where the patient is exhibiting behavior that presents a danger to themselves and/or others.

### **PROCEDURE:**

#### **-Physical Restraint Guidelines:**

- Use the minimum number of physical restraints required to accomplish necessary patient care and ensure safe transportation (Soft restraints may be sufficient). If law enforcement or additional manpower is needed, call for it prior to attempting restraint procedures. Do not endanger yourself or your crew.
- Avoid placing restraints in such a way as to preclude evaluation of the patient's medical status.

#### **-Physical Restraint Procedure:**

- 1) Place patient **face up** on long backboard.
- 2) Secure ALL extremities to backboard. Try to restrain lower extremities first around both ankles. Next, restrain the patient's arms at his/her sides.
- 3) If necessary, utilize cervical spine precautions (tape, foam bags, etc.) to control violent head or body movements.
- 4) Secure the backboard onto gurney for transport using additional straps if necessary. Remember to secure additional straps to the upper part of the gurney to avoid restricting the wheeled carriage.
- 5) Evaluate the patient's respiratory and cardiac status every few minutes to ensure that no respiratory compromise exists. Monitor SpO2 if possible.
- 6) DO NOT tighten chest straps to the point that they restrict breathing.

#### **- Chemical Restraint Guidelines:**

- Sedative agents may be used to provide a safe method of restraining the violently combative patient. These patients may include alcohol and/or drug-intoxicated patients and restless, combative, head-injury patients.

#### **- Chemical Restraint Procedure:**

- 1) Evaluate the personnel needed to safely attempt restraining the patient.
- 2) Prepare for possible hypotensive side effects.
- 3) Consider administration of Versed 2.5-5.0 mg IV or IM. Assess vital signs q 5 minutes. May repeat to a max dose of 10 mg.
- 4) After administration of antipsychotic (Haldol), consider diphenhydramine 1 mg/kg IV or deep IM if the patient shows signs of EPS to a maximum dose 50 mg.
- 5) Follow altered mental status protocol to address possible causes of combativeness.

### **PRECAUTIONS:**

- Patients who are restrained particularly in a prone position are at risk for asphyxia and sudden death. Constant evaluation of the patient's respiratory status is necessary.
- Only the minimum amount of restraint is to be used of the patient's chest area.
- Side effects of Haldol may include hypotension, tachycardia, and acute dysphoric reactions.
- Hypoxia may be a cause of combativeness.

## **SUCTIONING**

### **INDICATIONS:**

- When patient is exhibiting respiratory difficulty secondary to secretions in airway or the potential for aspiration exists.

### **PROCEDURES:**

#### **- Oral Suctioning**

- 1) Pre-oxygenate patient with 100% oxygen.
- 2) Assemble equipment: Suction unit with tonsil tip or dental tip, personal protective equipment (gloves, goggles, gown).
- 3) Attach required monitoring equipment.
- 4) Turn suction unit on and confirm mechanical suction is present.
- 5) Insert tip without suction.
- 6) Cover thumbhole to begin suction if using a tip other than dental tip.
- 7) Apply suction for < 15 seconds.
- 8) Monitor patient's oxygen saturation.
- 9) Re-oxygenate patient for at least 2 – 3 minutes between suction attempts.

#### **- Tracheal Suctioning**

- 1) Pre-oxygenate patient with 100% oxygen.
- 2) Assemble equipment: Suction unit, correct size suction catheter, sterile rinse, personal protective equipment (gloves, goggles, gown).
- 3) Attach required monitoring equipment.
- 4) If patient is being ventilated with BVM prior to suctioning, have someone else remove the bag from end of ET tube prior to suction attempt.
- 5) Insert catheter into the ET tube without applying suction.
- 6) Advance catheter as far as possible.
- 7) Withdraw slowly using **intermittent** suction while rotating catheter.
- 8) Do not suction more than 15 seconds.
- 9) Monitor patient's oxygen saturation.
- 10) Rinse catheter in sterile saline.
- 11) Re-oxygenate patient for at least 2 – 3 minutes between suction attempts.

#### **- Suctioning with Meconium Aspirator**

- 1) If meconium is lightly stained and newborn is vigorous do not suction infant.
- 2) Assemble equipment: Suction unit, appropriate size ET tube, personal protective equipment (gloves, goggles, gown.)
- 3) Attach required monitoring equipment.
- 4) Turn suction unit on and confirm mechanical suction is present.
- 5) After infant has been intubated, attach meconium aspirator to end of ET tube.
- 6) Cover thumbhole to begin suctioning while slowly withdrawing the ET tube.
- 7) Do not suction for more than 15 seconds.
- 8) Monitor patient's oxygen saturation and heart rate and stop if patient becomes bradycardic.
- 9) Re-oxygenate patient for at least 2 – 3 minutes between suctioning attempts.
- 10) If patient has not been intubated and meconium is thick, at the least, aggressive oropharyngeal suctioning should be carried out with the largest diameter suction device available.

### **PRECAUTIONS:**

Oral and tracheal suctioning is potentially traumatic and dangerous, not only because of the possible trauma to the oropharynx and airway but because of the risk of bradycardia, hypoxia, and an increased delay in resuscitation.

## **TAZER® BARB REMOVAL**

### **DEFINITION:**

- Tazer® barbs will be removed by law enforcement in most cases.

### **INDICATIONS:**

- Tazer® barbs should be removed at the request of law enforcement if:
  - A. The patient has been adequately subdued so as not to pose a danger to Fire/EMS personnel. **AND,**
  - B. The barbs are not embedded in the face, neck or groin areas.

### **PROCEDURE:**

- 1) Perform patient assessment.
- 2) Monitor vitals and LOC. Ensure that vitals are in the normal limits for the situation.
- 3) Expose the area where Tazer barb has implanted under the skin.
- 4) Cut wires from the barb if still attached.
- 5) Place thumb and forefinger above and below the barb parallel to the portion of the shaft implanted in the patient's skin.
- 6) Spread your thumb and forefinger apart to stretch the skin tightly over the barb.
- 7) Holding tension, use needle-nose pliers (or similar tool) with gripping strength and grasp the end of the barb protruding out of the skin near the wire lead and firmly pull out the barb with one quick jerking motion.
- 8) Assess the skin where the barb was removed. The skin should be cauterized from the electrical current. Dress the wound to prevent infection.

### **PRECAUTIONS:**

- Patients should be in police custody and monitored by Police for the safety of medical personnel.
- Do not remove Tazer® Barbs from the face, neck or groin area. Stabilize the barbs and transport to the Emergency Department.
- Tazers® emit two barbs. Make sure both are removed. Treat all barbs as a bio-hazard and dispose as you would any other sharps.
- Potential trauma may have occurred before (during a struggle) or after the patient was hit by the Tazer® (patient falls and hits head).
- Consider whether the patient meets criteria for Altered Mental Status or Poisonings and Overdoses protocols.
- CAUTION: Where barbs have wires still connected to the Tazer® Gun, shock can still be delivered.

## **TENSION PNEUMOTHORAX (Chest Decompression)**

### DEFINITION:

- The emergency decompression of a tension pneumothorax using an over-the-needle catheter.

### INDICATIONS:

- Some of the following signs of simple pneumothorax as well as some of the signs of tension pneumothorax must be present before decompression is undertaken:

- **Tension pneumothorax (indications):**

- Consistent history, i.e., chest trauma / surgery, COPD, patient on positive pressure ventilation.
- Shock, low BP or rapidly decreasing BP.
- Progressive respiratory distress.
- Tracheal shift away from affected side (late sign).
- Distended neck veins.
- Asymmetrical movement on inspiration.
- Hyperexpanded chest on affected side.
- Drum-like percussion on affected side.
- Increased resistance to positive pressure ventilation, especially if intubated.

**NOTE: Simple or non-tension pneumothorax is relatively common, is not immediately life threatening, and should not be decompressed in the field.**

### PROCEDURE:

- 1) Expose the entire chest.
- 2) Clean chest vigorously with alcohol or Benadine.
- 3) On affected side, locate the mid-clavicular line and insert a large gauge angiocath (10-14 gauge) over the superior margin of the third rib.
- 4) Hit the rib, then slide over it.
- 5) If the air is under tension, the barrel will pull easily and "pop" out the back of the syringe. Remove syringe, advance catheter, and remove needle.
- 6) Secure from movement using tape and/or gauze placed on each side.
- 7) Reassess lung sounds and vital signs.
- 8) Attach Heimlich Valve and secure with tape.

# ***OPERATIONS***

## **ADVANCED DIRECTIVES (Do Not Resuscitate)**

PAGE 1 OF 2

### **PURPOSE:**

- This EMS system believes in respect for patient autonomy. The patient with decision-making capacity has the right to accept or refuse medical intervention. This includes the right to specify, in advance, patient preferences when the person is no longer able to communicate wishes.

### **PROCEDURE:**

The EMS system shall honor Advance Directives and DNAR (DNR, or Do Not Resuscitate) orders that the EMT sees in writing under the following circumstances:

**A. Do Not Attempt Resuscitation:** In the **pulseless and apneic** patient who does **not** meet the criteria of the DEATH IN THE FIELD protocol, but is suspected to be a candidate for withholding resuscitation, BLS protocols will be followed until one of the following occurs:

1. The EMT sees a written DNAR order, which should be honored and resuscitation stopped.
2. The patient's physician is contacted and directs EMTs to discontinue resuscitation.
3. A valid *Advance Directive* or *Directive to Physician* is seen and directs not to continue resuscitation.
4. The patient's attorney-in-fact (PAHC or DPAHC) directs the EMTs not to resuscitate the patient.
5. OLMC directs the EMTs not to continue resuscitation.

**B. Advance Directives:** DNAR (DNR) orders only apply if the patient is in cardiopulmonary arrest. If the patient's PAHC, DPAHC, Directive to Physicians, or other Advance Directive is available to convey the patient's wishes, and the EMTs have seen a copy of the document, the EMTs must honor the treatment preferences as expressed.

**NOTE:** An "Advance Directive" executed after November 4, 1993 is not legally valid, but may be used as "evidence" of the patient's "desires and interests."

**C. Physician Orders for Life-Sustaining Treatment (POLST):** (formerly the Medical Treatment Coversheet): If a POLST signed by the patient's physician, which clearly expresses the patient's wishes is available, the EMTs shall honor the patient's treatment care preferences as documented in the EMS section of the POLST. **[Cite: OAR 847-035-030 (7)]**

**D. Death with Dignity Act:** The Oregon Death with Dignity Act does not require that the patient inform their family of their intent to take a lethal dose of medication. The act requires that two physicians evaluate the patient. If those physicians determine that the patient is of capable mind and has a terminal disease that will end their life within six months, the patient may request in writing a lethal dose of medication. The medication can only be taken orally. No lethal injection is allowed and a physician is not required to be present at the time the medication is taken. The act allows the patient to rescind their decision at any time in any manner *without regard to their mental state*. This could mean that the patient changes their mind after they have taken their medication. If the patient verbally tells you, after they have taken the medication that they have changed their mind, all available means to provide care should be provided. If you respond to a call where the patient has taken a lethal dose of medication under the Death with Dignity Act, the following action should be taken:

1. Provide comfort measures as indicated.
2. Determine who called 9-1-1 and why. Was the call to treat side effects like seizures, vomiting, respiratory problems, OR because the patient wanted to change their mind.
3. Determine if there is a DNAR or similar document and/or instructions that this is an action taken under the Death with Dignity Act.
4. Contact OLMC immediately.
5. Withhold resuscitation if:
  - a. DNAR or similar orders are present.
  - b. There is evidence that this is an act taken under the Death with Dignity Act.
  - c. OLMC directs withholding treatment.
6. If there are questions regarding the circumstances of the call, error on the side of basic life support and contact OLMC.

## **ADVANCED DIRECTIVES (Do Not Resuscitate)-Continued**

PAGE 2 OF 2

### DEFINITIONS:

- **Do Not Attempt Resuscitation Order (DNAR):** An order written by a physician stating that in the event of cardiopulmonary arrest, cardiopulmonary resuscitation will not be administered. DNAR orders apply only if the patient is pulseless and apneic.
- **Health Care Instruction:** A document executed by a person to indicate the person's instructions regarding health care decisions.
- **Advance Directive:** A document that contains a health care instruction or a power of attorney for health care. However, this term is best used to describe those documents drafted pursuant to ORS 127.505 to 127.660, as amended.
- **Directive to Physician:** A written document executed before November 4, 1993, and still in effect directing the withholding or withdrawal of life-sustaining procedures.
- **Living Will:** A document that may confirm an Advance Directive or Directive to Physician informing her/him that if the patient has a terminal illness and death is imminent, the patient would not wish to be placed on artificial life support that will only prolong the process of dying. **In general, the traditional Living Will document alone is not helpful in the out-of-hospital setting because of its multiple restrictions and lack of clarity on when it should take effect.**
- **Attorney in Fact:** An adult appointed to make health care decisions for a person.
- **Durable Power of Attorney for Health Care (DPAHC):** A power of attorney executed prior to November 4, 1993 and still in effect that authorizes an attorney-in-fact to make health care decisions for a person when the person is incapable. When an attorney-in-fact speaks, it is as if the patient is expressing wishes.
- **Power of Attorney for Health Care (PAHC):** Power of attorney document executed after November, 1993 that authorizes an attorney-in-fact to make health care decisions for a person when the person is incapable.
- **Physician Orders for Life-Sustaining Treatment (POLST):** The POLST is a voluntary form that was developed to document and communicate patient treatment preferences across treatment settings. It includes a section for documentation of DNAR orders and a section communicating patient preferences for EMS care. While these forms are most often used to limit care, they may also indicate that the patient wants everything medically appropriate done. **Read the form carefully!** When signed by a physician, the POLST is a physician's order.

## **CRIME SCENE RESPONSE**

### **PURPOSE:**

- Law enforcement agencies stress that their first priority on any crime scene is the preservation of life with reconstruction of the crime scene second. EMS personnel can be of assistance by adhering to the following guidelines regarding crime scene response.

### **PROCEDURE:**

#### **- Response and Arrival**

- 1) Be conscious of physical and weather conditions around the site. Tire tracks of suspect vehicles are often located in or adjacent to a driveway.
- 2) Limit the number of personnel allowed onto the scene. Consult with police on the scene to direct placement of vehicles and route of personnel onto the scene.
- 3) If you are responding to a known crime scene or any potentially violent situation, stage your vehicle out of site and in an area that is safely away. Notify dispatch of your staging location and advance your response only when scene safety is verified by on-scene officials.

#### **- Access and Treatment**

1. Select a single route to the victim. Maintaining a single route decreases the chance of altering or destroying evidence or tracking blood over a suspect's footprints.
2. Note the location of furniture, weapons, and other articles, and avoid disturbing them. If they need to be moved, someone should note the location the article was moved from, by whom it was moved, and where it was placed.
3. Remove from the scene all EMS generated debris that is contaminated with blood or body fluid and dispose of through established channels.
4. Be conscious of any statements made by the victim or other persons at the crime scene. Write down what these statements were and report to the investigating officers.
5. Note the specific garments worn by the patient at the time of treatment. It is also important not to tear the clothing off or cut through any holes, whether made by a knife, bullet, or other object.
6. The victim should be placed on a clean sheet when ready for transport. At the hospital, please try to obtain the sheet once the victim is moved off of it, fold it carefully in on itself, and give it to the investigating officers. This is especially important in close contact crimes such as rape, serious assault and death cases.

#### **- Documentation**

1. A detailed report is important in case you are later called to testify in court. An incident report should be completed and should cover your observations, conversations with family or witnesses, location of response vehicles and equipment, furniture, weapons, clothing that has been moved, items that were handled and your route to the victim.
2. An Unusual Event Report may be helpful for you to complete. This is a protected document and if you are called to court may be used by you to refresh your memory of aspects of the call that are not included in the Patient Care Report.
3. Do not offer your opinions or evaluations about the crime scene.

### **REMINDER:**

- Any location can be, or become, a crime scene. When responding, and upon arrival, if something does not appear to be right, notify police. If you suspect a crime scene and police are not present, secure area and document what you see.

## **DEATH IN THE FIELD**

### **PURPOSE:**

- The purpose of the Death in the Field Protocol is to define under what conditions medical care can be withheld or stopped once it has been started.

### **PROCEDURE:**

- Resuscitation efforts may be withheld if one or more of the following conditions is present:
  - The patient qualifies as a "DNR". (See Advance Directives Protocol)
  - The patient is pulseless and apneic in a mass casualty incident or multiple patient scene where the resources of the system are required for the stabilization of living patients.
  - The patient is decapitated.
  - The patient has rigor mortis in a warm environment.
  - The patient is in the stages of decomposition.
  - The patient has skin discoloration in dependent body parts (dependent lividity).

### **\*Specific Guidelines for: TRAUMATIC ARREST:**

- 1) A victim of trauma (blunt or penetrating) who has no vital signs in the field may be declared dead on scene. If opening the airway does not restore vital signs/signs of life, the patient should NOT be transported unless there are extenuating circumstances.
- 2) A cardiac monitor may be beneficial in determining death in the field when you suspect a medical cause or hypovolemia: A narrow complex rhythm (QRS < .12) may suggest profound hypovolemia, and may respond to fluid resuscitation.
- 3) At a trauma scene, the paramedic should consider the circumstances surrounding the incident, including the possibility that a medical event (cardiac arrhythmia, seizure, and hypoglycemia) preceded the accident. When a medical event is suspected, treat as a medical cardiac event. **VF should raise your index of suspicion for a medical event.**
- 4) In instances prior to transport where the patient deteriorates to the point that no vital signs (i.e. pulse/respiration) are present, a cardiac monitor should be applied to determine if the patient has a viable cardiac rhythm. A viable rhythm especially in patients with penetrating trauma may reflect hypovolemia or obstructive shock (tamponade, tension pneumothorax) and aggressive care should be continued.

### **\*\*Specific Guidelines for: MEDICAL CARDIAC ARREST:**

- 1) If the patient's ECG shows asystole or agonal rhythm upon initial monitoring, and after at least two lead changes, the patient, in the paramedic's best judgment, would not benefit from resuscitation:
  - The EMT In Charge should determine DIF and notify the Medical Examiner or Law Enforcement; **Or**
  - Begin BLS procedures, and contact OLMC with available patient history, current condition and with a request to discontinue resuscitation.
2. If after the airway is established and the asystole protocol has been exhausted the patient persists in asystole, (**Confirm in at least 2 leads**), consider termination of efforts. The EMT In Charge may declare the patient to be dead in the field.
3. The patient who has PEA and has not responded to the initial cycle of ACLS may be determined to be dead at the scene after appropriate consultation with OLMC.
4. All patients in VF should be treated and transported.

### **NOTES:**

- ORS allows a layperson, EMT or Paramedic to determine "Death in the Field"
- The EMT is encouraged to consult OLMC if any doubt exists about the resuscitation potential of the patient.
- A person who was pulseless or apneic and has received CPR and has been resuscitated, is not precluded from later being a candidate for solid organ donation.
- ETCO<sub>2</sub> may be a useful adjunct in the decision to terminate resuscitation with PEA. An ETCO<sub>2</sub> of 10 or less in patients in PEA after 20 minutes of ACLS resuscitation does not correlate with survival.
- Survival from trauma arrest is low, but not completely zero.

## DOCUMENTATION

### PURPOSE:

- To provide guidelines that specify the minimum documentation required after any patient contact.

### PROCEDURE:

- A patient care report shall be written for each patient seen, evaluated, treated, and/or transported. The patient care report shall be completed in an acceptable format after the EMT has returned to quarters and before going off duty. **Patient Care Reports should be written as soon as possible and no later than 12 hours or before the end of shift** which ever comes first. PCR's must be faxed to the Malheur County EMS Coordinators office and receiving facility as soon as possible.

Patient Care Form: At a minimum, documentation shall include:

- The patient's name.
- Date of birth.
- Allergies and medications.
- Chief Complaint.
- Narrative, to include subjective information (history), objective findings, assessment, and plan of action including treatment rendered. (See "*Key Considerations*" in each protocol for hints)
- Vital signs and OLMC contacts.
- Any changes in patient condition, whether related to treatment or not.
- All medications, dosages, and times of administration.
- All procedures, invasive or otherwise, including times and outcome.
- All narrative documentation should be in the S.O.A.P. format.

### Unusual Event Forms, Operational and Clinical Errors

- EMS is performed in a stressful environment with time-critical decisions, and these decisions often have to be made without the benefit of a careful risk-benefit analysis. Given these situations, it is expected that we as individuals will make mistakes. Our QA process is designed to be non-punitive, and clinical or operational problems that are reported in a timely, honest, and complete manner will be evaluated according to the following criteria:
  - System problems. (protocols, procedures, equipment, etc.)
  - Education or Training problems.
  - Circumstances led to unusual operational decision.
  - Negligent behavior.
- The EMS Office has the obligation to identify system and educational problems and plan effective changes, ensuring that the results are measured through the QA process so that the desired improvement is achieved. Circumstances that lead to difficult scenes will be evaluated for their educational value, the case will be "blinded", and the information shared with other medics. Negligent behavior will be carefully evaluated as to its context (intentional or non-intentional), and appropriate improvement plans will be developed.
- An Incident Report shall be completed any time one of the following situations occurs (there are NO exceptions):
  - Major operational errors or problems on scene.
  - Any equipment failures during patient care.
  - Any time a clinical error is made, or there is a deviation from protocols or accepted practice.
  - Any on-scene conflict that is unresolved at the crew level.
  - Any repeated behavior problems with other agencies or internal personnel.
  - Any situation where the medic believes a crime has occurred.
  - Any calls to incidents where abuse against the elderly or children is observed. (see protocols)
  - Transport by fire department personnel.
  - Any other unusual event or occurrence.

## **GRIEVING PEOPLE**

### **PURPOSE:**

- These guidelines are intended to provide paramedics with direction during the difficult emotional times immediately before and following death.

### **RESUSCITATION PHASE:**

- Remove children from the resuscitation area. Depending upon the emotional state of family members, consider allowing them to watch and/or participate in a limited and appropriate way. If personnel is available, assign someone to be with family to explain scene operations.
- If family or friends were doing CPR prior to your arrival, commend their efforts.
- If family or friends are disruptive, remove them, with as little force as necessary. Remember why they may be agitated. If there is no help to remove them, try assigning simple tasks, such as helping bring in the stretcher, holding doors open, telling other family about the event and calling the doctor or minister. **Make requests. Don't give orders.**
- As time allows give accurate and truthful updates about the patient's prognosis. If the patient is not responding to medications or other treatments, tell family members (this helps prepare if death is imminent).

### **DEATH PRONOUNCEMENT:**

- After the decision to stop resuscitation efforts, certain practices can be employed for telling loved ones that will help them understand and begin their grieving process.
- Tell family and friends of the death honestly. Avoid using past tense terms when speaking to survivors of the recently dead. Allow family and friends to express their emotions.
- Give factual information. Knowing certain pertinent details will help family and friends de-mystify the death. These details could include an explanation of resuscitation efforts or why resuscitation was not attempted or, if appropriate, why the terminal event happened. Be honest with children.
- Genuine warmth and compassion will be more helpful than almost anything else for survivors. Don't feel it necessary to say the "right" things. Listening often provides grieving people with the most comfort.

### **FOCUSING ON THE SURVIVORS:**

- Friends and family may not be able to focus on what needs to be done after they learn about death of a loved one. See to it that survivors have a support system present before you leave. Call friends, family, clergy, or neighbors to be with them. Respect the survivor's wishes to be alone. Explain the next steps to them after you have pronounced death.
- Help them to make decisions such as which people should be called. If they ask you to make the calls, try to comply, mention the need to find a funeral home, if one has not already been chosen. Clergy will also be helpful with this decision as may the Medical Examiner's office.
- The Medical Examiner's office shall be contacted and the EMT shall obtain instructions from the Medical Examiner before moving, altering or cleaning the body.
- A chaplain may be helpful in assisting with survivors. It is advisable to call early, as the chaplains do not have code-3 capabilities.
- In the home, ask on-scene relatives if there is a special covering they would like used over the body. As survivors want their loved ones to look comfortable, ask if they want the head covered.
- Allow family members to spend time with the deceased.

### **DEATH OF A CHILD:**

- **Make every effort to resuscitate children.** This helps parents feel that everything possible was tried. Do not accuse the parents of abuse or neglect, but take careful note of the patient surroundings and the general physical condition of the child. Do not be overly silent, which may imply guilt to the parents.
- Do not allow the parents to drive themselves to the hospital. Remind parents to arrange for child care of other children.
- Listen carefully to their statements and answer only with accurate information. If there is a police investigation tell the parents that this is only routine. Successful management of child deaths requires supportive, compassionate and tactful measures.

## **HAZARDOUS MATERIALS MEDICAL RESPONSE (PAGE 1 OF 2)**

### **PURPOSE:**

- EMT's may be first on the scene of a hazardous materials situation because of shorter response times or no knowledge of dispatch that hazardous materials are involved. This protocol is intended to guide EMT's who do not normally function in hazardous materials scenes. If the scene you are responding to is a known or suspected (based on information from dispatch) hazardous materials situation, stage and wait for the hazardous materials personnel. When you have arrived at the scene and find out during scene assessment that hazardous materials are involved, stage and wait for the hazardous materials personnel. All scenes (MVA, Industrial, etc.) should be considered as being a potential hazardous materials situation. The following approach procedure should be used:

### **PROCEDURE:**

#### **1) Approach**

##### **- All scenes:**

- Be cautious all times.
  - The reported location may be inaccurate, response into a contaminated area might occur.
  - Approach upwind and upgrade if possible.
  - Position vehicle well away from the incident.
  - Communicate your actions to the 9-1-1 Center.
  - Remember: contaminated and/or exposed response personnel may add to the overall problem and reduce their effectiveness to help.
- If at any time you suspect a hazardous materials situation:
- Confirm that fire and police have been notified. The agency responsible for hazardous materials response may respond with different levels of personnel and equipment based upon the information received. Do not always expect a hazardous materials team to respond.
  - If you are a first-in responder, the first priority is scene isolation.
  - If you believe that you or your vehicle is contaminated, stage in an isolated area.

**KEEP OTHERS AWAY! KEEP UNNECESSARY EQUIPMENT FROM BECOMING CONTAMINATED.**

#### **2) Person in Charge**

- If the EMT is the first medical person on the scene, he/she should assume the role of Person in Charge (medically) until a "hazardous materials trained personnel" arrives. If at all possible the Incident Command Structure should be implemented.
- The HAZMAT team will direct all care.
- The HAZMAT team will determine the method of transport of the exposed patient (air vs. ground).
- The HAZMAT team will determine who will provide care during transport (Hazmat personnel may remain in that position during transport).

#### **3) Patient Care for the Contaminated Patient**

- Types of incidents which may require decontamination of the patient:
  - Radiation
  - Biological hazards
  - Chemical
  - Toxic substances
- Contamination can occur through:
  - Smoke
  - Direct contact.
  - Vapor
  - Run-off.

4) Determine the hazardous substance involved and provide treatment as directed by the HAZMAT team (in the absence of the HAZMAT team, consult the Poison Center through OLMC).

5) The hazardous materials team must be contacted about removal of contaminated clothing and packaging of the patient with regard to your protection and the patient's.

#### **6) Ambulance Preparation:**

- The HAZMAT team shall determine the process needed for ambulance preparation.
- Remove any supplies and equipment that will be needed for patient care.
- Seal cabinets and drape interior, including floor and squad bench, with plastic (available from hazardous materials team).

## **HAZARDOUS MATERIALS MEDICAL RESPONSE-continued**

PAGE 2 OF 2

### 7) Transport and Arrival at the Hospital.

- If an ambulance has transported a patient from an incident that is subsequently determined to involve hazardous materials exposure, scene personnel must immediately relay all relevant information to the transporting unit(s) and/or receiving facility(s) involved (via EMS dispatch or OLMC).
- OLMC and the receiving hospital should be contacted as soon as possible. The EMT should communicate the material involved, degree of exposure, decontamination procedures used and patient condition.
- The ambulance should park in an area away from the emergency room or go directly to a decontamination center or area.
- Patient(s) should not be brought into the emergency department before EMT's receive permission from the hospital staff.
- Once the patient(s) has been released to the hospital, follow the HAZMAT teams direction and if necessary double bag the plastic sheeting used to cover the gurney and the floor. Double bag any equipment, which is believed to have become contaminated.
- After unloading the patient from the ambulance, check with the HAZMAT team to see where the ambulance can be safely decontaminated and whether or not there is equipment available for this purpose. Do not begin decontamination without direction from HAZMAT. After consultation with the Hazardous Materials Team leader the team may recommend that the ambulance be decontaminated.
- Following decontamination recommendations from the HAZMAT team decontaminate the ambulance and personnel before returning to the incident scene. When returning to the incident scene, bring bags containing contaminated materials, equipment, clothing, etc., and turn them over to the HAZMAT team.

### 8) EMT Exposure

- If an EMT is exposed or is concerned with the possibility of exposure, medical help should be sought immediately.
- Report all exposures to the HAZMAT team, Poison Center, and supervisor.
- Follow guidelines for Communicable Disease: Blood borne/Airborne Pathogens including Personnel Exposure Report.
- Do not return to service until cleared to do so by the HAZMAT team or Poison Center.
- *FOR ADDITIONAL INFORMATION SEE THE HAZMAT PROTOCOL*

# INFECTION CONTROL PRACTICES

## PURPOSE:

- This protocol identifies equipment and its degree of risk for exposure to blood and body fluids. The degree of risk is divided into disposable, high, medium and low categories.

## DEFINITIONS:

- Disinfect: Disinfection **will not** remove 100% of the infection-causing organisms. The effectiveness of a disinfectant will vary depending on its application. Anything that is going to be laid on the unbroken skin can be disinfected. If the item is going to come in contact with broken skin/mucus membrane then it must be sterilized to prevent infection.
- Sterilize: To remove all growth. An item that is going in the body or in contact with skin should be sterilized.
- Decontamination: The process of rendering an object, person, or area free of a contaminating substance such as bacteria, poison, gas, or a radioactive substance.

## CATEGORIES:

- Disposable (single use equipment)
  - Oxygen masks, nasal cannulas, disposable airway devices and suction catheters.
  - Disposable extremity splints and bandages of all types.
  - Obstetric kits.
  - Emesis containers, disposable protective eyewear and face masks and disposable gowns or linen.
- High Risk
  - High risk equipment decontamination measures shall consist of washing or wiping off the equipment to remove all particulate material before sterilizing it.
    - Equipment:
      - Laryngoscope blades, McGill forceps and stylets.
      - Thermometers if uncovered/thermometer covers
- Intermediate Risk
  - Intermediate risk equipment decontamination measures shall consist of washing or wiping the equipment before disinfecting it.
    - Equipment:
      - Stethoscope and sphygmomanometers.
      - Laryngoscope handle.
      - Tourniquets.
      - Traction splints, backboards and straps, KED and extremity splints.
      - Wheeled cot mattress and non-disposable linen.
- Low
  - Low risk equipment decontamination measures consist of washing the equipment with soap or detergent.
    - Equipment:
      - Monitor/defibrillation paddles.
      - Non-disposable eyewear and non-disposable gowns.

# **MEDICAL CONTROL OF SCENE**

PAGE 1 OF 2

## **PURPOSE:**

- The purpose of this protocol is to describe who is in charge of patient care on the scene of medical emergencies and how to resolve disputes with other medical professionals in attendance. **This protocol does not apply to MCI/MPS events where ICS is established.**

## **PROCEDURE:**

- 1) EMTs/Paramedics/Prehospital Providers On-Scene: The first arriving, highest certified EMT will be the Person-In-Charge (PIC) and will assume responsibility for directing overall patient care. The team approach to patient care assessment and treatment should be utilized by the PIC.
- 2) When a higher level EMT arrives, in an EMS role, that individual shall assume the role of PIC, after receiving verbal report from the initial PIC.
- 3) The responsibilities of the PIC directing overall patient care include:
  - Assuring that treatment, operations, and communications follow protocols.
  - Coordinating patient care activities. This PIC must watch over the entire patient care scene activities and be sure that the patient care activities are being accomplished in a rapid, efficient, and appropriate manner.
  - Directing other EMTs to establish airway management, start IVs, etc.
  - Establishing the appropriate time to be spent at the scene for doing patient care.
  - Determining when transportation of the patient is to occur.
  - Performing medical coordination with all agencies and personnel.
- 4) The PIC directing overall patient care will be held responsible and accountable for patient care activities performed at the scene and be identified on all patient care reports.
- 5) If a patient requires transport and the first arriving PIC is from a non-transporting agency, provision of patient care will be turned over to the transporting EMT-P or flight personnel when:
  - The patient is placed on the transport unit's gurney, **OR**
  - At a time agreed upon by both EMTs, continued patient care will then become the responsibility of the transporting unit. There will be a verbal agreement anytime transfer of care from one EMT (EMT-P) to another takes place.

## **PARAMEDIC DIRECTION ON-SCENE:**

- EMTs and Paramedics take medical direction from:
  - Physician Supervisors.
  - Regional Protocols.
  - On-Line Medical Control (OLMC) as directed in protocols.

## **PHYSICIAN ON-SCENE POLICY (WITHIN OFFICE):**

- When EMS is called to a physician's office, the EMTs and paramedics should receive information from the physician and attempt to provide the service requested by the physician.
- While in the physician's office, the physician shall remain in charge of the patient. The EMTs and paramedics may follow the direction of the physician as long as it is within the Scope of Practice and protocols of the PIC. Anytime there is a conflict between a physician's orders and the protocols, OLMC shall be contacted.
- Once the patient is in the ambulance, unless the physician accompanies the patient, paramedics shall follow the protocols.

## **PHYSICIAN ON-SCENE POLICY (OUTSIDE OFFICE):**

- Any physician (MD or DO) at the scene of an emergency may be qualified to provide assistance to EMTs and paramedics and shall be treated with professional courtesy.
- A licensed physician requesting control of patient care at the scene shall be:
  - Thanked for the offer by the PIC.
  - Advised that the EMTs and Paramedics work under regional protocols and On-Line Medical Control.
  - Advised that we are not permitted to relinquish medical control to a physician on the scene without agreement from On-Line Medical Control.

## **MEDICAL CONTROL OF SCENE (CONTINUED)**

PAGE 2 OF 2

- If the physician requesting control is not the patient's "physician of record," EMTs and paramedics shall be authorized to proceed under the direction of the physician **ONLY IF ALL THREE OF THE FOLLOWING PROVISIONS ARE MET:**
  - OLMC is contacted and authorizes transfer of patient care.
  - The physician agrees to accompany the patient to the hospital in the ambulance.
  - The physician agrees to complete and sign the appropriate patient care report.
  
- If communication with OLMC cannot be established, care may be provided only according to approved ALS protocols. No direction from an on scene physician may be accepted.

### **DISPUTES ON-SCENE BETWEEN PARAMEDICS/EMTS AND OTHER MEDICAL PROFESSIONALS:**

- Disagreements about care should be handled in a professional manner and shall not detract from patient care.
- To the extent possible, the ALS and BLS protocols shall be followed and provide the basis for resolving disputes.
- If an unresolved dispute continues between EMTs or other medical professionals concerning the care of a patient, **OLMC shall be contacted.**
- If a dispute arises which results in transfer of patient care from one PIC to another, the approximate time of the transfer shall be included on the patient care report.
- **DISPUTES SHALL NOT APPEAR ON PATIENT CARE REPORTS.** Written "Unusual Event Forms" should be completed pursuant to any dispute arising at the scene.

# **REFUSAL & INFORMED CONSENT**

PAGE 1 OF 2

## **PURPOSE:**

- To establish the process of obtaining informed consent.
- To define which persons may be left at the scene because they are not considered in need of EMS.
- To describe the process of obtaining and documenting patient refusal.

## **PROCEDURE: (Refer to Refusal Flow sheet)**

- Determine if there is an "Identified Patient":
  - Determine "No Patient Identified" if the person meets **ALL** of the following criteria:
    - No significant mechanism of injury.
    - No signs of traumatic injury.
    - No acute medical condition.
    - No behavior problems that place the patient or others at risk.
    - Person is NOT less than 18 years of age.
    - Person is NOT the 911 caller.
- **IDENTIFIED PATIENT:**
  - Identified Patient who is refusing medical care or transport:
    - Determine if the patient appears to have impaired decision making capacity. Consider conditions that may be complicating the patient's ability to make a decision:
      - Head injury.
      - Drug or alcohol intoxication.
      - Toxic exposure.
      - Psychiatric problems.
      - Language barriers (consider translator or ATT language line through dispatch).
      - Serious medical conditions.
  - Identified Patient **WITH** decision making capacity who refuses **needed** treatment and/or transport:
    - Explain the risks and possible consequences of refusing care and/or transport.
    - If a serious medical need exists, contact OLMC for physician assistance.
    - Enlist family, friends, or law enforcement to help convince patient.
    - If patient continues to refuse, complete the Patient Refusal Information Form and have them sign it.
  - Identified Patient **WITH IMPAIRED** decision making capacity:
    - Treat and transport any person who is incapacitated and has a medical need.
    - Patients with impaired decision making capacity should **NOT** sign a release form.
    - With any medical need, make all reasonable efforts to assure that the patient receives medical care. Attempt to contact family, friends, or law enforcement to help.
    - If deemed necessary, consult with OLMC and consider chemical or physical restraint per Restraining of Patients Protocol.
- **DOCUMENTATION:**
  - All instances of an identified patient, with or without impaired decision making capacity, must be fully documented on a Patient Care Form with an attached signed refusal form. The following is considered minimum documentation criteria:
    - General appearance and level of consciousness (mental status).
    - History, vital signs, and physical exam.
    - Presence of any intoxicants.
    - Assessment of the person's decision making capacity.
    - Risks explained to patient.
    - Communication with family, friends, police, and/or OLMC.

## **REFUSAL & INFORMED CONSENT-continued**

PAGE 2 OF 2

### GUIDELINES & DEFINITIONS:

- Decision Making Capacity: The ability to make an informed decision about the need for medical care based on:
  - Accurate information given the patient regarding potential risks associated with refusing treatment and/or transport.
  - The persons perceived ability to understand and verbalize these risks.
  - The person's ability to make a decision that is consistent with his/her beliefs and life goals.
- Impaired Decision Making Capacity: The inability to understand the nature of the illness or injuries, or the risks and consequences of refusing care.
- Emergency Rule: EMTs may treat and/or transport under the doctrine of implied consent a person who requires immediate care to save a life or prevent further injury. Minors may be treated and transported without parental consent if a good faith effort has been made to contact the parents or guardians regarding care and transport to a hospital, and the patient, in the opinion of EMTs, needs transport to a hospital. When in doubt, contact OLMC.
- Required OLMC Contact: EMTs are required to contact OLMC for the following refusal situations:
  - Suspected impaired decision making capacity.
  - Suspected serious medical condition such as:
    - Respiratory distress.
    - Sustained abnormal vital signs.
    - Compromised airway.
    - Uncontrolled bleeding.
    - Suspected cervical spine injury.
    - Infants under 3 months of age.
    - Chest pain.
    - Cardiac dysrhythmia.
    - Poisons and overdoses.
    - First time seizures.
  - Suspected abuse situation involving a minor or the elderly.
  - Any unconscious or altered mental status (individual or parent/guardian for a minor).
  - Conflict on scene regarding refusal of care.
  - Minor without a parent or guardian who is refusing care.

## **REPORTING SUSPECTED CHILD ABUSE**

STATUTORY AUTHORITY – ORS 419B

### PURPOSE:

- To establish guidelines for the reporting of suspected child abuse.

### DEFINITIONS:

- Abuse: The non-accidental assault or physical injury to a child. This may include mental abuse, sexual abuse, neglect, etc.
- Child: An unmarried person under the age of 18.
- Public or Private Officials: physicians, including residents and interns, firefighter or EMT among others.

### PROCEDURE:

- It is the policy of the State of Oregon to require mandatory reporting of suspected child abuse.

#### - DUTY TO REPORT CHILD ABUSE (ORS 419B.010)

- Public or private officials **have a duty** to report child abuse. Such an official who has reasonable cause to believe that a child has either been abused or witnessed abuse of another child or adult, or who comes into contact with someone who has abused a child, **shall report** the contact to DHS (Department of Human Services) or a law enforcement agency, i.e., any city or municipal police department, any county sheriff's office, the Oregon State Police, or a County Juvenile Department.

#### - CONTENT OF REPORT (ORS 419B.015)

- EMT must file an Unusual Event Report with the EMS Office within 12 hours as outlined in the Documentation Protocol. If there is imminent danger to health or life, notify police and the Duty Chief, and page the EMS Chief or the Assistant Chief. The report must contain, if known, the following information:
  - The names and addresses of the child and parents/person responsible for the child's care.
  - The child's age.
  - The nature and extent of abuse (including any evidence of previous abuse).
  - The explanation given for the abuse.
  - Any information the official believes may be helpful in establishing the cause of abuse or the perpetrator's identity.
  - NOTE: A report must be submitted regardless of whether law enforcement was present at the scene or not.

#### -IMMUNITY OF PERSONS MAKING REPORTS (ORS 419.025):

- Persons who acting in good faith and upon reasonable grounds, report child abuse are immune from civil and criminal liability.

## **REPORTING SUSPECTED ELDER ABUSE**

STATUTORY AUTHORITY – ORS 124

### PURPOSE:

- To establish guidelines for the reporting of suspected elder abuse or abuse of a resident in a long term care facility.

### PROCEDURE:

- There are two separate elder abuse reporting requirements; a general reporting requirement which applies to patients outside long-term care facilities and a special reporting requirement, which applies to patients of long-term care facilities.

### DEFINITIONS:

- Abuse: The non-accidental physical injury to an elderly person or patient of a long term care facility. Abuse also includes:
  - Outside long-term care facilities:
    - Neglect is the withholding of services necessary to maintain health and well being. Treatment solely by spiritual means is not neglect; however, the person must be voluntarily under the care of an accredited practitioner or in accordance with the practices of a recognized church or religion.
    - Abandonment, including desertion or willful forsaking of an elderly person or withdrawal or neglect of duties and obligations owed an elderly person by a caregiver.
    - Willful infliction of physical pain or injury.
  - Inside long-term care facilities:
    - Illegal or improper use of the patient's financial resources for personal profit or gain.
    - Sexual contacts by force, threat, duress or coercion by an employee, agent or other resident.
    - Use of derogatory names, phrases, harassment, intimidation, punishment or involuntary seclusion.
- Elderly person: Any person 65 years of age or over.
- Long-term care facility: Any licensed skilled nursing facility or intermediate care facility.

### PROCEDURE:

#### 1) DUTY TO REPORT ELDER ABUSE AND PATIENT ABUSE IN A LONG TERM CARE FACILITY

- An EMT who has reasonable cause to believe that an elderly person has been abused, or who comes into contact with someone who has abused an elderly person, shall file an Unusual Event Report with the EMS Office within 12 hours as outlined in the Documentation Protocol. If there is imminent danger to health or life, notify police and the Duty Chief, and page the EMS Chief or the Assistant Chief.

#### 2) CONTENT OF REPORT

- The elder abuse report must contain, if known, the following information:
  - The names and addresses of both the elderly person and anyone responsible for his/her care.
  - The nature and extent of abuse including any evidence of previous abuse.
  - The explanation given for the abuse.
  - Any information the official believes may be helpful in establishing the cause of abuse.

#### 3) IMMUNITY OF PERSONS MAKING REPORTS

- Persons participating in good faith in making a report of elder abuse and who have reasonable grounds for making it are immune from civil and criminal liability including participation in any judicial proceeding resulting from their report. Persons making such a report of abuse of a patient in a long term care facility in addition have immunity from any criminal liability that might otherwise be incurred or imposed with respect to making such a report.

## **STAGING FOR HIGH RISK RESPONSE**

### **PURPOSE:**

- To establish guidelines for medical responders who are en-route to incidents involving violence, or are anticipated to be potentially violent in nature.

### **POLICY:**

- Medical units shall stage on the following:
  - Any time dispatch directs them to do so.
  - Any time a violent incident might expose medical responders to danger.
  - On any call at the medical unit's discretion.
  - If the scene you are responding to is a known or suspected (based on information from dispatch) hazardous materials situation, stage and wait for the HazMat Team.

### **PROCEDURE:**

- 1) Stage approximately two blocks from the incident address and out of the line of sight.
- 2) Notify dispatch of your location when staged.
- 3) Additional responding units will respond to the same staging location if possible (avoid traveling past incident address).
- 4) Unless traffic hazard, turn off headlights and warning lights. Turn on four-way flashers.
- 5) Once staged, units will not enter the scene until it is declared secure by police.

**NOTE:** It shall not be assumed that the mere presence of police on scene means that medical responders may now proceed safely into the call location. If police are on scene, call Dispatch to request verification that medical units may proceed onto the scene or stage.

# TRAUMA PATIENTS-SYSTEM GUIDELINES

PAGE 1 OF 2

## PATIENT ENTRY:

- Patients are to be entered into the Trauma System if they meet any of the following criteria:

### - MANDATORY:

#### - Physiological Criteria:

- Systolic BP < 90 mm/Hg.
- Respiratory Rate < 10 or > 29, or airway management is required.
- GCS < 12

#### - Anatomical Criteria:

- Flail chest.
- Two or more obvious fractures of femur or humerus.
- Penetrating injury of the head, neck, torso, or groin associated with energy transfer.
- Amputation above wrist or ankle.
- Spinal cord injury with limb paralysis.

#### - Mechanism of Injury:

- Heavy extrication > 20 minutes.
- Death of same car occupant.
- Patient ejected from enclosed vehicle.

### - DISCRETIONARY:

#### - High-Energy Transfer Situation:

- Significant falls.
- Auto vs. Pedestrian collisions.
- Rollover.
- Motorcycle, ATV or Bicycle Crash.
- Impact/Significant Intrusion.

#### - Co-morbid Factors:

- Age (< 12 or > 60 years).
- Presence of intoxicants.
- Hostile environment (hot/cold).
- Pregnancy (especially third trimester).
- Significant medical history (e.g., anticoagulant therapy).
- Morbid obesity.

## - MEDICAL DIRECTION:

- Off-line medical direction for trauma patients is controlled by the Treatment Protocols.
- OLMC is provided by the on duty emergency physician or Dr. Smith. OLMC may override off-line medical direction.

## - DESTINATION

- *Patients or Guardians Request:* If the alert, competent patient or his/her competent guardian requests transport to a specific hospital, consent by the emergency physician from the nearest hospital must be granted. **A bypass form explaining possible complications must be signed by the patient prior to departure.**
- *Multiple Patients:* Contact with the receiving facility will determine the number of patients that can be accepted.
  - Early communication with the receiving hospital will help in triaging patients to the appropriate facility. Follow Malheur County Disaster Plan for mass casualty incidents.
- *Diversion To Local Hospital:* If the paramedic is unable to establish an airway, the patient should be transported to the nearest acute care facility.

## **TRAUMA PATIENTS-SYSTEM GUIDELINES (CONTINUED)**

PAGE 2 OF 2

### - MODE OF TRANSPORT:

- An air ambulance should be used when transport time can be decreased to the appropriate receiving hospital.

### - PATIENT EVALUATION PROTOCOL:

-Treatment Priority Should Be Approached In This Order:

- 1) Airway Maintenance (Including control of the cervical spine).
- 2) Breathing.
- 3) Control of circulation and hemorrhage.
- 4) Treatment of shock.
- 5) Neurological examinations.
- 6) Complete secondary survey.
- 7) Splinting of fractures.

### - SCENE TIME:

- After gaining access to the patient, scene time should not exceed **ten minutes** for any patient who is entering the Trauma System. Plan to start IV/IOs and initiate other care once en-route to the hospital if necessary.

# ***MEDICATIONS***

**ACTIVATED CHARCOAL  
(INSTA-CHAR)  
CHAR®**



**SUPPLIED:**

- 25 gm / 120 ml bottle

**PHARMACOLOGY AND ACTIONS:**

- Adsorbs toxic substances ingested, and inhibits GI adsorption by forming an effective barrier between remaining particulate material and the gastrointestinal mucosa. The effect is greatest within one hour of ingestion.

**INDICATIONS:**

- Effective in the management of poisoning or overdose of many substances.

**CONTRAINDICATIONS:**

- Patient with altered mental status or inability to maintain own airway.
- Patient with aspiration or impending aspiration.

**PRECAUTIONS:**

- OLMC must be contacted before administering activated charcoal unless ingestion is ASA and/or APAP only, and less than 2 hours has elapsed prior to administration.
- Activated charcoal may be ineffective in some ingestions.
- Administration of Activated charcoal can result in aspiration.
- Milk, ice cream and other dairy products will decrease adsorption capacity substantially.

**ADULT INDICATION DOSE ROUTE(S) SPECIAL**

- Poisoning or overdose 1 gm/kg PO or NG **OLMC Required except** for ASA/APAP ingestions less than 2 hours prior.

**PEDIATRIC INDICATION DOSE ROUTES(S) SPECIAL**

- Poisoning or overdose 1 gm/kg PO or NG **OLMC Required except** for ASA/APAP ingestions less than 2 hours prior.

**ADENOSINE  
(ADENOCARD)**

ADENOCARD®

SUPPLIED:

- 6mg and 12 mg pre-load syringes or 6mg vial.

PARAMEDIC

PHARMACOLOGY AND ACTIONS:

- Adenosine is a naturally occurring nucleoside that has the ability to slow conduction through the AV node. Since most cases of PSVT involve AV nodal re-entry, adenosine is capable of interrupting the AV nodal circuit and stopping the tachycardia, restoring normal sinus rhythm. It is not associated with hypotension. It is eliminated from the circulation rapidly, having a half-life in the blood of less than 10 seconds.

INDICATIONS:

- To convert PSVT to normal sinus rhythm, including PSVT that is associated with accessory bypass tracts (e.g., Wolff-Parkinson-White Syndrome - WPW). **(PSVT is a regular, narrow complex tachycardia with a rate over 150.)**

CONTRAINDICATIONS:

- Second or third degree heart block, sick sinus syndrome.
- Known hypersensitivity.
- Atrial fibrillation

PRECAUTIONS:

- When doses larger than 12mg are given by infusion, there may be a decrease in blood pressure secondary to a decrease in the vascular resistance.
- The effects of adenosine are antagonized by methylxanthines such as Theophylline, caffeine. Larger doses of Adenosine may be required.
- Adenosine effects are potentiated by dipyridamole (Persantine®), resulting in prolonged asystole.
- In the presence of carbamazepine (Tegretol®), high degree heart block may occur.
- Adenosine is not effective in converting A-fib, A-flutter, or VT.

SIDE EFFECTS/SPECIAL NOTES:

- The most common side effects include facial flushing, dyspnea, chest pressure, nausea, headache, and lightheadedness lasting less than 10 seconds.
- Adenosine is not contraindicated in pregnancy.

ADULT INDICATION DOSE ROUTE(S) SPECIAL

- PSVT 6 mg, 12 mg, 12mg Rapid IV/IO bolus Large proximal IV line with Fluid bolus flush.

PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- PSVT 0.1 mg/kg first dose, 0.2 mg/kg two repeat doses. (Do not exceed adult dosing)
- Rapid IV/IO bolus. Large proximal IV with line. Fluid bolus flush.

**ALBUTEROL  
(VENTOLIN)**

VENTOLIN®

SUPPLIED:

- 2.5 mg / 3 ml bottle
- OLMC Contact Required: Use in Hyperkalemia Crush injury patients.

**EMT-I &  
PARAMEDIC**

**PHARMACOLOGY AND ACTIONS:**

- Albuterol is a potent, relatively selective beta2-adrenergic bronchodilator and is associated with relaxation of bronchial smooth muscle and inhibition of release of mediators of immediate hypersensitivity from cells, especially mast cells. The onset of improvement in pulmonary function is within 2 to 15 minutes after the initiation of treatment and the duration of action is from 4-6 hours. As a beta2 agonist, albuterol induces bronchial dilation, but has occasional beta1 overlap with significant cardiac effects. Arrhythmias may occur especially in patients with underlying cardiovascular disorders such as coronary insufficiency and hypertension.

**INDICATIONS:**

- Respiratory distress.
- Anaphylaxis.
- Hyperkalemia.
- Crush Injury with potential hyperkalemia

**CONTRAINDICATIONS:**

- None

**PRECAUTIONS:**

- The patient's rhythm should be observed for arrhythmias. Stop treatment if frequent PVCs develop or any tachyarrhythmias other than sinus tachycardia appear or if heart rate increases more than 20 bpm.
- Paradoxical bronchospasm may occur with excessive administration.

**TECHNIQUE:**

- Oxygen flow should be set at 6 liters/minute.
- Patients should be instructed to breathe as follows: Inhale slowly; hold breath; exhale passively through nose.

**ADULT INDICATION DOSE ROUTE(S) SPECIAL**

- Respiratory Distress 2.5 mg repeat as needed Nebulized
- Hyperkalemia 10 mg Nebulized **OLMC Required**
- Anaphylaxis 2.5 mg Nebulized **Use Nebulizer for ETT.**
- Crush Injury Per OLMC Nebulized **OLMC Required**

**PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL**

- All Same as adult Nebulized **See above.**

## **AMMONIA INHALANTS**

**ALL LEVELS**

### **SUPPLIED:**

- 1 ml pearls

### **PHARMACOLOGY AND ACTIONS:**

- Ammonia inhalants (15% anhydrous ammonia and 35% alcohol) when broken, release ammonia as a colorless gas with a strong, pungent odor characteristic of drying urine. This gaseous ammonia reacts with moisture in mucosal surfaces (eyes, skin, and respiratory tract) to produce ammonia hydroxide causing irritation. This irritation functions as a highly effective noxious stimuli eliciting an immediate withdrawal response in all but deeply obtunded patients.

### **INDICATIONS:**

- For use as a non-injurious noxious stimulus, as an aid to assessment of neurological status in obtunded or comatose patients.

### **CONTRAINDICATIONS:**

- None

### **PRECAUTIONS:**

- Do not automatically rule out potential medical or traumatic causes of coma, somnolence or extreme lethargy.
- Ammonia inhalants should never be placed in nostrils or inside oxygen masks.

## **ASPIRIN**

### SUPPLIED:

- Children's Multi tablet bottle
- 81 mg / tablet

### PHARMACOLOGY AND ACTIONS:

- Aspirin inhibits prostaglandins and disrupts platelet function for the life of the platelet (10 days). It is also a mild analgesic and anti-inflammatory.

### INDICATIONS:

- In unstable angina and acute myocardial infarction, aspirin has been shown to lower mortality and is indicated in patients with suspected AMI.

### CONTRAINDICATIONS:

- Aspirin shall not be administered to:
  - Any patient who has an allergy to aspirin.
  - Any patient with a history of an active bleeding disorder or ulcer.
  - Any patient with suspected aortic dissection.

### PRECAUTIONS:

- Patients with asthma may have an allergic reaction to aspirin.

### ADULT INDICATION DOSE ROUTE(S) SPECIAL

- Acute Coronary Syndrome (AMI), give 324 mg (4 x 81 mg tablets) PO
- Can be given even if patient has taken ASA that day.

### PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- Not recommended for pediatrics

## ATROPINE SULFATE



### SUPPLIED:

- 1 mg / 10 ml pre-filled syringe
- 8 mg / 20 ml multi-dose vial

### PHARMACOLOGY AND ACTIONS:

- Atropine is a muscarinic-cholinergic blocking agent. It has effects such as increases heart rate (by blocking vagal influences), increases conduction through A-V node, reduces action and tone of the urinary bladder (may cause urinary retention) and dilates pupils. This drug blocks cholinergic (vagal) influences already present. If there is little cholinergic stimulation present, effects will be minimal.

### INDICATIONS:

- To improve conduction in 2nd and 3rd Degree Heart Block.
- As an antidote for some insecticide exposures (anti-cholinesterase, e.g., organophosphate) and nerve gases.
- To counteract excessive vagal influences causing some Bradysystolic and Asystolic arrest.
- For bradycardia not due to hypoxia when using Succinylcholine.

### PRECAUTIONS:

- Atropine may actually worsen the bradycardia associated with second-degree Mobitz II and third-degree AV blocks. In these cases, go straight to transcutaneous pacing instead of trying atropine.
- A maximum dose of 0.04mg/kg of atropine should not be exceeded except in the setting of organophosphate poisoning. If the heart rate fails to increase after a total of 0.04mg/kg has been given, then transcutaneous pacing is indicated.

### CONTRAINDICATIONS:

- Contraindicated in Atrial Fibrillation and Flutter because increased conduction may speed ventricular rate excessively.
- Bradycardia in the setting of an acute MI is common and probably beneficial. Do not treat them unless there are signs of poor perfusion.
- Do not give to neonates.

### SIDE EFFECTS AND SPECIAL NOTES:

- 2<sup>nd</sup> and 3<sup>rd</sup> degree block may be chronic and without symptoms. Symptoms occur mainly with acute change. Treat the patient, not the arrhythmia.
- Atropine pushed slowly will cause a 6-8 beat per minute slowing in the heart rate. For patients with HR < 40 this could be undesirable.

### ADULT INDICATION DOSE ROUTE(S) SPECIAL

- Asystole, PEA give 1 mg IV
  - 2 mg ET IV/ ET/IO q 3-5 minutes to MAX of: 3.0 mg IV or 4.0 mg ET
- Bradycardia 0.5-1.0 mg IV/IO q 3-5 minutes MAX 3 mg
  - RSI 0.5 mg IV/IO p.r.n. after RSI
- Organophosphates 1-2 mg IV/IO **Call OLMC for frequency.**

### PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- Asystole, PEA, Bradycardia give 0.02 mg/kg
  - Do not exceed adult dose.
  - IV/IO/ET Minimum dose is 0.1 mg.
- RSI 0.02 mg/kg Do not exceed adult dose
  - IV/IO for pre-treatment in RSI
  - Minimum dose is 0.1 mg.
- Organophosphates 0.02 mg/kg
  - Do not exceed adult dose
  - IV/IO Minimum dose is 0.1 mg.

## **CALCIUM CHLORIDE**

# PARAMEDIC

### **SUPPLIED:**

- 1 Gram / 10ml = 100 mg / ml.

### **MECHANISM OF ACTION:**

- Calcium chloride replaces calcium in cases of hypocalcemia. Calcium chloride causes a significant increase in the myocardial contractile force and appears to increase ventricular automaticity. Calcium chloride is an antidote for magnesium sulfate and can minimize some of the side effects of calcium channel blocker usage.

### **INDICATIONS:**

- Suspected Calcium Channel Blocker overdose. (nifedipine, verapamil, diltiazem)
- Suspected Hyperkalemia

### **CONTRAINDICATIONS:**

- Hypercalcemia and hypercalciuria (hyperthyroidism, Vitamin D overdose, bone metastases).
- Ventricular Fibrillation.
- Patients on Digoxin.

### **PRECAUTIONS:**

- Extravasation of Calcium will cause necrosis of tissue. IV should be secured, and free return of blood into the syringe or tubing should be checked 2-3 times during administration. If extravasation does occur, immediately stop administration.
- Administer slowly (no faster than 2 ml/min) and stop if the patient complains of distress. Make sure the patient remains recumbent after administration. Inject using a small needle in a large vein.
- Calcium chloride will precipitate if mixed with sodium bicarbonate. Do not mix with sodium bicarbonate preparations. Slowly flush remaining calcium chloride from the catheter prior to administering sodium bicarbonate.
- Avoid use with patients who are on Digoxin since calcium can augment the positive inotropic and negative chronotropic effects of digitalis preparations.

### **SIDE EFFECTS AND SPECIAL NOTES:**

- Rapid injection of Calcium chloride may cause vasodilatation, decreased blood pressure, bradycardia, cardiac arrhythmias, syncope and cardiac arrest.

### **ADULT INDICATION DOSE ROUTE(S) SPECIAL**

- Hyperkalemia, Calcium Channel, Blocker OD give 10ccs Slow IV (over 5-10 min.)
- Use a proximal port. OLMC Contact Required.

### **PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL**

- 2-4mg/kg via IV

## DEXTROSE 50%



### SUPPLIED:

- 25 gm / 50 ml pre-filled syringe

### PHARMACOLOGY AND ACTIONS:

- Glucose is the body's basic fuel. It produces most of the body's quick energy. Its use is regulated by insulin, which stimulates storage of excess glucose outside the bloodstream, and glucagon, which mobilizes stored glucose into the bloodstream.

### INDICATIONS:

- Hypoglycemia documented by glucose meter.

### CONTRAINDICATIONS:

- None

### PRECAUTIONS:

- Recent research suggests that hyperglycemia may complicate or worsen a number of medical conditions (e.g., myocardial infarction and **stroke**).
- Extravasation of 50% dextrose will cause necrosis of tissue. IV should be secured, and free return of blood into the syringe or tubing should be checked 2-3 times during administration. If extravasation does occur, immediately stop administration.
- D50% may be administered orally.

### SIDE EFFECTS AND SPECIAL NOTES:

- To mix D25% solution: Expel half (25 cc) of the D50% syringe. Clean injection port on NS IV bag, insert needle, and withdraw same amount of fluid (25 cc) back into syringe. Mix well.

### ADULT INDICATION DOSE ROUTE(S) SPECIAL

- Hypoglycemia (**Altered Mental Status**) 50ccs Slow IV None.

### PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- Hypoglycemia (**Altered Mental Status**) Patients > 10kg, 1cc/kg MAX 50ccs of D50% Slow IV May repeat once.
- Hypoglycemia (**Altered Mental Status**) Patients < 10kg, administer 2cc/kg of D25% Slow IV May repeat once.

**DIAZEPAM**  
(VALIUM)

# PARAMEDIC

**SUPPLIED:**

- Valium is supplied in ampules and prefilled syringes containing 10 milligrams in 2 milliliters of solvent.

**PHARMACOLOGY AND ACTIONS:**

- Diazepam is principally used for its anticonvulsant properties. It suppresses the spread of seizure activity and stress. It is effective in treating the tremors and anxiety associated with alcohol withdrawal. It is also an effective skeletal muscle relaxant. It is a good premedication for cardioversion because it induces amnesia, which diminishes the patient's recall of such procedures.

**INDICATIONS:**

- Major motor seizures
- Status epilepticus
- Premedication before cardioversion
- Skeletal muscle relaxant
- Acute anxiety states

**CONTRAINDICATIONS:**

- Any patient with a history of hypersensitivity to the drug, head injury, low blood pressure, acute narrow angle glaucoma.

**PRECAUTIONS:**

- Diazepam is a relatively short-acting drug, therefore seizure activity may recur. In such cases, an additional dose may be required. Flumazenil (Romazicon), a benzodiazepine antagonist, should be available to use as antidote if required.
- Injectable diazepam can cause local venous irritation. To minimize this, it should only be injected into a relatively large vein and should not be given faster than 1 milliliter a minute.

**SIDE EFFECTS AND SPECIAL NOTES:**

- Diazepam can cause hypotension, drowsiness, headache, amnesia, respiratory depression, blurred vision, venous irritation nausea and vomiting.
- Any time diazepam is given via IV in conjunction with other drugs the IV line should be adequately flushed.
- The effects of diazepam can be additive when used in conjunction with other CNS depressants and alcohol.

**ADULT INDICATION DOSE ROUTE(S) SPECIAL:**

- 5-10mg given for patients having a seizure given via slow IV push with
- 5-15mg given to induce amnesia prior to cardioversion given via slow IV push
- 2-5mg given for patients with acute anxiety reactions given via IM.

**PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL:**

- 0.1mg/kg via IV/IO for seizure pt's.
- 0.5mg/kg rectally for seizure pt's

## **DILTIAZEM**

(Cardizem)

### SUPPLIED:

- 5mL vials containing 25mg of cardizem
- 10mL vials containing 50mg of cardizem

### PHARMACOLOGY AND ACTIONS:

- Diltiazem causes vascular dilation and slows conduction through the atrioventricular (AV) node.
- In the Treatment of angina it has a negative inotropic effect and it dilates the coronary arteries.

### INDICATIONS:

- To control rapid ventricular rates associated with atrial fibrillation and atrial flutter.
- Angina Pectoris
- Paroxysmal supraventricular tachycardia refractory to adenosine.

### CONTRAINDICATIONS:

- Any patient with severe hypotension or cardiogenic shock.
- Any patient with ventricular tachycardia (wide-complex tachycardia).
- Any patient with Wolff-Parkinson-White syndrome

### PRECAUTIONS:

- Diltiazem can cause systemic hypotension.
- Diltiazem should be kept refrigerated. However it can be kept at room temperature for one month, but must be discarded if unused.

### SIDE EFFECTS AND SPECIAL NOTES:

- Diltiazem can cause nausea, vomiting, dizziness, headache, bradycardia, heart block, hypotension and asystole.
- Diltiazem should not be administered to patients receiving intravenous Beta Blockers because of an increased risk of congestive heart failure, bradycardia and asystole.

### ADULT INDICATION DOSE ROUTE(S) SPECIAL:

- 20mg IV Bolus (0.25m/kg) for pt's with rapid ventricular rates associated with A-fib and A-flutter given over 2 minutes.
- If no change, 2<sup>nd</sup> dose of 0.35mg/kg for pt's with A-fib and A-flutter
- 0.25mg/kg IV bolus for pt's with PSVT given over 2 minutes.

### PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL:

- Pediatric doses rarely used.

**DIPHENHYDRAMINE  
(BENADRYL)**

**EMT-I &  
PARAMEDIC**

**SUPPLIED:**

- 50 mg / 1 ml vial

**PHARMACOLOGY AND ACTIONS:**

- An antihistamine which blocks action of histamines released from cells during an allergic reaction.
- Direct CNS effects, which may be stimulant, or more commonly depressant, depending on individual variation.
- Anticholinergic, antiparkinsonism effect, which is used to treat acute dystonic reactions to antipsychotic drugs (e.g., Haldol®, Thorazine®, Compazine®, Inapsine®). These reactions include: oculogyric crisis, acute torticollis, and facial grimacing.

**INDICATIONS:**

- The second-line drug in anaphylaxis and severe allergic reactions (after epi).
- Used to help prevent dysphoric and dystonic reactions (EPS) and to increase sedation.

**PRECAUTIONS:**

- May have additive effect with alcohol or other CNS depressants.
- Although useful in acute dystonic reactions it is not an antidote to anti-psychotic toxicity or overdose.
- May cause hypotension when given IV.

**CONTRAINDICATIONS:**

- Diphenhydramine can cause hypotension, headache, palpitations, tachycardia, sedation, drowsiness and disturbed coordination.

**SIDE EFFECTS AND SPECIAL NOTES:**

- Diphenhydramine is rarely necessary in the field. It is not the first-line drug for allergic reactions, but may be useful for long transports. It may also be useful for acute dystonic reactions; but these, while emotionally and physically trying, are not life threatening and don't require treatment.

**ADULT INDICATION DOSE ROUTE(S) SPECIAL**

- Anaphylaxis 1 mg/kg to MAX of 50 mg. IV or deep IM. Not first line for anaphylaxis
- EPS 1 mg/kg to MAX of 50 mg. IV or deep IM

**PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL**

- Anaphylaxis 1 mg/kg to MAX of 50 mg. IV or deep IM. Not first line for anaphylaxis
- EPS 1 mg/kg to MAX of 50 mg. IV or deep IM

## **DOPAMINE**



### **SUPPLIED:**

- 2 grams / 500ml = 4 mg / ml

### **PHARMACOLOGY AND ACTIONS:**

- Chemical precursor of norepinephrine which occurs naturally in humans and which has both alpha and beta receptor stimulating actions. Its actions differ with dosage given:
  - 1-2mcg/kg/min - dilates renal/mesenteric blood vessels (no effect on heart rate or blood pressure).
  - 2-10mcg/kg/min - beta effects on heart which usually increase cardiac output without increasing heart rate or blood pressure.
  - 10-20mcg/kg/min – peripheral alpha effects cause peripheral vasoconstriction and increased blood pressure.
  - 20-40mcg/kg/min - alpha effects reverse dilatation of renal and mesenteric vessels with resultant decreased flow.

### **INDICATIONS:**

- Primary indication is cardiogenic shock.
- May be useful for other forms of shock, except hypovolemic.

### **PRECAUTIONS:**

- May induce tachyarrhythmias, in which case infusion should be decreased or stopped.
- High doses may cause extreme peripheral vasoconstriction. Conversely, low doses may cause a decreased blood pressure due to peripheral dilation.
- Should not be added to sodium bicarbonate or other alkaline solutions since dopamine will be inactivated in alkaline solutions.

### **CONTRAINDICATIONS:**

- Dopamine should not be used as the sole agent in the management of hypovolemic shock unless fluid resuscitation is well under way. Dopamine should not be used in patients with known pheochromocytoma (a tumor of the adrenal gland.)

### **SIDE EFFECTS AND SPECIAL NOTES:**

- The most common side effects include ectopic beats, nausea, and vomiting.
- Angina has been reported following treatment. (Tachycardia and arrhythmias are less likely than with other catecholamines.)
- Can precipitate hypertensive crisis in susceptible individuals, i.e. patients on MAO inhibitors (Parnate®, Nardil®, Marplan®).
- Consider hypovolemia and treat this with appropriate fluids before administration of dopamine.
- Dopamine is contraindicated for hypovolemic shock.

### **ADULT INDICATION DOSE ROUTE(S) SPECIAL:**

- 5-20mcg/kg/min drip. (400mg in 250ml = 1600mcg/mL solution)

### **PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL:**

- 5-20mcg/kg/min drip. (400mg in 250ml = 1600mcg/mL solution)

**EPINEPHRINE**  
(ADRENALIN)

**EMT-I &**  
**PARAMEDIC**

SUPPLIED:

- 1:10,000 – 1 mg / 10 ml pre-filled syringe
- 1:1,000 – 30 mg / 30 cc vial
- 1:1,000 – 1mg / 1cc ampule

PHARMACOLOGY AND ACTIONS:

- Catecholamine with alpha and beta effects.
- In general, cardiovascular responses such as increased heart rate, increased myocardial contractile force, increased systemic vascular resistance, increased arterial blood pressure, increased myocardial O<sub>2</sub> consumption and increased automaticity.

INDICATIONS:

- Ventricular fibrillation.
- Asystole.
- Pulseless Electrical Activity (PEA).
- Systemic allergic reactions (anaphylaxis).
- Asthma in patients under 40. (Patients >40 needs OLMC approval prior to administration)
- In a patient age 6 months to 6 years **with audible stridor at rest.**

PRECAUTIONS:

- Epinephrine increases cardiac work and can precipitate angina, MI, or major dysrhythmias in an individual with ischemic heart disease.
- Consider wheezing in an elderly person as pulmonary edema in addition to COPD with bronchospasm.

CONTRAINDICATIONS:

- Epinephrine 1:10,000 is contraindicated in patients who do not require extensive cardiopulmonary resuscitative efforts. With simple allergic reactions and asthma, the 1:1,000 dilution should be used and is administered subcutaneously.

SIDE EFFECTS AND SPECIAL NOTES:

- Anxiety, tremor, headache.
- Tachycardia, PVCs.
- Angina, hypertension.
- To reduce the fluid volume placed in the lungs when administering epinephrine through the ET tube, the following doses are recommended:
  - Draw up 1 mg (1 cc) from multi-dose vial (1:1,000 concentration) and administer with 1 dose of 1:10,000 concentration pre-filled syringe (11cc of fluid).

ADULT INDICATION DOSE ROUTE(S) SPECIAL

- Ventricular fibrillation, Asystole, PEA give 1 mg IV, 2 mg (in 10cc of NS) ET IV/ET/IO q 3-5 min. Double the dose for ETT.  
**-LAST RESORT!**
- Anaphylaxis, Asthma give 0.3mg 1:1000 SQ or IM **OR** 0.3 mg 1:10,000 IV.

PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- Ventricular fibrillation, Asystole, PEA IVP/IO—0.01 mg/kg (1:10,000).
  - ET— 0.1 mg/kg (1:1,000) in 4ccs minimum volume. IV/ET/IO q 3-5 min. MAX ET dose is 10 mg. **LAST RESORT!**
- Anaphylaxis 0.01 mg/kg of 1:1,000 SQ or IM MAX dose is 0.3 mg
- Respiratory distress 5cc of 1:1,000 Nebulizer for audible stridor at rest.

## **ETOMIDATE**

Amidate)

### SUPPLIED:

- 40 mg / 20 ml Single dose vial (2 mg/ml)

### PHARMACOLOGY AND ACTIONS:

- A hypnotic drug without any analgesic activity. Intravenous injection of Etomidate produces hypnosis characterized by a rapid onset of action; usually within one minute. Duration of hypnosis is dose-dependent but relatively brief, usually 3-5 minutes.

### INDICATIONS:

- Induction drug for use in Rapid Sequence Intubation.

### CONTRAINDICATIONS:

- Etomidate is contraindicated in patients who have a known hypersensitivity to it.

### PRECAUTIONS:

- Over dosage may occur from too rapid or repeated injections.
- Excessive rapid injection may be followed by a fall in blood pressure.

### SIDE EFFECTS / SPECIAL NOTES:

- The most frequent adverse reactions are transient venous pain on injection, and transient skeletal muscle movements, including myoclonus.
- Nausea and/or vomiting

### ADULT INDICATION DOSE ROUTE(S) SPECIAL

- Rapid Sequence Intubation give 0.3 mg/kg IV/IO injected over 10 seconds

### PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- Rapid Sequence Intubation give 0.3 mg/kg IV/IO injected over 10 seconds

**FLUMAZENIL**  
(Romazicon)



**SUPPLIED:**

- 5mL and 10mL multi-dose vials containing 0.1mg/mL

**PHARMACOLOGY AND ACTIONS:**

- Flumazenil antagonizes the actions of the benzodiazepines in the central nervous system.
- Flumazenil inhibits their actions on the GABA/benzodiazepine complex.
- Flumazenil is used to reverse the sedative effects of the benzodiazepines.

**INDICATIONS:**

- For complete and partial reversal of CNS and respiratory depression caused by benzodiazepines including valium, halcyon, tranxene, ambient, centrax, versed, restoril, serax, doral, xanax, ativan, dalmane, klonopin, prosom.

**PRECAUTIONS:**

- Flumazenil should be administered with caution to patients dependent on benzodiazepines. Benzodiazepine withdrawal can be life threatening.
- The effects of flumazenil can wear off resulting in the return of sedation. Following administration, patients should be monitored for signs of re-sedation and respiratory depression.

**CONTRAINDICATIONS:**

- Flumazenil is contraindicated in patients with a known hypersensitivity to the drug or to benzodiazepines. It should not be administered to patients who have received benzodiazepines to control life-threatening conditions such as status epilepticus. It should not be used in patients with tricyclic antidepressant overdoses.

**SIDE EFFECTS AND SPECIAL NOTES:**

- Flumazenil can cause fatigue, headache, agitation, nervousness, dizziness, flushing, confusion, convulsions, arrhythmias, nausea, vomiting.

**ADULT INDICATION DOSE ROUTE(S) SPECIAL**

- 0.2mg via IV over 30 seconds. Repeated up to a max dose of 1.0mg. IV only.

**PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL**

- 0.01mg/kg over 15 seconds, up to 0.2mg in a single dose.
  - 1<sup>st</sup> dose: 0.2mg IV over 15 seconds.
  - 2<sup>nd</sup> dose: 0.3mg IV over 30 seconds
  - 3<sup>rd</sup> dose: 0.5mg IV over 30 seconds

**FUROSEMIDE**  
(Lasix)

**SUPPLIED:**

- 40 mg / 4 ml pre-filled syringe (*OLMC Contact Required: Respiratory Distress – Second Dose*)

**PHARMACOLOGY AND ACTIONS:**

- Potent diuretic with a rapid onset of action and short duration of effect. It acts primarily by inhibiting sodium reabsorption throughout the kidney. Increase in potassium excretion occurs along with the sodium excretion. As an IV bolus, causes immediate (3-4 minute) increase in venous capacitance. This decreases venous pre-load and probably accounts for its immediate effect in pulmonary edema. Peak effect: 1/2-1 hours after IV administration; duration about 1 hour. (Duration 6-8 hours if given orally, peak in 1-2 hrs.)

**INDICATIONS:**

- Acute pulmonary edema: to decrease extracellular volume and reduce venous pressure on the lungs in cardiac failure.

**PRECAUTIONS:**

- Contra-indicated in hypovolemia or hypotension, which can lead to profound diuresis with resultant shock and electrolyte depletion. Therefore, do not use in hypovolemic states and monitor closely, particularly after IV administration.
- Call OLMC for uses in children 18 years or younger.
- Should not be used in pregnant women.

**CONTRAINDICATIONS:**

- Usage in pregnancy should be limited to life-threatening situations in which the benefits of Furosemide outweigh the risks. Furosemide has been known to cause fetal abnormalities. It should not be administered to patients with a known allergy to the sulfa class of medications.

**SIDE EFFECTS AND SPECIAL NOTES:**

- Hypovolemia, hypotension, hyponatremia, and hypokalemia are the main toxic effects.
- Patients who are on digitalis and are having arrhythmias consistent with digitalis toxicity (i.e. atrial tachycardia with conduction block, nonparoxysmal junctional tachycardia, sinus arrest, high-grade or third-degree heart block), may need lower doses of Furosemide. Contact OLMC.
- Other toxic effects are usually not related to single dose use.

**ADULT INDICATION DOSE ROUTE(S) SPECIAL**

- Pulmonary Edema- 20 mg—OR Amount equal to the patients largest individual daily dose IV MAX dose is 100 mg

**PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL**

- 1mg/kg slow IV push.

## GLUCAGON

# PARAMEDIC

### SUPPLIED:

- 1 mg vial of powder
- 1 ml vial of diluent solution
- **OLMC Contact Required: Beta Blocker Overdose**

### PHARMACOLOGY AND ACTIONS:

- Glucagon is a hormone which causes glucose mobilization in the body. It works opposite to insulin, which causes glucose storage. It is released at times of insult or injury when glucose is needed and mobilizes glucose from body glycogen stores. Return to consciousness should be within 20 minutes of IM dose if patient is hypoglycemic.

### INDICATIONS:

- Known hypoglycemia (preferably demonstrated by blood glucose determination).
- Altered mental status.
- Possible Beta Blocker OD (Contact OLMC).

### CONTRAINDICATIONS:

- Because glucagon is a protein, hypersensitivity may occur. Do not administer glucagon to patients with known hypersensitivity of the drug.

### PRECAUTIONS:

- IV glucose or dextrose is the treatment of choice for hypoglycemia. Use of Glucagon is restricted to patients who are seizing, comatose, combative, or with collapsed veins and in whom an IV cannot be started. In these rare situations, it may be invaluable.

### SIDE EFFECTS AND SPECIAL NOTES:

- Nausea and vomiting may occur.
- Persons with no liver glycogen stores (malnutrition, alcoholism) may not be able to mobilize any glucose in response to Glucagon.

### ADULT INDICATION DOSE ROUTE(S) SPECIAL

- Hypoglycemia 1 mg IM May not be effective in malnourished patients
- Beta Blocker OD Call OLMC Call OLMC **OLMC Required.**

### PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- Hypoglycemia 0.02 mg/kg to a max of 1 mg IM
- Beta Blocker OD Call OLMC Call OLMC **OLMC Required.**

## **HYDROXYZINE**

(Vistaril, Atarax)

### SUPPLIED:

- Single dose vials containing 25mg or 50mg in 1mL.

### PHARMACOLOGY AND ACTIONS:

- Hydroxine is chemically unrelated the phenothiazines. Because of its antihistamine properties, hydroxyzine has been shown to exert a calming effect during acute psychotic states. It is an effective antiemetic and muscle relaxant. When administered concurrently with many analgesics, it tends to potentiate their effects.

### INDICATIONS:

- To potentiate the effects of narcotics and synthetic narcotics.
- Nausea and vomiting
- Anxiety reactions

### CONTRAINDICATIONS:

- Patients with hypersensitivity to the drug.

### PRECAUTIONS:

- Hydroxyzine is given by IM injection only. When administered concomitantly with analgesics, the potentiating effects of hydroxyzine should be kept in mind, and total analgesic dose should be adjusted accordingly.

### SIDE EFFECT AND SPECIAL NOTES:

- Hydroxyzine can cause sedation, dizziness, headache, dry mouth and nausea.

### ADULT INDICATION DOSE ROUTE(S) SPECIAL

- Acute Anxiety: 50-100mg via IM.
- Antiemetic: 25-50mg via IM.

### PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- 1mg/kg via IM

**IPRATROPIUM**  
ATROVENT®



SUPPLIED:  
- 0.5 mg / 2.5 ml vial

**PHARMACOLOGY AND ACTIONS:**

- Ipratropium is an atropine derivative used for inhalation therapy. Recent studies have shown that for severe asthma, ipratropium taken in addition to a short-acting beta agonist (such as Albuterol) can provide greater bronchodilation and clinical benefit than the beta agonist alone.

**INDICATIONS:**

- As a supplement to Albuterol in patients with asthma and COPD.

**CONTRAINDICATIONS:**

- Patients with severe glaucoma.

**PRECAUTIONS:**

- The patients's vital signs must be monitored during therapy with ipratropium. Caution should be used when administering it to elderly patients and those with cardiovascular disease or hypertension. Lungs sounds should be auscultated before and after each treatment. Ideally, the patient's peak flow rate should be measured both before and after drug administration.

**SIDE EFFECT AND SPECIAL NOTES:**

- Dry mouth.
- Pharyngeal irritation.
- Increased intra-ocular pressure in glaucoma patients.

**ADULT INDICATION DOSE ROUTE(S) SPECIAL**

- Asthma/COPD 0.5 mg Nebulized. Combine with 2nd and 3<sup>rd</sup> doses of Albuterol®

**PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL**

- 125-250mcg in 2.5-3ml normal saline via nebulizer

**LIDOCAINE**  
XYLOCAINE®

# PARAMEDIC

SUPPLIED:

- 100 mg / 5 cc (2%)

PHARMACOLOGY AND ACTIONS:

- Depresses automaticity of Purkinje fibers; therefore, raises stimulation threshold in the ventricular muscle fibers (makes ventricles less likely to fibrillate).
- The effect of a bolus on the heart disappears in 10-20 minutes due to redistribution in the body.

INDICATIONS:

- PVCs in suspected ischemic event.
- Stable VT or recurrent ventricular tachycardia if clinical condition is not rapidly deteriorating.
- Recurrent VF.
- Following successful defibrillation or cardioversion from VT or VF.

PRECAUTIONS:

- Lidocaine is not recommended for treatment of supra-ventricular arrhythmias.
- If administering maintenance dosing and the patient starts seizing, D/C the maintenance dosing and contact OLMC.

CONTRAINDICATIONS:

- Lidocaine is usually contraindicated in second-degree Mobitz II and third-degree blocks. Lidocaine slows conduction of the electrical impulse from the atria to the ventricles. Decreased ventricular rates may accompany high-grade heart block, resulting in escape beats that are premature ventricular contractions (PVCs.) Whenever premature ventricular contractions occur in conjunction with bradycardia, the bradycardia should be treated first. The drug of choice is atropine sulfate followed by external pacing if atropine is not effective. If PVCs are still present after increasing the rate, lidocaine should be administered.

SIDE EFFECTS AND SPECIAL NOTES:

- Side Effects: Sleepiness, dizziness, disorientation, confusion, convulsions and hypotension.
- Drug is metabolized in the liver and, therefore, patients with hepatic disease, shock or congestive heart failure will have impaired metabolism. For these patients, all doses after the initial dose must be decreased to 1/4 of the initial dose.  
**Example:** An 80 kg patient. First dose 120 mg. All subsequent doses are 30 mg.
- Be cautious with the administration of Lidocaine if any of the following:
  - Blood pressure is < 90 systolic, **OR**
  - Heart rate is < 50/min, **OR**
  - Period of sinus arrest or any A-V block is present.

ADULT INDICATION DOSE ROUTE(S) SPECIAL

- *Bolus:* 1 -1.5 mg/kg (3 mg/kg MAX) PVCs, Stable VT, Recurrent VF
- *Maintenance:* 0.5 – 0.75 mg/kg bolus up to 3 mg / kg total. Continuous infusion of 1 – 4 mg / min.

PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- Same as adult. Do not dilute for pediatric patients

## **MAGNESIUM SULFATE**

# PARAMEDIC

### SUPPLIED:

- 1.0 gm /2 ml vial

### PHARMACOLOGY AND ACTIONS:

- Magnesium is a cation which is present in human cells and intercellular fluids. It acts as an antiarrhythmic agent and may convert ventricular fibrillation and ventricular tachycardia.

### INDICATIONS:

- In cardiac arrest, after defibrillation, epinephrine, lidocaine and amiodarone in the treatment of Ventricular Fibrillation and Pulseless Ventricular Tachycardia.
- Magnesium sulfate is also used to treat and prevent seizures in women with preeclampsia/eclampsia. Contact OLMC for dosing guidelines. You may encounter a woman who is on a magnesium drip during an inter-hospital transfer.
- In severe asthma, magnesium sulfate may be helpful as a smooth muscle relaxant and as an inhibitor of histamine. Contact OLMC prior to administration.

### PRECAUTIONS:

- In the non-arrest patient, magnesium may cause hypotension, bradycardia or decreased reflexes and respiratory depression.

### CONTRAINDICATIONS:

- Magnesium sulfate should be used administered to patients who are in shock, who have persistent severe hypertension, who have third degree AV block, who routinely undergo dialysis, or who are known to have a decreased calcium level (hypocalcemia.)

### ADULT INDICATION DOSE ROUTE(S) SPECIAL

- V-Fib/Torsades 2 grams over 1-2 minutes IV/IO
- Eclampsia IV/IO: **Contact OLMC**
- Asthma IV/IO: **Contact OLMC**

### PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- V-Fib/Torsades 25 mg/kg over 1 – 2 minutes IV/IO
- Asthma IV/IO: **Contact OLMC**

## **METHYLPREDNISOLONE**

SOLU-MEDROL®

# PARAMEDIC

### SUPPLIED:

- 125 mg/2ml vial

### PHARMACOLOGY AND ACTIONS:

- Methylprednisolone is a synthetic steroid that suppresses acute and chronic inflammation. In addition, it potentiates vascular smooth muscle relaxation by beta-adrenergic agonists and may alter airway hyperactivity.

### INDICATIONS:

- Moderate to severe asthma/COPD
- Anaphylaxis after epinephrine therapy.

### PRECAUTIONS:

- A single dose of methylprednisolone is all that should be given in the prehospital phase of care. Long-term steroid therapy can cause gastro-intestinal bleeding, prolonged wound healing and suppression of adreno-cortical steroids.

### CONTRAINDICATIONS:

- Do not use in patients with known hypersensitivity to corticosteroids.

### SIDE EFFECTS/SPECIAL NOTES:

- May cause nausea, vomiting, headache, dizziness or hypertension.

### ADULT INDICATION DOSE ROUTE(S) SPECIAL

- Respiratory Distress/Anaphylaxis 125 mg Slow IV over 1-2 minutes

### PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- Respiratory Distress/Anaphylaxis 2 mg/kg Slow IV over 1-2 minutes

## **METOPROLOL**

(Lopressor)

# PARAMEDIC

### SUPPLIED:

- Ampules and prefilled syringes containing 5mg of the drug in 5mL of solvent.

### PHARMACOLOGY AND ACTIONS:

- Metoprolol causes a reduction in heart rate, systolic blood pressure, and cardiac output following administration. This is due to its selective effects on Beta 1 adrenergic receptors. In addition, metoprolol appears to inhibit tachycardia, especially in the period following an acute myocardial infarction. Because of these effects, metoprolol is thought to be protective of the heart and is used to reduce potential complications in selected patients who have suffered an acute myocardial infarction. Metoprolol has proved effective in reducing the incidence of ventricular fibrillation and chest pain in these patients, thus reducing overall patient mortality in the post-myocardial infarction period.

### INDICATIONS:

- Patients with suspected or definite acute myocardial infarction who are hemodynamically stable.

### PRECAUTIONS:

- The blood pressure, pulse rate, EKG, and respiratory status should be continuously monitored during metoprolol therapy. Prehospital personnel should be alert for signs and symptoms of congestive heart failure, bradycardia, shock, heart block, or bronchospasm when administering metoprolol. The presence of any of these signs or symptoms is an indication for discontinuing the medication.

### CONTRAINDICATIONS:

- Metoprolol is contraindicated in patient with a heart rate less than 45 bpm, a systolic blood pressure less than 100, or congestive heart failure. Contraindicated in patients with first-degree heart block with a PR interval greater than 0.24 second, a second-degree heart block (either Mobitz I or Mobitz II), or third-degree block. It is also contraindicated in any patient showing either early or late signs of shock.

### SIDE EFFECT AND SPECIAL NOTES:

- Metoprolol may cause bradycardia, hypotension, lethargy, congestive heart failure, dyspnea, wheezing and weakness.

### ADULT INDICATION DOSE ROUTE(S) SPECIAL

- Following an acute MI give 5mg bolus via a slow IV push.
- If vital signs remain stable give a second dose of 5mg two minutes after the 1<sup>st</sup> bolus.
- If the first two boluses were tolerated well then give a 3<sup>rd</sup> bolus of 5mg two minutes after the 2<sup>nd</sup> bolus.
  - Total dose not to exceed 15mg.
  - Given via IV only

### PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- NONE

**MIDAZOLAM**  
VERSED®

# PARAMEDIC

**SUPPLIED:**

- 10mg/2ml vial

**PHARMACOLOGY AND ACTIONS:**

- Midazolam is a benzodiazepine with potent sedative, anxiolytic and anti-convulsant properties. Midazolam also causes significant antegrade amnesia when administered IV and it is well absorbed IM.

**INDICATIONS:**

- Status Seizures. For the purposes of these protocols, this would be any seizure, which has lasted longer than 2 minutes or two consecutive Seizures without regaining consciousness. Do not give unless the patient is actively seizing.
- To control pain and discomfort during cardioversion or pacing.
- For sedation during RSI.

**PRECAUTIONS:**

- Midazolam causes respiratory depression and/or hypotension especially if administered rapidly. This occurs more commonly than with other benzodiazepines.

**CONTRAINDICATIONS:**

- Midazolam should not be administered to any patient with a history of hypersensitivity to the drug. It should not be used in patients who have narrow-angle glaucoma. Midazolam should not be administered to patients in shock, with depressed vital signs or who are in alcoholic coma.

**SIDE EFFECT AND SPECIAL NOTES:**

- Side effects include drowsiness, hypotension, respiratory depression and apnea. These are more likely to occur in the very young and in the elderly. Rarely, patients may experience paradoxical agitation.
- More likely to cause respiratory depression in patients who have co-ingested other CNS depressant drugs such as opioids, alcohol and barbiturates.
- Drug is metabolized in the liver and excreted by the kidney. Doses should be adjusted accordingly in patients with underlying hepatic or renal diseases and low flow states such as CHF.
- When used for pacing and cardioversion, the drug should be given by slow IV and the dose titrated to effect.

**ADULT INDICATION DOSE ROUTE(S) SPECIAL**

- Seizures, pacing 2.5 mg IV to 5.0 mg IM IV, May repeat up to 10 mg total. If still more needed, call OLMC.
- RSI 2.5 mg IV – 5 mg IV, IM to a total of 10 mg.

**PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL**

- Seizures, pacing 0.1 mg/kg IV (2.5 mg MAX)
  - 0.2 mg/kg IM (5.0 mg MAX) IV, IM
    - May repeat once after 5 minutes. Call OLMC if more needed.
- RSI 0.1 mg/kg IVP MAX 2.5mg IV

## **MORPHINE SULFATE**

# PARAMEDIC

### SUPPLIED:

- 10mg/2ml vial

### PHARMACOLOGY AND ACTIONS:

- Morphine is a narcotic with analgesic and hemodynamic properties. It exerts its analgesic effects on the central nervous system, simultaneously inducing drowsiness, mental clouding and mood changes. Morphine has several hemodynamic actions including increasing venous capacity, pools blood peripherally and decreases its return. This relieves pulmonary congestion and left ventricular end diastolic dimensions/myocardial wall stress. These all result in decreased myocardial oxygen demand. Reduces systemic vascular resistance at the arteriolar level (reduced afterload), decrease myocardial oxygen requirements. Onset of action is in 2-3 minutes, peaks at 7-10 minutes, and lasts 3-5 hours.

### INDICATIONS:

- Cardiac chest pain
- Severe pain. E.g. musculoskeletal, burns.
- Pulmonary edema

### CONTRAINDICATIONS:

- Known allergy to morphine.
- Hypotension.

### PRECAUTIONS:

- Morphine causes respiratory depression. This is reversible with Narcan®. Respiratory depression is more likely in patients with pre-existing respiratory insufficiency (e.g. COPD).
- Narcan® and respiratory support should always be at hand when administering Morphine.
- Undiagnosed head or abdominal pain or trauma or suspected trauma to abdomen or head.

### SIDE EFFECTS AND SPECIAL NOTES:

- Nausea and vomiting are common side effects.
- The analgesic effect of Morphine should not be gauged solely by the total elimination of pain. It reduces the perception of pain while the patient may still recognize the painful stimulus.
- Hypotension may develop especially in older patients, volume depleted patients, or patients requiring elevated systemic vascular resistance for the maintenance of their blood pressure. Hypotension is usually responsive to Narcan® and the Trendelenburg position.
- Morphine has a high tendency for addiction and abuse and is classified as a Schedule II drug under the Controlled Substances Act of 1970. Follow your Controlled Substance protocol or procedure for documentation, wasting and replacement.

### ADULT INDICATION DOSE ROUTE(S) SPECIAL

- Severe pain, burns, chest pain, pulmonary edema 2-5 mg, repeat with 2-5 mg to a MAX of 10 mg.

### PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- < 20 kg give 0.1 mg/kg
- >20kg give 0.1-0.2mg/kg IV/IM/IO/SQ

## **NALOXONE**

NARCAN®

# **EMT-I & PARAMEDIC**

### SUPPLIED:

- 2 mg / 2 ml pre-filled syringe
- 0.4 mg / ml in a 1 ml vial
- 0.4 mg / ml in a 10 ml vial

### PHARMACOLOGY AND ACTIONS:

- Naloxone is an opioid antagonist which competitively binds to opioid receptor sites but which exhibits almost no pharmacologic activity of its own. Duration of action: 1-4 hours.

### INDICATIONS:

- Reversal of opioid effects, particularly respiratory depression, due to drugs either ingested, injected or administered in the course of treatment. Opioid drugs include Fentanyl, morphine, Demerol®, heroin, hydromorphone hydrochloride (Dilaudid®), Percodan®, codeine, Lomotil®, propoxyphene, (Darvon®); pentazocine (Talwin®), methadone.
- Diagnostically in coma of unknown etiology.

### CONTRAINDICATIONS:

- Do not use in neonates.

### PRECAUTIONS:

- In patients physically dependent on narcotics, violent withdrawal symptoms may occur.
- Be prepared to restrain the patient if violent withdrawal is expected.

### SIDE EFFECTS AND SPECIAL NOTES:

- This drug is safe and free from side effects. Do not hesitate to use it if indicated.
- The duration of some narcotics is longer than naloxone and the patient must be monitored closely. Repeated doses of naloxone may be required. Patients who have received this drug must be transported to the hospital because coma may reoccur.
- May need large doses to reverse propoxyphene, (Darvon®), methadone overdose.

### ADULT INDICATION DOSE ROUTE(S) SPECIAL

- Reversal of narcotic effects, coma of unknown etiology 0.4 mg IV/IM repeat q 2 minutes up to 2 mg **titrate to respirations**. If no effect OR
- If no IV: 2mg IV/IM q 5 minutes up to 8 mg MAX
- If no reaction, consider other causes.

### PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- Reversal of narcotic effects, coma of unknown etiology 0.1 mg/kg no more than 2 mg/dose IV, IM
- Do not use in neonates.

**NITROGLYCERIN**  
(Nitrolingual Spray)(Nitrostat)



SUPPLIED:

- Metered Dose Spray (0.4mg/spray)

PHARMACOLOGY AND ACTIONS:

- Cardiovascular effects include:
  - Reduced venous tone -- this causes pooling of blood in peripheral veins and decreased return of blood to the heart (reduced pre-load).
  - Decreased peripheral resistance (reduced afterload).
  - Dilatation of coronary arteries (if not already at maximum).
- General smooth muscle relaxation.

INDICATIONS:

- Angina.
- Pulmonary edema.

PRECAUTIONS:

- Generalized vasodilatation may cause profound hypotension and reflex tachycardia.
- NTG should be stored in a cool place.
- Use with caution in hypotensive patients.
- Do not shake canister prior to administration.

CONTRAINDICATIONS:

- Nitroglycerin is contraindicated in patients who are hypotensive or who may have increased intracranial pressure. It should not be administered to patients in shock. NTG is contraindicated in patients who have recently taken Viagra® (sildenafil citrate) or Levitra® (vardenafil HCl) within 24 hours OR taken Cialis® (tadalafil) within 48 hours. Contact OLMC for direction.

SIDE EFFECTS AND SPECIAL NOTES:

- Common side effects are throbbing headache, flushing, and dizziness.
  - **NOTE:** Therapeutic effect is enhanced, but adverse effects are increased when patient is upright.
- Because nitroglycerin causes generalized smooth muscle relaxation, it may be effective in relieving chest pain caused by esophageal spasm.

ADULT INDICATION DOSE ROUTE(S) SPECIAL

- Angina 0.4mg q 5 minutes if SBP is >100 mmHg and is effective. If no effect, give only 3 doses.
- SL Use with caution with inferior MI. **Consider IV prior to administration.** Pulmonary edema 0.4mg q 5 minutes if SBP is >100 mmHg SL. See precaution E above

PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- Not generally used with pediatrics. Call OLMC if unsure.

**NITROGLYCERIN PASTE**  
(NITRO-BID OINTMENT)



**SUPPLIED:**

- 20 gram and 60 gram tubes. Several dose measuring applicators are also included.

**PHARMACOLOGY AND ACTIONS**

- Nitroglycerin is a rapid smooth-muscle relaxant that reduces cardiac work and to a lesser degree, dilates the coronary arteries. This results in increased coronary blood flow and improved perfusion of the ischemic myocardium. Relief of ischemia causes reduction and alleviation of chest pain. Pain relief following transcutaneous nitroglycerin administration usually occurs within 5-10 minutes and therapeutic effects can be observed up to 30 minutes later. Nitroglycerin also causes vasodilatation which decreases preload. Decreased preload leads to decreased cardiac work, in conjunction with coronary vasodilatation, this reverses the effects of angina pectoris.

**INDICATIONS:**

- Chest pain associated with angina pectoris and acute myocardial infarction.

**PRECAUTIONS:**

- Patients taking the drug routinely may develop a tolerance and require an increased dose. Headache is a common side effect of nitroglycerin administration and occurs as a result of vasodilatation of the cerebral vessels. Postural syncope sometimes occurs following the administration of nitroglycerin. This should be anticipated and the patient kept supine when possible. It is important to monitor the blood pressure constantly.

**CONTRAINDICATIONS:**

- Nitroglycerin paste is contraindicated in patients with increased intracranial pressure. It should not be administered to patients who are hypertensive or in shock.

**SIDE EFFECTS AND SPECIAL NOTES:**

- Nitroglycerin can cause headache, dizziness, weakness, tachycardia, hypotension, orthostasis, skin rash, dry mouth, nausea and vomiting.

**ADULT INDICATION DOSE ROUTE(S) SPECIAL**

- ½-1 inch (1.25-2.50cm) of ointment is applied to pt's chest

**PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL**

- Not generally used with pediatrics. Call OLMC if unsure.

## **ORAL GLUCOSE**

**ALL LEVELS**

### **SUPPLIED:**

- 15 and 45 gram single use tubes

### **INDICATIONS:**

- Hypoglycemia confirmed by glucometer and consistent with a history in those patients who are alert with an active/intact gag reflex and are able to ingest tablet or gel without assistance.

### **CONTRAINDICATIONS:**

- Hyperglycemia
- Altered mental status without intact/active gag reflex
- Inability to ingest tablet or gel without assistance

### **SIDE EFFECTS AND SPECIAL NOTES:**

- Nausea
- Consider oral glucose in those patients who received Glucagon per protocol (unable to establish IV access) and continue to show signs of hypoglycemia, particularly during transport, within the limitations above.

### **ADULT INDICATION DOSE ROUTE(S) SPECIAL**

- 15 grams of gel
- may need to repeat or administer additional doses.

### **PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL**

- 15 grams of gel
- may need to repeat or administer additional doses.

## **OXYGEN**

**ALL LEVELS**

### **SUPPLIED:**

- "D" Cylinder 415 liters at 2,000 psi

### **PHARMACOLOGY AND ACTIONS:**

- Oxygen added to the inspired air raises the amount of oxygen in the blood and the amount delivered to the tissues. Breathing in most persons is regulated by small changes in acid/base balance and CO<sub>2</sub> levels. It takes a large drop in blood oxygen concentration to stimulate respiration.

### **INDICATIONS:**

- Suspected hypoxemia or respiratory distress from any cause.
- Acute chest pain in which cardiac ischemia or myocardial infarction is suspected.
- Shock (decreased oxygenation of tissues) from any cause.
- Carbon monoxide poisoning.

### **PRECAUTIONS:**

- If the patient is not breathing adequately on their own, the treatment of choice is ventilation with oxygen.
- A small percentage of patients with COPD breathe because they are hypoxic.
  - DO NOT WITHHOLD OXYGEN BECAUSE OF THIS POSSIBILITY.

### **CONTRAINDICATIONS:**

- None

### **SIDE EFFECTS AND SPECIAL NOTES:**

- Restlessness may be an important sign of hypoxia.
- Oxygen supports combustion.
- Nasal prongs work equally well on nose and mouth breathers.

## SODIUM BICARBONATE



### SUPPLIED:

- 50 mEq / 50 ml pre-filled syringe

### PHARMACOLOGY AND ACTIONS:

- Sodium Bicarbonate is an alkalotic solution, which neutralizes acids found in the blood. Acids are increased in the blood when body tissues become hypoxic due to cardiac or respiratory arrest. Acidosis depresses cardiac contractility, the cardiac response to catecholamines and makes the heart more likely to fibrillate and less likely to be defibrillated. Unfortunately, in the non-perfusing patient, Sodium Bicarbonate has been shown to increase the intercellular acidosis and thus worsen the acid/base balance.

### INDICATIONS:

- To control arrhythmias or asystole in cyclic antidepressant overdose or hyperkalemia.
- Acidosis caused by cardiac arrest, entrapment, and other metabolic dysfunctions.

### PRECAUTIONS:

- Addition of too much Sodium Bicarbonate may result in alkalosis, which is difficult to reverse and can cause as many problems in resuscitation as acidosis.
- May increase cerebral acidosis, especially in diabetics who are ketonic.
- Do not mix sodium bicarbonate with calcium preparations. Slowly flush remaining calcium gluconate from the catheter prior to administering sodium bicarbonate.

### CONTRAINDICATIONS:

- None as long as used in the above listed indications for the drug.

### SIDE EFFECTS AND SPECIAL NOTES:

- Each amp of Sodium Bicarbonate contains 50mEq of sodium. This may increase intravascular volume and hyperosmolarity conditions, resulting in cerebral impairment.
- Sodium Bicarbonate will probably be helpful, and should be used early in cardiac arrest of known cyclic antidepressant overdose or renal failure with possible hyperkalemia.

### ADULT INDICATION DOSE ROUTE(S) SPECIAL

- Tricyclic Antidepressant OD 1 mEq/kg IV/IO **OLMC Required**
- Entrapment Call for Dose IV/IO Trauma Physician through OLMC for advice.
- V-Fib/pulseless VT Asystole 1 mEq/kg IV/IO
- Hyperkalemia 50 mEq IV/IO **OLMC Required**

### PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- Tricyclic Antidepressant OD, Neonatal Resuscitation 1 mEq/kg IV/IO **OLMC Contact Required.**

## **SUCCINYLCHOLINE** **(Anectine)**

# PARAMEDIC

### SUPPLIED:

- 200mg/10ml vial

### PHARMACOLOGY AND ACTIONS:

- Succinylcholine is a short acting, motor nerve depolarizing, and skeletal muscle relaxant. It competes with acetylcholine to combine with cholinergic receptors in the motor end plate causing depolarization inhibiting neuromuscular transmission. After IV injection, paralysis is obtained within one or two minutes and persists for approximately 5 to 10 minutes. Effects then start to fade and return to normal. It has no effect on consciousness. Succinylcholine is hydrolyzed by plasma pseudo cholinesterase and is excreted by the kidneys (10%).

### INDICATIONS:

- To achieve temporary paralysis where endotracheal intubation is indicated.

### CONTRAINDICATIONS:

- Succinylcholine may be contraindicated in patients with:
  - A hypersensitivity to the drug.
  - A family or personal history of malignant hyperthermia.
  - Major burn patients > 48 hours post burn.
  - Known or suspected hyperkalemia or neuromuscular disease (e.g. crush injury, renal failure, quadriplegia, muscular dystrophy)

### PRECAUTIONS:

- Oxygen, ventilation equipment and resuscitation drugs should be readily available.
- Succinylcholine produces paralysis, but does not alter the patient's level of consciousness. Paralysis in the conscious patient is very frightening, therefore sedation should be provided to the patient during the procedure - - even if you do not think the patient can hear you.
- In rare individuals, because of a deficiency in pseudo cholinesterase, paralysis may persist for a prolonged period of time. Be prepared to continue assisting ventilations for the entire period.

### SIDE EFFECTS AND SPECIAL NOTES:

- Succinylcholine can cause wheezing, respiratory depression, apnea, aspiration, arrhythmias, bradycardia, sinus arrest, hypertension, increased intraocular pressure and increased intracranial pressure.

### ADULT INDICATION DOSE ROUTE(S) SPECIAL

- RSI 1.5 mg/kg IV/IO Dose is for 6 years of age and older.

### PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL

- RSI 2 mg/kg IV/IO Dose is for <6 years of age.

## **THIAMINE**

### **SUPPLIED:**

- 1mL ampoules containing 100mg of the vitamin

### **PHARMACOLOGY AND ACTIONS:**

- Thiamine is required for the conversion of pyruvic acid to acetyl-coenzyme-A. Without this step a significant amount of the energy available in glucose cannot be obtained. The brain is extremely sensitive to thiamine deficiency. Chronic alcohol intake interferes with the absorption, intake and use of thiamine.

### **INDICATIONS:**

- Coma of unknown origin, especially if alcohol maybe involved
- Delirium tremors

### **PRECAUTIONS:**

- A few cases of hypersensitivity to thiamine have been reported.

### **CONTRAINDICATIONS:**

- There are no contraindications to the administration of thiamine in the emergency setting.

### **SIDE EFFECT AND SPECIAL NOTES:**

- Few side effects are reported with thiamine usage. However, hypotension, dyspnea and respiratory failure have been reported with its uses.

### **ADULT INDICATION DOSE ROUTE(S) SPECIAL**

- 100mg via IV or IM

### **PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL**

- 10-25mg via IV or IM

**VECURONIUM**  
**(Norcuron)**

**PARAMEDIC**

**SUPPLIED:**

- 10 mg vial of powder
- 10 ml vial of diluent solution

**PHARMACOLOGY AND ACTIONS:**

- Vecuronium Bromide is a long acting non-depolarizing (competitive blocking) skeletal muscle relaxant. Vecuronium competes with acetylcholine at cholinergic receptor sites. Its maximal neuromuscular blockade occurs in five minutes and its duration of action is about 30 to 45 minutes. As with Succinylcholine, complete paralysis of all skeletal muscles occurs and there is no effect on consciousness at all.

**INDICATIONS:**

- To maintain prolonged paralysis in the intubated patient. Vecuronium can be used when the effects of Succinylcholine start to wear off after the patient has been intubated.

**PRECAUTIONS:**

- Vecuronium should not be administered unless personnel skilled in endotracheal intubation are present and ready to perform the procedure. Oxygen therapy equipment should be readily available as should all emergency resuscitative drugs and equipment.

**CONTRAINDICATIONS:**

- None

**SIDE EFFECT AND SPECIAL NOTES:**

- Due to the prolonged duration of action, it is absolutely essential to constantly monitor endotracheal tube placement.
- Patients with renal or hepatic failure may experience prolonged paralysis.
- Vecuronium can be used to maintain paralysis even if intubation was performed without Succinylcholine.

**ADULT INDICATION DOSE ROUTE(S) SPECIAL**

- RSI 0.1 mg/kg IV/IO

**PEDIATRIC INDICATION DOSE ROUTE(S) SPECIAL**

- RSI 0.1 mg/kg IV/IO