V. JURISDICTIONAL OPTIONAL PROTOCOLS

O. CYANIDE POISONING

1. Initiate General Patient Care.

2. Presentation
   Depending on its form, cyanide can enter the body through inhalation, ingestion, or absorption through the skin. Cyanide should be suspected in occupational or smoke exposures (e.g., firefighting), industrial accidents, natural catastrophes, suicide and murder attempts, chemical warfare, and terrorism (whenever there are multiple casualties of an unclear etiology).

   Non-specific and early signs of cyanide exposure (inhalation, ingestion, or absorption) include the following signs and symptoms: anxiety, vertigo, weakness, headache, tachypnea, nausea, dyspnea, vomiting, and tachycardia.

"High Concentrations of cyanide" will produce:
1. Markedly altered level of consciousness
2. Seizure
3. Respiratory depression or respiratory arrest or
4. Cardiac dysrhythmia (other than sinus tachycardia)

The rapidity of onset is related to the severity of exposure (inhalation or ingestion) and may have dramatic, immediate effects causing early hypertension with subsequent hypotension, sudden cardiovascular collapse, or seizure/coma.

ALERT

PATIENTS WHO HAVE SUSTAINED A BURN AND/OR TRAUMATIC INJURY SHOULD BE GIVEN TREATMENT SPECIFIC TO THOSE INJURIES, INCLUDING APPLYING SPINAL PROTECTION, IF INDICATED. THE SMELL OF (BITTER) ALMONDS IS NOT A RELIABLE SIGN AND THE PROVIDER SHOULD NOT ATTEMPT TO INHALE LOCAL AIR NOR PATIENT BREATH TO DETERMINE IF THE ALMOND SMELL IS PRESENT. **(NEW '15)**

BE SURE TO ASSESS FOR EVIDENCE OF TRAUMATIC OR MEDICAL CAUSES FOR PATIENT'S ALTERED MENTAL STATUS.

3. Treatment:

a) Remove the patient from the source of exposure. (In the smoke inhalation victim, maintain appropriate provider respiratory protection, SCBA.)
b) Restore or maintain airway patency.
c) Administer 100% oxygen via non-rebreather mask or bag-valve-mask.
d) Provide aggressive advanced airway management.

CYANIDE POISONING (CONTINUED)

e) Establish IV access with LR.
f) Use glucometer and treat patient accordingly.
g) There is no widely available, rapid, confirmatory cyanide blood test. Treatment decisions must be made on the basis of clinical history and signs and symptoms of cyanide intoxication. For the patient with an appropriate history and manifesting one or more of "high concentrations of cyanide" signs or symptoms:

(1) Collect a pre-treatment blood sample in the appropriate tube for Lactate and Cyanide levels.

(2) ADULT: Administer Hydroxocobalamin. Initial dose is 5 grams administered over 15 minutes slow IV. Each 2.5 gram vial of hydroxocobalamin for injection is to be reconstituted with 100 mL of LR and administered at 10–15 mL/minute. An additional 5 gram dose may be administered with medical consultation.

(3) PEDIATRIC: Administer Hydroxocobalimin 70 mg/kg (reconstitute concentration is 25 mg/mL). Each 2.5 gram vial of hydroxocobalamin for injection is to be reconstituted with 100 mL of LR and administered at 10–15 mL/minute. Maximum single dose is 5 grams.

(4) If patient (adult or pediatric) has a reported oral cyanide ingestion and does not manifest signs and symptoms meeting administration criteria, medical consultation is required for administration of hydroxocobalamin (consider simultaneous consultation with poison control and medical consultation).

(5) If patient history is suggestive of CO inhalation, consider transport to hyperbaric medicine treatment facility.

ALERT

HYDROXOCOBALAMIN MAY CAUSE TEMPORARY RED DISCOLORATION OF THE SKIN, URINE, AND MUCOUS MEMBRANES (WHICH IS NOT TO BE CONFUSED WITH THE RARE SIGN OF CARBON MONOXIDE POISONING). THE DEVICES THAT RELY ON COLORIMETRY (E.G,. PULSE OXIMETER AND CO LEVEL) WILL BE INTERFERED WITH BY THE COLOR CHANGE AND ARE NOT RELIABLE FOR PATIENT ASSESSMENT.

NOTIFY HOSPITAL OF ADMINISTRATION OF HYDROXOCOBALAMIN AND DO NOT ADMINISTER SODIUM THIOSULFATE THROUGH THE SAME IV, AS THIS MAY CAUSE CRYSTALLINE PRECIPITATION.

4. Continue General Patient Care.

HYDROXOCOBALAMIN

1. Pharmacology

Hydroxocobalamin is a form of Vitamin B-12.

2. Pharmacokinetics

Hydroxocobalamin binds to the cyanide ion, forming cyanocobalamin, which is excreted in the urine.

3. Indication

Signs and symptoms of high concentrations of cyanide exposure with an appropriate clinical history are indications for treatment as there is no widely available, rapid, confirmatory cyanide blood test.

"High concentrations of cyanide" will produce:

a) Markedly altered level of consciousness
b) Seizure
c) Respiratory depression or respiratory arrest or
d) Cardiac dysrhythmia (other than sinus tachycardia)

Mechanism of action of **cyanide** in the body

Cyanide inhibits mitochondrial cytochrome oxidase and hence blocks electron transport, resulting in decreased oxidative metabolism and oxygen utilization. Lactic acidosis occurs as a consequence of anaerobic metabolism. The oxygen metabolism at the cell level is grossly hampered.

Cyanide is rapidly absorbed from the stomach, lungs, mucosal surfaces, and unbroken skin.

The lethal dose of potassium or sodium **cyanide** is 200 to 300 mg, and of hydrocyanic acid is 50 mg. Effects begin within seconds of inhalation and within 30 minutes of ingestion. The rapidity of onset is related to the severity of exposure (inhalation or ingestion) and may have dramatic, immediate effects causing sudden cardiovascular collapse or seizure/coma.

Initial effects of poisoning include headache, faintness, vertigo, excitement, anxiety, a burning sensation in the mouth and throat, breathing difficulty, increased heart rate, and hypertension. Nausea, vomiting, and sweating are common.

Smell of almonds is not a reliable sign and the provider should not attempt to inhale local air nor patient breath to determine if the almond smell is present.

HYDROXOCOBALAMIN (CONTINUED)

4. Contraindications

Patients with known anaphylactic reactions to hydroxocobalamin or cyanocobalamin

5. Adverse Effects

a) Reddish discoloration of the skin and urine (which is not to be confused with the rare sign of carbon monoxide poisoning). The devices that rely on colorimetry (e.g., pulse oximeter and CO level) will be interfered with by the color change and are not reliable for patient assessment.
b) Rash
c) Increased blood pressure
d) Nausea
e) Headache
f) Decreased white cell count
g) Injection site reactions
h) Allergic reactions have been observed.

6. Precautions

a) Notify hospital of administration of hydroxocobalamin and do not administer sodium thiosulfate through the same IV, as this may cause crystalline precipitation.
b) Administer slowly over 15 minutes.
c) Watch for administration sight reactions.
d) Monitor for hypertensive response to administration.

BE SURE TO ASSESS FOR EVIDENCE OF TRAUMATIC OR MEDICAL CAUSES FOR PATIENT'S ALTERED MENTAL STATUS.

7. Dosage

a) Collect a pre-treatment blood sample in the appropriate tube to assess cyanide level.
b) ADULT: Administer hydroxocobalamin. Initial dose is 5 grams administered over 15 minutes slow IV. (Each 2.5 gram vial of hydroxocobalamin for injection is to be reconstituted with 100 mL of LR and administered at 10–15 mL/minute.) An additional 5 gram dose may be administered with medical consultation.
c) PEDIATRIC: Administer hydroxocobalamin 70 mg/kg (reconstitute concentration is 25 mg/mL). Each 2.5 gram vial of hydroxocobalamin for injection is to be reconstituted with 100 mL of LR and administered at 10–15 mL/minute. Maximum single dose 5 grams.
d) If patient (adult or pediatric) has a reported oral cyanide ingestion and does not manifest signs and symptoms meeting administration criteria, consider medical consultation for administration of hydroxocobalamin.

P. GLYCOPROTEIN IIb/IIIa ANTAGONIST INFUSIONS FOR INTRAFACILITY TRANSPORTS (Paramedic only)

1. PURPOSE

During interfacility transports, a paramedic may monitor a patient on a continuous IV Glycoprotein IIb/IIIa infusion as long as the following criteria have been met.

2. INDICATIONS

The Glycoprotein IIb/IIIa infusion must have been started by the hospital staff prior to an interfacility transfer. IV Glycoprotein IIb/IIIa transports may NOT be started by the prehospital provider in the prehospital setting.

3. CONTRAINDICATIONS

a) Patients who are clinically unstable, including but not limited to unstable vital signs and blood pressure, or current arrhythmia
b) Pediatric patients

4. PROCEDURE

a) Maintain the infusion as directed by the sending physician.
b) The sending physician must document the infusion to be administered on the patient's transport record or transport note. This includes the concentration of the medication and the infusion rate.
c) The infusion must be maintained on an infusion pump designed for transport. The provider must be trained in the appropriate use of the specific make and model of the infusion pump. The ambulance must have an inverter to power the pump while in the vehicle.
d) The total volume of Glycoprotein IIb/IIIa infused must be recorded on the patient care report.
e) The patient must be on a cardiac monitor and vital signs should be documented on the patient care report at least every 15 minutes.
f) When in doubt, contact the sending physician for medical direction.

5. SPECIAL CONSIDERATIONS

The ALS service or jurisdiction must provide and document training of the ALS providers on the operation of the infusion pump(s) being used. They must also have a quality improvement (QI) program monitoring the appropriateness and quality of care provided. The QI program should be directed or coordinated by, at minimum, a Paramedic.

GLYCOPROTEIN IIb/IIIa ANTAGONIST

(Paramedic only)

1. Pharmacology

Platelet glycoprotein antagonist. This agent reversibly prevents fibrinogen and von Willenbrand's factor from binding to the Glycoprotein IIb/IIIa receptor, inhibiting platelet aggregation.

2. Pharmacokinetics

Glycoprotein IIb/IIIa has a half-life of 2.5 hours. Metabolism of this drug is limited and is excreted via the kidneys.

3. Indications

Patients with acute coronary syndrome including those with Percutaneous Coronary Intervention (PCI)

4. Contraindications

a) Hypersensitivity, active internal bleeding, history of bleeding, stroke within one month, major surgery with severe trauma, severe hypotension, history of intracranial bleeding, intracranial neoplasm, arteriovenous malformation/aneurysm, aortic dissection, or dependence on renal dialysis
b) Pediatric patients

5. Side Effects/Adverse Reactions

a) Cardiovascular: Stroke, hypotension
b) Systemic: Bleeding, anaphylaxis
c) Other: Hematuria, thrombocytopenia

6. Precautions

Glycoprotein IIb/IIIa is a medication designed to inhibit the clotting factor in blood. Patients on this medication should be protected from further injuries that may cause bleeding. Attempts to start IVs should not be made without a doctor's orders.

7. Dosage

a) INITIAL BOLUS: Given at sending facility and should be documented.
b) MAINTENANCE IV DRIP: Follow Standard Dosing. Maintain drip based on patient weight and sending physician's orders.

ALERT IF CHEST PAIN OR HYPOTENSION DEVELOPS DURING TRANSPORT, THE PARAMEDIC MUST CONSULT WITH EITHER THE SENDING OR RECEIVING PHYSICIAN FOR FURTHER INSTRUCTIONS.

July 2014: Naloxone is required for Public Safety EMT and remains Optional Supplemental Program for EMR and BLS Commercial Services (initially implemented September ’13).

P1. INTRANASAL NALOXONE FOR BLS PROVIDERS
(EMR AND COMMERCIAL EMT)

1. PURPOSE
When encountered with a patient exhibiting respiratory depression with a confirmed or suspected opioid/narcotic overdose, an EMT and EMR may administer intranasal naloxone provided the following criteria have been met.

2. INDICATIONS
A patient suffering respiratory depression caused by a known or suspected opioid/narcotic overdose

3. CONTRAINDICATIONS
a) None clinically significant in the adult patient
b) Patients < 28 days old

4. PROCEDURE
a) Ensure that naloxone is indicated and the medication is not expired.
b) Inject volume of air into vial that is equal to desired volume of medication to be removed using a needle (blunt tip preferred) and 2 mL or 3 mL syringe.
c) Pull back on syringe plunger to remove desired volume of medication.
d) Use gradations on syringe to measure volume of medication to nearest 0.10 mL.
e) Safely remove needle from syringe and dispose of in sharps container.
f) Attach mucosal atomization device to luer-lock of syringe.
g) Place tip of mucosal atomization device in the nostril and briskly push the plunger forward, administering half of the total volume of medication (up to a MAXIMUM of 1 mL per nostril).
h) Repeat previous step in the other nostril, delivering the remaining half of the medication.
i) Monitor patient for response and continue supportive care.

ALERT

IF EMS OPERATIONAL PROGRAM USES A DIFFERENT FORMULARY/CONCENTRATION OR MEDICATION PACKAGING (E.G., PRE-FILLED SYRINGE OR AMPULE), PROVIDERS MUST RECEIVE PROPER TRAINING REGARDING SAFETY, PREPARATION, AND CONVERSION TO INTRANASAL ATOMIZATION OF THE MEDICATION.

ALTERED MENTAL STATUS: UNRESPONSIVE PERSON

1. Initiate General Patient Care

2. Presentation
   Patients may exhibit confusion, focal motor sensory deficit, unusual behavior, unresponsiveness to verbal or painful stimulus.

ALCOHOL CAN CAUSE ALTERED MENTAL STATUS BUT IS NOT COMMONLY A CAUSE OF TOTAL UNRESPONSIVENESS TO PAIN.

3. Treatment
   a) Obtain pulse oximetry, if available.
   b) Administer glucose paste (10–15 grams) between the gum and cheek. Consider single additional dose of glucose paste if not improved after 10 minutes.
   c) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider strongly suspects an opioid/narcotic overdose, administer naloxone.**
      2 mg intranasal atomizer (divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril).

Consider additional doses of naloxone.

   d) Obtain pulse oximetry, if available.
   e) Administer glucose paste (10–15 grams) between the gum and cheek. Consider single additional dose of glucose paste if not improved after 10 minutes.
   f) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider strongly suspects an opioid/narcotic overdose, administer naloxone.**
      28 days to 8 years: Administer naloxone 0.8–1 mg intranasal atomizer (divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril).
      8 years to adult: Administer naloxone 2 mg intranasal atomizer (divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril).

Consider additional doses of naloxone.

OVERDOSE/POISONING: ABSORPTION

1. Initiate General Patient Care.

2. Presentation
   Patient may exhibit any of the following: nausea, vomiting, diarrhea, altered mental status, abdominal pain, rapid heart rate, dyspnea, seizures, arrhythmias, sweating, tearing, defecation, constricted/dilated pupils, rash, or burns to skin.

3. Treatment
   a) Remove patient from the toxic environment by appropriately trained personnel using proper level PPE.
   b) Identify agent and mechanism of exposure.
   c) Decontaminate as appropriate.
   d) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider strongly suspects an opioid/narcotic overdose, administer naloxone.**
   2 mg intranasal atomizer (divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril).

Consider additional doses of naloxone.

   e) Remove patient from the toxic environment by appropriately trained personnel using proper level PPE.
   f) Identify agent and mechanism of exposure.
   g) Decontaminate as appropriate.
   h) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider strongly suspects an opioid/narcotic overdose, administer naloxone.**

   28 days to 8 years: Administer naloxone 0.8–1 mg intranasal atomizer (divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril).

   8 years to adult: Administer naloxone 2 mg intranasal atomizer (divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril).

Consider additional doses of naloxone.

OVERDOSE/POISONING: INGESTION

1. Initiate General Patient Care.

2. Presentation
   Patient may exhibit any of the following: nausea, vomiting, diarrhea, altered mental status, abdominal pain, rapid heart rate, dyspnea, seizures, arrhythmias, chemical burns around or inside the mouth, or abnormal breath odors.

3. Treatment
   a) Identify substance and amount ingested.
   b) Consider activated charcoal **without** Sorbitol 1 gram/kg PO.
   c) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider strongly suspects an opioid/narcotic overdose, administer naloxone.**
   2 mg intranasal atomizer (divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril).

   Consider additional doses of naloxone.

ALERT

DO NOT GIVE ANYTHING BY MOUTH WITHOUT MEDICAL CONSULTATION! POISON INFORMATION CENTER RECOMMENDATIONS SHOULD BE SOLICITED IN CONJUNCTION WITH MEDICAL CONSULTATION, BUT MEDICATION ORDERS CAN ONLY BE ACCEPTED FROM AN APPROVED BASE STATION.

   d) Identify substance and amount ingested.
   e) Consider activated charcoal **without** Sorbitol 1 gram/kg PO.
   f) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider strongly suspects an opioid/narcotic overdose, administer naloxone.**

   28 days to 8 years: Administer naloxone 0.8–1 mg intranasal atomizer (divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril).

   8 years to adult: Administer naloxone 2 mg intranasal atomizer (divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril).

   Consider additional doses of naloxone.

OVERDOSE/POISONING: INJECTION

1. Initiate General Patient Care.
2. Presentation
   Patient may exhibit any of the following: local pain, puncture wounds, reddening skin, local edema, numbness, tingling, nausea, vomiting, diarrhea, altered mental status, seizures, muscle twitching, hypoperfusion, metallic or rubber taste.

3. Treatment
   a) Identify markings (insects, bites, needlestick, etc.).
   b) Do not apply distal and/or proximal constricting bands for a poisonous snakebite to an extremity. Do remove any jewelry on the affected extremity.
   c) Immobilize extremity.
   d) Apply cool packs for relief of pain only.

IF THE SNAKE IS **DEAD**, AND IF IT IS PRACTICAL, DELIVER IT WITH ITS HEAD INTACT. DEAD SNAKES STILL BITE!

   e) Assist patient experiencing moderate to severe allergic reaction symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed or EMS service's epinephrine auto-injector or patient's prescribed fast-acting bronchodilator.
   f) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider strongly suspects an opioid/narcotic overdose, administer naloxone.**
   2 mg intranasal atomizer (divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril).

   Consider additional doses of naloxone.
   g) Identify markings (insects, bites, needlestick, etc.).
   h) Do not apply distal and/or proximal constricting bands for a poisonous snakebite to an extremity. Do remove any jewelry on the affected extremity.

   i) Assist patient experiencing moderate to severe allergic reaction symptoms or mild symptoms with a history of life-threatening allergic reaction with the patient's prescribed or EMS service's epinephrine auto-injector or patient's prescribed fast-acting bronchodilator.
   j) **If patient has respiratory depression with decreased LOC, constricted pupils, and provider strongly suspects an opioid/narcotic overdose, administer naloxone.**

   28 days to 8 years: Administer naloxone 0.8–1 mg intranasal atomizer (divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril).

   8 years to adult: Administer naloxone 2 mg intranasal atomizer (divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril).

   Consider additional doses of naloxone.

July 2014: Naloxone is required for Public Safety EMT and remains Optional Supplemental Program for EMR and BLS Commercial Services (initially implemented September '13).

Naloxone (Narcan)

1. **Pharmacology**
   Reverses all effects due to opioid (morphine-like) agents. This drug will reverse the respiratory depression and all central and peripheral nervous system effects.
2. **Pharmacokinetics**
   a) Onset of action is within a few minutes with intranasal (IN) administration.
   b) Patients responding to naloxone may require additional doses and transportation to the hospital since most opioids/narcotics last longer than naloxone.
   c) Has no effect in the absence of opioid/narcotic.
3. **Indications**
   To reverse respiratory depression induced by opioid/narcotic agent
4. **Contraindications**
   Patients under 28 days of age
5. **Adverse Effects**
   Opioid withdrawal
6. **Precautions**
   a) Naloxone may induce opiate withdrawal in patients who are physically dependent on opioids.
   b) Certain drugs may require much higher doses of naloxone for reversal than are currently used.
   c) Should be administered and titrated so respiratory efforts return, but not intended to restore full consciousness.
   d) Intranasal naloxone must be administered via nasal atomizer.
   e) Naloxone has a duration of action of 40 minutes; the effect of the opioid/narcotic may last longer than naloxone and patients should be encouraged to be transported.

ALERT

PROVIDERS MUST CONTACT A BASE STATION PHYSICIAN FOR PATIENTS WISHING TO REFUSE TRANSPORT AFTER BLS ADMINISTRATION OF NALOXONE.

7. **Dosage**
   a) Adult: Administer 2 mg IN. Divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril.
   b) Pediatric:
      (1) **Child 8 years of age to adult:**
      Administer 2 mg IN. Divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril.
      (2) **Child 28 days to less than 8 years of age:**
      Administer 0.8–1 mg IN; Divide administration of the dose equally between the nostrils to a maximum of 1 mL per nostril.
      (3) **Child less than 28 days:**
      Not indicated

Repeat as necessary to maintain respiratory activity.

Q. HEPARIN INFUSION FOR INTERFACILITY TRANSPORT

(Paramedic only)

1. PURPOSE

During interfacility transports, a paramedic may monitor a patient on a continuous IV heparin infusion as long as the following criteria have been met.

2. INDICATIONS

The heparin infusion must have been started by the hospital staff prior to an interfacility transfer. IV heparin infusions may NOT be started by the prehospital provider in the prehospital setting.

3. CONTRAINDICATIONS

a) Patients who have had trauma or surgery to the brain, eye, spinal cord, urinary tract, joints, or retroperitoneum within the last 7 days
b) Patients with active bleeding
c) Third trimester pregnancy

4. PROCEDURE

a) Follow the appropriate ALS algorithm and maintain the infusion as directed by the sending physician.
b) The sending physician must document the infusion to be administered on the patient's record or transport note, including the concentration of the units per hour.
c) The infusion must be maintained on an infusion pump designed for transport, and the provider must be trained in the appropriate use of that specific make and model infusion pump. The ambulance must have an inverter to power the pump while in the vehicle.
d) The total volume of heparin infused must be recorded on the patient care report.
e) The patient must be on a cardiac monitor and vital signs should be documented on the patient care report every 15 minutes.
f) When in doubt, contact the sending physician for medical direction.

5. SPECIAL CONSIDERATIONS

The ALS service or jurisdiction must provide and document the training of ALS providers on the operation of the infusion pump(s) being used. They must also have a quality improvement (QI) program monitoring the appropriateness and quality of care provided. The QI program should be directed or coordinated by, at minimum, an ALS provider.

HEPARIN

(Paramedic only)

1. Pharmacology

Heparin is an anticoagulant that works by neutralizing several of the clotting factors (XIII, XII, XI, X, IX, and II).

2. Pharmacokinetics

a) Heparin inhibits the coagulation mechanism in 3 sites:
   (1) activation of factor X
   (2) formation of thrombin from prothrombin
   (3) conversion of fibrinogen to fibrin
b) Heparin's effect, which is to retard or prevent blood clotting, is immediate. The half-life of intravenous heparin is 1–1 1/2 hours.

3. Indications

a) Thromboembolic disease, such as pulmonary embolism deep vein thrombophlebitis, and arterial embolization
b) Acute myocardial infarction. (Heparin may be given alone or in conjunction with thrombolytic therapy.)

4. Contraindications

a) Patients who have had trauma or surgery to the brain, eye, spinal cord, urinary tract, joints, or retroperitoneum within the last 7 days
b) Patients with active bleeding
c) Third trimester pregnancy

5. Adverse Effects

Increased potential for bleeding

6. Precautions

a) Inadvertent infusion of too much heparin can result in over-anticoagulation and the potential for bleeding complications.
b) If it is necessary to draw blood or start an IV while a patient is receiving heparin, extra time to hold pressure over the puncture site will be necessary to stop the bleeding.
c) Use with caution for patients with extreme hypertension.

7. Dosage

a) Adult: Administer a maximum of 2,000 units per hour.
b) Pediatric: Not indicated.

Q1. IMPEDANCE THRESHOLD DEVICE (ITD) (single use device)

1. PURPOSE

While CPR is being performed, the impedance threshold device prevents air from entering the chest during chest recoil, thereby increasing negative pressure. This enhanced vacuum pulls more blood back to the heart, doubling blood flow during CPR. Studies have shown that this mechanism increases cardiac output, blood pressure, and survival rates.

2. INDICATIONS

The impedance threshold device is indicated for patients 12 years of age and older with cardiac arrest.

3. CONTRAINDICATIONS

a) Children less than 12 years of age
b) Patients with a pulse

4. PROCEDURE

a) Use with a facemask.
   (1) Connect ITD to facemask.
   (2) Open airway. Establish and maintain tight face seal with mask throughout chest compressions; a head strap or 2-handed technique is recommended.
   (3) Connect ventilation source to ITD.
   (4) Perform CPR at the recommended compression to ventilation ratio.
b) Use with an ET Tube.
   (1) Confirm ET tube placement and firmly secure ET tube as there is additional weight.
   (2) Connect ITD to ET tube.
   (3) Connect ventilation source to ITD.
   (4) Perform continuous chest compressions at recommended rate.
   (5) Remove clear tab and turn on timing assist lights. Ventilate asynchronously at timing light flash rate of 10/min.
   (6) Place exhaled CO_2 detector between ITD and ventilation source.

ONCE THE PATIENT HAS A RETURN OF SPONTANEOUS CIRCULATION (A PULSE) THE ITD MUST BE REMOVED. THE SAME ITD MAY BE PLACED BACK INTO THE VENTILATION CIRCUIT IF THE PATIENT GOES BACK INTO CARDIAC ARREST REQUIRING ADDITIONAL CPR.

5. SPECIAL CONSIDERATIONS

Remove secretions from the ITD by shaking or blowing out the device with the ventilation source.

Q2. AIRWAY MANAGEMENT: LARYNGEAL TUBE AIRWAY DEVICE (KING LTS-D™)

1. PURPOSE

To provide an alternative to the Combitube® (latex) or EasyTube® (latex-free); it is a latex-free means of ventilating patients who cannot be intubated via direct laryngoscopy.

2. INDICATIONS

Inability to place an endotracheal tube in a patient who has no gag reflex (including patients who cannot be intubated following the administration of succinylcholine)

3. CONTRAINDICATIONS

a) Responsive patients with an intact gag reflex
b) Patients under 4 ft (2 and 2.5 LT not to be used)
c) Known esophageal disease or ingestion of caustic substances

4. POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

a) The LTS-D airway does not protect against the effects of regurgitation and aspiration.
b) High airway pressures may divert gas either to the stomach or to the atmosphere.
c) Intubation of the trachea cannot be ruled out as a potential complication of the insertion of the LTS-D airway. After placement, perform standard checks for breath sounds and utilize an appropriate carbon dioxide monitor.

5. PROCEDURE

a) Inspect all components of the LTS-D for visible damage.
b) Select appropriate size LTS-D airway:
   (1) Size 3: Patients 4–5 ft tall (BVM connector tip is yellow)
   (2) Size 4: Patients 5–6 ft tall (BVM connector tip is red)
   (3) Size 5: Patients greater than 6 ft tall (BVM connector tip is purple)
c) Test cuffs by injecting the maximum volume of air (by size) and lubricate with water soluble jelly.
   (1) Size 3: 60mL Air
   (2) Size 4: 80mL Air
   (3) Size 5: 90mL Air

(d) Maintain cervical immobilization (if indicated) and lift tongue and jaw upward with one hand. Ideal position of the head is in the “sniffing position”; however, the LTS-D airway can be inserted with the head in neutral position.
(e) Insert LTS-D airway using a lateral approach and advance the tip behind the base of the tongue while rotating the tube back to midline so the blue line faces the patient’s chin.
(f) Without exerting excessive force, advance tube until base of connector is aligned with teeth and gums.
(g) Inflate cuff and ventilate patient. Gently withdraw the tube until ventilation becomes easy and free-flowing.
(h) Adjust cuff inflation to obtain a seal of the airway.
(i) Ventilate and evaluate lung ventilation (breath sounds, absence of gastric sounds, chest rise, end-tidal carbon dioxide, oxygen saturation).
(j) Once effective ventilation is confirmed, continue to monitor oxygen saturation and ventilate to desired end-tidal carbon dioxide level.
(k) If unable to achieve adequate ventilation using LTS-D airway, remove device, reinsert, and attempt again. If unable to ventilate, re-attempt bag-valve-mask ventilation and consider obstructed airway maneuvers.

Q3. AIRWAY MANAGEMENT: BI-LEVEL POSITIVE AIRWAY PRESSURE (BiPAP)

1. INDICATIONS

a) Interfacility transfer of a patient with established/chronic respiratory distress or failure due to cardiogenic pulmonary edema or COPD/Asthma in which the patient demonstrates spontaneous respirations and a patent, self-maintained airway
b) No increase in pressure settings or oxygen requirement of the current BiPAP device within 48 hours of the transfer. Otherwise, the patient shall be transferred by a SCT team.
c) Patients who are 15 years of age or older

2. CONTRAINDICATIONS

a) Circumstances in which endotracheal intubation or a surgical airway is preferred or necessary to secure a patent airway
b) Circumstances in which the patient is being transferred for treatment of acute respiratory distress

3. PROCEDURE

a) Assure patent airway.
b) Perform appropriate patient assessment, including obtaining vital signs, pulse oximeter (SpO_2) reading, and cardiac rhythm.
c) Apply BiPAP device per manufacturer's instructions.
d) Program the device to match the settings of the BiPAP machine that the patient is currently using.
e) Assess the patient after placing the BiPAP device selected for transfer. If respiratory distress occurs, support the patient with a BVM until facility personnel reestablish therapy with original BiPAP device.
f) Continuously reassess the patient.
g) Monitor continuous pulse oximetry.
h) Monitor continuous $ETCO_2$ with nasal prongs.
i) Follow the appropriate set of standing orders for continued treatment.
j) Confirm the availability of a BiPAP device at the destination facility.

ALERT

FOR CIRCUMSTANCES IN WHICH THE PATIENT DOES NOT IMPROVE OR CONTINUES TO DETERIORATE DESPITE BIPAP AND/OR MEDICATIVE THERAPY, TERMINATE BIPAP ADMINISTRATION AND PERFORM BVM VENTILATION AND ENDOTRACHEAL INTUBATION IF NECESSARY.

BIPAP MAY BE CONSIDERED FOR NON-CARDIOGENIC PULMONARY EDEMA.

Q4. BLS GLUCOMETER PROTOCOL
(EMT ONLY)

a) PURPOSE
The glucometer should be utilized by BLS providers to determine the blood glucose level in an attempt to determine the etiology of the patient's condition and provide treatment tailored to the needs of the patient before ALS intervention can be made.

b) INDICATIONS
The glucometer should be utilized for any patient presenting with an altered mental status, seizure activity, or unresponsiveness.

c) TREATMENT
Utilize the glucometer to determine the patient's blood glucose level. If the glucose level is less than 70 mg/dl:

(1) ADULT: Administer glucose paste (10–15 grams) between the gum and cheek. Consider single additional dose of glucose paste if not improved after 10 minutes.

(2) PEDIATRIC: Administer glucose paste (10–15 grams) between the gum and cheek; this may be accomplished through several small administrations. Consider single additional dose of glucose paste if not improved after 10 minutes.

IF THE GLUCOSE LEVEL IS GREATER THAN 100 MG/DL, DO NOT ADMINISTER GLUCOSE PASTE.

Q5. HIGH PERFORMANCE CPR (HPCPR)

a) PURPOSE

To improve the overall survival rate of sudden out-of-hospital cardiac arrest patients within the State of Maryland. High Performance Cardio Pulmonary Resuscitation (HPCPR) employed with Code Resource Management (CRM) is a proven concept based on a team approach that ensures effective and efficient use of EMS resources. This systematic change in treatment and management of cardiac arrest patients is based on research and practices being used in many other high performance EMS systems across the country.

b) INDICATIONS

Patients in cardiac arrest who have reached their 8th birthday.

c) CONTRAINDICATIONS

Patients meeting the criteria for PDOA protocol
Patients who have not reached their 8th birthday.

d) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

None

e) PRECAUTIONS

None

f) PROCEDURE FOR HIGH PERFORMANCE CPR

The first provider at the patient's side will assess and initiate compressions.

(1) Effective Compressions - Manual chest compressions should be initiated immediately upon identification of cardiac arrest, as long as the scene is safe. When compressions are done manually, compressors should be rotated **every 2 minutes** in order to maintain high-quality compressions. Ideally, one compressor is on each side of the patient's chest; one person compressing the chest and the other person ready to start. Chest compressions will be performed at a depth of at least two inches allowing for complete recoil of the chest after each compression. Compressions should be accomplished with equal time given for the down and up motion, and achieve a rate of 100–120/min.

(2) Continuous Compressions - Chest compressions will be performed at a rate of 100 to 120 per minute and will NOT be interrupted during the two-minute cycle for any reason. Other treatments such as ventilations, IV access, or intubation attempts will be done while compressions are ongoing. After completion of a two-minute cycle, a phase to assess pulses and/or defibrillate will be limited to < 10 seconds.

(3) Defibrillation – placement of the defibrillator pads will not interrupt chest compressions

(a) Automatic External Defibrillation

The AED will be powered on as soon as the cardiac arrest is confirmed. Do not interrupt chest compressions to remove clothing or place defibrillation pads. If the AED charges after analyzing, chest compressions will be performed while the device charges, then the patient will be "cleared" and defibrillated. Compressors will hover over the patient with hands ready during defibrillation so compressions can start immediately after a shock. Another two-minute cycle of compressions will be immediately performed. Pulse checks will not occur after a shock, but only after the AED prompts "no shock advised." If no pulse is palpated, or if unsure, immediately perform another two minutes of CPR.

(b) Cardiac Monitor/Defibrillator

When a manual defibrillator is in use, it will be charged to the appropriate energy level as the end of the compression cycle nears (approximately 1 minute and 45 seconds into a two-minute cycle). At the end of the two-minute cycle, the patient will be cleared, the rhythm will then be interpreted rapidly, and the patient will either be defibrillated or the defibrillator energy charge will be cancelled. This sequence must be performed within 10 seconds. During this sequence, the compressors will hover over the patient with hands ready. If a shock is delivered, the compressor will immediately resume CPR. Rhythm interpretation will not occur after a shock, but only after the two-minute cycle of CPR is performed. If a shock is not indicated, check for a pulse. If patient remains pulseless, immediately resume HPCPR

(4) Ventilations

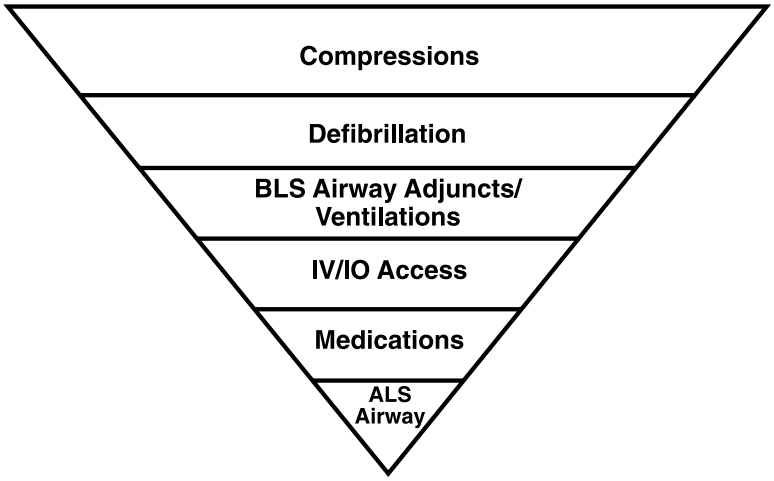
Ventilations will be performed without stopping chest compressions. One ventilation will be given every 10th compression during recoil (upstroke). Once an advanced airway is in place, ventilations will be asynchronous with compressions (1 ventilation every 6 to 8 seconds). High performance, continuous compressions remain the priority. Ensure ventilations are adequate with BVM attached to 100% oxygen. Providers will not interrupt compressions to obtain an advanced airway.

(5) Advanced Life Support - ALS providers will address defibrillation, IV/IO access, medication administration, and advanced airway placement, as indicated within these protocols; however, the placement of an advanced airway is no longer a focus of cardiac arrest management and will not interrupt chest compressions.

Nasal capnography may be utilized to optimize CPR performance and evaluation of ROSC with use of bag-valve-mask ventilation.

(6) Return of Spontaneous Circulation (ROSC) - Implement the hypothermic resuscitation protocol as indicated and transport to the closest Cardiac Interventional Center. Following stabilization, post-ROSC, obtain a 12-lead EKG.

g) PROCEDURE: CODE RESOURCE MANAGEMENT (CRM)
Crews should coordinate their duties keeping the call priorities in mind. Intervention priorities are (in order of highest to lowest):



The number of personnel on a given incident and the qualifications of those personnel can vary; however, the priorities remain the same. Appropriate crew roles are outlined below:

2 provider crew:
Provider 1 – Chest compressions
Provider 2 – Ventilate, attach/operate AED/defibrillator, assume crew leader responsibilities (providers rotate positions every two minutes)
Roles remain the same even if providers are ALS equipped

3 provider crew:
Provider 1 – Chest compressions
Provider 2 – Ventilate
Provider 3 – Crew Leader, attach/operate AED/defibrillator
(Providers 1 and 2 rotate every two minutes)
Roles remain the same even if providers are ALS equipped

4 provider crew:
Provider 1 – Chest compressions
Provider 2 – Ventilate
Provider 3 – Attach/operate AED/defibrillator
Provider 4 – Crew leader
(Providers 1, 2, and 3 rotate every two minutes)

*** Once first two roles have begun treatment, ALS providers will establish IV/IO and administer medications*

Greater than 4 providers - Utilize the same initial assignments as the four provider crew. The crew leader will assign additional roles such as informing the family of patient status, gathering patient information, and documenting the medical interventions performed on the call. If resources allow, rotate additional providers to do chest compressions to achieve optimal performance.

Crew leader - The crew leader will keep time, record interventions performed during the arrest, give compression feedback and ensure rotation of personnel doing compressions every two minutes. Verbal announcements of time should occur at one minute, 30 seconds before reassessment, 15 seconds left, and countdown to reassessment at 10 seconds.

Q6. ANTIMICROBIAL INFUSION FOR INTERFACILITY TRANSPORT
(Paramedic only) **(NEW '15)**

1. PURPOSE
During interfacility transports, a paramedic may monitor a patient on a continuous IV antimicrobial medication infusion as long as the following criteria have been met.

2. INDICATIONS
The antibiotics infusion must have been started by the hospital staff prior to an interfacility transfer. IV antimicrobial infusions may NOT be initiated by the prehospital provider.

3. CONTRAINDICATIONS
a) Patients who have unstable vital signs or are being transferred to an intensive care environment
b) Patients with allergic reaction to infusing antibiotic agent or class
c) Pediatric patients

4. PROCEDURE
a) Follow the appropriate ALS algorithm and maintain the infusion as directed by the sending physician/practitioner.
b) The paramedic will review the sending physician's antibiotics order and will review the specific antibiotic agent to ensure appropriate administration, indications, and absence of contraindications.
c) Unless not indicated per the medication profile, the antimicrobial infusion must be maintained on an infusion pump designed for transport, and the provider must be trained in the appropriate use of that specific make and model infusion pump. The ambulance must have an inverter to power the pump while in the vehicle.
d) The administration of the antibiotics infusion will be recorded on the patient care report to include the antibiotic agent's name, dose, rate, and volume infused during transport.
e) When in doubt, contact the sending physician/practitioner for medical direction.

5. SPECIAL CONSIDERATIONS
a) The ALS service or jurisdiction must provide and document training of the ALS providers on the operation of infusion pump(s) being used.
b) The ALS service or jurisdiction must provide and document training of the ALS providers on the general administration of antimicrobials. However, due to the vast array of antimicrobials, the paramedic must utilize a practice of evaluating each patient care situation with the use of current medication reference materials to ensure appropriate administration of the infusion.
c) The ALS service or jurisdiction must also have a quality improvement (QI) program monitoring the appropriateness and quality of care provided. The QI program should be directed or coordinated by, at minimum, an ALS provider.

Q6. ANTIMICROBIAL INFUSION FOR INTERFACILITY TRANSPORT

1. Pharmacology

Antimicrobials are agents that kill microorganisms or suppress their multiplication or growth.

2. Pharmacokinetics

Antimicrobial agents are classified functionally according to the manner in which they adversely affect a microorganism.

3. Indications

Treatment of known or suspected infectious disease, or as prophylaxis for an infectious process

4. Contraindications

a) Patients who have unstable vital signs or are being transferred to an intensive care environment
b) Patients with allergic reaction to specific antibiotic agent or class
c) Pediatric patients

5. Adverse Effects and Precautions

Antimicrobials have various adverse effects depending on the specific agent's mechanism of action. Current medication reference materials should be consulted for specific patient situation.

6. Dosage

a) Adult: Administer per practitioner order.
b) Pediatric: Not indicated.

R. MARK I / DuoDote Kits (Atropine and 2-PAM Auto-Injectors)

1. Initiate General Patient Care.

2. General Information

a) Nerve agents are a group of highly toxic chemicals that may be released in a WMD event. These agents act to inhibit cholinesterase and therefore prolong the effects of acetylcholine. These agents are potent, long acting, and all bind to acetylcholine irreversibly unless an oxime is given.

b) Nerve agents include Tabun (GA), Sarin (GB), Soman (GD) and GF. There are also V agents such as VX.

c) The G-type agents evaporate (become vapor) or may be dispersed in the air by weapons. When a person inhales this vapor, effects begin within seconds to minutes.

d) The V-type agents are oily and evaporate very slowly. They persist on the ground, foliage, etc., for long periods. Exposure to this liquid on the skin causes effects to start as soon as 10 minutes or as long as 18 hours after contact. The vapor hazard from these is not as great as from the G-type agents.

e) Many insecticides currently in use are organophosphates and are chemically related to nerve agents. The organophosphate insecticides may have a slower onset and a longer lasting effect compared with nerve agents.

3. Presentation

a) Characteristic signs and symptoms may identify nerve agent poisoning. After vapor exposure, early manifestations of poisoning occur in the eyes, nose, and airway. With liquid/dermal contact exposure, early manifestations occur in the skin and the GI tract. Thus, when looking at the chart below, consider the mechanism of release and the associated signs and symptoms. (Refer to the chart below with the mnemonic P-SLUDGE-MC for symptoms and signs. NOTE: This mnemonic is used for all organophasphate toxicity. Pupillary response occurs only with vapor exposure and will not be seen unless there is direct liquid contact with the eye. Urinary incontinence is also very rare.)

Nerve Agents
Signs and Symptoms of Chemical Agents

		Vapor Exposure	Liquid Exposure
	P - Pinpointing pupils	x	Not Seen
	S - Salivation	x	Not Seen
Mild	**L -** Lacrimation (tearing)	x	Not Seen
Severe	**U -** Urination	x	x
	D - Defecation	x	x
	G - Gastrointestinal; pain/gas	x	x
	E - Emesis (vomiting)	x	x
	M - Muscle twitching	x	x
	C - Convulsions	x	x

b) EMS providers must know the following MILD, MODERATE, and SEVERE signs and symptoms of nerve agent poisoning. When providers recognize most or all of the symptoms listed below they must IMMEDIATELY receive treatment (first aid or buddy aid).
   (1) MILD poisoning (self-aid). Casualties with mild symptoms may experience most or all of the following:
      (a) Unexplained runny nose
      (b) Unexplained sudden headache
      (c) Sudden drooling
      (d) Difficulty in seeing (dimness of vision, constricted pupil)
      (e) Tightness in the chest or difficulty in breathing
      (f) Wheezing and coughing
      (g) Localized sweating and muscular twitching in the area of the contaminated skin
      (h) Stomach cramps
      (i) Nausea without vomiting
   (2) MODERATE effects would be the above, but also include more severe effects such as diarrhea, moderate to severe difficulty breathing, and some skeletal-muscular twitching/fasciculations. The progression of symptoms from mild to moderate indicates either inadequate treatment or continuing exposure to the nerve agent.
   (3) SEVERE symptoms. Providers with severe symptoms will not be able to treat themselves and must receive prompt buddy aid and medical treatment. Casualties with severe symptoms may experience most or all of the MILD symptoms plus most or all of the following:
      (a) Impaired thinking
      (b) Increasing wheezing and increased difficulty breathing
      (c) Severe pinpoint pupils
      (d) Red eyes with tearing
      (e) Vomiting
      (f) Severe muscular twitching and general weakness
      (g) Involuntary defecation
      (h) Convulsions
      (i) Unconsciousness
      (j) Respiratory Failure
      (k) Bradycardia

4. Prevention of Poisoning

a) In the setting of an exposure to a nerve agent, the most rapid absorption occurs through the respiratory tract. When it is suddenly determined that providers are in the “hot zone,” do **not** look for the **invisible** vapor cloud. Providers should hold their breath until they don and clear their breathing apparatus or protective masks. Once masked, a provider will then give the alarm to other providers. This may be done with hand signals or through the mask. If a fellow provider is severely poisoned with altered consciousness in the hot zone, the initial, less-poisoned masked provider should mask the casualty.

b) When the masked casualty is severely poisoned after exposure to vapor and liquid, he/she should be decontaminated by removing clothing, blotting the agent (if a liquid exposure), and diluting the agent by using a flush with large amounts of water. Decontamination should be done as soon as possible, but it will usually occur in the warm zone or a safe area.
c) When treating a severely poisoned casualty, the treating provider should take care to avoid exposure to the liquid agent (which could occur when kneeling next to the casualty). Squatting next to the casualty while masking or treating him/her will help the caregiver to avoid exposure to liquid nerve agent.
d) Do not administer nerve agent antidotes before actual exposure to nerve agents or development of clinical symptoms occurs. Nerve agent antidotes may degrade performance in the hot zone (creating a heat-stressed provider) and should be administered only when symptoms and signs of nerve agent poisoning are present.

5. Treatment

a) The ABC priorities of prehospital treatment require modification to AABCs (Antidote then ABCs). The antidote (Atropine and 2-PAM) should be given as soon as possible, because toxic exposure to the nerve agent will make ventilation difficult. If the antidote is not immediately available, prevent further exposure to the nerve agent, provide ABC support, and evacuate the patient to an area where the antidote is available.
b) Certified EMR or EMT may administer MARK I / DuoDote kits (up to total of three kits) as buddy care to public safety personnel or when directed to do so by an ALS provider based on signs and symptoms in a mass casualty incident (MCI) or on-site chemical testing that confirms nerve or organophosphate agent presence in a mass casualty incident. The midazolam 5 mg or diazepam 10 mg auto-injector (CANA) can only be administered when three MARK I / DuoDote kits are administered in a severe exposure by an ALS provider. Medical consultation is not required in these situations.
c) Dosage scheme for Mark I / DuoDote auto-injector administration
    (1) Vapor (small exposure)
        (a) Symptoms may include pinpoint pupils, runny nose, and/or mild shortness of breath.
        (b) Onset of symptoms: within seconds
        (c) If only symptoms are pinpoint pupils and/or runny nose, DO NOT TREAT; otherwise, treatment should begin with one dose of the Mark I / DuoDote antidote kit initially. This dosage may be repeated in 10 minutes if the patient remains symptomatic.
    (2) Liquid (small exposure)
        (a) Symptoms may include sweating, twitching, vomiting, weakness
        (b) Onset: minutes to hours
        (c) Treatment should begin with one dose of Mark I / DuoDote antidote kit initially. The dosage may be repeated in 10 minutes if the patient remains symptomatic.

(3) Vapor or liquid (moderate exposure)
(a) Symptoms may include more severe respiratory distress, muscular weakness, and/or vomiting and diarrhea.
(b) Treatment should begin with 2 doses of Mark I / DuoDote antidote kit initially. The dose of 2 mg of atropine may be repeated in 10 minutes if the patient remains symptomatic.

(4) Vapor or liquid (large exposure)
(a) Symptoms may include copious secretions, unconsciousness, convulsions, and/or apnea.
(b) Onset: seconds to hours
(c) Treatment should begin with 3 doses of Mark I / DuoDote antidote kit initially. The dose of 2 mg of atropine may be repeated until symptoms decrease or cease.

d) Monitoring effectiveness of treatment
(1) Mark I / DuoDote antidote treatment is initiated when symptoms are present in a WMD potential nerve agent setting.
(2) Evidence of response to treatment includes improvement in initial symptoms and **drying of secretions**. If neither occurs after initial Mark I / DuoDote administration, then administer additional atropine until these endpoints are reached. In this setting the pulse will generally be above 90 beats per minute (bpm) as an additional sign of atropinization. Pupillary constriction (pinpoint/miosis) usually occurs from direct exposure, will not respond to systemic atropine, and should not be used as a sign of the effect of treatment.
(3) The duration of effect of each 2 mg atropine auto-injector is approximately 5 to 15 minutes. If secretions return and the pulse drops below 90 bpm, then additional atropine treatment should be given.

e) Advanced Life Support care should be initiated once the patient is adequately decontaminated.
(1) Once an IV is established, a patient may be treated with Atropine 2–4 mg IVP or IM every 5–10 minutes for symptoms listed above. Treatment should be titrated to the endpoints listed above.
(2) If 2-PAM has not previously been administered, 1–2 grams may be administered IM.
(3) Seizures should be treated with midazolam as indicated in protocol. If only diazepam (CANA) available, administer 10 mg IM.
(4) Severe nerve agent exposure: The midazolam 5 mg or diazepam 10 mg auto-injector (CANA) can only be administered when three MARK I / DuoDote kits are administered in a severe exposure by an ALS provider. Medical consultation is not required in these situations.

S. SPECIALTY CARE PARAMEDIC

(Paramedic only)

The Scope of Practice for the Specialty Care Paramedic (SP) is defined by a floor and a ceiling of care. The entry level for this program is Maryland Licensed Paramedic. The floor of this Specialty Care Paramedic is the existing *Maryland Medical Protocols for EMS Providers*, including the Optional Supplemental protocols: CPAP, Glycoprotein IIB/IIIA Antagonist, Heparin, Scene/Chronic Ventilator, and Mark I/DuoDote. (The Pilot programs and the Optional Supplemental protocols **Wilderness** and **Transport of Acute Ventilator Interfacility Patient** are not included as part of ALS transports.) The medications and procedures listed within *The Maryland Medical Protocols for EMS Providers* may be administered by the SP based on the written interfacility transfer orders of the sending Medical Director of the Commercial Specialty Care Service (without manipulation of the *Maryland Medical Protocols for EMS Providers*) or receiving physician without having to request online base station medical consultation.

The ceiling for the SP is defined by the medications and procedures that are defined as “RN” or are not listed within the tables below. Those medications or skills that are listed as “Rn” require familiarization by the SP but are the responsibility of the transport nurse or physician constituting the patient care team.

If a medication or procedure is listed within the scope of practice for the SP, it applies to both adult and pediatric patients unless otherwise noted.

The practice environment for these medications and procedures will be strictly for the interfacility transfer of patients and not extended into the realm of the 9-1-1 response unless otherwise noted.

Classification of Drugs and Procedures

SP **(NEW ’15)**	A Specialty Care Paramedic (SP) may initiate, monitor, and maintain without a transport nurse if they have successfully completed an EMS Board-approved Specialty Care program. (The commercial ambulance must still meet the requirement of an additional ALS provider and EMT driver to complete the specialty care transport.)
RN **(NEW ’15)**	A transport nurse or physician is onboard – SP needs familiarity with the medication or procedure but SP may not perform or administer.

OPTIONAL SUPPLEMENTAL PROGRAM
SPECIALTY CARE PARAMEDIC
PARAMEDIC ONLY

Medication - Procedure		
A. Medications	**Specialty Care Paramedic** (SP)	**Team with Nurse** (RN)
1. Sedatives		
a. Etomidate (amidate)		RN
b. Lorazepam (ativan)	SP	
c. Midazolam (versed)	SP	
d. Propofol (diprivan)		RN
2. Analgesics		
a. Fentanyl (sublimaze)	SP	
b. Hydromorphone (dilaudid)		RN
c. Meperidine (demerol)		RN
d. Non-narcotic analgesics (e.g., Ketorolac)	SP	
3. Paralytics		
a. All types		RN
4. Antihypertensives		
a. All types		RN
5. Volume Expanders		
a. Albumin	SP	
b. Blood products		RN
c. Dextran	SP	
d. Hespan	SP	
e. Plasmanate	SP	
6. Vasopressors		
a. Dobutamine (dobutrex)		RN
b. Epinephrine – drip		RN
c. Norepinephrine (levaphed)		RN
d. Phenylephrine		RN
7. Bronchodilators		
a. Metaproterenol (alupent)	SP	
b. Theophylline – IV		RN
c. Terbutaline (brethine) - Inhaled	SP	
d. L-Albuterol (inhaled)	SP	
8. Anti-Anginals		
a. Atenolol (tenormin)		RN
b. Metoprolol (lopressor)		RN
c. Nitroglycerin (tridil) – IV	SP (adults only)	
d. Propranolol (inderal)		RN

Medication - Procedure (Continued)		
A. Medications (Continued)	**Specialty Care Paramedic** (SP)	**Team with Nurse** (RN)
9. Fibrinolytics/Thrombolytics		
a. All types		RN
10. Anti-Coagulants/Anti-Platelets		
a. All Types	SP (adults only)	
11. Anti-Emetic		
a. All types anti-emetic	SP	
12. Miscellaneous		
a. Flumazenil AD (romazicon)		RN
b. Insulin – IV		RN
c. Insulin in TPN	SP	
d. Mannitol (osmitrol)		RN
e. Mag Sulfate (added to mixed drip – e.g., with vitamins)	SP	
f. Potassium Chloride (only maintenance infusions; not bolusing)	SP	
g. Sodium Bicarbonate Drip	SP	
h. Steroids – IV (not initiated)	SP	
i. Tocolytics (including Mag Sulfate)		RN
j. Uterine stimulants (e.g., oxytocin)		RN
13. Anti-Arrhythmic		
a. Amiodarone		RN
b. Bretylium (bretylol)		RN
c. Digoxin (lanoxin)		RN
d. Diltiazem Drip	SP	
e. Esmolol (brevibloc)		RN
f. Metoprolol (lopressor)		RN
g. Procainamide (pronestyl)		RN
h. Quinidine Sulfate & Gluconate		RN
14. Anti-Convulsants (also see sedatives)		
a. Barbiturates		RN
b. Phenytoin (dilantin)/Fosphenytoin	SP	
c. Other non-benzodiazepine anti-convulsants		RN
15. Diuretics	SP	

	Medication - Procedure (Continued)		
B.	**Invasive Procedures**	**Specialty Care Paramedic** (SP)	**Team with Nurse** (RN)
1.	Chest Escharotomies		RN
2.	Chest Tubes Insertion		RN
3.	Chest Tube or Surgical Drain with or without vacuum system	SP	
4.	Laryngeal Mask Airway (LMA)	SP (adult only)	
5.	Needle Cricothyroidotomy	SP	
6.	Rapid Sequence Intubation		RN
7.	Surgical Cricothyroidotomy	SP	
8.	Tracheostomy Care and Replacement (fresh)	SP	
9.	Urinary catheter insertion	SP	
C.	**Non-Invasive Procedures**		
1.	IV Pumps	SP	
2.	Ostomy care	SP	
D.	**System Monitoring**		
1.	Arterial Line/Cardiac Sheath		RN
2.	CVP line (monitor but not performing measures)	SP	
3.	Intracranial Pressure Monitor/Line		RN
4.	Swan-Ganz		RN
E.	**Specialized Equipment**		
1.	Automatic Internal Cardiac Defibrillator (AICD)	SP	
2.	Acute Ventilated Interfacility Patient – Transport Service's Ventilator (Except as in E6)	SP	
3.	Internal Pacer with external control		RN
4.	Intra-Aortic Balloon Pump		RN
5.	Peritoneal Dialysis Systems	SP	
6.	Specialty Ventilator (e.g., Pediatric or when hospital ventilator must accompany patient)		RN
7.	Transport Isolette/Incubator		RN
8.	Ventricular Assist Devices	SP	

T. TACTICAL EMS

A. INTRODUCTION

1. Scope and Applicability
   a) These protocols are intended for use during high-risk, large-scale, and extended law enforcement or homeland security operations.
   b) The Tactical Emergency Medical Services (TEMS) provider is not directly responsible for any person(s) outside the direct field of operations, whose care may safely be provided by the local EMS Operational Program.
   c) These protocols supplement the current version of *Maryland Medical Protocols for Emergency Medical Services Providers* and, at the Tactical Physician's discretion, may incorporate other EMS protocol components such as: Wilderness, Interfacility, Pilot/Optional, and WMD sections.
   d) The Tactical Emergency Medical Services Protocols shall be used only by Tactical EMS providers sponsored by a law enforcement agency and operating under law enforcement command.
   e) To be approved, there must be a written, integrated relationship between the EMS Operational Program and the TEMS program, with both the EMS Operational Program Medical Director and the TEMS Medical Director having signed-off on the agreement.
   f) Tactical EMS Providers at the BLS or ALS levels may administer the medications and perform the procedures listed in these protocols only after receiving specific training on their use and only under the medical direction of a Tactical Physician.
   g) The primary function of the Tactical EMS Provider is to support law enforcement or homeland security operations by facilitating the health and safety of critical public safety personnel inside the perimeter of high-risk, large-scale, and extended operations.
   h) Once the patient is removed from the law enforcement perimeter of operation, the TEMS protocol will end, the *Maryland Medical Protocols for EMS Providers* will be implemented, and the transition of care will be made to the local EMS agency.
   i) An exception may be made when the Tactical EMS Provider's specialized training is needed to manage a specific illness/injury.
      (1) If the Tactical EMS Provider's specialized training is needed to manage the patient's illness/injury, then the highest-trained Tactical EMS Provider shall ride to the hospital with the patient to maintain medications that are not allowed by *Maryland Medical Protocols for EMS Providers*.
      (2) If, during transport, Tactical EMS personnel encounter a significant conflict between TEMS protocols and those of the transporting EMS agency, they should attempt to contact their own Tactical Physician and request a dual consult with the local Base Station Physician.
      (3) If they cannot reach a Tactical Physician, they should contact the local EMS Base Station for on-line medical consultation.

2. Definition of Tactical Environment
   a) Any law enforcement or homeland security operation where deployed personnel are in a large-scale operation or where the risk of injury is sufficiently high as to warrant the presence of on-scene emergency medical services providers.
   b) Types of operations may include: high-risk warrant service, hostage-barricade situations, emergency ordinance disposal, executive protection details, civil demonstration or protest, dynamic training operations, aquatic operations, high-angle, search and rescue missions, and acts of terrorism.
   c) Any prolonged law enforcement deployment, where performance decrement or environmental issues may arise and the safety of the public and deployed law enforcement personnel would benefit from the presence of a Tactical EMS Provider to monitor these circumstances.

3. Demonstration of Need
   a) Jurisdictions that seek approval for a Tactical EMS Program shall submit a demonstration-of-need letter outlining the necessity for the program.
   b) The letter shall be submitted to the Executive Director of the Maryland Institute for Emergency Medical Services Systems for approval and include the following:
      (1) Name of organization and scope of the Tactical EMS Team
      (2) Name and qualifications of the Tactical Medical Director and other Tactical Physicians
      (3) Name and qualifications of the Tactical EMS Coordinator and other Tactical EMS Providers

4. Sponsoring Law Enforcement Agency Requirements
   a) Sponsoring Law Enforcement Agencies shall be responsible for:
      (1) Completing background investigations appropriate for medical providers working in and around law enforcement operations
      (2) Providing appropriate personal protective equipment, to accommodate conditions that the team may reasonably encounter, to the Tactical EMS Providers and Tactical Physician(s) and ensure adequate training in the equipment's use
      (3) Providing written documentation to MIEMSS that addresses the medical liability and personal injury considerations of the Tactical EMS Providers/ Physician(s)

5. Tactical EMS Provider/Tactical Physician Minimum Training Requirements:
   a) The Tactical EMS Provider shall be a Maryland licensed/certified BLS or ALS provider and have successfully completed a nationally recognized (CONTOMS/ IFHP (Counter-Narcotic Tactical Operation Medical Support/Integrated Force Health Provider Program or equivalent) Tactical Provider course that includes instruction and training in:

(1) Team wellness and health management, including preventive medicine
(2) Providing care under fire/basic weapons safety
(3) Officer rescue
(4) Planning medical operations and medical intelligence
(5) Response to the Active Shooter
(6) Orientation to specialized medical gear personal protective equipment used in tactical medical operations
(7) Remote medical assessment ("medicine across the barricade")
(8) Response and management of WMD events, including field-expedient decontamination ("hasty decon") procedures
(9) Operational security, light and sound discipline, helicopter operations, pyrotechnic and other chemical agents, as utilized by law enforcement teams
(10) Less-than-lethal weaponry, the injuries they may cause, and any specific interventions required

b) The Tactical EMS Provider shall have responsibilities for part or all of these protocols, as summarized as follows, based upon either BLS (EMT) or ALS (CRT-I or Paramedic) level certification.

INTERVENTION	BLS	ALS	MAIS
Provision of access to medications: Ibuprofen, Naproxen, Fexofenadine, Fexofenadine+Pseudoephedrine, Pseudoephedrine, Oxymetazoline nasal spray, Mylanta, Cimetidine, Omeprazole, Clove oil, Acetaminophen, Caffeine	✔	✔	✔
Administration of medications in Protocol, not listed above		✔	✔
Cyanoacrylate tissue adhesive (Dermabond)	✔	✔	✔
Field expedient wound closure (Stapling)	✔	✔	
Conducted Electrical Weapon (CEW) dart removal	✔	✔	

c) The Tactical EMS Provider shall document each patient contact utilizing MAIS, EMAIS, or eMEDS®. The documentation must be consistent with current MIEMSS regulations for interventions, as summarized in the above table. All TEMS implementations will be reviewed.
d) The Tactical Physician shall possess an unrestricted Maryland License (preferred Emergency Medicine, General/Orthopedic/Trauma Surgery, or Critical Care), have experience in on-line medical direction, and have

completed a nationally recognized (CONTOMS/IFHP or equivalent) tactical medical director's course that includes instruction and training in the following topics:
(1) History of/need for Tactical EMS provision
(2) Administrative/Command concerns and responsibilities
(3) Care under fire
(4) Special equipment/hazards in the Tactical environment
(5) Forensic examination
(6) Medicine "across the barricade"
(7) Medical threat assessment

6. Quality Assurance
    a) Individual Tactical EMS providers must be approved for TEMS Pilot Participation by the TEMS Medical Director.
    Successful completion of small group training of the following:
    (1) Classroom lecture
    (2) Mannequin instruction
    (3) Must demonstrate proficiency through skills testing and written test
    b) Ongoing Demonstration of Proficiency
    A verification of all TEMS skills and review of TEMS principles of safety will be performed on an annual basis by the Medical Director, or the provider may document utilization of skills in the field.
    c) Review of Each Call
    (1) Mechanism for follow-up of each call will be in accordance with the Quality Review Procedure for Pilot Programs (formerly "Class B" Additional Procedure Algorithm) of the Maryland Medical Protocols, with the addition of (2) and (3) below:
    (2) Upon completion of the Tactical Incident, notification of any implementation of the TEMS protocol will be made to your jurisdictional TEMS supervisor.
    (3) Medical Director will evaluate all TEMS interventions within 48 hours of resolution of the Tactical Incident.
    d) The TEMS program will maintain a detailed TEMS database and will provide an annual report to the State EMS Medical Director.

B. GENERAL PROTOCOLS

1. Medical Direction
    a) Tactical EMS Providers may provide medical care using Tactical Medical Protocols only under the medical direction of a Tactical Physician.
    b) Immediately available telephone or radio contact during an operation shall be considered a reasonable substitute for in-person supervision of the Tactical EMS Providers.
    c) In the absence of medical direction by a Tactical Physician, jurisdictional trained and designated Tactical EMS Providers should defer to their usual EMS protocols.

2. Operational Command
   Operational command within a law enforcement perimeter of operation lies with the law enforcement commander. At times, the safety and success of the law enforcement objectives may override the need to care for casualties. The law enforcement commander is responsible for the care and movement of casualties within a law enforcement operation.

C. SPECIAL CONSIDERATION FOR TACTICAL EMS

1. The execution of some law enforcement operations may require that minor illness or injury in essential public safety personnel be treated and, to the extent that it is medically safe to do so, that those treated personnel return to duty. Fitness for duty of public safety personnel with minor injuries or illnesses shall be determined by the law enforcement commander in consultation with a Tactical Physician.

2. Prescription and Over the Counter (OTC) medications may be used for the treatment (or "symptomatic relief") of constitutional symptoms as required to promote the health, safety, and functionality of persons necessary to the operation. The Tactical EMS Provider(s) under the Tactical Physician will know the indications/contraindications for the medications available to him/her (as will be delineated under "Additional Medications for Tactical EMS," to follow). At the BLS level, medications will be made available to those persons under the Tactical Provider's care to self-select and self-medicate at the individual requesting person's own discretion regarding appropriateness of use.

3. The Tactical EMS Provider may provide care to all persons associated with the operation, and shall be responsible for initial access, assessment, and stabilization (within the scope of *The Maryland Medical Protocols for EMS Providers*) of those victims, bystanders, and suspects within the "warm" or "hot" zones until they may be extracted to local EMS providers. The Tactical EMS provider is not directly responsible for any person(s) outside the direct field of operations, whose care may safely be provided by the local EMS Operational Program.

D. SPECIFIC PROCEDURES

1. Cyanoacrylate tissue adhesive (Dermabond)
   a) Purpose: To limit blood loss, pain, and risk of secondary contamination/injury to a minor open wound
   b) Indications
      (1) Clean wounds
      (2) Minor bleeding wounds difficult to control with other interventions
      (3) Wounds in personnel who must remain operational
   c) Contraindications
      (1) Grossly contaminated wounds

(2) Greater than two hours since infliction of wound
(3) Macerated/crushed surrounding tissue
(4) Wounds near the eyes

d) Potential adverse effects/Complications
(1) This is not intended to constitute definitive wound closure—however, if properly cleaned prior to procedure, may be reviewed by physician without further intervention.
(2) Transient local pain at application site may be reported.

e) Precautions
(1) Ask regarding previous reaction/exposure to agent.
(2) Advise patient of requirement for further evaluation by physician.

2. "Field expedient" wound closure (stapling)
a) Purpose: To limit blood loss and risk of secondary contamination injury to an open wound.
b) Indications
(1) Clean wounds
(2) Delay in transportation to definitive care will be or is anticipated to be several hours
(3) Bleeding wounds difficult to control with other interventions
(4) Wounds in personnel who must remain operational

c) Contraindications
(1) Grossly contaminated wounds
(2) Greater than six hours since infliction of wound
(3) Macerated/crushed surrounding tissue
(4) Situations with less than two hours anticipated time to transportation to definitive care
(5) Facial wounds

d) Potential adverse effects/Complications
(1) This is **not** intended to constitute definitive wound closure—this will minimize the risk for increased infection and increased foreign body retention.

e) Precautions
(1) Ask regarding local anesthetic allergies.
(2) Advise patient of requirement for further evaluation by physician.

3. Impaled conducted electrical weapon dart removal
a) ANY conducted electrical weapon dart impalement to the head, neck, hands, feet, or genitalia must be stabilized in place and evaluated by a physician.
b) In order to safely transport the patient, attempted extraction may be made one time by a Tactical EMS Provider as long as the dart is not lodged in a location listed in a) above and is not fully embedded up to the hub in tissue.
c) All patients receiving conducted electrical weapon intervention will need to be transported to the Emergency Department for assessment.

SUPPLEMENTAL FORMULARY FOR TACTICAL EMS

Tactical EMS providers may administer the following medications to support and maintain Tactical personnel in the operation environment.

1. Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)
   a) Ibuprofen (Motrin/Advil)
   b) Naproxen (Aleve/Naprosyn)
   c) Ketorolac (Toradol) (injectable)
2. Antihistamines/Decongestants
   a) Fexofenadine (Allegra)
   b) Fexofenadine + Pseudoephedrine (Allegra-D)
   c) Pseudoephedrine (Sudafed)
   d) Oxymetazoline nasal spray (Afrin)
3. Gastrointestinal
   a) Liquid Antacid (Mylanta or other equivalent liquid antacid)
   b) Cimetidine (Tagamet—or other equivalent H2 blocker)
   c) Omeprazole (Prilosec—or other equivalent Proton Pump Inhibitor)
   d) Loperamide (Immodium)
   e) Metoclopramide (Reglan) (injectable)
   f) Dimenhydrinate (Dramamine), Meclizine (Antivert) (for motion sickness)
   g) 5-HT3 Antagonist (Zofran/Ondansetron, Kytril/Granisetron, Anzemet/Dolasetron—or other equivalent 5-HT3 antagonist) (become non-operational member if given)
4. Opthalmologicals
   a) Proparacaine or Tetracaine (Alcaine) ophthetic
   b) Fluorescein stain (and Blue light)
5. Antimicrobials (agent specific training)
   a) Betalactames or Cefazolin (Ancef) (IV) (for trauma applications when transport delayed)
   b) Quinolones (Following exposure or prophylaxis)
6. Steroids
   a) Prednisone (PO or IV)
   b) Dexamethasone (Decadron) (PO or IV)
7. Clove oil (for topical dental analgesia)
8. Analgesics/Anesthetics
   a) Tramadol (Ultram) (PO)
   b) Acetaminophen (Tylenol)
   c) Lidocaine (IM/SQ for stapling as temporizing measure only, alternate dosing regimen)
9. Nitroglycerin (alternate dosing regimen – just taking out consultating requirement (not for hypertension))
10. Performance aids
    a) Zaleplon (Sonata) (sleeper)
    b) Modafinil (Provigil)

c) Caffeine (No-Doz)

11. Volume Expanders
    a) Hydroxyethyl starch (Hespan)
    b) 3% NaCl
12. Wound Management
    a) Cyanoacrylate tissue adhesive (Dermabond)
    b) Powdered hemostatic agent or impregnated dressing (Quik-Clot/equivalent)

OPERATIONAL: THE MEDICATION MAY BE GIVEN TO A LAW ENFORCEMENT MEMBER WHO MAY CONTINUE TO PERFORM HIS/HER ASSIGNED DUTIES.

NON-OPERATIONAL: ONCE THE MEDICATION HAS BEEN ADMINISTERED, THE LAW ENFORCEMENT MEMBER IS REMOVED FROM HIS/HER ASSIGNED DUTIES SINCE THE MEDICATION OR THE ASSOCIATED MEDICAL/TRAUMATIC COMPLAINT MAY IMPAIR HIS/HER ABILITY TO PERFORM CRITICAL LAW ENFORCEMENT TASKS AND DUTIES.

1. Non-Steroidal Anti-Inflammatory Drugs

IBUPROFEN (Motrin/Advil)

AVAILABILITY……Tablet: 200mg (OTC) and 100mg/5mL suspension
ACTION……..Non-steroidal anti-inflammatory pain medication
INDICATIONS……....Mild to moderate pain
CONTRAINDICATIONS……..……Known hypersensitivity; renal insufficiency (not failure); PUD/GERD/GI bleed history
PRECAUTIONS…….Do not use with other NSAIDs; caution with concomitant steroid use. aL CB (D in 3rd trimester) [a]+
OPERATIONAL STATUS?……..……Operational
SIDE EFFECTS…….GI upset/nausea; GI bleeding risk
INTERACTIONS…….…...
DOSAGE……400–600mg /4 to 6 hours or 600–800mg / 6 to 8 hours

NAPROXEN (Aleve/Naprosyn)

AVAILABILITY……Tablet: 220 / 375 / 500mg
ACTION…….…. Non-steroidal anti-inflammatory pain medication
INDICATIONS…….…...Mild to moderate pain
CONTRAINDICATIONS……..……Known hypersensitivity; renal insufficiency (not failure); PUD/GERD/GI bleed history
PRECAUTIONS…….Do not use with other NSAIDs; caution with concomitant steroid use. aL CB (D in 3rd trimester) [a]+
OPERATIONAL STATUS?……..……Operational
SIDE EFFECTS…….GI upset/nausea; GI bleeding risk
INTERACTIONS…….…...
DOSAGE……..…220–500mg / 12 hours

KETOROLAC (Toradol) (Injectable)

AVAILABILITY……30mg/mL IV/IM
ACTION……..Non-steroidal anti-inflammatory pain medication
INDICATIONS……Mild to moderate pain
CONTRAINDICATIONS……Known hypersensitivity; renal insufficiency (not failure); PUD/GERD/GI bleed history
PRECAUTIONS……Do not use with other NSAIDs; caution with concomitant steroid use. aPlasma CC (D 3rd trimester) [a]?
OPERATIONAL STATUS?……Operational
SIDE EFFECTS……GI upset/nausea; GI bleeding risk
INTERACTIONS……
DOSAGE……..30mg IM/IV every 6 to 8 hours

2. Antihistamines/Decongestants

FEXOFENADINE (Allegra)

AVAILABILITY……Tablet: 60mg
ACTION……..Non-sedating antihistamine
INDICATIONS……...Allergic symptoms
CONTRAINDICATIONS……Known hypersensitivity
PRECAUTIONS……..Hypertension history; aLK CC [a]+
OPERATIONAL STATUS?……Operational
SIDE EFFECTS…….
INTERACTIONS……
DOSAGE……..60mg / once or twice daily

FEXOFENADINE & PSEUDOEPHEDRINE (Allegra-D)

AVAILABILITY……Tablet
ACTION……..Non-sedating antihistamine with decongestant
INDICATIONS……...Allergy symptoms with nasal congestion/symptoms
CONTRAINDICATIONS……Known hypersensitivity
PRECAUTIONS……..Hypertension history; aL CC [a]+ (C–psdphd but used)
OPERATIONAL STATUS?……Operational
SIDE EFFECTS……..
INTERACTIONS……
DOSAGE……One tablet once or twice daily

PSEUDOEPHEDRINE (Sudafed)

AVAILABILITY……Tablet: 30mg; 60mg (OTC)
ACTION……..Decongestant
INDICATIONS……Nasal congestion; rhinorrhea
CONTRAINDICATIONS……Known hypersensitivity; hypertension
PRECAUTIONS……..
OPERATIONAL STATUS?……Operational
SIDE EFFECTS……Insomnia
INTERACTIONS……
DOSAGE……..30mg to 60mg every 4 to 6 hours, as needed

OXYMETAZOLINE (Afrin)

AVAILABILITY……Nasal spray 0.05%
ACTION……..Nasal vasoconstriction; decongestant
INDICATIONS……..……Rhinorrhea; sinus congestion and pain
CONTRAINDICATIONS……..……..Known hypersensitivity
PRECAUTIONS……..…..aL CC [a]?
OPERATIONAL STATUS?……..…… Operational
SIDE EFFECTS…….Nose bleed (minor) possible, often used in treatment of nose bleed
INTERACTIONS……..……
DOSAGE……..…Two sprays per nostril two to three times per day

3. Gastrointestinal

LIQUID ANTACID (Mylanta/Maalox)

AVAILABILITY……Liquid (OTC)
ACTION……..…Antacid
INDICATIONS ……..…GI upset; GERD; PUD; Gastritis; Esophagitis
CONTRAINDICATIONS……..……Known hypersensitivity
PRECAUTIONS……..…Some medications require acidic pH and should not be taken at same time with this medication: aK C+ (? 1st trimester) [a]?
OPERATIONAL STATUS?……..…… Operational
SIDE EFFECTS……..
INTERACTIONS ……..…Loose stools possible
DOSAGE……....15–45mL every 4 to 8 hours

CIMETIDINE (Tagamet)

AVAILABILITY ……200, 300, 400mg tablet; 300mg IV/IM
ACTION……..…Proton pump inhibitor
INDICATIONS ……..…PUD; GERD; Esophagitis; Gastritis
CONTRAINDICATIONS……..……Known hypersensitivity; concomitant H-2 blocker use
PRECAUTIONS……..…..aL CC [a]?
OPERATIONAL STATUS?……..…… Operational
SIDE EFFECTS……..
INTERACTIONS ……..……
DOSAGE……....300mg IV/IM/PO every 6 to 8 hours; 400mg twice daily

OMEPRAZOLE (Prilosec)

AVAILABILITY ……Capsule: 20mg, 40mg (OTC)
ACTION……..…Proton pump inhibitor
INDICATIONS ……..…PUD; GERD; Esophagitis; Gastritis
CONTRAINDICATIONS……..……Known hypersensitivity; concomitant H-2 blocker use
PRECAUTIONS……..…..aL CC [a]?
OPERATIONAL STATUS?……..……Operational
SIDE EFFECTS……..
INTERACTIONS……..……
DOSAGE……..……40mg once daily

LOPERAMIDE (Immodium)

AVAILABILITY……Tablet: 2mg (OTC) and 1mg/5mL suspension
ACTION……..Anti-diarrheal
INDICATIONS……Diarrhea
CONTRAINDICATIONS……Known hypersensitivity; hypertension; bloody diarrhea
PRECAUTIONS……..aL CB [a]+
OPERATIONAL STATUS?……Operational
SIDE EFFECTS……ENT dryness
INTERACTIONS……
DOSAGE……4mg first dose; 2mg each subsequent episode until stool formed; maximum 16mg per day

METOCLOPRAMIDE (Reglan) (Injectable)

AVAILABILITY……IM/IV injectable; 10mg
ACTION…… Anti-emetic; promotes GI motility
INDICATIONS ……Nausea/vomiting
CONTRAINDICATIONS……Known hypersensitivity
PRECAUTIONS…….. Dystonic reaction risk (treat with Diphenhydramine); may see sedation; aK CB [a]?
OPERATIONAL STATUS?……NON-OPERATIONAL
SIDE EFFECTS……Sedation; dystonia
INTERACTIONS……..
DOSAGE……...10–20mg IM/IV/PO every 4 hours, as needed; per MD/DO

DIMENHYDRINATE (Dramamine)

AVAILABILITY……IM/IV injectable; 50mg tablet
ACTION ……Anti-emetic; anti-motion sickness
INDICATIONS ……Nausea/vomiting
CONTRAINDICATIONS……Known hypersensitivity
PRECAUTIONS……..May see sedation; aK CB [a]?
OPERATIONAL STATUS?……NON-OPERATIONAL
SIDE EFFECTS……Sedation
INTERACTIONS……
DOSAGE……50–100mg IM/IV/PO every 4 hours, as needed; per MD/DO

MECLIZINE (Antivert)

AVAILABILITY……25–50mg tablet
ACTION……..Anti-emetic; anti-motion sickness
INDICATIONS……...Nausea/vomiting
CONTRAINDICATIONS…….. Known hypersensitivity
PRECAUTIONS……..May see sedation; aK CB [a]?
OPERATIONAL STATUS?……NON-OPERATIONAL
SIDE EFFECTS……Sedation
INTERACTIONS……
DOSAGE……...25–50mg PO every 4 hours, as needed; per MD/DO

ONDANSETRON / 5-HT3 Antagonist (Zofran)

AVAILABILITY……IM/IV injectable; tablets
ACTION……Anti-emetic; anti-motion sickness
INDICATIONS……Nausea/vomiting
CONTRAINDICATIONS……Known hypersensitivity
PRECAUTIONS……aK CB [a]?
OPERATIONAL STATUS?……NON-OPERATIONAL
SIDE EFFECTS…….
INTERACTIONS……
DOSAGE……Per MD/DO

4. Opthalmologicals

PROPARACAINE /Tetracaine (Alcaine)

AVAILABILITY ……Ocular anesthetic solution
ACTION……..Topical anesthetic
INDICATIONS……To facilitate eye exam; relieve eye pain; per MD/DO
CONTRAINDICATIONS……Known hypersensitivity
PRECAUTIONS……Ensure eye protection from foreign objects after exam
OPERATIONAL STATUS?……Operational
SIDE EFFECTS…….
INTERACTIONS……Eye pain
DOSAGE……1–2 drops per eye; per MD/DO

FLUORESCEIN (and Blue light)

AVAILABILITY ……Single application strips
ACTION……Dye to facilitate eye exam
INDICATIONS……Suspected eye injury (foreign body / corneal abrasion)
CONTRAINDICATIONS……Known hypersensitivity
PRECAUTIONS……N/A
OPERATIONAL STATUS?……Operational
SIDE EFFECTS……N/A
INTERACTIONS……N/A
DOSAGE……One drop per eye

5. Antimicrobials (agent specific training)

Quinolones (Following exposure or prophylaxis)

CIPROFLOXACIN (Cipro)

AVAILABILITY ……Tablet: 250/500/750mg; 400mg IVPB;
250 or 500/5 susp
ACTION……2nd generation Quinolone antimicrobial agent
INDICATIONS……Per MD/DO—infectious exposures
CONTRAINDICATIONS……Known hypersensitivity
PRECAUTIONS……aLK CC (teratogenicity unlikely) [a]?+
OPERATIONAL STATUS?……Operational
SIDE EFFECTS……GI upset; nausea/vomiting; diarrhea; yeast infection
INTERACTIONS……
DOSAGE……Per MD/DO

Betalactam e.g.: Aminocillins, Cephalosporins, Carbapenems, Monobactams

CEFAZOLIN (Ancef)

AVAILABILITY……0.5–1.5 gram IM/IV
ACTION……..…1st generation Cephalosporin antimicrobial agent
INDICATIONS ……..…Per MD/DO—infectious exposures / trauma
CONTRAINDICATIONS……..……Known hypersensitivity to PCN or Cephalosporins
PRECAUTIONS……...….aK CB [a]+
OPERATIONAL STATUS?……..……NON-OPERATIONAL
SIDE EFFECTS…… GI upset; nausea/vomiting; diarrhea; yeast infection
INTERACTIONS……..……
DOSAGE……..…Per MD/DO

6. Steroids

PREDNISONE

AVAILABILITY……PO or IV; Tablet: 1/5/10/20/50mg and 5mg/mL or 5mg/5mL sol.
ACTION……..….Corticosteroid; anti-inflammatory
INDICATIONS ……..…Allergic reaction; auto-immune condition; per MD/DO
CONTRAINDICATIONS……..…… Known hypersensitivity
PRECAUTIONS……...….PUD/GERD/GI bleed history; aL CC [a]+
OPERATIONAL STATUS?……..……Operational
SIDE EFFECTS……..GI upset/nausea
INTERACTIONS……..……
DOSAGE ……..40mg to 60mg once daily; per MD/DO

DEXAMETHASONE (Decadron)

AVAILABILITY ……PO or IV/IM; tablets
ACTION……..….Corticosteroid; anti-inflammatory
INDICATIONS ……..…Allergic reaction; auto-immune condition; per MD/DO
CONTRAINDICATIONS……..……Known hypersensitivity
PRECAUTIONS……...….PUD/GERD/GI bleed history; aL CC [a]-
OPERATIONAL STATUS?……..……Operational
SIDE EFFECTS……..GI upset/nausea
INTERACTIONS……..……
DOSAGE……..…10mg once daily; per MD/DO

7. Clove Oil

CLOVE OIL

AVAILABILITY……Topical Liquid (OTC)
ACTION……..….Topical (dental) anesthetic
INDICATIONS……..…..Dental pain/injury
CONTRAINDICATIONS……..……Known hypersensitivity
PRECAUTIONS……...….Penetrating/open intra-oral wounds
OPERATIONAL STATUS?……..……Operational

SIDE EFFECTS ……
INTERACTIONS……
DOSAGE……..…Topical application to site of dental pain

8.Analgesics

TRAMADOL (Ultram)

AVAILABILITY ……PO Tablet: 50 and 100mg
ACTION……..….Pain medication
INDICATIONS…….…...Moderate to moderately severe pain
CONTRAINDICATIONS……..…….Known hypersensitivity; seizure disorder; SSRI / TCA / MAOI use; renal or hepatic insufficiency (adjust dose)
PRECAUTIONS……..…..Caution with concomitant opioid use. aLiver CC [a]?
OPERATIONAL STATUS?……..……Operational (if no side effects reported)
SIDE EFFECTS…….Potentially dizziness/nausea
INTERACTIONS……..…..Antidepressants; antipsychotics; Warfarin; Digoxin; Tegretol; Quinidine
DOSAGE……50 to 100mg every 4 to 6 hours; 400mg/day maximum

ACETAMINOPHEN (Tylenol)

AVAILABILITY ……Tablet: 325 and 500mg
ACTION……..….Pain medication
INDICATIONS…….…...Mild to moderate pain
CONTRAINDICATIONS……..…….Known hypersensitivity; liver disease; PUD/GERD/GI bleed history
PRECAUTIONS……..…..aL CB [a]+
OPERATIONAL STATUS?……Operational
SIDE EFFECTS…….GI upset
INTERACTIONS ……
DOSAGE……..…650–1000mg / 4 to 6 hours

LIDOCAINE (For stapling as temporizing measure only)

AVAILABILITY ……IM or SQ Injectable 1% solution
ACTION……..….Local anesthetic
INDICATIONS…….…..Infiltration anesthesia
CONTRAINDICATIONS……..……Known hypersensitivity
PRECAUTIONS……..…..a C [a]
OPERATIONAL STATUS?……..……Operational
SIDE EFFECTS…….
INTERACTIONS…….…..
DOSAGE……...5mg/kg maximum

9. Nitroglycerin

NITROGLYCERIN

AVAILABILITY ……………………… 1:150 grain (=0.4mg) sublingual tablet
ACTION……………………………… Vasodilator; antihypertensive
INDICATIONS ……………………… Chest pain suspicious for cardiac origin; pulmonary edema
CONTRAINDICATIONS……………… Known hypersensitivity; hypotension (SBP < 90 mmHg); Pulmonary Artery Hypertension (e.g., Adcirca) or erectile dysfunction drugs (e.g., Viagra) used within 48 hours
PRECAUTIONS……………………… Obtain IV access prior to administration, if possible; aL CC ª? (mother's needs paramount)
OPERATIONAL STATUS?…………… NON-OPERATIONAL
SIDE EFFECTS……………………… Headache (transient); hypotension
INTERACTIONS……………………… Erectile dysfunction drugs (e.g., Sildenafil [Viagra]) may cause lethal hypotension
DOSAGE…………………………… 0.4mg sublingual every 3 to 5 minutes for chest pain until improvement of pain or desired BP; discuss utilization of Morphine for chest pain with MD/DO versus continued NTG and frequency

10. Performance Affecting

ZALEPLON (Sonata) (sleeper)

AVAILABILITY ……………………… Capsule: 10mg
ACTION……………………………… Anxiolytic/hypnotic; shortest t-1/2 of agents available
INDICATIONS ……………………… Facilitate rest during non-operational periods in prolonged deployment/transportation; minimum 4-hour block required for usage (6 hours preferred)
CONTRAINDICATIONS……………… Known hypersensitivity; insecure location; lack of assured 4-hour non-operational period
PRECAUTIONS……………………… May not drive/operate machinery/use weapons minimum 4 hours post-administration aL CC ª-
OPERATIONAL STATUS?…………… NON-OPERATIONAL (x 4 hours after administration)
SIDE EFFECTS……………………… Sedation
INTERACTIONS……………………… Alcohol/other sedatives potentiate effect
DOSAGE…………………………… 10–20mg with assured 4-hour non-operational block, as approved by MD/DO

MODAFINIL (Provigil)

AVAILABILITY………………………… 200mg Tablet
ACTION……………………………… Enhances alertness/concentration
INDICATIONS ……………………… To facilitate functioning with limited rest periods
CONTRAINDICATIONS……………… Known hypersensitivity
PRECAUTIONS……………………… aL CC ª?
OPERATIONAL STATUS?…………… Operational
SIDE EFFECTS……………………… Insomnia, mild blood pressure elevation
INTERACTIONS………………………
DOSAGE…………………………… 200mg once daily

CAFFEINE (No-Doz)

AVAILABILITY……200mg Tablet
ACTION……Enhances alertness
INDICATIONS……...Suspected caffeine withdrawal headache; to facilitate functioning with limited rest periods
CONTRAINDICATIONS……Known hypersensitivity
PRECAUTIONS……aL CB ª?
OPERATIONAL STATUS?……Operational
SIDE EFFECTS……Insomnia
INTERACTIONS……...
DOSAGE……...100–200mg / 3 to 4 hours as needed

11. Volume Expanders

HYDROXYETHYL STARCH (Hespan)

AVAILABILITY ……500 & 1000mL IV bags 6% solution
ACTION……Volume expander
INDICATIONS……..Hemorrhagic shock / hypovolemia
CONTRAINDICATIONS……Known hypersensitivity
PRECAUTIONS……Attempt to maintain adequate urine output; aK CC ª?
OPERATIONAL STATUS?……NON-OPERATIONAL
SIDE EFFECTS…….
INTERACTIONS……...
DOSAGE……...500–1000mL 6% solution IV

3% NaCl (Hypertonic Saline)

AVAILABILITY ……250 & 500mL IV bags
ACTION……Volume expander
INDICATIONS……..Hemorrhagic shock / hypovolemia
CONTRAINDICATIONS……Known hypernatremia
PRECAUTIONS……Attempt to maintain adequate urine output; aK CC ª?
OPERATIONAL STATUS?……NON-OPERATIONAL
SIDE EFFECTS…….
INTERACTIONS……...
DOSAGE……100–500mL IV

12. Wound Management

Cyanoacrylate Tissue Adhesive (Dermabond)

AVAILABILITY ……Single use ampoules
ACTION……Tissue adhesive
INDICATIONS……..Minor trauma
CONTRAINDICATIONS……Known hypersensitivity
PRECAUTIONS……Avoid near eyes
OPERATIONAL STATUS? ……Operational
SIDE EFFECTS……Transient local discomfort
INTERACTIONS……..N/A
DOSAGE ……As required for wound closure, 2–4 layered applications

Powdered Hemostatic Agent or Impregnated Dressing (Quik-Clot / equivalent)

AVAILABILITY ……Single use packets
ACTION……..….Blood clotting aid
INDICATIONS ……..…..Hemorrhage
CONTRAINDICATIONS……..……Known hypersensitivity
PRECAUTIONS……...….Standard/Universal precautions for wound care
OPERATIONAL STATUS?……..…...NON-OPERATIONAL
SIDE EFFECTS……N/A
INTERACTIONS ……..…..N/A
DOSAGE……Single or multiple packet(s) applied to bleeding wound

U. Transport of ACUTE Ventilated Interfacility Patients

1. PURPOSE

To define the indications for use of a mechanical ventilator by a Paramedic for the acute ventilated patient

a) The level of care required for the interfacility transport of the **"acute ventilated interfacility patient"** is beyond the routine training curriculum for a paramedic; this type of patient must be transported by a higher level health care provider who is credentialed, educated, and competent in dealing with the ventilator and the ventilated patient. **or**

b) When a critical interfacility transfer is needed and a credentialed, educated, and competent higher level health care provider is **genuinely unavailable**, a credentialed, educated, and competent paramedic (through a MIEMSS-approved training program) may attend the ventilator and the ventilated patient with the addition of a second ALS provider or advanced airway trained health care provider when determined appropriate by the sending/referring physician.

2. INDICATIONS

ACUTE VENTILATED PATIENTS for the interfacility transport are defined as:

a) Intubated **or**

b) Tracheostomy patient when the reason for transport is:
   (1) For increased level of care from a hospital, **or**
   (2) To continue the same level of care in an acute care setting, **or**
   (3) The new tracheostomy patient, within the last 7 days

3. VENTILATOR STANDARDS

a) ACUTE VENTILATOR DEVICE STANDARDS

(1) The ventilator that the service is to use for the acute ventilated patient should be able to match the existing ventilator settings. The following minimum device features (including circuit) must be present for this category of patient:
   (a) Set rate of ventilations
   (b) Adjust delivered Tidal Volume
   (c) Adjustable Pressure Support Settings
   (d) Adjustable Inspiratory and Expiratory ratios (I:E ratio)
   (e) Positive End-Expiratory Pressure (PEEP)
   (f) Peak airway pressure gauge
   (g) Continuous Expiratory Volume measurement (Required)
   (h) Modes
      (i) Assist Control (AC)
      (ii) Synchronized Intermittent Mandatory Ventilation (SIMV)
      (iii) Controlled Mechanical Ventilation (CMV)

(i) Alarms
(i) Peak airway pressure
(ii) Disconnect

(2) Strongly recommended options are:
Blend percentage oxygen

(3) Must perform periodic maintenance (including calibration) meeting the manufacturer's specifications

b) ACUTE VENTILATOR USAGE

(1) A ventilator maintained by the ambulance service or health care facility must be specifically designed for transport use and capable of providing the required settings.

(2) Continuous pulse oximeter and continuous capnography monitoring equipment must be used on all acute ventilated interfacility patients.

(3) Tracheal suctioning kits/catheters must be available.

(4) A tracheostomy replacement tube the same size and one size smaller shall be transported with the patient ventilated through a tracheostomy. (The endotracheal tube equivalent may be substituted.)

4. POTENTIAL ADVERSE EFFECTS

a) Pneumothorax
b) Barotrauma
c) Hypoxemia
d) Hyperventilation
e) Hypoventilation
f) Extubation of endotracheal or tracheostomy tube

5. PRECAUTIONS

If any problems arise with mechanical ventilation, the patient shall be disconnected from the ventilator and manually ventilated.

6. OPTIONAL PROGRAM REQUIREMENTS

a) A special "Ventilated Patient" report form will be completed for each mechanically ventilated patient and will include vital signs, pulse oximeter readings, and lung sounds (recorded a minimum of every 5 minutes), and documentation of any of the following;
(1) cardiac arrest during transport,
(2) dislodgment of tracheostomy tube or endotracheal tube,
(3) equipment failure (with FDA report),
(4) discontinuance of ventilator and conversion to BVM,
(5) deterioration of patient, or
(6) the upgrading of patient care to critical care.

b) The Optional Program will require a training program which meets or exceeds the "Acute Ventilated Interfacility Patient" curriculum and be approved by the operational program medical director with skills validation. A copy of the training program shall be reviewed and be approved or disapproved by MIEMSS.

V. Optional Program Transport of CHRONIC and SCENE Ventilated Patients

1. PURPOSE

To define the indications for use of a mechanical ventilator:

a) Chronic ventilated patient
The level of care required for the interfacility transport of **"chronic ventilated patients"** is within the scope of practice of a paramedic who has been credentialed, is competent, and received adequate training specific to the patient's condition and the equipment necessary to provide care. Exception: A CRT-I or EMT may transport a chronically ventilated patient who is going for routine medical care and has in attendance a patient provided attendant who can manage the patient's own ventilator.

b) Patient ventilated at the scene of an emergency
The level of care required for the transport of a ventilated patient from the "**scene of an emergency**" is within the scope of practice of a paramedic who has been credentialed, is competent, and received adequate training specific to the patient's condition and the equipment to provide care.

2. INDICATIONS

a) CHRONIC VENTILATED PATIENTS are defined as:

(1) Have an established tracheostomy and ventilator settings that have no changes within 24 hours or changes reflecting improvement in the patient **(NEW '15) and**

(2) Point of origin or destination is:
- (a) Long-term care facility,
- (b) Home,
- (c) Outpatient setting,
- (d) Hospital; **and**

(3) Reason for transport is:
- (a) Return from or transport to a scheduled appointment, **or**
- (b) For extended care, **or**
- (c) For emergency treatment (but not complication of airway or respiratory distress); **and**

(4) Ventilator settings are:
- (a) Positive End-Expiratory Pressure (PEEP) ≤ 10
- (b) Peak pressures ≤ 30, and
- (c) No changes in the ventilator settings are required during the transport.

b) SCENE OF AN EMERGENCY – Out-of-Hospital

(1) Point of origin is at the scene of an out-of-hospital emergency

(2) A Paramedic may utilize mechanical ventilation once the patient is intubated.

(3) Reason for mechanical ventilation is respiratory arrest or when the patient is intubated and not bucking the ventilator.

(4) Once the patient is on a ventilator, a second provider (EMT or higher) is required to assist with patient care.

(5) Destination – closest appropriate hospital

(6) Contraindicated in children 8 years of age or less.

3. VENTILATOR STANDARDS

a) CHRONIC VENTILATOR DEVICE STANDARDS

(1) The ventilator that the service is to use for the acute or chronically ventilated patient should be able to match the existing ventilator settings. The following minimum device features (including circuit) must be present for this category of patient:
   (a) Set rate of ventilations
   (b) Adjust delivered Tidal Volume
   (c) Adjustable Pressure Support Settings
   (d) Adjustable Inspiratory and Expiratory ratios (I:E ratio)
   (e) Positive End-Expiratory Pressure (PEEP)
   (f) Peak airway pressure gauge
   (g) Modes
      (i) Assist Control (AC)
      (ii) Synchronized Intermittent Mandatory Ventilation (SIMV)
      (iii) Controlled Mechanical Ventilation (CMV)
   (h) Alarms
      (i) Peak airway pressure
      (ii) Disconnect

(2) Strongly recommended options are:
   (a) Continuous Expiratory volume measurement
   (b) Blend percentage oxygen

(3) Must perform periodic maintenance (including calibration) meeting the manufacturer's specifications

b) CHRONIC VENTILATOR USAGE

(1) Ventilator used is:
   (a) The patient's own ventilator intended for home/transport use and have the patient, home-care provider, or staff member from the health care facility manage the ventilator, **or**
   (b) A ventilator maintained by the ambulance service or health care facility specifically designed for transport use and capable of providing the required settings. If the patient's ventilator is the same as the company ventilator, the paramedic may manage the ventilator without the home-care provider accompanying patient. Exception: A CRT-I or EMT may transport a chronically ventilated patient who is going for routine medical care and has in attendance a patient provided attendant who can manage the patient's own ventilator.

(2) Monitoring equipment must include pulse oximeter (provided by family or service).

(3) Tracheal suctioning kits/catheters must be available.

(4) A replacement tracheostomy tube the same size and one size smaller shall be transported with the patient ventilated through a tracheotomy. (The endotracheal tube equivalent may be substituted.)

c) SCENE OF AN EMERGENCY VENTILATOR DEVICE STANDARDS

Mechanical ventilator used must:

(1) Be intended for transport use,
(2) Deliver 100% oxygen, and
(3) Have minimal parameters to set rate and volume (both adjustable to meet the needs of pediatric and adult patients)

4. POTENTIAL ADVERSE EFFECTS

a) Pneumothorax
b) Barotrauma
c) Hypoxemia
d) Hyperventilation
e) Hypoventilation
f) Extubation of endotracheal or tracheostomy tube

5. PRECAUTIONS

a) Any acutely ill or injured **breathing** patient at the “scene of an emergency” requiring assisted ventilation shall be manually ventilated.
b) If any problems arise with mechanical ventilation, the patient shall be disconnected from the ventilator and manually ventilated.
c) The Optional Program will require a training program that meets or exceeds the “Chronic and Scene Ventilated Patient” curriculum and be approved by the operational program medical director. A copy of that training program shall be reviewed and be approved or disapproved by MIEMSS.

W. TRANSPORT TO FREESTANDING MEDICAL FACILITY

1. PURPOSE

The purpose of this protocol is to define the type of patient an EMS service may transport to a MIEMSS-designated freestanding medical facility.

2. INDICATIONS

A jurisdiction may allow transport of a patient meeting one or more of the following indications to a freestanding medical facility.

a) A stable priority 3 or 4 patient as outlined in *The Maryland Medical Protocols for EMS Providers* who does not need a time-critical intervention.
b) A priority 1 patient with an unsecured airway or *in extremis* that requires stabilization beyond the capability of the EMS crew (e.g., cardiac or respiratory arrest).

3. CONTRAINDICATIONS

Except as provided in #2, the following patients shall not be transported to a freestanding medical facility.

a) Any patient meeting the criteria for transport to a trauma center or specialty referral center as defined in *The Maryland Medical Protocols for EMS Providers.*
b) A pregnant patient complaining of abdominal pain or a patient who is in active labor.
c) Any patient in need of time-critical intervention that can be provided only at a hospital-based Emergency Department.

4. PROCEDURE

The EMS provider, when unclear of appropriate destination, should consult with a Base Station and the freestanding medical facility prior to arrival. The Base Station shall direct the provider to the appropriate destination for the patient.

5. SPECIAL CONSIDERATIONS

None

X. WILDERNESS EMS

A. INTRODUCTION

These protocols are complementary to the MIEMSS protocols. They are to be utilized only under the following conditions:

1. The protocols are being utilized in a defined wilderness environment.
2. The EMS jurisdiction has been authorized to utilize wilderness EMS protocols.
3. The EMS provider has been credentialed as a wilderness EMS provider (see B.1.b).
4. The EMS provider is functioning under appropriate wilderness EMS medical direction.

B. DEFINITIONS

1. Wilderness Environment
   a) A wilderness environment is defined as “any geographic area where the typical urban resources are not adequate for the management of an injured or sick patient.” Some examples include woodland areas, mountainous terrain, uneven terrain where traditional urban EMS equipment and stretchers are not able to safely function, rivers, and ski hills.
   b) In order to be considered a Wilderness EMS (WEMS) provider, the provider needs to have completed additional training beyond that required to function in the urban environment. This training can be completed by any of the following methods:
      (1) Completion of the State of Maryland Wilderness EMS Course
      (2) Alternatively, the provider may demonstrate proficiency in the skills of wilderness EMS after providing proof of completion of a nationally recognized wilderness EMS program. Four programs that are nationally recognized are:
         (a) National Outdoor Leadership School’s Wilderness Medical Institute
         (b) National Ski Patrol’s Outdoor Emergency Care program
         (c) Stonehearth Open Learning Opportunities
         (d) Wilderness Medical Associates
2. Wilderness EMS Physician
   a) In order to be considered a wilderness EMS physician, the physician needs to have fulfilled the requirements in order to function as a medical director under COMAR 30.03.03 and be recognized by the State EMS Medical Director as being qualified to provide medical direction in the wilderness environment. Expertise in wilderness EMS may be demonstrated by:
      (1) Completion of a recognized program in wilderness medicine
      (2) At least 2 years of experience functioning in the wilderness environment under the defined capacity of a wilderness medical practitioner
3. Wilderness EMS Jurisdiction
   a) In order to be recognized as a wilderness EMS jurisdiction the following parameters must be met:
      (1) A written request with a demonstrated need
      (2) EMS providers credentialed as Wilderness Providers
      (3) The providers are functioning under a state recognized wilderness EMS medical director
   b) As there is limited utility for a ground ambulance in the wilderness environment, the wilderness EMS jurisdiction need not be required to have a primary transport vehicle in order to be recognized as a wilderness

EMS jurisdiction. However, since the patient will likely eventually need transport to definitive care by ground and/or air ambulance, the wilderness EMS jurisdiction needs to have a plan for transportation once the patient(s) is out of the wilderness environment. Thus, there must be readily available and functioning communication methods between the wilderness EMS jurisdiction and the local EMS jurisdiction. Further, in order to facilitate timely and appropriate post wilderness care, if the WEMS program is not a section of a previously established public safety EMS transporting jurisdiction, there must be a memorandum of understanding between the wilderness jurisdiction and an EMS operational program that is able to transport the patient via an ambulance to an acute care facility as needed. This MOU must be approved and on file with the State EMS Medical Director prior to implementation of these protocols.

C. SCOPE OF PRACTICE

1. Provision of medical care in the wilderness environment is unique in that delays of care due to the remoteness of the environment may be detrimental to the patient.
   In order to address the unique needs and specialized skills required to manage a patient in the wilderness, these protocols and the training required to utilize these protocols will serve to define the scope of practice of the WEMS provider. Therefore, THE TERM PROVIDER IS GENERIC AND DOES NOT IMPLY A SPECIFIC LEVEL OF MEDICAL TRAINING. THE WILDERNESS PROVIDER MAY BE TRAINED TO ANY LEVEL AND COULD BE A PHYSICIAN, PARAMEDIC, CARDIAC RESCUE TECHNICIAN, EMT, OR WILDERNESS EMERGENCY MEDICAL RESPONDER. However, since medical providers trained at the BLS level (i.e., Emergency Medical Responder and Emergency Medical Technician) may not be fully familiar with the principles of medication administration, these providers may only administer medications that are needed to prevent imminent death (example: epinephrine for anaphylaxis). Thus, within the body of these protocols, medications listed as ALS SKILL may only be administered by providers that are trained at a level of CRT or higher.
2. In order for the EMS provider to use these wilderness EMS protocols there must be a need demonstrated in which it is documented that without these protocols:
   a) It would not be possible to safely extricate the patient from the environment
   or
   b) There is a high risk of the patient incurring permanent disability or death without the use of the WEMS protocols

D. TRANSFER OF CARE

1. Care is transferred from the WEMS provider to the transporting EMS provider at the point at which the patient is either:
   a) No longer in the wilderness environment, or
   b) The wilderness EMS provider has formally transferred care to the transporting provider.
2. There may be times in which the WEMS provider's expertise is needed after transfer of care to the transporting jurisdiction. If this is the case:
   a) The highest trained WEMS provider shall ride to the hospital with the patient.
   b) Conflicts shall be resolved by contacting the medical director for the WEMS jurisdiction and then the local EMS base station medical control.

E. DOCUMENTATION/QUALITY IMPROVEMENT

1. At the completion of the rescue, the WEMS providers must fill out a patient chart in compliance with the MIEMSS charting system.
2. A brief written report shall be provided to the transporting agency with the following information:
   a) Patient name, age, sex
   b) Pertinent history of the case
   c) Vital signs and other pertinent physical findings
   d) Care rendered
3. WEMS providers must demonstrate proficiency to the WEMS Medical Director on an annual basis via skills testing and/or documentation of the utilization of skills in the field. This may be demonstrated through regular field training exercises.
4. Review of each call:
   (a) Upon completion of the WEMS event, notification of the utilization of the WEMS protocols will be made to the appropriate EMS supervisor.
   (b) The WEMS Medical Director will review 100% of WEMS calls as soon as is reasonably possible. Ideally this should be done within 48 hours of the event.
   (c) The WEMS program will maintain a detailed WEMS database and will provide an annual report to the State EMS Medical Director.

TREATMENT PROTOCOLS

A. Airway

1. Initiate general patient care as per the MIEMSS protocols.
2. Assess the patient's airway and determine if the patient's airway is patent, intact, or compromised.
3. If the airway is compromised, establish a patent airway using one of the following techniques:
   a) Insert an oral-pharyngeal airway or naso-pharyngeal airway.
   b) Tack the patient's tongue to the patient's lip using a safety pin.

ALS SKILL

   c) Insert a KING airway per protocol.
      Note: as per MIEMSS protocols, KING airway is not to be used for pediatric patients under 4 feet in height.
   d) If unable to insert a KING airway and unable to keep the airway open with a non-invasive technique, then proceed to a surgical cricothyroidotomy.

B. Cardiac Arrest

1. Initiate general patient care as per the MIEMSS protocols.
2. Perform CPR.
3. If equipped with AED, utilize as appropriate.
4. Continue CPR and utilization of AED per protocol until there is Return of Spontaneous Circulation (ROSC).
5. If there is no ROSC after 30 minutes of resuscitative efforts, terminate resuscitation.

C. Asthma

1. Initiate general patient care as per the MIEMSS protocols.
2. Administer albuterol MDI – 2 puffs every hour as needed, may administer up to 4 puffs per hour.
3. Consider administration of EpiPen for severe asthma.
4. Pediatrics < 30 kg estimated weight administer 0.15 mg IM
5. Pediatrics > 30 kg estimated weight and adults administer 0.3 mg IM

ALS SKILL

6. Consider administration of dexamethasone
   (a) Pediatrics – 0.5 mg/kg to max of 10 mg every 24 hours
   (b) Adults – 10 mg every 24 hours

All Providers

7. Continue treatment and monitoring of patient.
8. Transport to definitive care.

D. Acute coronary syndrome

1. Initiate general patient care as per the MIEMSS protocols.
2. Acute coronary syndrome may be difficult to diagnose in the wilderness environment without the use of a 12-lead EKG. WEMS providers should have a high index of suspicion in a patient complaining of chest pain, shortness of breath, or extreme fatigue without an alternate explanation for these symptoms.
3. Closely monitor vitals signs during patient contact.
4. Provide oxygen if available at 2 liters per nasal canula or as needed to treat symptoms or keep oxygen saturation above 90% if a pulse oximetry is available.
5. Administer aspirin 324 mg (81 mg baby aspirin X 4) or 325 mg aspirin chewed
6. Expedite transport out of the wilderness.

E. Shock

1. Patients presenting with shock will exhibit signs of poor perfusion to critical organs.
2. The patient may or may not be hypotensive.
3. The most common reason for shock in trauma is hemorrhage.
4. Treat the underlying cause. Control external bleeding.
5. Control for environmental conditions.

ALS SKILL

6. If carrying IV fluids, establish IV access and administer a IV fluids with Lactated Ringer's (LR).
7. Pediatrics 20 mL/kg bolus to maintain a radial pulse and to maintain normal mentation
8. Adults 500–1,000 mL bolus to maintain a radial pulse and to maintain normal mentation
9. Continue fluids to maintain peripheral perfusion.

ALL PROVIDERS

10. Expedite transport.

F. External Bleeding
   1. Initiate general patient care as per the MIEMSS protocols.
   2. Control external bleeding with direct pressure.
   3. If unable to control extremity bleeding with direct pressure apply tourniquet proximally to the site of bleeding. Note the time and date of the application tourniquet. If time of delivery of patient to definitive care is expected to exceed 12 hours, then it is appropriate to release the tourniquet every 2 hours. However if tourniquet is released, closely observe area for bleeding and immediately reapply if bleeding resumes.

ALS SKILL

   4. If unable to control bleeding in site other than extremity, or if unable to get control of bleeding with a tourniquet, then apply hemostatic agent (HemCon or similar product) per manufacturer instructions.

G. Wound Care
   1. Initiate general patient care as per the MIEMSS protocols.
   2. Once bleeding has been controlled, assess the size and depth of the wound. Assess for extent of contamination. In addition, assess for any suspicion of underlying broken bones or dislocated joints in association with the wound.
   3. Irrigate the wound. Ideally the wound should be irrigated with high pressure. High pressure irrigation devices can be created with a syringe or a plastic bag with a small hole. Irrigate with water that is clean enough to drink. Irrigate until all visible foreign bodies have been removed.

ALS SKILL

   4. Assess need for primary closure of wound.
      a) In the wilderness setting, large wounds may warrant primary closure if time to definitive treatment is greater than four hours.
      b) Primary closure can be achieved with:
         (1) Tissue adhesive (Dermabond or similar product)
         (2) Steri-strips or other tape (duct tape works well)
         (3) Staples (Physician only skill)
         (4) Sutures (Physician only skill)
      c) Wounds that persist with foreign bodies despite adequate irrigation should not be primarily closed.
      d) Unless there will be a significant delay of transport of patient to definitive care (i.e., greater than 12 hours) do not primarily close facial wounds in the wilderness environment.
   5. Assess need for administration of antibiotics
      a) Wounds that warrant antibiotic prophylaxis include:
         (1) Grossly contaminated wounds
         (2) Wounds with obvious involvement of broken bones or joint spaces
         (3) Wounds with involvement of tendons or ligaments
         (4) Mammalian bites
      b) Antibiotic that may be used include:
         (1) Amoxicillin-clavulanate (Augmentin) – 10 mg/kg or 500 mg of the amoxicillin component every 8 hours

(2) Cephalexin (Keflex) – 10 mg/kg or 500 mg every 6 hours
(3) Bactrim 5 mg/kg every 12 hours or 1 DS every 12 hours
(4) Clindamycin 10 mg/kg every 8 hours or 300 mg every 8 hours

ALL PROVIDERS

6. Cover wound with bacitracin antibiotic ointment.
7. Cover wound with sterile gauze and gauze wrap.

H. Altered mental status
   1. The differential of altered mental status is quite broad, including:
      a) Traumatic brain injury
      b) Stroke
      c) Infection
      d) Acute coronary syndrome
      e) Intoxication
      f) Hypoglycemia
   2. If there is any possibility of trauma, protect the patient's cervical spine.
   3. If unable to check glucose with a glucometer, assume that the patient is hypoglycemic and treat accordingly.
      a) Gently rub glucose paste on the inside of the patient's cheek, 10–15 grams.

ALS SKILL

      b) If carrying glucagon, administer 1mg IM (0.5 mg if < 25kg).
      c) If carrying IV medications, administer dextrose.
      d) 1 amp D50 IV for adults
      e) 1–2 mL/kg D50 for children > 2 years old
      f) 2–4 mL/kg D25 for children < 2 years old

ALL PROVIDERS

4. Transport out of the wilderness.

I. Traumatic Brain Injury
   1. Initiate general patient care as per the MIEMSS protocols.
   2. Any patient with a blow to the head and the following findings should prompt the WEMS provider to initiate rapid transportation to a trauma center:
      a) GCS less than 13 or a motor score less than 6
      b) Rapidly declining GCS
      c) Debilitating headache
      d) Profuse vomiting
      e) Raccoon's eyes
      f) Battle's signs
      g) Seizures
   3. Control the cervical spine and airway as needed.
   4. In a patient with a blow to the head, no loss of consciousness, but at least a brief period of confusion or loss of memory, closely observe and extricate from the wilderness environment. Watch for deterioration of mental status. The patient should be cleared by a physician prior to resuming activities at risk for head injury.

J. Back Injury/Spinal Cord Injury
   1. Extrication of a fully immobilized patient from the wilderness environment can be quite difficult and pose increased risks to both the patient and rescuers. Therefore, despite a significant mechanism of injury, as outlined in this section of the protocol, it is appropriate to decide to selectively immobilize a patient rather than assume that all patients with significant mechanism must be immobilized.
   2. Once a decision is made to immobilize the patient, use the materials available. While it is ideal to immobilize with a commercially available cervical collar and rigid backboard, in the wilderness environment these may not always be available.
      a) Some examples of improvised immobilization materials are:
         (1) Flexible splinting material such as a SAM splint
         (2) Sleeping bags
         (3) Ground sleeping pad
   3. Immobilize all blunt trauma patients with an altered mental status (i.e., GCS <15).
   4. Any patient that has been immobilized for spinal precautions should have placement of a diaper for control of urine—especially if the transport time to definitive care is expected to be greater than one hour.
   5. Assess the patient for the potential to selectively not immobilize the cervical spine.
      a) In order for a patient to not require immobilization the patient must:
         (1) Have normal alertness (i.e., GCS =15)
         (2) Not be intoxicated
         (3) Have no neurological deficits (i.e., no paralysis, no paresthesia, no pria prism)
         (4) Have no pain on palpation of the midline posterior neck on the spine
         (5) Have no other injuries that distract the patient's attention away from the WEMS provider's exam
      b) If the patient meets the criteria in "a)" then the WEMS provider may selectively decide to not immobilize the patient despite a significant mechanism of injury.
      c) Continue to reassess the patient throughout patient contact. If at any time the patient meets the criteria for immobilization, then the patient should be immobilized for the duration of patient contact.
      d) Once the patient has been immobilized, WEMS providers should continue immobilization for the full duration of patient contact. WEMS providers should never "clear" someone's cervical spine.

K . Diagnosis of fractures in the wilderness will be based on clinical findings rather than radiologic studies.
   1. Things to assess when considering if a patient has a possible fracture requiring immobilization are:
      a) Ability of the patient to bear weight or use the affected limb
      b) Evidence of angulations, deformities, crepitus, bruising
      c) Did the patient hear a breaking sound or feel the bone breaking?
   2. Assess distal neurological as well as vascular function.
   3. If the patient does NOT have intact distal pulses, then manually reduce by bringing the affected area back to a near anatomic alignment.

4. The general principle of splinting is to immobilize the joint above and below the site of suspected fracture. Provide adequate padding. Splints may be commercially designed or improvised. Assess pulses before and after splinting. Perform frequent vascular checks during transportation.
5. Consider placing a diaper on the patient to catch urine—especially for fractures of the lower extremities that will prevent the patient from being able to urinate unaided.
6. Specific splinting guidelines are as follows:
   a) Shoulder and upper arm
      (1) Immobilize as needed for comfort.
      (2) Place in a sling and swath.
   b) Lower arm
      (1) Immobilize, including the wrist and elbow.
      (2) Place in sling and swath.
   c) Hand
      (1) Realign mis-angulated digits as needed.
      (2) Place a soft roll of gauze in the hand.
      (3) Wrap with a bandage.
   d) Hip
      (1) Immobilize both upper legs together, placing padding between the legs.
      (2) Place on a stretcher.
      (3) Carry out.
      (4) Do not place patient in traction.
   e) Pelvis
      (1) Assess for injury to vagina or penis.
      (2) Pelvic fracture is noted by instability of the pelvis.
      (3) Immobilize with commercially available pelvic binder or improvised pelvic binder.
      (4) Expedite transport to a trauma center.
   f) Femur
      (1) Immobilization of femur fractures with traction splints is no more effective than immobilization to the unaffected leg and transport on a stretcher. In the WEMS setting, the provider should use judgment and either use a traction split or immobilize the injured leg to the unaffected leg.
      (2) Immobilize the fractured leg to the uninjured leg with adequate padding or use a traction splint.
      (3) Place padding behind the knees.
      (4) Carry the patient out on a stretcher.
   g) Knee
      (1) Patellar fractures typically occur due to a direct blow to the patella.
      (2) The patient is likely to have significant pain and not want to fully extend the knee.
      (3) Immobilize with a circumferential splint ensuring that the popliteal artery behind the knee is not compromised.
      (4) The patient may be able to ambulate out on own with a crutch and assistance.

L. Dislocations
   1. Considerations for reducing a dislocated joint in the wilderness:
      a) Reductions are typically easier immediately after an injury, before the joint has become swollen and muscles are in spasm.
      b) Extrication of a patient from the wilderness with a dislocated joint can be quite difficult, presenting increased risks to the patient and the rescuers.
      c) Dislocated joints can result in compromise to vascular and/or neurological structures.
   2. Always check neurological and vascular integrity before and after an attempted reduction.
   3. Consider placing a diaper on the patient for control of urine—especially for dislocations of the lower extremities that may prevent the patient from being able to urinate unaided.
   4. Specific reductions are as follows:
      a) Shoulder
         (1) The greater majority of shoulder dislocations are anterior. Mechanism is typically external rotation and abduction. The patient will complain of pain in the shoulder and will be resistant to bringing the arm into a position of rest across the body.
         (2) Check for motor and vascular integrity in the hand.
         (3) Also check for sensation in the outer aspect of the shoulder.
         (4) Reduction technique
            External Rotation
            (a) Lie the patient supine on a flat surface.
            (b) Secure the patient's affected arm adducted to the patient's side.
            (c) The elbow should be flexed to 90 degrees.
            (d) Hold the patient's wrist and gently guide the arm into a slow external rotation while holding the upper arm fixed to the patient's side.
            (e) Whenever the patient experiences pain, halt the procedure momentarily then continue.
            (f) Continue guiding the forearm until it is lying perpendicular to the patient's side on the flat surface.
         (5) Place the patient in a sling and swath.
      b) Fingers
         (1) Clinically diagnosed by obvious deformity and loss of function
         (2) Reduction technique
            (a) Maintain digit in partial flexion.
            (b) Apply traction to the flexed digit while pushing the base of the phalanx back into place.
         (3) Splint the fingers in an anatomic position with a roller gauze splint.
      c) Hip
         (1) Hip dislocations tend to be posterior. The patient's hip will be internally rotated and adducted. You may also notice the affected limb to appear shorter than the other limb.
         (2) If equipped with ALS medications, pretreat with midazolam 5 mg IM. Alternatively pre-medicate with an oral analgesic.

(3) Reduction technique
(a) The patient should be lying supine flat on the ground.
(b) Flex the hip and knee to 90 degrees.
(c) Straddle the patient and apply traction in an upward direction while another provider is providing counter traction by holding the pelvis fixed to the ground.
(4) Once reduced, the hip should be immobilized to the uninjured leg and the patient carried out on a stretcher.

d) Knee
(1) Knee dislocations carry great risk of injury to the popliteal artery behind the knee.
(2) Assess for pulses in the foot.
(3) Reduction technique
Gently exaggerate the injury and then apply gentle traction to bring the joint to anatomic position.
(4) Splint the knee slightly flexed and carry the patient out.
(5) Expedite transport to a trauma center.

e) Patella
(1) The patella will typically displace laterally with the knee held flexed by the patient for comfort.
(2) Reduction technique
(a) Gently extend the knee so that the lower leg is straight to the upper leg. This movement may result in the reduction of the dislocated patella.
(b) If the patella remains dislocated after extension of the knee, then apply gentle pressure on the lateral edge of the patella pushing the patella back into its anatomic location. Do not force the patella if it is not easily reducible.
(3) Splint the leg in extension.
(4) The patient may be able to ambulate with a crutch and assistance.

f) Ankle
(1) Ankle dislocations are typically associated with fractures.
(2) There will be obvious deformity.
(3) There may be compromise of vascular structures.
(4) Reduction technique
Apply gentle traction to place the ankle back into its anatomic location.
(5) The ankle will likely remain unstable after reduction and may easily dislocate without splinting. Therefore, be prepared to splint the ankle immediately after reduction. Have one provider maintain the reduction, while another provider applies a splint.
(6) Carry the patient out of the wilderness.

M. Ankle sprain
1. An ankle sprain typically is described by the patient as twisting of the ankle after walking or tripping over a ledge. The patient will often be able to ambulate on the ankle with assistance. There should be no instability to the ankle.

2. Management
   a) Support the ankle with an ACE wrap or other supportive device.
   b) Provide a walking aid for the patient such as a crutch or walking stick.
   c) Assist the patient in ambulating out of the wilderness.

N. Foot Care – Blister management
1. Blisters typically develop from a hiker wearing a shoe that has not been broken in and/or is not fitted properly. Wearing two pairs of socks often helps to prevent blisters.
2. Management
   a) Cover the blister with mole-skin or mole foam.
   b) In most cases you should NOT open the blister, as this increases the risk of infection.
   c) You may open the blister with a scalpel or clean knife if the location of the blister is impeding the ability for the patient to self extricate from the wilderness. Cut in the lines of the skin, drain the fluid, and then cover with antibiotic ointment and a sterile dressing.
   d) Assist the patient in ambulating out of the wilderness.

O. Eye
1. Non-painful acute loss of vision
   a) Patients with acute non-painful loss of vision may have occlusion of the artery to the eye or vasculitis of the artery.
   b) If available, administer oxygen at high flow.

ALS SKILL

   c) Administer aspirin 325 mg po (adults only).

ALL PROVIDERS

   (d) Expedite transport to the ophthalmology referral center.
2. Globe rupture
   a) Rupture of the eye globe may be obvious or occult.
   b) Obvious globe rupture will be diagnosed by bleeding from the orbit and irregularly shaped orbit and/or pupil that is not reactive to light.
   c) Cover the affected eye with eye dressing, being careful not to put pressure on the globe, and expedite transport to the ophthalmology referral center.
3. Red Eye
   a) Differential diagnosis of red eye includes:
      (1) Foreign body
      (2) Infection—either bacterial or viral
      (3) Allergic reaction
      (4) Globe rupture
      (5) Acute angle closure glaucoma
   b) Cover eye and expedite transport to ophthalmology referral center.
4. Foreign body in eye
   a) If the provider is sure that the patient's discomfort is due to a foreign body, the provider may attempt to remove the foreign body.

ALS SKILL

b) Numb the eye with 2 drops tetracaine 0.5% opthalmic solution (peds and adults).

ALL PROVIDERS

c) Evert the eyelid.
d) Remove any foreign particles with a moist cotton applicator or equivalent.
e) DO NOT FORCEFULLY REMOVE PARTICLES STUCK TO THE EYE.
f) Irrigate the eye with water clean enough to drink.

P. Nose - Epistaxis

1. Control bleeding by pinching nose until bleeding stops.
2. If unable to control bleeding, pack with gauze.

ALS SKILL

3. If you anticipate the packing to be in for greater than 24 hours, initiate antibiotic prophylaxis with either Augmentin or Bactrim.

ALL PROVIDERS

4. Transport out of wilderness.

Q. Teeth

1. Fractured tooth
   a) A fractured tooth that is bleeding is a dental emergency.
   b) The exposed nerve roots will typically be quite painful.
   c) Place a small piece of aspirin on the top of the exposed nerve roots. This will initially be painful to the patient, but the pain should quickly decrease and then be followed by significant relief of pain. You can also cover the exposed nerve roots with sugarless gum or wax.
   d) Have patient cover tooth with gauze.
   e) Transport out of wilderness.
2. Tooth avulsion
   a) Pick the tooth up by the top rather than the root.
   b) Irrigate tooth and socket gently with water clean enough to drink.
   c) DO NOT SCRUB THE TOOTH.
   d) Replace tooth in socket and have patient maintain tooth by keeping mouth closed as much as possible. You may fix the tooth in place with a piece of sugarless gum.
   e) Alternatively place tooth inside of cheek ensuring that the patient does not aspirate or swallow the tooth.
   f) If traveling in difficult terrain, it is acceptable to place tooth in container with clear liquid.

R. Burns

1. Clean burns with water clean enough to drink and gentle scrubbing as needed to remove debris.
2. If you expect to get the patient to a burn center within 24 hours, do not cover with antibiotic ointment. If transport to a burn center is expected to exceed 24 hours, then cover with antibiotic ointment.
3. Cover burn with sterile dressing.

ALS SKILL

4. Treat pain
    a) Ibuprofen 600 mg po every 6 hours; 10 mg/kg
    b) Acetaminophen 3–5 yrs old 160 mg/5mL; 6–9 yrs old 320 mg/10mL; > 9 yrs old 640 mg/20mL or 650 mg po tab. May repeat dose ever 6 hours as needed.
    c) Oxycodone 5–10 mg every 6 hours as needed
    d) For pediatrics administer 0.1 mg/kg of oxycodone every 6 hours as needed.
    e) Morphine 0.1 mg/kg IV/IM to max dose 20 mg with repeat dose of 0.05 mg/kg to max dose of 10 mg every 1 hour as needed
    f) Administer fentanyl 1 mcg/kg IN/IV/IM to a max dose of 200 mcg with a repeat dose of 1 mcg/kg to a max dose of 200 mcg every 1 hour as needed.

ALL PROVIDERS

5. Transport to burn center if meeting burn center criteria (see burn protocol in MIEMSS general protocols).

S. Anaphylaxis

1. Severe allergic reactions present with diffuse hives, airway swelling, and signs of hypoperfusion.
2. Goals of treatment are to counteract the effects on the airway, respiratory system, and cardiovascular system.
3. Specific treatment
    a) Epinephrine
        (1) < 30 kg estimated weight, adminster 0.15 mg IM auto-injector
        (2) > 30 kg estimated weight and adults, adminster 0.3 mg IM
    b) Albuterol MDI 2 puffs may repeat every 5 minutes as needed

ALS SKILL

    (c) Benadryl: Pediatric 1 mg/kg every 6 hours; Adults 25–50 mg every 8 hours
    (d) Dexamethasone: Pediatric 0.5 mg/kg; Adults 10 mg po

ALL PROVIDERS

4. Expedite transport out of the wilderness.

T. Hypothermia

1. Hypothermia occurs when the body's ability to conserve and generate heat is not able to compensate for loss of heat.
2. The conditions that are most favorable for development of hypothermia mirror the most efficient methods for losing heat—wet and windy conditions. Therefore, temperatures just above freezing are often more favorable for the development of hypothermia than temperatures below freezing.
3. The beginning stages of hypothermia are clinically evident when a patient is cold and shivering. During this stage the patient will be able to re-warm themselves with passive warming techniques.
    a) Remove the patient from the wet and windy conditions.
    b) Remove any wet clothes.
    c) Place the patient in sleeping bags or cover the patient with blankets (foil safety blankets work well). Another option is to place the patient's body into garbage bags, ensuring that the head is not covered with the bag.

4. The point at which the patient is no longer shivering marks the beginning of severe hypothermia. If the patient is not shivering, the patient will not be able to self generate heat. Also during this stage the patient may develop confusion and other neurological findings. Treatment will need to be active replacement of heat. Follow the steps in #3 above. In addition, add heat to the patient. Possible methods for adding heat include:
    a) Have another person join the patient in a sleeping bag or under blankets.
    b) Pack the patient's axilla and groin with warm packs or water bottles filled with warm liquids.
5. Profound hypothermia is marked by cardiac instability progressing to arrhythmias—ventricular fibrillation, severe bradycardias, and asystole. Handle the patient carefully so as to not induce ventricular fibrillation, but nevertheless remove the patient from the environment. If suspicious of cardiac arrest, check for a pulse for at least 30 seconds. If the patient is in cardiac arrest, attempt to warm the patient while performing CPR. Continue CPR until the patient is warm, he or she is transferred to the transporting EMS agency, or the rescuers are fatigued.
6. If the patient is alert and there is no concern for airway compromise, feed the patient per the nutrition guidelines. The treatment of hypothermia is aided by the patient having fuel to self-generate heat.

U. Frostbite
1. Frostbite is a localized tissue injury from freezing of tissue. Whereas hypothermia can occur in temperatures above freezing, tissue will not freeze unless temperatures are below freezing.
2. The beginning stages of frostbite are marked by periods of intermittent pain and swelling of the affected tissue. This period is actually called "frostnip" and does not require intervention other than removing the affected tissue from the cold environment.
3. Once the tissue is frostbitten the skin will be pale, cold, and numb. Underlying tissue may be soft and pliable or firm depending on the depth of the freezing.
4. Treatment should only be initiated if the provider is confident that there is no chance of the affected tissue refreezing. If the tissue is likely to continue to be exposed to a cold environment prior to the patient reaching definitive care, then the affected tissue should, as much as possible, be protected from the environment and covered with warm clothes and/or sterile dressing.
5. If the provider is reasonably sure the tissue will not be further exposed to the cold, then active treatment may be initiated.
    a) Actively warm the affected tissue in warm water that has been measured with a thermometer to a temperature of 100.4–104 degrees Fahrenheit.

ALS SKILL

    b) Give ibuprofen 600 mg po every 6 hours for management of the frostbite (Peds dosing 10 mg/kg up to max of 600 mg).
    c) Manage pain as needed—see pain management section HH.

ALL PROVIDERS

6. Transport the patient to definitive care.

V. Heat Exhaustion
   1. Heat exhaustion is marked by intravascular volume depletion due to dehydration and excessive sweating in a hot environment.
   2. Symptom include dizziness, excessive sweating, headache, confusion, nausea, and weakness.
   3. Treatment
      a) Remove the patient from the hot environment and keep in the shade.
      b) Cool the patient by getting the patient wet and fanning.
      c) Replace fluids.
   4. Transport out of the wilderness.

W. Heat Stroke
   1. Heat stroke is a true environmental emergency marked by injury to the neurological system as a result of excessive heat.
   2. The patient may or may not be sweaty.
   3. Symptoms include confusion, ataxia, and tachycardia.
   4. Skin will be red and hot.
   5. Treatment mirrors that for heat exhaustion.
      a) Remove patient from the hot environment and keep in the shade.
      b) Cool patient with water and fanning.
      c) Place ice packs in axilla and groin; if shivering, remove the ice packs.
      d) If the patient is alert, orally replace fluids.

X. Snake Bites
   1. There are two wild snakes indigenous to the State of Maryland that are poisonous:
      a) Northern Copperhead – The Northern Copperhead is identified by the coppery color to its head and the alternating tan and dark brown on its body. It likes to hide within woodpiles or under logs.
      b) Timber Rattlesnake – The Timber Rattlesnake is a large, stout bodied snake that can grow up to 5 feet or more. It is typically identified by bands of dark chevrons on its back. Generally the snake likes to live in wooded areas but gravid females may be found sunning on open rocks.
   2. Snake bites may or may not present with paired fang puncture wounds. A snake bite may also present with a single puncture wound or just a scratch.
   3. The greater majority of bites will present with immediate onset of pain at the site of the bite. The bite will become swollen and erythematous.
   4. Mark the site of erythema and monitor its progression.
   5. Treatment
      a) Gently clean the area and cover with a sterile dressing.
      b) Do NOT attempt to suck out the venom with a commercial or improvised device.
      c) Do not apply a distal and proximal constricting band for poisonous snakebite to an extremity. Splint the extremity. Remove any jewelry on affected extremity.
      d) As much as possible keep the affected area below the level of the heart.
      e) Unless absolutely necessary, the patient should be carried out rather than walked out on their own accord.
      f) Calmly expedite transport out of the wilderness.
   6. Do NOT try to catch the snake for identification purposes.

Y. Tick Bites
1. Tick bites in the State of Maryland are at high risk for transmission of Lyme Disease and/or Rocky Mountain Spotted Fever.
2. In order for a tick to transmit Lyme, the tick has to be attached to the patient for at least 36 hours. Ticks found on a patient that are engorged with blood pose a much higher risk than ticks that are not engorged with blood.
3. Lyme disease presents with a circular red rash with the center clear of redness. Patients will have fevers and non-specific flu-like symptoms. The patient may also have neurological finding such as a facial droop.
4. To remove a tick, directly pull the tick up from the skin using a pair of tweezers in a single firm steady pull.

ALS SKILL

5. If there is high suspicion for Lyme, start the patient on antibiotic treatment with doxycycline 100 mg twice a day; 2.2 mg/kg > 8 years old. If < 8 years old use Augmentin 15 mg/kg.
6. If there is suspicion for Rocky Mountain Spotted Fever (the patient has fever and petechiae), then doxycycline is the antibiotic of choice for all age groups. If < 45 kg estimated weight, administer 2.2 mg/kg every 12 hours to max dose of 100 mg. If > 45 kg then administer 100 mg every 12 hours.

Z. Large Animal Attacks (e.g., bear, wild cat, fox)
1. Ensure that the area is safe and that the animal is not still a threat to the patient or rescuers.
2. Patients typically die from large animal attacks secondary to injury to airway structures or hemorrhagic shock from large, gaping wounds.
3. Ensure the patient has an intact airway.
4. Control for any external bleeding.
5. Clean and dress wounds.
6. Transport out of the wilderness.
7. Do NOT attempt to capture the animal for identification purposes.

AA. Plants
1. Patients may develop localized skin reactions after contact with a plant.
   a) Remove the patient from the plant.
   b) Wash the area clean.

ALS SKILL

   c) For mild reactions, use a topical steroid. Cover the area with Betamethasone valerate 0.1% ointment twice a day.
   d) For severe reactions administer dexamethaxone 10 mg po; 0.5mg/kg for pediatrics.
   e) Transport
2. Ingestion of plants and mushrooms can be life-threatening.
   a) Patients will present with nausea and vomiting.
   b) Provide supportive care.
   c) Transport

BB. Oral Rehydration

1. Oral rehydration with a glucose-sodium solution may be indicated in one of three conditions.
   a) Excessive sweat loss from intense exercise
   b) Mild to moderate heat illness, or severe heat illness as long as the airway is intact and the patient is able to tolerate oral fluids
   c) Dehydration from diarrhea
2. The patient will likely feel dehydrated. Mucus membranes will be dry. Skin may tent.
3. Replacement of fluids with only water and no electrolytes may lead to a dilution of intravascular sodium levels. This risks the development of cerebral edema. Therefore, fluids should be replaced with a solution of glucose and salts.
4. The ideal solution will contain 2–6% glucose and 30 mEq/Liter of sodium. Commercial sports drinks generally contain about 6% glucose and 25 mEq/Liter of sodium. While commercial sports drinks contain more than the ideal amount of glucose and less than the ideal amount of sodium, these solutions are better than just water.
5. If a glucose/sodium solution is not available, hydrate with water judiciously.
6. Replace fluids at a rate of 50–100 mL/kg over the first 4–6 hours.

CC. Nutrition

1. In rescues that are expected to be prolonged (i.e., greater than 4 hours) it may be necessary to provide nutritional support to the patient.
   a) Ensure that the patient has an intact airway and that the patient is not experiencing nausea or vomiting.
   b) Only feed the patient if you are reasonably sure that the patient will not be going to surgery in the next 12 hours.
   c) Provide nutrition with a combination of protein and carbohydrate.
      (1) Energy bars are a good choice.
      (2) A mixture of dried fruits and nuts is also a good choice.

DD. Nausea

1. Patients with traumatic injuries and/or medical illness may experience nausea.

ALS SKILL

2. If carrying ALS medications and IVs, follow nausea and vomiting protocol in the MIEMSS protocols.
3. Alternatively, may administer
   a) Pomethazine pediatric > 2 years old 0.5 mg/kg every 12 hours; adults 25 mg po every eight hours
   b) Zofran pediatric 0.1 mg/kg; adults 4 mg IM

EE. Diarrhea

1. Diarrhea in the wilderness can result in significant dehydration to the patient.
2. Orally rehydrate the patient.

ALS SKILL

3. Administer loperamide
4. Pediatric – (loperamide is generally not indicated for pediatric populations. However, in the wilderness it may be needed to prevent profound dehydration or to facilitate extrication. Use judiciously.)
5. 2–6 years of age or 13–20 kg 1 mg po three times a day
6. 6–8 years of age or 20–30 kg 2 mg bid
7. Adults–4 mg po for the first dose then 2 mg po after each subsequent loose stool up to a total of 16 mg in a 24 hour period
8. Contraindications for loperamide are diarrhea with fevers and bloody diarrhea.

FF. Abdominal Pain

1. Non-traumatic abdominal pain may indicate a surgical emergency.
2. In women, a ruptured ectopic pregnancy is a true emergency that may present with abdominal pain.
   (a) Check a female patient's urine for beta Hcg using a commercial urine pregnancy test.
   (b) If the patient with abdominal pain is pregnant, expedite transport.
3. In non-pregnant females and all males with abdominal pain, monitor vital signs and patient symptoms. Concerning findings suggestive of a surgical abdomen include:
   a) Instability of vital signs
   b) Progressing pain
   c) Rebound pain–pain with movement
   d) Nausea and vomiting
4. If there is high concern for surgical abdomen, do not feed the patient and expedite transport.
5. All other patients with abdominal pain should be transported so as to not miss occult surgical disease.

GG. Gastroesophageal reflux

1. Gastroesophageal reflux (GERD) (or heartburn) is typically identified by the patient complaining of a burning, substernal chest pain. The patient also may complain of having a sour taste.
2. It is important to note that the patient with symptoms of GERD may actually have an acute coronary syndrome. Therefore, as you are treating the patient's symptoms, also assess for possible acute coronary syndrome and manage appropriately. Relief of symptoms with the recommended treatment for GERD does NOT rule out the possibility of acute coronary syndrome.

ALS SKILL

3. Management of GERD
   Tums 1–2 chewed every hour as needed to a max dose of 4 tablets

HH. Pain Management

1. Treatment of pain in the wilderness may at times be necessary in order to facilitate extrication and transport out of the wilderness. Therefore, treatment of pain not only benefits the patient by simply decreasing pain, treatment of pain also improves the safety of the patient and rescuers by decreasing the time spent in the wilderness.

ALS SKILL

2. Mild to moderate pain can be treated with ibuprofen and/or acetaminophen.
   a) Ibuprofen 600 mg every 6 hours orally; 10 mg/kg to max dose 600 mg for pediatric dosing
   b) acetaminophen up to 650 mg every 6 hours orally; 160 mg/5mL for 3–5 years old; 320 mg/10 mL 6–9 years old
3. Management of severe pain will often require treatment with an opiate analgesic. While intravenous opiates may have a quicker onset and more easily titratable, oral opiate analgesics tend to have less acute respiratory depression.
   a) If carrying parenteral morphine, administer 0.1 mg/kg IV/IM up to 20 mg IM. may repeat dose of 0.05 mg/kg every hour as needed.
   b) Administer fentanyl 1 mcg/kg IN/IV/IM to a max dose of 200 mcg with a repeat dose of 1 mcg/kg to a max dose of 200 mcg every 1 hour as needed.
   c) Alternatively, administer Oxycodone 5–10 mg every 6 hours as needed. Pediatric dosing for oxycodone – 0.1 mg/kg every 6 hours

FORMULARY

acetaminophen (Tylenol)

• Availability	325 mg tablet; 160 mg/5 mL
• Action	analgesic; anti-pyretic
• Indication	mild to moderate pain; fever
• Contraindication	known end stage liver disease
• Precautions	
• Side effects	
• Dose	3–5 years old 160 mg/5 mL every 6 hours as needed 6–9 years old 320 mg/10 mL every 6 hours as needed 10 years and above 640 mg/20 mL or 650 mg tab every 6 hours as needed

albuterol

• Availability	90 mcg/metered spray
• Action	bronchodilator
• Indication	shortness of breath; exacerbation of asthma/copd; wheezing
• Contraindication	
• Precautions	
• Side effects	
• Dose (Peds & Adult)	start with 2 puffs every four hours as needed; may use up to 4 puffs every hour

amoxicillin-clavulanate (Augmentin)

- Availability — 500 mg–125 mg tablet; 125 mg–31.5 mg/5 mL
- Action — antibiotic
- Indication — suspected respiratory infection
- Contraindication — hypersensitivity to penicillin
- Precautions
- Side effects — diarrhea
- Dose — Pediatrics – 10 mg/kg every 12 hours
  1 tablet every 8 hours

Aspirin

- Availability — 325 mg; 81 mg
- Action — anti-platelet
- Indication — suspected acute coronary syndrome or stroke
- Contraindication — hypersensitivity to salicylates
- Precautions
- Side effects
- Dose — No pediatric dosing
  Adults - one 325 mg tab po qd or four 81 mg tabs po qd

bacitracin

- Availability — 1 ounce (28 gram) ointment tube
- Action — topical antibiotic
- Indication — soft tissue wounds
- Contraindication
- Precaution
- Side effects
- Dose (Peds & Adult) — cover the affected area 2–3 times a day

betamethasone valerate

- Availability — 0.1% topical ointment
- Action — topical steroid anti-inflammatory
- Indication — contact dermatitis
- Contraindication
- Precautions
- Side effects
- Dose (Peds & Adult) — apply to affected area twice a day

calcium carbonate (Tums)

- Availability — 500 mg; 750 mg chewable
- Action — neutralizes stomach acid
- Indication — upset stomach; gastroesophageal reflux
- Contraindication
- Precautions
- Side effects
- Dose — Pediatric – 1 every four hours as needed
  Adult – 1–2 every hour as needed up to max dose of 8 tabs

cephalexin (Keflex)

- Availability — 500 mg tablets; 125 mg/5mL
- Action — antibiotic
- Indication — suspected skin infection or prophylaxis for skin wound
- Contraindication — hypersensitivity to penicillin
- Precautions
- Side effects — diarrhea
- Dose — Pediatric – 10 mg/kg every 6 hours
  Adult – 500 mg every 6 hours

chitosan (Hemcon)

- Availability — 2”X2”; 2”X4”; 4”X4” bandages
- Action — hemostatic
- Indication — severe bleeding
- Contraindication
- Precautions
- Side effects
- Dose (Peds & Adult) — apply to severe bleeding as needed

ciprofloxacin (Cipro)

- Availability — 500 mg tablets
- Action — antibacterial
- Indication — suspected urinary tract infection; skin infection if patient is hypersensitive to penicillin
- Contraindication — hypersensitivity to floroqinolone
- Precautions
- Side effects
- Dose — no pediatric dosing
  Adult – 500 mg every 12 hours

cryanoacrylate tissue adhesive (Dermabond)

- Availability — single use ampoules
- Action — tissue adhesive
- Indication — minor wound repair
- Contraindication — known hypersensitivity
- Precaution — avoid near eyes
- Side effects — transient local discomfort
- Dose — as required for wound closure; may need 2–4 layers

dexamethasone (Decadron)

- Availability — 1 mg/1 mL solution
- Action — Steroidal anti-inflammatory
- Indication — asthma, allergic reactions
- Contraindication
- Precautions
- Side effects
- Dose — Adults 10 mg po every 24 hours as needed
  Pediatrics 0.5 mg/kg po every 24 hours as needed

diphenhydramamine (Benadryl)

- Availability — 25 mg tablets; 12.5 mg/5 mL
- Action — antihistamine
- Indication — allergic reactions
- Contraindication
- Precautions
- Side effects — sedating
- Dose — Pediatric – 1 mg/kg to max dose 50 mg every 8 hours
  Adult – 25–50 mg every 8 hours as needed

doxycycline (Doxy)

- Availability — 100 mg tablets; 25 mg/5 mL
- Action — antibacterial
- Indication — suspected respiratory infection with contraindication to Augmentin
- Contraindication
- Precautions
- Side effects
- Dose — 8–14 years old - 2.2 mg/kg every 12 hours
  Adults – 100 mg every 12 hours

epinephrine auto-injector (EpiPen)

- Availability — 0.3 mg (EpiPen); 0.15 mg (EpiPenJr) auto-injector
- Action — antihistamine; anti-inflammatory; vasoconstrictor
- Indication — moderate to severe allergic reaction
- Contraindication
- Precautions
- Side effects — tachycardia; hypertension
- Dose — Pediatric < 30 kg estimated weight – 0.15 mg IM
  > 30 kg estimated weight and adults – 0.3 mg IM

fentanyl

- Availability — prefilled syringe, multidose vial
- Action — opioid analgesic
- Indication — severe pain
- Contraindication
- Precautions
- Side effects — depressed level of consciousness; hypoxia; hypotension
- Dose — 1 mcg/kg IN/IV/IM to a max dose of 200 mcg with a repeat dose of 1 mcg/kg to a max dose of 200 mcg every 1 hour as needed

glucagon

- Availability — 1 mg injector
- Action — facilitates release of glucose from glycogen stores in the liver
- Indication — suspected hypoglycemia in patient that is not able to take oral glucose
- Contraindication
- Precautions
- Side effects
- Dose — Pediatric < 25 kg – 0.5 mg IM
  > 25 mg and adults – 1 mg IM

glucose gel (Glutose 15)

- Availability — 15 grams oral gel
- Action — raises blood glucose levels
- Indication — suspected hypoglycemia
- Contraindication
- Precautions — use caution in patient with depressed level of consciousness
- Side effects
- Dose (Peds & Adult) — give to patient by mouth
  in patient with depressed level of consciousness, rub the gel on the patient's gums, but use caution

ibuprofen (Advil; Motrin)

- Availability — 200 mg; 400 mg; 600 mg; 40 mg/mL
- Action — anti-inflammatory; analgesic
- Indication — mild to moderate pain
- Contraindication — hypersensitivity; known renal disease; history of GI bleeding
- Precautions
- Side effects
- Dose — Pediatric – 10 mg/kg to max dose 600 mg every 6 hours as needed
  Adult – 200 mg–600 mg every 6 hours as needed

loperamide (Immodium)

- Availability — 2 mg tablets
- Action — anti-diarrheal
- Indication — diarrhea
- Contraindication
- Precautions
- Side effects — constipation
- Dose — Pediatric – 2 mg after first watery stool, then 1 mg after each subsequent watery stool; max dose 8 mg per day
  Adult – 4 mg after first watery stool; then administer 2 mg after each subsequent watery stool; max dose 16 mg per day

metaclopramide (Reglan)

- Availability — 10 mg tablets; 5 mg/gmL
- Action — anti-emetic
- Indication — nausea and vomiting
- Contraindication
- Precautions
- Side effects
- Dose — Pediatric – 0.1 mg/kg every 8 hours as needed
  Adult – 10 mg every 8 hours as needed

morphine

- Availability — 4 mg carpujet
- Action — opiate analgesic
- Indication — severe pain
- Contraindication
- Precautions
- Side effects — depressed level of consciousness; hypoxia; hypotension
- Dose — Pediatric – 0.1 mg/kg IM every hour as needed
  Adult – 4 mg IM every hour as needed

ondansetron (Zofran)

- Availability — 4 mg injectable solution
- Action — anti-emetic
- Indication — severe nausea and vomiting
- Contraindication
- Precautions
- Side effects
- Dose — Pediatric – 0.1 mg/kg IM every 1 hour as needed up to max dose 16 mg/day
  Adult – 4 mg IM every 1 hour as needed up to max dose of 32 mg/day

oxycodone

- Availability — 5 mg tablet
- Action — opiate analgesic
- Indication — moderate to severe pain
- Contraindication
- Precautions
- Side effects — depressed level of consciousness
- Dose — Pediatric – 0.05–0.15 mg/kg every 6 hours
  Adult – 1–2 tablets by mouth every 4 hours as needed

promethazine (Phenergan)

- Availability — 25 mg tablets; 6.25/5 mL
- Action — anti-emetic
- Indication — mild to moderate nausea
- Contraindication
- Precautions
- Side effects
- Dose — Pediatric – 0.5 mg/kg every 8 hours as needed
  Adult – 25 mg every 8 hours by mouth as needed

tetracaine

- Availability — 0.5% ophthalmic solution
- Action — topical anesthetic
- Indication — severe eye pain; foreign body removal from the eye
- Contraindication — hypersensitivity
- Precautions
- Side effects
- Dose (Peds & Adult) — 2 drops to the affected eye

trimethoprim/sulfamethoxazole (Bactrim)

- Availability — 160 mg TMP/800 mg SMX (DS tab); 40 mg/200 mg/5 mL
- Action — antibiotic
- Indication — sinus infection, upper respiratory infection, urinary tract infection
- Contraindication — hypersensitivity to sulfa
- Precautions
- Side effects
- Dose — Pediatric – 5 mg/kg TMP every 12 hours
  Adult – 1 DS tab po bid

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Y. MARYLAND VACCINATION & TESTING PROGRAM

Scope of practice for paramedic personnel has been expanded to allow select immunization and Purified Protein Derivative (PPD) testing by paramedic personnel. The immunizations that are allowed to be performed include Hepatitis B, Influenza, and PPD. This program is a jurisdictional option requiring the jurisdictional medical director and the jurisdiction to authorize select trained paramedic personnel to perform these functions. There are program requirements below. Please note that you must have a written memorandum of understanding between your EMS service and the local health department before this program can be instituted.

In order to become recognized and authorized to implement the immunization and testing program for paramedics, you must complete the application and submit a copy of the health department memorandum of understanding to the Office of the State EMS Medical Director. At that time you will receive a copy of the CD-ROM that has all of the pertinent documents and instructional material, along with a CDC videotape on PPD placement and interpretation. Your jurisdiction will then be recognized as an authorized optional immunization and testing jurisdiction.

When you are implementing this program, we strongly encourage you to advise EMS personnel at risk to seek vaccination where possible.

REQUIREMENTS:

1. Medical Director: Must have a jurisdictional Medical Director who is willing to take responsibility for the program.
2. Must be under the Infection Control Program for the Jurisdiction.
3. Immunization record form with documentation of all pertinent information about vaccination or test, including the patient's primary care practitioner.
4. Direct linkage with occupational medicine/employee health and a memorandum of understanding (MOU) with local public health service/department.
5. Statewide protocol approved by the EMS Board.
6. ALS resuscitation equipment (refer to *The Maryland Medical Protocols for EMS Providers*) must be available on-site during vaccinations.
7. Must use the comprehensive training curriculum developed by MIEMSS Infection Control Committee.
8. Physician does not have to be physically present for the administration of vaccinations or tests by the trained paramedic (Vaccination and Testing Officer (VTO)).
9. Program instruction must be directed by and have participation by the jurisdictional Medical Director to select paramedics who will become the VTOs.
10. This is not for post-exposure prophylaxis (patient must be seen by occupational medicine/physician for consent and treatment).
11. Only Public Safety Personnel (any career or volunteer member of a fire, rescue, or EMS department, company, squad, or auxillary; any law enforcement officer; or the State Fire Marshal or sworn member of the State Fire Marshal's office) are eligible to receive immunizations or testing from VTOs.

12. Mechanism for meeting FDA storage and refrigeration standards for vaccines and testing with the use of the Maryland Inventory Control Sheet.
13. Mechanism for follow-up
    a) For additional vaccinations for completion of series
    b) For potential complications of vaccinations or symptoms noted on adverse event form (meeting federal reporting requirements)
    c) Patient contact phone number for complications (e.g., bad vaccine "lot")
14. Must have a standardized informed consent form and standardized vaccine pre-screening questionnaire form.
15. Vaccinations allowable are:
    a) Influenza
    b) Hepatitis B
16. Testing
    a) PPD Screening (Intradermal)
17. Recommend 30-minute observation period (to be determined by the jurisdictional medical director) post-immunization administration with ALS personnel and equipment available.

THE GOVERNOR'S ORIGINAL EXECUTIVE ORDER 01.01.2009.15 WAS RENEWED BY EXECUTIVE ORDER 01.01.2009.19 EXTENDING IT TO JANUARY 10, 2010. SO LONG AS THAT ORDER AND ANY RENEWAL OR REISSUE THEREOF REMAINS IN EFFECT, 18),19), AND 20) OF THIS PROTOCOL WILL BE IN EFFECT.

18. Cardiac Rescue Technicians who have been trained by the EMS Operational Program and credentialed by the Medical Director may vaccinate public safety personnel, health care providers, and members of the public with H1N1 (Swine) flu vaccine (LAIV and IM injection) after appropriate screening by a VTO, registered nurse, or physician.
19. Vaccination and Testing Officers and Cardiac Rescue Technicians are permitted to vaccinate public safety personnel, health care providers, and members of the public with H1N1 (Swine) flu vaccine (LAIV and IM injection) at points of distribution that have been established or approved by local health departments (e.g., a clinic, occupational health site, a fire house, or other location).
20. Screening, administration, tracking, and dosage requirements for H1N1 (Swine) flu vaccine (LAIV and IM injection) shall be provided by the Maryland Department of Health and Mental Hygiene and/or local health departments.

HEPATITIS B VACCINATION

Indications:
Pre-exposure: preventive

Contraindications:
History of anaphylactic reaction to baker's yeast

Adverse effects:
Not clinically significant

Precautions:
(1) Recipients must read and sign consent form.
(2) CDC recommends antibody testing 1–2 months after the third dose to determine immunity.

Dose:
(three total, using a 3 mL syringe with 1" 25 gauge needle)
Initial 1 mL IM (deltoid)
2nd dose 4 weeks after initial; 1 mL IM (deltoid)
3rd dose 5–6 months after 2nd dose; 1 mL IM (deltoid)

INFLUENZA VACCINATION

Indications:
(1) Persons who attend to patients at high risk for complications (e.g., the elderly)
(2) Persons with chronic medical conditions
(3) Pregnant women who will be in the second or third trimester of pregnancy during influenza season
(4) Providers of essential community services

Contraindications:
History of anaphylactic hypersensitivity to eggs

Adverse effects:
(1) More common: soreness at the injection site that lasts up to 2 days
(2) Less common: fever, malaise, myalgia beginning 6–12 hours after vaccination and persisting for 1 to 2 days.

Precautions:
(1) Vaccine should be delayed in the presence of acute febrile illness; administer after symptoms have abated.
(2) It takes two weeks to develop adequate antibodies against the vaccine virus strain.
(3) Optimal time for organized vaccination campaigns is usually the period from October through mid-November.

(4) Because influenza vaccine contains only noninfectious viruses, it cannot cause influenza.
(5) Recipients must read and sign consent or refusal form.

Dose: (using a 3 mL syringe with 1" 25 gauge needle)
0.5–1 mL IM (deltoid)

PURIFIED PROTEIN DERIVATIVE (PPD) TEST

Indications:
Yearly administration for healthcare providers

Contraindications:
(1) Previous positive reaction to PPD
(2) History of TB

Adverse effects:
Not clinically significant

Precautions:
Recipients must read and sign consent form.

Procedure
(1) Injection is given intradermally and should be read 48–72 hours post injection.
(2) Feel the induration with your finger tips.
(3) Measure with approved device in millimeters (mm).
  (a) Less than 5 mm is negative.
  (b) Equal to or greater than 5 mm requires clinical correlation and evaluation by jurisdictional medical director or other appropriate physician.

Note:
Do not use erythema as margins; measure only the induration.

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