

Eastern PA EMS Council Regional Protocol and Guideline Addendum

Pre-Hospital Communications Protocol
REGIONAL PROTOCOL

Criteria:

- A. An ALS provider who is treating an ALS patient and has either
 1. Completed treatment by protocol and requires further guidance
 2. An ALS patient and requires communications with the receiving hospital for notification purposes.
- B. A BLS provider who requires medical command as defined in the Statewide and/or Regional Protocols.
- C. Any provider who encounters an incident which meets the definition of an MCI as defined in the Regional Disaster Operating Guidelines.

Exclusion Criteria:

- A. An ALS provider with a BLS patient
- B. A BLS provider with a BLS and does not require Medical Command

System Requirements:

- A. Licensed EMS Vehicle
- B. Communications equipment capable of accessing Eastern PA MedCom

Definitions:

- A. Medical Command Relay – Communications between an ALS unit and a Medical Command Facility for the purpose of relaying information about an ALS patient, but does not require or request orders from a Medical Command Physician.
- B. Medical Command – Communications between an ALS unit and a Medical Command Facility in which the ALS unit is requesting consultation or specific treatment orders from a Medical Command Physician.

Procedure:

- A. Contact Eastern PA MedCom via UHF radio on Med channel 4. Provide facility name and communications type. MedCom will provide the ALS unit with a channel assignment.
- B. In the event of a radio failure, communications may established via telephone. Contact Eastern PA MedCom at 1-800-782-2409, provide facility name and type of patch needed.¹²
- C. For any Level MCI refer to the Regional Disaster Operating Guidelines

Notes:

1. In the event MedCom is unreachable, utilization of County PSAP radio communications are acceptable.
2. ALL MedCom communications are recorded, and stored indefinitely.

Performance Parameters:

- A. Consider 100% audit to ensure that Medical Command was contacted for each case utilizing appropriate means.

Non-Trauma Use of Aeromedical Evacuation Regional Protocol

Criteria:

- A. Consideration for direct air medical transport of on-scene medical patients to tertiary care facilities with Medical Command approval.

Exclusion Criteria:

- A. Patients requiring transportation due to traumatic injury

System Requirements:

- A. ALS unit on scene
- B. Aircraft available for scene response

Procedure:

1. Primary/Secondary survey
2. Address ABCs, resuscitate as appropriate.
3. Estimate ground transport time to closest local hospital and tertiary care facility
4. Determine flight time to tertiary care facility.
5. Possible considerations for direct medical flight include:
 - A. STEMI with pre-hospital 12-lead EKG
 - B. Acute CVA (witnessed normal activity within 2 hours)
 - C. Other unusual circumstances that require immediate care at tertiary care center.
6. **Contact the closest Medical Command Facility- REQUIRED FOR AUTHORIZATION OF FLIGHT**

Command Physician Orders may include:

1. Further history and/or physical information related to complaint
2. Request ground transportation to local hospital
3. Request for ground transportation to tertiary care facility
4. Request air medical transport to tertiary care facility

Notes:

1. **If able, transmit 12-lead EKG to Medical Command Facility**

Performance Parameters:

- A. 100% audit of all cases for appropriate use of Aero-medical evacuation and appropriate use of other applicable protocols (e.g. Chest pain, CVA)

ALS Inter-Facility Transport Guidelines

Criteria:

- A. Patient who requires transportation and/or monitoring at the ALS level while enroute from one hospital to another.

Exclusion Criteria:

- A. Patients encountered outside of the hospital environment (i.e. nursing home or skilled care facility)

System Requirements:

- A. ALS service with appropriate equipment and crew composition.

Procedure:

1. The ALS unit must make arrangements, prior to the patient transfer, with an on duty, recognized and approved Medical Command Physician from the sending facility. This physician must:
 - a. Agree to provide medical command for the patient if the need arises during the transport.
 - b. If using an Eastern PA EMS approved medical command physician, the transferring service must have on board of the ambulance, an EMT-P or PHRN with current medical command authorization for that service. The EMT-P may only be utilized if the treatment being provided to the patient does not exceed their scope of practice as published by the Department of Health, Bureau of EMS in the Pennsylvania Bulletin.
 - c. If the Medical Command Physician refuses or is unable to be available for possible command during the transfer the EMT-P may not be utilized.
2. Services should seek written agreements for medical command for ALS inter-facility transports in the event that medical command cannot be obtained otherwise.
3. If the sending facility provides a staff nurse, who is not a medical command eligible health professional or paramedic, that hospital is responsible for the care provided during the transfer. The staff nurse should have written orders or have telecommunications with the sending hospital staff physician. The ALS provider, regardless of level of certification, may NOT accept orders from the nurse or non-command physician.
4. A staff physician (non-Medical Command Physician) may accompany the patient if he/she assumes responsibility for all care and completes the "On Scene Physician" card and signs the clinical record of the patient. EMS providers may not honor their orders.
5. Automatic intravenous control rate devices may be used by ALS providers during inter-facility transports with the following conditions:
 - a. The Service Medical Director must provide and/or ensure that the ALS providers have received training on the device that they will be using.
 - b. The EMS organization retains training records that support (a) above.
 - c. The Service Medical Director provide, at least annually, a roster of personnel that have received training and for which devices they have received training, which will be added to their medical command file at the EMS Council office.
6. ALS personnel with current and valid medical command authorization with their organization may maintain existing IV infusions of any medication that is listed on the Authorized Medication List published in the Pennsylvania Bulletin by the Department of Health, Bureau of EMS at least annually. Additionally the following requirements must be met:
 - a. The only medications authorized to be carried on an EMS vehicle as part of the regular stock shall be found in Protocol Eastern ALS 09
 - b. Prior to any ALS provider transporting a patient with an IV medication not found on the Regional Authorized Medication List, that provider must receive in-service training and authorization from their Service Medical Director. The SMD shall ensure that a copy of the ALS providers training is retained at the service. At least annually, the service shall provide a record of additional medication training, if any, that each ALS provider has received, to the EMS Council for placement in their respective medical command file.
 - c. The sending facility is responsible for ensuring that there is an adequate amount of solution/medication prior to transport. The ordering physician should be made aware that any medications may be discontinued by medical command if the patients condition changes.

- d. If the ALS personnel are not adequately trained as noted above, or the medications/solutions (i.e. blood products) are not within the EMS provider's scope of practice, then the sending facility is responsible for providing either an RN or physician to accompany the patient.
7. It is the responsibility of the ALS service to make arrangements prior to transportation for accessing a medical command physician. The sending facility should provide medical command. In the event that the sending facility is unable to provide command, the ALS service shall have a policy in effect which determines what facility to contact for command. In any instance where command is required during an inter-facility transport, Eastern PA MedCom shall be used whenever possible.
8. Each organization that provides ALS inter-facility transports in the Eastern PA Region shall have a Quality Assurance/Quality Improvement Plan. The plan shall provide a mechanism to ensure that PCRs are completed in a timely manner, accurately, and that any deviations from protocol or standard of care are documented with outcomes.
9. Each organization shall maintain a report by month, available for inspection by the EMS Council if requested that contains the following:
 - a. A list of the ALS inter-facility transports, with approval by the Service Medical Director.
 - b. Number of times Medical Command was needed and specific reference to cases for which it was required.
 - c. Medications that were administered beyond ALS protocol by staff nurse or physician who accompanied the patient. These should be noted by case number.

Notes:

1. At no time may a physician order an EMS Provider to transport a patient with medications or devices that are not approved by the Department of Health, Bureau of EMS as published in the Pennsylvania Bulletin

Performance Parameters:

- A. Each EMS organization shall review 100% of the ALS inter-facility transports to ensure compliance with the above.

Use and Insertion of Saline Locks Regional Protocol

Criteria:

- A. Patient who requires IV access by protocol, but does not require medication or fluid administration.

Exclusion Criteria:

- A. Patients that require a fluid bolus
- B. Patients that will be receiving IV medications other than Narcan or Dextrose
- C. All Trauma Patients

System Requirements:

- A. ALS unit on location with appropriate equipment and personnel.

Procedure:

- A. All patients
 1. Prior to attempting IV access assemble the required equipment
 - a. IV pigtail (tubing approximately 6" in length)
 - b. Pre-filled saline flush (usually 5ml or greater) OR draw at least 5 ml saline into syringe from multi-use vial of saline for injection
 - NOTE - the tubing must be flushed prior to attachment to patient**
 2. Establish IV access using appropriate size catheter in the usual manner
 - a. If drawing pre-hospital labs, perform prior to attachment of tubing
 3. Attach tubing and secure in normal fashion
 4. Flush tubing with at least 5ml of saline to ensure patency

Possible MC Orders:

- A. None
-

Notes:

1. Normal aseptic techniques should be observed during this, and all IV insertion procedures

Performance Parameters:

- A. Consider 100% audit of all Saline Lock cases to ensure appropriate use.

**Medications and Procedures Requiring Medical Command
Regional Protocol**

Criteria:

- A. ALL ALS Interactions that include the medications and procedures listed below

Exclusion Criteria:

- A. None

System Requirements:

- A. ALS unit on scene with appropriate equipment and staff.

Procedure:

Medications Requiring Medical Command

1. Etomidate
2. Repeat doses of Morphine Sulfate or Fentanyl
3. Dopamine Drip
4. Captopril
5. Enalapril

Procedures Requiring Medical Command

1. None

Notes:

Performance Parameters:

- A. Any deviation from the above must be reviewed by the Service Medical Director and forwarded to the EMS Council office.

Eastern PA EMS Council - Regional Medication List

Generic Name	Trade Name	Minimum Quantity	Maximum Quantity
Adenosine	Adenocard	30 mg	
Albuterol	Proventil	15 mg	
Amiodarone	Cordarone	600 mg	
Aspirin		1 bottle (81mg chewable tablets)	
Atropine Sulfate		6 mg	
Calcium Chloride 10%		1 gm	
Captopril		50 mg	
Dextrose 50%		50 gm	
Dextrose 25%		2.5 gm	
Diazepam	Valium	20 mg	40 mg*
Diltiazem	Cardizem	50 mg (vials) 200 mg (ADD-Vantage)	
Diphenhydramine	Benadryl	100 mg	
Dopamine	Intropin	1 premixed (1600mcg/mL OR 800mcg/mL)	
Enalapril		2.5 mg	
Epinephrine 1:1,000	Adrenalin	2 mg	
Epinephrine 1:10,000	Adrenalin	10 mg	
Etomidate **OPTIONAL**	Amidate	60 mg	
Fentanyl		200 mcg	500mcg
Furosemide	Lasix	200 mg	
Glucagon		2 mg	
Lidocaine		500 mg	
Lidocaine Drip		1 premixed (1 gm/250mL OR 2 gm/500mL)	
Lorazepam **OPTIONAL**	Ativan	4mg	8mg
Magnesium Sulfate		2 gm	
Methylprednisolone	Solu-Medrol	375 mg	
Midazolam	Versed	20 mg	40 mg *
Morphine Sulfate		20 mg	40 mg*
Naloxone	Narcan	4 mg	
Nitroglycerin		1 bottle (0.4mg per tablet or metered dose spray)	
Nitroglycerin Ointment, 2%		1 tube	
Ondansetron	Zofran	12 mg	
Sodium Bicarbonate		50 mEq	

* maximum amounts refer to per vehicle maximum

**Syncope
Regional Protocol**

Criteria:

- A. A patient who has experienced a total loss of consciousness and is conscious upon patient contact.

Exclusion Criteria:

- A. Unconsciousness due to trauma

System Requirements:

- A. ALS unit on scene with appropriate equipment and staff.

Procedure:

- A. ALL patients:
 1. Assess patient and resuscitate as needed.
 2. Initiate the following
 - a. Cardiac monitoring to include EKG, SPO2 and ETCO2 (if available).
 - b. 12 Lead EKG (if capable)
 - c. IV of appropriate size and fluid.
 - d. Oxygen
 3. Consider/determine causes of syncope.
 4. Determine blood glucose and treat appropriately.
 5. Transport
 6. Contact Medical Command.

Possible MC Orders:

- A. Order change in fluid administration (type and rate)
- B. Order additional D50
- C. Order glucagon if IV access unable to be obtained.

Notes:

1. Use appropriate protocol if cause is determined

Performance Parameters:

- A. Review for documentation of monitoring and determination of cause.

**Intravenous Therapy
Regional Protocol****Criteria:**

- A. A patient who requires IV access due to illness or injury.
- B. Must be used in conjunction with another protocol that indicates this procedure is appropriate.

Exclusion Criteria:

- A. None

System Requirements:

- A. ALS unit on scene with appropriate equipment and staff.

Procedure:

- A. IV access shall be obtained as per the clinical norm, ensuring that aseptic technique is observed at all times.
 - B. The following fluids are authorized for use:
 - 1. Normal Saline Solution (0.9 NaCl)
 - a. Used for most IV applications
 - 2. Lactated Ringers
 - a. Used primarily for trauma patients, however Medical Command may request LR be utilized for other illnesses/injuries
 - 3. 5% Dextrose in Water (D5W)
 - a. May be used for mixing medications for drips
 - 4. $\frac{1}{4}$ Normal Saline OR D5 .25 Normal OR Both
 - a. May be used for specific pediatric patients as dictated by protocol or Medical Command
-

Notes:

- 1. Use care when setting drip rates for Keep Vein Open (KVO)/To Keep Open (TKO). Fluid overload may have deleterious effects on some patients
 - 2. After three (3) unsuccessful attempts to initiate IV therapy, Medical Command must be contacted prior to any further attempts
-

Performance Parameters:

- A. Review for documentation of site placement and fluid choice
- B. Monitor attempts vs successes to determine if remediation may be required.

**CPAP/BiPAP USE
Regional Protocol****Criteria:**

- A. Conscious patient in severe respiratory distress due to suspected pulmonary edema or burn inhalation injuries.
- B. Shortness of breath with pulse oximetry < 92% on high-flow oxygen via NRB mask.
- C. Must be used in conjunction with another protocol that indicates this procedure is appropriate.

Exclusion Criteria:

- A. Suspected Pneumothorax.
- B. Inability to maintain own airway.
- C. Altered mental status
- D. Agitated or Combative behavior.
- E. Facial trauma or burns

System Requirements:

- A. Prehospital CPAP/ BiPAP equipment that meets DOH requirements

Procedure:

- A. Adult patients:
 - 1. Assess patient and initiate high flow oxygen as indicated.
 - 2. Monitor pulseoximetry.¹
 - 3. Apply CPAP/ BiPAP if oxygen saturation < 92% on high flow oxygen via NRB mask.
 - a. Connect CPAP/BiPAP device to suitable oxygen supply.
 - b. Attach breathing circuit to CPAP/BiPAP device and ensure device is functioning properly.
 - c. Apply and secure appropriate size breathing circuit mask to patient.
 - d. Titrate positive airway pressure up until improvement in patient pulse oximetry and symptoms.
 - 1) **WARNING:** Do not exceed pressures of 10 cm H₂O
 - 4. Reassess the patient.
 - 5. Follow CHF or Asthma protocols if appropriate.^{2,3}
 - 6. Transport
 - 7. Contact Medical Command.⁴

Possible MC Orders:

- A. If CHF suspected, may order additional serial nitroglycerine.
- B. If reactive airway disease suspected, may order nebulized bronchodilator treatment.

Notes:

- 1. Pulse oximetry should be monitored continuously during use of CPAP/BiPAP
- 2. If appropriate, nebulized bronchodilators may be administered during PAP ventilation via a side port.
- 3. When appropriate, nitroglycerine should be administered by tablets rather than spray when a patient is receiving PAP ventilation.
- 4. Advise the receiving ED of CPAP use as soon as possible. Many EDs do not have CPAP within the ED and may need to obtain it from within the hospital.

Performance Parameters:

- A. Consider 100% audit of all CPAP cases for appropriate use of CPAP and appropriate use of other applicable protocols (e.g. CHF)
- B. Review for documentation of pulse oximetry both before and after CPAP applied.

OROTRACHEAL INTUBATION REGIONAL ALS GUIDELINE

Criteria:

- A. Cardiac arrest
- B. Patient with inadequate ventilations that requires manual ventilation by EMS personnel
- C. Patient who is unable to maintain a patent airway with nasopharyngeal or oropharyngeal airways.
- D. Must be used in conjunction with another protocol that indicates this procedure is appropriate.

Exclusion Criteria:

- A. In pediatric patients, ventilation with BVM may be the preferred method of ventilation and airway maintenance if the ETA to hospital is short and ventilation by BVM is adequate.

Procedure:

A. All Patients:

1. Assemble the equipment while providing maximal oxygen and continuing ventilation:
 - a. Choose tube and blade size. (see Table below)¹
 - b. Introduce the stylet and be sure it stops 1 cm short of the tube's end. Test balloon with 5-10 ml syringe full of air.
 - c. Assemble laryngoscope and check light.
 - d. Connect and check suction.
2. Position patient: neck flexed forward, head extended back. Back of head should be level with or higher than back of shoulders.
 - a. **NOTE:** neck should not be extended or flexed if cervical spine injury is suspected. In this case, intubation should be attempted with in-line cervical stabilization by another individual while neck is kept in a neutral position. During in-line stabilization, the cervical collar may be opened to permit better jaw mobility and improved visualization.
3. Ventilate prior to intubation, but avoid high volumes and overzealous ventilation. Two-person BVM technique with cricoid pressure is preferred.²
4. Insert laryngoscope to right of midline. Move it to midline, pushing tongue to left and out of view.³
5. Lift straight up on blade (no levering on teeth) to expose posterior pharynx.⁴
6. Identify epiglottis: tip of curved blade should sit in vallecula (in front of epiglottis), straight blade should lift epiglottis.
7. Gently lift blade to expose glottis, identify trachea by arytenoids and vocal cords.⁵
8. External laryngeal manipulation (by the intubator's right hand, generally in a backward, upward, and rightward direction) of the thyroid cartilage may dramatically improve the visualization of the glottic opening.
9. Insert tube from right side of mouth, along blade into trachea under direct vision.
10. Advance tube so cuff is 2-3 cm beyond cords.
11. Confirm placement and adequate ventilation using the Confirmation of Airway Placement Protocol - See protocol # 2032.
12. Inflate cuff with 5-10 ml of air. Check for air leaking at mouth after cuff is inflated.
13. Secure tube using woven twill tape or commercial device.
14. Reconfirm tube placement per protocol #2032, but especially after any patient movement.⁶

Notes:

1. In children, a length-based reference tape is the preferred method of determining tube and equipment sizes. Other methods include the formula of ETT size = $[(\text{age}/4) + 4]$.
2. **Endotracheal intubation is NOT the procedure of choice in the first minutes of resuscitation.** It is a secondary procedure only. Most persons can be adequately ventilated with mouth-to-mask or BVM with oropharyngeal or nasopharyngeal airway. If the number of personnel is limited, defibrillation, good chest compressions with minimal interruption, and establishing an IV take precedence over intubation if the patient can be ventilated adequately.
3. An intubation attempt is defined by the insertion of the laryngoscope blade into the mouth passed the teeth or alveolar ridge. Every insertion of the blade should be considered an intubation attempt. Number of attempts must be documented.
4. Any dentures or partial dental plates should be removed prior to laryngoscopy.

5. Intubation should take no more than 15-20 seconds to complete: do not lose track of time. If visualization is difficult, stop and re-ventilate before trying again. If intubation is not successful after 3 attempts, follow the Difficult Airway Algorithm and proceed to appropriate rescue or alternative device - see Airway Management Protocol # 4001.
6. If a patient's condition deteriorates, consider possible complications, such as:
 - a. Esophageal intubation: particularly common when tube not visualized as it passes through cords. The greatest danger is in not recognizing the error. Auscultation over stomach during trial ventilations should reveal air gurgling through gastric contents with esophageal placement.
 - b. Intubation of the right mainstem bronchus: be sure to listen to chest bilaterally.
 - c. Upper airway trauma due to excess force with laryngoscope or to traumatic tube placement.
 - d. Vomiting and aspiration during traumatic intubation or intubation of patient with intact gag reflex.
 - e. Hypoxia due to prolonged intubation attempt.
 - f. Induction of pneumothorax, either from overzealous ventilation or aggravation of underlying pneumothorax.
 - g. Teeth or dentures may be broken.

Orotracheal Tube Size Table	
Age	Endotracheal Tube (uncuffed)
Premature	2.5 - 3.0
Newborn	2.5 - 3.0
2.5 - 3.0 months	3.5
18 months	4.0
3 years	4.5
5 years	5.0
8 years	6.0
10-15 years	6.5 - 7.0 cuffed
Adult	7.0 - 9.0 cuffed

Laryngoscope Blade Size Table	
Age	Laryngoscope Blade Size
Premature	0 Straight
Term-1 year	1 Straight
1-1½ year	1½ Straight
1½-12 years	1½ Straight
13+ years	3 Curved

NASOTRACHEAL INTUBATION REGIONAL ALS GUIDELINE

Criteria:

- A.** Breathing patient, either awake or comatose, that has inadequate ventilation or oxygenation despite maximal treatment with non-intubation alternatives. Examples include:
 - 1. Patient's predicted to be difficult to intubate by orotracheal route (e.g. extremely obese, short neck, inability to widely open jaw, severe tongue edema, etc.)
 - 2. Patient's who are poor candidate for drug-facilitated intubation with etomidate or care by ALS service's that do not perform this optional skill.
 - 3. Patient's entrapped in a sitting or other position that precludes direct laryngoscopy.
- B.** Asthma, pulmonary edema, and respiratory distress situations where patient is anxious and sitting upright and resists laying back.
- C.** Must be used in conjunction with another protocol that indicates this procedure is appropriate.

Exclusion Criteria:

- A.** Apneic patients.
- B.** Patients with significant nasal or craniofacial trauma.
- C.** In general, this technique is not used in children.

Procedure:**A. All Patients:**

- 1. Assemble equipment while providing high-flow oxygen by NRB mask, CPAP device or by assisting patient's ventilations with BVM.
 - a. Choose correct ET tube size (slightly smaller than diameter of nasal passage, about 7 mm in adult).
 - b. Connect and check suction.
- 2. Position patient with head in midline, neutral position (cervical collar may be in place, or assistant may hold in-line stabilization in trauma patients).
- 3. Lubricate ET tube with Xylocaine jelly or other water-soluble lubricant.
- 4. With gentle, steady pressure; advance the tube through the nose to the posterior pharynx. Use the patient's larger nostril.¹
 - a. If using the left nostril, pass the first few cm of ETT upside down to avoid driving bevel into nasal septum, then rotate the tube after partial insertion. This may avoid a nosebleed from the fragile septum.
- 5. Keeping the curve of the tube exactly in midline, continue advancing slowly.
- 6. There will be a slight resistance just before entering the trachea. Wait for an inspiratory effort before final advance into trachea. Patient may also cough or buck just before breath.
- 7. Continue advancing until air is exchanging through the tube.
- 8. Advance about 3-5cm further, then inflate cuff.
- 9. Confirm placement by assuring that patient's natural respirations are exiting through, and not around tube.
- 10. Confirm placement and adequate ventilation using the Confirmation of Airway Placement Protocol # 2032.
- 11. Secure tube using woven twill tape or commercial device.
- 12. Reconfirm tube placement per protocol # 2032, but especially after any patient movement.²

Notes:

- 1. An intubation attempt is defined by the insertion of the tip of the tube into the nostril. The number of attempts must be documented.
- 2. Adjuncts to improve success rate include:
 - a. Using a "trigger tube" or Endotrol ETT that has a trigger to pull the distal tube anteriorly when near the glottis.
 - b. Attaching a BAAM device to the end of the ETT to provide a whistle sound during exhalation when the tube tip is at the glottis.
- 3. If a patient's condition deteriorates, consider possible complications, such as:

- a. Esophageal intubation: particularly common when tube not visualized as it passes through cords. The greatest danger is in not recognizing the error. Auscultation over stomach during trial ventilations should reveal air gurgling through gastric contents with esophageal placement.
 - b. Intubation of the right mainstem bronchus: be sure to listen to chest bilaterally.
 - c. Nosebleed can lead to brisk hemorrhaging.
 - d. Vomiting & aspiration during traumatic intubation or intubation of patient with intact gag reflex.
 - e. Hypoxia due to prolonged intubation attempt.
 - f. Induction of pneumothorax, either from overzealous ventilation or aggravation of underlying pneumothorax.
-

**COMBITUBE INSERTION
REGIONAL ALS GUIDELINE****Criteria:**

- A.** The Combitube is only indicated in unresponsive patients without a gag reflex. Indications include:
 - 1. Unsuccessful attempts at endotracheal intubation. The number of attempts at endotracheal intubation will be at the discretion of the paramedic based on the ability to visualize the vocal cords, but will not exceed three attempts per patient before attempting to place the Combitube.
 - 2. Limited access to patient's head prohibiting endotracheal intubation.
 - 3. Potential cervical spine injury and inability to perform adequate direct visualization with neck in neutral position
- B.** Must be used in conjunction with another protocol that indicates this procedure is appropriate.

Exclusion Criteria:

- A.** The Combitube should not be used on patients with the following conditions:
 - 1. Conscious or unconscious with a gag reflex.
 - 2. Known esophageal disease (for example, esophageal varices, cancer or stricture).
 - 3. Caustic oral ingestion.
 - 4. Patient less than 4 feet tall

Procedure:**A. All patients:**

- 1. Administer high flow oxygen and ventilate.
- 2. Select the correct size Combitube for the patient:
 - a. The standard Combitube should be used for patients over 5'6" in height.
 - b. The Combitube SA should be used for patients between 4" and 5' 6".
- 3. Check the balloons for leaks.
- 4. Lift the patient's jaw and tongue with the non-dominant hand. Discontinue any cricoid pressure.
- 5. Hold the ETC in the dominant hand and insert gently following the natural curve of the pharynx. Insert until the teeth or the alveolar ridge is between the two black lines.
- 6. Inflate the blue (# 1) pilot balloon leading to the pharyngeal balloon to the recommended amount by the manufacturer with air using the provided syringe.
- 7. Inflate the white (# 2) pilot balloon leading to the distal cuff to the recommended amount by the manufacturer with air using the small syringe.
- 8. Give initial ventilation through the blue (#1) lumen while simultaneously confirming absence of gastric sounds. Then listen to confirm good bilateral breath sounds. Continue ventilating if gastric sounds are absent and breath sounds are good.
- 9. If gastric ventilation sounds are present or breath sounds are absent, ventilate through the short, clear (# 2) lumen while simultaneously confirming absence of gastric sounds. Then listen to confirm good bilateral breath sounds. Continue ventilating if gastric sounds are absent and breath sounds are good.
- 10. Confirm tube placement and ventilation using the Confirmation of Airway Placement Protocol – See protocol # 2032.

NEEDLE CRICOTHYROTOMY REGIONAL ALS PROTOCOL

Criteria:

- A. Patient with **complete** airway obstruction that cannot be relieved by basic and advanced obstructed airway techniques or a patient in respiratory arrest with a spinal or head injury who cannot be ventilated adequately with a bag-valve mask or a patient in respiratory arrest with facial injuries that preclude endotracheal intubation or alternative airway insertion with at least 2 attempts documented. The ALS provider **MUST** document that they felt that this patient would expire without this intervention.
- B. Must be used in conjunction with another protocol that indicates this procedure is appropriate.

Exclusion Criteria:

- A. Patients under 10 years of age.

System Requirements:

- A. ALS ambulance services that choose to provide needle cricothyrotomies must carry a transtracheal ventilation system that is capable of providing oxygen at 50 PSI and must carry the equipment necessary for needle cricothyrotomy.
- B. Commercial percutaneous cricothyrotomy kits may be used if approved by the service medical director.

Procedure:

A. All patients:

1. Attempt to clear obstruction by basic and advanced methods.
2. Contact Medical Command to evaluate the need for the procedure if time permits.
3. Place the patient in supine position and place roll or pillow under the back and neck for hyperextension (except for head and spinal injuries).
4. Palpate and identify the Cricothyroid space:
 - a. Palpate the thyroid notch anteriorly.
 - b. Palpate the cricoid cartilage inferiorly.
 - c. Locate the cricothyroid space between the cricoid and thyroid cartilages.
5. Stabilize the trachea by holding the thyroid cartilage between the thumb and fingers.
6. Prep the area.
7. Assemble and attach either a 10g, 12g, or 14g angiocath to a 10 ml syringe.¹
8. Puncture the skin midline and directly over the cricoid cartilage, directing the needle at a 45-degree angle caudally.
9. Aspirate the syringe as the needle advances, any air aspiration signals entry into the trachea.
10. Withdraw the inner stylet while gently advancing the catheter into position.
11. Attach the catheter to the hub of the transtracheal jet insufflator.
12. Ventilate the patient while observing chest inflation and auscultating breath sounds.
13. Allow passive expiration while opening the Y adaptor on the jet insufflator, as to allow expiration.
14. Secure device to the neck.
15. Apply and continuously monitor pulse oximetry.
16. Prepare to transport.
17. Observe patient color, vital signs and level of consciousness and document findings.
18. **CONTACT MEDICAL COMMAND AS SOON AS POSSIBLE UPON COMPLETION OF PROCEDURE.**

Notes:

1. A commercially available alternative airway device like Nu-Trake or Pertrach may be used if approved by ALS service Medical Director and used in accordance to the manufacturer's directions
-

Performance Parameters:

1. 100% of all Needle Cricothyrotomy attempts must be submitted to the EMS Council Office for review.

**EXTERNAL JUGULAR IV ACCESS
REGIONAL ALS GUIDELINE****Criteria:**

- A. Patient in need of fluid administration for volume expansion or medication administration and other peripheral sites have been unsuccessful

Exclusion Criteria:

- A. Patient has a functioning peripheral extremity IV.
- B. Patient has an indwelling central venous line and is hemodynamically unstable.

Procedure:**A. All Patients:**

1. Explain the procedure to the patient whenever possible.
2. Position the patient: supine, elevate feet if patient condition allows (this may not be necessary or desirable if congestive heart failure or respiratory distress is present). Turn patient's head to opposite side from procedure.
3. Expose vein by having patient bear down if possible, and "tourniquet" vein with finger pressure just above clavicle.
4. **Scrub** insertion site (Betadine v. alcohol is less important than vigor.)
5. Do not palpate, unless necessary, after prep.
6. Align the cannula in the direction of the vein, with the point aimed toward the shoulder on the same side.
7. Puncture the skin over the vein first, then puncture vein itself. Use other hand to traction vein near clavicle to prevent rolling.
8. Attach syringe and aspirate if the pressure in the vein is not sufficient to give flashback. Advance cannula well into vein once it is penetrated. Occlude catheter with gloved finger until IV tubing is connected to help prevent air embolism. Attach IV tubing.
9. If initial attempt is unsuccessful, a second attempt may be made on the same side as the first prior to contacting medical command. Medical command must be contacted prior to making more than 2 attempts or if bilateral attempts are considered.
10. Open IV tubing clamp full to check flow and placement, then slow rate to TKO or as directed.
11. Cover puncture site with appropriate dressing. Secure tubing with tape, making sure of at least one 180° turn in the taped tubing to be sure any traction on the tubing is not transmitted to the cannula itself.
12. Recheck to be sure IV rate is as desired, and monitor.
13. Document fluid type, size of catheter, site and complications on PA PCR.

INTRAOSSEOUS (IO) ACCESS REGIONAL ALS GUIDELINE

Criteria:

- A. Patient in need of fluid administration for volume expansion or medication administration without IV access.

Procedure:**A. All Patients:**

1. Connect tubing to IO solution container.
2. Fill drip chamber ½ full.
3. Expose IO site:
 - a. Children < 3 years: proximal tibia, flat surface
 - b. Children ≥ 3 years: proximal tibia or medial malleolus
 - c. Adults: medial malleolus
4. Prepare insertion site (scrub with Betadine or alcohol).
5. Hold lower leg firmly (side-to-side) against firm surface.

B. Children:

1. Angling slightly away from perpendicular, toward the foot, penetrate the skin overlying the flat medial surface of the tibia, 1-2 cm below the tibial tuberosity. Apply firm but controlled pressure with a to-and-fro rotary motion until the tip of the needle passes through the cortex of the bone into the narrow cavity. In some infants, a release of resistance will be felt when this occurs.

C. Adults:

1. Locate the medial malleolus. Move 1-2 fingerbreadths anteriorly and locate the flat area of the tibia medial to the tibial crest. Holding the 18 gauge IO needle perpendicular to the site, insert the needle with a twisting motion until decreased resistance of a “pop” is felt.

D. All Patients:

1. Remove the stylet and aspirate with a blank syringe.
2. Infuse 1-2 ml NSS through the IO needle and observe for extravasation around the site and on the side of the leg opposite the needle entry site. Proper placement is characterized by:
 - a. Solid anchoring of the needle;
 - b. Minimal resistance to infusion; and
 - c. Lack of extravasation of infused fluid.
3. Attach tubing from IO solution container.
4. Secure the IO needle.
5. Adjust IO rate as desired, and monitor.
6. **WARNING:** Sternal IO is **NOT** in scope of practice.

Notes:

1. Do not insert IO needles distal to a fracture site. Avoid inserting through burned tissue.
 2. Do not puncture the same bone more than once.
 3. Sterile technique should be utilized during IO placement.
 4. This technique is best accomplished in children younger than three years, particularly infants.
 5. Self-injury has also occurred while performing this procedure. Avoid this by holding the lower limb side-to-side, rather than with one hand underneath the limb, opposite the needle insertion site.
 6. All of the complications of peripheral IV lines apply to IO lines, including air and other emboli.
 7. Other complications include:
 - a. Osteomyelitis (be sure to use sterile technique).
 - b. Joint and growth plate damage (be sure to angle away from the joint).
-

**Needle Thoracostomy
Regional Protocol****Criteria:**

- A. Patients who have or are suspected of having a Tension Pneumothorax as evidenced by:**
1. **Respiratory distress**
 2. **Increased resistance to ventilation by BVM**
 3. **Absent or decreased breath sounds**
 4. **Hyper-resonance to percussion**
 5. **Deviated trachea away from tension**
- B. Must be used in conjunction with another protocol that indicates this procedure is appropriate.**

Exclusion Criteria:

- A. None**

System Requirements:

- A. ALS unit on location with appropriate equipment and personnel.**

Procedure:

All patients

1. Confirm assessment of need
 - a. If question remains, contact Medical Command
2. Maintain airway
3. Find anatomical landmarks
 - a. 2nd intercostal space, midclavicular line, just above the 3rd rib
4. Cleanse area using aseptic technique (Betadine/Alcohol preps with outward circular motion)
5. Insert needle (14 or 16 gauge angiocatheter) at 90° angle to skin, into pleural space.
6. Remove needle and attach Heimlich valve or flutter valve device.
7. Continue to monitor patient, ensure IV is placed
8. Contact Medical Command

Possible MC Orders:

- A. Repeat as necessary**

Notes:

1. Procedure may be repeated if difficulty in breathing or ventilation returns after insertion.
-

Performance Parameters:

1. 100% review by services to ensure proper documentation of need.