ALL-LEVEL CONSOLIDATED

Procedure Manual

Saint James-John W. Albrecht Medical Center

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Medical Directors:

Neal Rushforth, MD

Matt Jackson, MD

OSF HEALTHCARE

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Airway

BLIND INSERTION AIRWAY (BIAD) - KING

Purpose:	To establish an airway in the unresponsive, nonbreathing patient in need of a definitive airway and for whom endotracheal intubation is difficult or not available
Note:	• BIAD King may not prevent aspiration of stomach contents • Suction through the BIAD King can be accomplished with an 18 french suction catheter
Indications	• Cardiac or respiratory arrest • Secondary airway for ALS and ILS if unable to intubate AND patient is in cardiac or respiratory arrest
Contra-indications	• Patients who are conscious and/or breathing • Patients under 16 years of age • Intact gag reflex • Known or high risk of esophageal disease (i.e. GERD, diagnosis of alcoholism) • Known or suspected caustic substance ingestion • Known or suspected foreign body obstruction • Burns and/or trauma that have altered the anatomy of the airway
Equipment	• King LTS-D of appropriate size for patient • Suction • Bag-valve-mask • Tape or commercial securing device • Water-soluble lubricant • Syringe (at least 60 ml) • Stethoscope
Procedure	1. Pre-oxygenate the patient. 2. Select the appropriate sized tube based on patient's height (reference manufacturer's literature). 3. Test cuff for proper inflation and possible leakage. 4. Lubricate the distal beveled tip and posterior aspect of the tube. Avoid lubrication of areas near the ventilator openings. 5. Place the patient's head in the neutral or sniffing position. 6. With the dominant hand, hold the BIAD-King, and with the non-dominant hand hold the mouth and apply chin-lift. 7. With the airway rotated 45°-90° laterally, such that the blue orientation line is touching the corner of the mouth, insert the tip of the airway into the mouth and advance past the base of the tongue. 8. As the tube passes under the tongue, rotate the tube back to midline with the blue orientation line facing the patient's chin. 9. Without exerting excessive force, advance the tube until the base of the

	connector is aligned with the teeth or gums. 10. Inflate the cuffs based on the manufacturer's literature. 11. Attach the bag-valve-mask to the tube and gently ventilate the patient. While ventilating, simultaneously withdraw the BIAD-King until ventilation is easy and free-flowing. When easy ventilation is achieved, discontinue withdrawal of the BIAD-King. 12. Confirm tube placement by auscultating for bilateral equal breath sounds and absence of sounds over the epigastrum. End-tidal CO_2 and capnography may also be utilized, but these are considered secondary placement confirmations. 13. Secure the tube using a commercial securing device or tape. 14. Repeat step 12 frequently and after any patient movement or manipulation. 15. Continuously monitor SpO_2 (REQUIRED) and capnography (if available).
Document	• BIAD-King size • Placement location by the centimeter marks in relation to either patient's teeth or lips. • At least 3 confirmation techniques. Stethoscopy of lung sounds and epigastrum is required. • Confirmation of proper placement after each patient movement. • Complications encountered and troubleshooting efforts
Complications and Trouble-shooting	• Sound of air leak from around BIAD-King *Ensure cuffs are inflated to appropriate level. Test "pilot balloon" to ensure cuffs are maintaining air pressure.* • No breath sounds/no chest rise with ventilations *Verify BIAD-King procedure was followed, emphasizing Step 11. If after adequate withdrawal and still no breath sounds/chest rise, remove BIAD-King and reattempt as appropriate. Confirm no major trauma to the upper airway is present.* • Resistant/difficult ventilations *Ensure BIAD-King has been withdrawn sufficiently (see Step 11). If after adequate withdrawal and still no breath sounds/chest rise, remove BIAD-King and reattempt as appropriate.*

COLOR	Yellow	Red	Purple
SIZE	3	4	5
PATIENT SIZE	Adults less than 61" (155 cm) in height	Adult 61"-71" (155-180 cm) in height	Adults greater than 71" (180 cm) in height
CUFF PRESSURE	60 cmH_2O	60 cmH_2O	60 cmH_2O
CUFF VOLUME (IF FILLED WITH SYRINGE)	60 ml	80 ml	90 ml
ITEM #	KLT 103	KLT 104	KLT 105

OSF HEALTHCARE

I-GEL Airway Placement

<table>
<tr><td>Purpose:</td><td>To establish an airway in the unresponsive, non-breathing patient in need of a definitive airway and for whom endotracheal intubation is difficult or not available</td></tr>
<tr><td>Note:</td><td></td></tr>
<tr><td>Indications</td><td>• Apneic Patient when endotracheal intubation is not possible or not available.
• Patient must be unconscious, without a gag reflex
• No Hx of esophageal foreign body, disease or caustic ingestion
• Failed Airway.</td></tr>
<tr><td>Contra-indications</td><td>• Obstructive lesions below the glottis
• Trimus, limited mouth opening, pharyngo-perilaryngeal abscess, trauma or mass
• Conscious or semi-conscious patients with intact gag reflex
• Do not allow peak airway pressure of ventilation to exceed 40cm H20
• Do not excessive force to insert the device
• As with all supraglottic airway devices, particular care should be taken with patients who have fragile and vulnerable dental work, in accordance with recognized airway management
• Use care to avoid the introduction of lubricant in or near the ventilator openings</td></tr>
<tr><td>Equipment</td><td>
<table>
<tr><th>I-Gel Size</th><th>Patient Size</th><th>Patient Weight Guide(Kg)</th></tr>
<tr><td>1</td><td>Neonate</td><td>2-5</td></tr>
<tr><td>1.5</td><td>Infant</td><td>5-12</td></tr>
<tr><td>2</td><td>Small Pediatric</td><td>10-25</td></tr>
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<tr><td>3</td><td>Small Adult</td><td>30-60</td></tr>
<tr><td>4</td><td>Medium Adult</td><td>50-90</td></tr>
<tr><td>5</td><td>Large Adult</td><td>90+</td></tr>
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Procedure	1. Grasp the lubricated i-gel firmly along the integral bite block (tube portion of the device). Position the device so that the I-gel cuff outlet is facing toward the chin of the patient. a. Note: be sure that there is only a thin layer of lubricant on the end of the I-gel to avoid blowing it into the lungs with bagging. b. Suction the upper airway PRIOR to insertion as needed. 2. The patient should be in the snuffing position, with head extended and neck slightly flexed forward. **If cervical injury is suspected use modified "jaw thrust" instead of any flexion at the neck.** The chin should be gently pressed down/inferior before proceeding to insert the I-gel. 3. Introduce the leading soft tip into the mouth of the patient in a direction toward the hard palate. 4. Glide the device downwards and backwards along the hard palate with a continuous, but gentle push until a definitive resistance is felt. 5. WARNING: Do not apply excessive force on the device during insertion. It is not necessary to insert your fingers or thumbs into the oral cavity of the patient during insertion of this device. If there is resistance during insertion, a "jaw thrust" and slight rotation of the device is recommended. 6. At this point, the tip of the device should be located into the upper esophageal opening and the cuff should be located against the laryngeal framework. The incisors should be resting on the integral bite block. POST-PLACEMENT 1. Auscultate breath sound. Check for chest rise and confirm placement with ETCO2 monitoring and SPO2 monitoring. a. Attach SPO2 monitor and caponometer b. ETCO2 Monitoring 1. Head injuries: 30-35 mmHg 2. Severe asthma, goal 40-50mmHg, will start >50mmHg 3. All other patients should be between 35-40mmHg 2. Secure the tube. 3. Place the NG tube in slide port and advance to appropriate position, apply suction to decompress the stomach 4. Continue to monitor, sedate per protocol as necessary 5. Consider definitive airway placement, if possible a. Endotracheal tube placement b. You can intubate through the I-Gel tub with either a Bougie introducer or 5-0 ET tube. Removal 1. Ensure suctioning equipment is ready, roll patient onto left side 2. Carefully remove I-Gel airway with gentle, but firm traction. Suction as needed. 3. Insert an oropharyngeal or nasopharyngeal adjunct, as needed 4. Continue ventilations with BVM at 10-15 LPM flow, as needed or place on

	non-rebreather mask at 10LPM 5. Document time of removal and ongoing vitals Pearls of using the I-gel 1. This is an alternative to a King LT or Combitube, consider a supraglottic airway (SGA) 2. This is NOT a definitive airway and aspiration can occur with this device 3. Preload on the OG port with a 12 French tube to prevent any fluid leakage from this hole during insertion 4. Apply a small amount of lubricating gel to the tip of the I-gel to aid in insertion, but do not over lubricate. 5. Do not leave in place >4hours.
Document	• Who attempted/performed procedure. • Number of attempts vs. successful. • BSI and equipment used. • Site of and indications for procedure. • Breath sounds, gastric sounds and at least one other method of endotracheal tube placement confirmation post procedure. • Endotracheal tube size. • Time of procedure. • Oxygen flow. • Any complications or undesired side effects.

OSF HEALTHCARE

ENDOTRACHEAL INTUBATION

Purpose:	To establish guidelines for endotracheal intubation of the patient with airway compromise by ILS and ALS personal.
Note:	• Each advanced level provider is limited to two attempts, with the total attempts to a patient limited to three. Contact Medical Control for authorizations to make additional attempts.
Indications	• Cardiac or respiratory arrest • Primary airway for ALS and ILS if patient is in cardiac or respiratory arrest
Contra-indications	• Patient not in cardiac/respiratory arrest with the ability to control airway with less invasive maneuvers
Equipment	• Endotracheal tubes of assorted sizes. • Stylet – adult and pediatric. • Laryngoscope handle and assorted blades with functional bulbs and battery. • 10cc syringe. • Lubricant. • Tube securing device • Suction capable of clearing large volumes or large pieces of emesis. • Stethoscope. • Neosynphrine nasal spray. • Cetacaine spray.
Procedure	1. Pre-oxygenate patient. 2. Position patient for intubation 3. With the left hand, carefully insert blade into the right side of the patient's mouth, following the natural curvature of the tongue. The blade should gradually be brought into the midline of the mouth so that the tongue is displaced to the left. 4. Visualize the hard palate and uvula as the oral cavity is "tracked through" 5. On arrival at the posterior pharynx, lift the tip of the blade. The tip of the epiglottis should be visible. With the tip of the blade (Miller), lift the epiglottis to visualize the vocal cords. If using the curved blade (Macintosh), the blade tip is inserted into the vallecula and then lifted higher to visualize the cords. 6. Lift the handle forward and anteriorly and avoid using the teeth as a fulcrum. 7. Visualize the vocal cords. With the right hand, insert the endotracheal tube between the vocal cords until the cuff just disappears from sight. 8. Remove the laryngoscope and inflate the endotracheal tube cuff with the manufacturers recommended amount of air. 9. Ventilate the patient and assess the patient for correct placement of endotracheal tube in the trachea.

Document	• Who attempted/performed procedure. • Number of attempts vs. successful. • BSI and equipment used. • Site of and indications for procedure. • Breath sounds, gastric sounds and at least one other method of endotracheal tube placement confirmation post procedure. • Endotracheal tube size. • Time of procedure. • Oxygen flow. • Any complications or undesired side effects.

Complications and Trouble-shooting	• LARYNGEAL SPASM
	  ○ If intubation attempts are unsuccessful and laryngeal spasm continues consider cricothyrotomy with Quick trach2
	• PNEUMOTHORAX
	  ○ Occurrence of pneumothorax may be minimized by proper placement of the stylet in the endotracheal tube prior to intubation. When using a stylet, ensure that it does not protrude through the end of the endotracheal tube.

PATIENT ASSESSMENT

Purpose:	To assure that a thorough and rapid survey of the scene and patient is accomplished.
Note:	**TRAUMA ASSESSMENT GUIDELINES:** Assess head and thorax: D-Deformities C-Contusion A-Abrasions P-Penetrations P-Paradoxical Motion B-Burns T-Tenderness L-Lacerations S-Swelling Assess extremities for: T-Tenderness I-Instability C-Crepitation P-Pulse M-Motor S-Sensation
Indications	All patient interactions
Contra-indications	
Equipment	1. Gloves and full-face protection (mask and goggles or full-face shield). 2. Stethoscope. 3. Sphygmomanometer. 4. Light source.
Procedure	1. Put on gloves. 2. Determine whether there has been any splattering of blood or body fluids. If so, put on full-face protection. • Scene Assessment ➢ Assure personal safety. ➢ Identify possible hazards.

- Location of patient(s).
- Access to patient(s).
- Number of patients.
- Mechanism of injuries.
- Triage as needed.
- Number of units and what types are needed.

- Initial Assessment.
  - Establish cervical spine control. (If indicated)
  - Check for responsiveness and open airway.
  - Check respiratory status.
  - Establish that pulses are present; note quality and location of pulses.
  - Check capillary refill (if under 6) and skin color, temperature and texture.
  - Check for MAJOR hemorrhage.

3. Determine patient level of distress.
   - If any of the above are compromised, stabilize the patient per MCAEMS Protocols.
   - Transport as soon as possible.

❖ **<u>Focused history and physical exam utilizing trauma assessment guidelines.</u>**

- Continue stabilization of the spine.
- Reassess ABC's.
- Assess the head.
- Assess the neck for tracheal deviation, distended neck veins.
- Assess the chest – look, assess breath sounds and feel.
- Assess the abdomen.
- Assess the pelvis.
- Assess all the extremities.
- Log roll the patient taking spinal precautions.
- Assess the posterior.
- Assess baseline vitals – stable V.S. q10min; Unstable V.S. q5min.

❖ **Detailed Physical Examination**= Inspect for any wounds, contusions or obvious injuries. Palpate for tenderness, instability or crepitation.

1. Head

- Scalp.
- Eyes.
  - Check pupils for size, equality and reactivity to light.
  - Bruising under the eyes.

- Nose.
  - Check for bleeding.
  - Check for drainage of clear fluid (CSF).
- Mouth.
  - Check for bleeding.
  - Check for loose teeth.
  - Check for foreign objects.
- Ears.
  - Check for fluid or drainage.
  - Check for bruising behind ear.

2. **Neck**
   - Symmetry.
   - Carotid Pulse.
   - Jugular Vein Distention.
   - Tracheal Deviation.
   - Subcutaneous Air.
3. **Chest.**
   - Symmetry.
   - Equal rise and fall.
   - Subcutaneous air.
   - Auscultate breath sounds.
   - Heart tones.
4. **Abdomen.**
   - Tenderness.
   - Pulsations.
   - Masses.
   - Rigidity.
5. **Pelvis.**
   - Stability (flex and compress – NO ROCKING).
6. **Spine.**
7. **Extremities**
   - Distal pulses.
   - Color.
   - Movement.
   - Sensation and peripheral edema.

❖ **<u>Focused History & Physical Examination using Medical Patient Guidelines</u>**

- Determine the "Chief Complaint" of responsive patient.
- Obtain a "history of present illness" (SAMPLE).
  - Signs and Symptoms.
  - Allergies.
  - Medications.
  - Previous illness.
  - Last meal or drink.
  - Events preceding the illness.

	➢ Perform rapid assessment as needed. ➢ Vital Signs. ○ Take vital signs every 10 minutes if stable. ○ Take vital signs every 5 minutes if not stable. ❖ Pulse. ○ Location. ○ Quality. ○ Rate. ○ Rhythm. ❖ Respiration's. ○ Rate. ○ Quality. ○ Depth. ○ Noises. ❖ Blood pressure. ❖ Glasgow Coma Score.
Document	• **Trauma Assessment Documentation** 1. Scene assessment. 2. Chief complaint, age, sex and weight. 3. Mechanism of injury. 4. Pertinent positive and negative findings of the primary and secondary survey. 5. Glasgow Coma Score. 6. Trauma Score 7. EMT's treatment and if the intervention helped. 8. BSI used. • **Medical Assessment Documentation** 1. Scene size-up. 2. Chief complaint, age, sex and weight. 3. History of present illness. 4. Pertinent positive & negative findings of the primary and secondary survey. 5. Past medical history. 6. Medications. 7. Allergies. 8. EMTs treatment and if it helped the patient. 9. BSI used.

Complications and Trouble-shooting	Later portions of the assessment may not be assessed due to inability to manage initial life threats

OXYGEN ADMINISTRATION

Purpose:	To assure that patients requiring oxygen receive the appropriate amount, using the correct device.
Note:	Shortcomings in pre-hospital care. In low-flow states, such as hypothermia and late hypovolemia, the pulse oximeter devise may not sense accurately. The presence of carbon monoxide on the hemoglobin molecule tends to elevate the saturation level falsely. Be careful in using the pulse oximeter in patients with anemia and in some cases of hypovolemia. You may get a normal reading. Give high flow oxygen regardless of oximeter reading.
Indications	Patients that require oxygen. ➢ Patients that exhibit the sign of hypoxia: • Tachycardia. • Nervousness. • Irritability. • Poor skin signs. • Poor air exchange. ➢ Any patient that has or could develop respiratory or circulatory compromise. ➢ Any patient with an oxygen saturation <94%
Contra-indications	No respiratory distress, and patient oxygenating appropriately with an oxygen saturation of >94 % Patients who achieve ROSC from cardiac arrest should have oxygen titrated to maintain saturations between 94%-96%
Equipment	• Gloves and full-face protection (mask and goggles or full-face shield). • Oxygen cylinder. • Oxygen regulator. • Nasal cannula. • Pulse oximeter if available. • Non-rebreather mask. • Bag-value-mask with oxygen reservoir. • O2 tubing. • Trach mask. • Cup.

Procedure	1. Put on gloves. 2. Determine whether there has been any splattering of blood or body fluids. If so, put on full-face protection. **<u>Devices to administer oxygen.</u>** ➢ **Nasal cannula.** • Usually the most tolerated device. • Two prongs direct oxygen into the nasal passages. • Flow at 1-6 liters per minute. • Oxygen percentage delivered at approximately 24-44%. ➢ **Non-Rebreather Mask.** • Fits like the other masks. • Has valves that keep room air out and allow almost pure oxygen to the patient. • Flow at 10-15 liters per minute – keep the reservoir bag full. • Oxygen percentage delivered is approximately 60-95%. ➢ **Bag-Valve-Mask With Reservoir.** • Must maintain a seal with mask to deliver effective ventilations. • Can be used on a non-breathing patient or to assist a breathing patient with any respiratory insufficiency. • Flow at 15 Lpm – keep the reservoir bag full. • Oxygen percentage delivered is approximately 100%. ➢ **Pulse Oximeter** • Functions by measuring transmission of red and infrared light though an arterial bed, such as those present in a finger, toe or ear lobe. • Gives a reading of 96% to 100% 02 saturation in patient with effective respirations. If respirations are compromised, even slightly, 02 saturation falls. • Provide any patient whose saturation is below 90% with aggressive oxygention. ➢ **CO Monitor** • Analyzes wavelengths of light to accurately measure carboxyhemoglobin (SpCO®) percent levels in the blood noninvasively and continuously ➢ **Trach Mask.** • Goes loosely over trach tube. • May use child O2 mask if proper trach mask not available. • Flow at 8 – 15 Lpm. • **Blow by O2.** • Keep away from eyes. • May use end of O2 hose. • Flow at 4 – 12 Lpm.
Document	• Method of administration

	• Flow rate • Respiratory response to oxygen therapy
Complications and Trouble-shooting	If decreased oxygen flow ensure that tubing is not kinked, also make sure tubing is not too long.

ASSISTED VENTILATIONS

Purpose:	To assure current guidelines and standards are met during treatment of the patient in respiratory arrest or who is hypoventilating.
Note:	Do not routinely hyperventilate patients
Indications	• Unresponsive • No normal breathing, although there may be brief irregular, 'gasping' breaths
Contra-indications	None in the emergency environment
Equipment	• Gloves and full-face protection (mask and goggles or full-face shield). • Oxygen cylinder. • Oxygen regulator. • Bag-valve mask with oxygen reservoir. • Oropharyngeal and/or nasopharyngeal airways. • Pulse oximeter (if available). • Pocket mask with one-way valve.
Procedure	1. Put on gloves. 2. Determine whether there has been any splattering of blood or body fluids. If so, put on full-face protection. 3. Determine unresponsiveness. 4. Establish an open airway. • Jaw thrust if spinal injury is suspected. 5. Check for breathing. • Look, listen and feel. 6. IF PATIENT IS NOT BREATHING…. • Insert airway. • Deliver two (2) slow (1.5-2 seconds) breaths. ➢ If these breaths are unsuccessful, begin techniques to clear the airway according to current American Heart Association guidelines. ➢ Reposition, modified jaw thrust. ➢ Abdominal thrusts. ➢ Finger sweeps for adults only. 7. Check for a carotid pulse. • If no pulse, begin CPR. • If there is a pulse but the patient is not breathing, continue ventilating patient once every five (5) seconds for an adult, (3) three seconds for child and infant.

	8. Place on cardiac monitor (if available).
Document	Ventilatory rate, size of bag valve mask used
Complications and Trouble-shooting	If poor ventilation check seal, assure that airway remains open, ensure no partial or complete airway obstruction

ENDOTRACHEAL INTUBATION

Purpose:	To establish guidelines for endotracheal intubation of the patient with airway compromise by ILS and ALS personal.
Note:	**USE OF THE FLEX-GUIDE™ ET TUBE INTRODUCER (BOUGIE)** This device can be used when there is difficulty visualizing a patient's vocal cords due to the patient's anatomy, edema, or a need to limit neck motion. It is best to use this device early in your intubation attempt. Prolonged scene times related to multiple intubation attempts should be avoided. CONTRAINDICATIONS: Nasal intubation Patient needs an ET tube smaller than 6.0 TECHNIQUE: Standard orotracheal intubation preparation and procedures should be used. When the laryngoscope blade is in place and exposing some or all of the laryngeal opening, advance the ET Tube Introducer, tip up, into the trachea until the black line on the introducer is at the patient's lips. Frequently, you will feel the introducer bounce along the tracheal rings as it is advanced. This is a good indication you are in the trachea. Lubricate an appropriately sized ET tube (minimum of 6.0mm) and pass it over the introducer and into the trachea. If resistance is felt, rotate the ET tube 90 degrees counterclockwise. This allows the bevel of the ET tube to spread the arytenoids so that minimum force is used. If resistance is still felt, back up the ET tube slightly and try again. Advance the ET tube to an appropriate depth and remove the introducer
Indications	Patient in cardiac arrest, patient unable to protect their own airway, patient unable to ventilate appropriately despite less invasive treatment
Contra-indications	Patient is able to maintain their own airway by less invasive means
Equipment	• Gloves and full-face protection (mask and goggles or full-face shield). • Endotracheal tubes of assorted sizes. • Stylet – adult and pediatric. • Laryngoscope handle and assorted blades with functional bulbs and battery. • 10cc syringe. • Lubricant. • Tube securing device 1. Suction capable of clearing large volumes or large pieces of emesis. 2. Stethoscope.

	3. 2% Lidocaine gel 4. Neosynphrine nasal spray. 5. CETACAINE spray.
Procedure	**ENDOTRACHEAL INTUBATION** 1. Put on gloves and full-face protection (mask and goggles or full-face shield). 2. Assemble all necessary supplies and equipment. 3. Attach appropriate blade to handle, lock handle and blade into place and assure that the bulb is functioning. 4. If using a stylet, insert stylet into the tube and conform to desire configuration. 5. Assure that end of stylet is recessed at least one half inch from the tube opening to prevent trauma during intubation. 6. Perform Sellick maneuver (application of mild pressure to the cricoid ring to partially occlude the esophagus) to reduce the risk of vomiting and subsequent aspiration. 7. Pre-oxygenate patient. 8. Position patient for intubation: • NON-TRAUMATIZED PATIENT: Place patients head into the "sniffing" position (place a small towel under the occiput to lift head slightly without hyperextension). • POTENTIALLY TRAUMATIZED PATIENT: Have a second rescuer stabilize the neck in neutral position from below during the entire process of intubation. 9. With the left hand, carefully insert blade into the right side of the patient's mouth, following the natural curvature of the tongue. The blade should gradually be brought into the midline of the mouth so that the tongue is displaced to the left. This will allow better visualization of landmarks. Visualize the hard palate and uvula as the oral cavity is "tracked through". A common mistake is to insert the full length of the laryngoscope blade beyond the epiglottis, making it difficult to visualize the cords. 10. On arrival at the posterior pharynx, lift the tip of the blade. The tip of the epiglottis should be visible. With the tip of the blade (Miller), lift the epiglottis to visualize the vocal cords. If using the curved blade (Macintosh), the blade tip is inserted into the vallecula and then lifted higher to visualize the cords. 11. Lift the handle forward and anteriorly and avoid using the teeth as fulcrum. 12. Visualize the vocal cords. With the right hand, insert the endotracheal

tube between the vocal cords until the cuff just disappears from sight.

13. Remove the laryngoscope and inflate the endotracheal tube cuff with the manufacturers recommended amount of air.
14. Ventilate the patient and assess the patient for correct placement of endotracheal tube in the trachea:
    - While auscultating first the right side of the chest, then the left side and then the epigastric are:

- If lung sounds are present and equal to auscultate, the endotracheal tube cuff may be inflated with the recommended amount of air as directed by the manufacturer.
- If lung sounds are more prominent in the right lung field, the endotracheal tube may have passed into the right mainstem bronchus. Deflate the endotracheal tube cuff. Pull the endotracheal tube back gradually, auscultating until the lung sounds have equalized in both lung fields and reinflate the endotracheal tube cuff.
- If lung sounds are not present or sounds are more prominent in the epigastric area, the endotracheal tube has passed into the esophagus and the procedure must be repeated.

15. Place secondary conformation device which is mandatory on any patient.
16. Other methods to help verify endotracheal tube placementVisualization of endotracheal tube passing through vocal cords.
    - Condensation observed on inside of endotracheal tube on patient exhalation.
    - Chest rise.
    - Loud breath sounds at suprasternal notch.
17. INADVERTENT ESOPHAGEAL INTUBATION IS A LETHAL COMPLICATION. Continuously reassess the patient to ensure proper endotracheal placement. REASSESS TUBE POSITION EVERY TIME THE PATIENT IS MOVED.
18. Secure the endotracheal tube in place.
19. Monitor the patient for potential complications.

Document	1. Who attempted/performed procedure. 2. Number of attempts vs. successful. 3. BSI and equipment used. 4. Site of and indications for procedure. 5. Breath sounds, gastric sounds and at least one other method of endotracheal tube placement confirmation post procedure. 6. Endotracheal tube size. 7. Time of procedure. 8. Oxygen flow. 9. Any complications or undesired side effects.
Complications and Trouble-shooting	<u>LARYNGEAL SPASM</u> 1. Put on gloves and full-face protection (mask and goggles or full-face shield). 2. Assemble all necessary equipment, use 2% Lidocaine gel to lubricate the end of the ET tube. 3. Monitor the patient for LARYNGEAL SPASM: • A reaction characterized by a spasm and closing of the vocal cords. Spasm can occur as a result of anaphylaxis, smoke inhalation, intubation attempts or introduction of a foreign body into the laryngeal space. • Most common after repeated nasal attempts. 4. Visualize and suction the lower airway to remove any possible obstruction. 5. Using the bag-valve-mask, ventilate the patient with 100% oxygen for several ventilations and re-attempt the intubation.

6. Swollen airways may require intubation with a tube size slightly smaller than usual.
7. If intubation attempts are unsuccessful and laryngeal spasm continues consider cricothyrotomy with a pertrach may be performed.

PNEUMOTHORAX

1. Put on gloves and full-face protection (mask and goggles or full-face shield).
2. Assemble all necessary equipment.
3. Monitor patient for PNEUMOTHORAX:
   - Air trapped within the pleural space. PNEUMOTHORAX may occur during intubation if a stylet is used and protrudes from the distal end of the endotracheal tube. This may lacerate the trachea or larynx.
   - Pneumothorax will be characterized by diminished or absent lung sounds on the affected side.
4. Auscultate lung fields beginning with the right side. Diminished sound only on the left side may indicate placement in the right mainstem bronchus.
5. Administer 100% oxygen and continue to assess patient for development of tension pneumothorax. Tension pneumothorax is characterized by deviation of the trachea away from the affected side, distended neck veins, further signs of respiratory compromise and shock (SBP<90).
6. Occurrence of pneumothorax may be minimized by proper placement of the stylet in the endotracheal tube prior to intubation. When using a stylet, ensure that it does not protrude through the end of the endotracheal tube.

COMMENT:
This is not a frequent complication of orotracheal intubation. As such perforation of trachea is more likely to cause PNEUMOMEDIASTINUM, which is impossible to diagnose without an x-ray.

ENDOTRACHEAL INTUBATION ASPIRATION

1. Put on gloves and full-face protection (mask and goggles or full-face shield).
2. Assemble all necessary equipment.
3. Monitor the patient for aspiration:
   - Introduction of foreign matter into lower airways and

lungs.
- Can occur when the unconscious patient is unable to protect the airway and foreign matter such as vomitus and/or blood enter the airways.

4. Have suction available and ready any time a patient's respirations are being assisted and during the intubation procedure. Suctioning may be required prior to attempting placement of the endotracheal tube to better visualize the vocal cords.
5. The Sellick maneuver (application of mild pressure to the cricoid ring to partially occlude the esophagus), used during the intubation procedure, will reduce the risk of vomiting and subsequent aspiration.

TRAUMA TO ORAL CAVITY

1. Put on gloves and full-face protection (mask and goggles or full-face shield).
2. Assemble all necessary equipment.
3. Monitor the patient for potential trauma to nasal/oropharyngeal nasal cavity.
   - Can occur during intubation if endotracheal tube is inserted in a rough manner, it too large of a laryngoscope blade is used or if it is used in a rough manner, if endotracheal tube is inserted blindly too far through the vocal cords or if a non-lubricated endotracheal tube is inserted into a dry oral or nasal cavity.
   - Trauma to the oral area may present with minimal to moderate bleeding.
4. The potential for trauma may be minimized by lubricating the distal portion of the endotracheal tube prior to insertion, gently placing the laryngoscope blade into the oral cavity and inserting the endotracheal tube gently, just past the cords.
5. If trauma occurs, suctioning around and/or through the endotracheal tube may be indicated.

ESOPHAGEAL INTUBATION

1. Put on gloves and full-face protection (mask and goggles or full-face shield).
2. Assemble all necessary equipment.
3. Immediately following placement of the endotracheal tube, assess the patient for:
   - Incorrect placement of the endotracheal tube into the

esophagus.
- During auscultation, sounds will be most prominent in the epigastric area, ventilations may be more difficult, the abdomen may become distended and vomitus may be present in the endotracheal tube.

4. Suction should be available and ready in case of vomiting.
5. The patient should be ventilated with the bag-valve-mask and 100% oxygen for several ventilations prior to attempting intubation again.
6. Opportunities for esophageal intubation may be minimized by visualizing the vocal cords prior to and while inserting the endotracheal tube and utilizing the Sellick maneuver and/or a stylet if the cords appear too anterior to visualize.

RIGHT MAINSTEM BRONCHUS INTUBATION

1. Put on gloves and full-face protection (mask and goggles or full-face shield).
2. Assemble all necessary equipment.
3. Monitor the patient for possible INTUBATION OF RIGHT MAINSTEM BRONCHUS:
   - Can occur when the endotracheal tube is placed too far after passing the vocal cords. The tube will pass into the right mainstem bronchus and during auscultation, breath sounds will be more prominent in the right lung fields.
4. During intubation, pass the endotracheal tube just past the vocal cords, auscultate both lung fields and if sounds are equal bilaterally, inflate the cuff of the endotracheal tube.
5. If during auscultation, lung sounds are more prominent in the right lung fields, gently and slowly pull the un-inflated endotracheal tube towards the rescuer while auscultating and ventilating until the lung sounds are equal on both sides.
6. Verify that no signs and symptoms of a tension pneumothorax is present.
7. Inflate the cuff with the amount of air recommended by the manufacturer.
8. The first advanced provider has two attempts at intubation. IF unsuccessful and another advanced provider is available one additional attempt may be made to a max total of three attempts per patient.
9. If unsuccessful at intubation after three attempts, a BIAD is to be put in place to secure the airway.

REMOVAL OF FOREIGN OBJECT WITH MAGILL FORCEPS

Purpose:	To establish guidelines for the removal of foreign objects in the unresponsive patient for whom abdominal thrusts or chest thrusts have been ineffective.
Note:	
Indications	1. Unconscious patient with airway compromised by foreign body not relieved by basic life support maneuvers.
Contra-indications	1. Conscious patient. 2. Patient age less than one year.
Equipment	1. Gloves and full-face protection (mask and goggles or full-face shield). 2. Resuscitation equipment. • Bag-valve-mask. • Oropharyngeal airways. • Endotracheal tubes, 10cc syringe, tape or "endolock". • Laryngoscope, blades with functioning bulbs and water soluble lubricant. • Oxygen. • Suction unit. • Stethoscope.
Procedure	1. Put on gloves and full-face protection (mask and goggles or full face shield). 2. Assemble all necessary supplies and equipment. 3. Determine that patient has completely obstructed airway: • Patient is apneic, aspiration was witnessed or is highly suspected. • One (1) sequence of A-B-C's, followed by abdominal thrusts and finger sweep (unsuccessful). 4. Position patient: • NON-TRAUMATIZED PATIENT: Place patients head into "sniffing" position. Place a small towel under the occiput to lift head slightly without hyperextension of the neck. • POTENTIALLY TRAUMATIZED PATIENT: Have a second rescuer stabilize the neck in a neutral position from below during the entire process and until the cervical spine is immobilized. 5. With the left hand, carefully insert blade into the right side of the patient's mouth, following the natural curvature of the tongue. The blade should gradually be brought into the midline of the mouth so that the tongue is displaced to the left. This will allow better visualization of landmarks. Visualize the hard palate and uvula as the

	oral cavity's is "tracked through". A common mistake is to insert the full length of the laryngoscope blade beyond the epiglottis, making it difficult to visualize the cords. 6. On arrival at the posterior pharynx, lift the tip of the blade. The tip of the epiglottis should be visible. With the tip of the blade (Miller), lift the epiglottis to visualize the vocal cords. If using the curved blade (MacIntosh), the blade tip is inserted into the vallecula and then lifted higher to visualize the cords. **7.** Lift the handle forward and anteriorly to **avoid using the teeth as a fulcrum.** 8. When the obstruction is visualized, use the Magill forceps in your right hand to grasp the material and gently remove it from the lower airway. (If the obstruction is too distal in the lower airway, cricothyrotomy may have to be immediately performed). 9. Suction any small particles or liquid from the posterior airways. 10. If the patient is apneic, intubate the trachea and ventilate with 100% oxygen. 11. Continuously re-assess the patient's condition and endotracheal tube placement.
Document	1. Results of initial assessment and indications for procedure. 2. Any difficulty with procedure. 3. Equipment used and oxygen flow used post procedure. 4. Time of procedure. 5. Respiratory status of patient. 6. BSI used.
Complications and Trouble-shooting	

OSF HEALTHCARE

CARE OF PATIENT WITH A TRACHEOSTOMY TUBE

Purpose:	To establish guidelines for management of the patient with a tracheostomy tube. Care actions may include removal of dried secretions from the stoma and surrounding skin and suctioning through the tracheostomy.
Note:	
Indications	Patient with tracheostomy tube, decreased SPO2, increased ETCO2, abnormal lung sounds, presence of respiratory distress
Contra-indications	
Equipment	• Disposable gloves, sterile glove and full-face protection (mask and goggles or full-face shield.) • Sterile 4X4's. • Sterile saline or sterile water. • Oxygen. • Tracheostomy mask. • Suction catheters of various sizes depending on the size of the tracheostomy tube (sizes 10, 12, 14 & 16 will accommodate most pediatric and adult patients). • Properly operating suction unit.
Procedure	**SUCTIONING THROUGH THE TRACHEOSTOMY TUBE** 1. Monitor patient for necessity of SUCTIONING THROUGH THE TRACHEOSTOMY TUBE: • Mucous may be visibly present in the airway. The patient may also display bubbly, noisy breathing or coughing. The cough, although noisy, is ineffectual because the glottis is bypassed by the tracheostomy. 2. Pre-oxygenate the patient. 3. Turn suction on and attach suction catheter without removing catheter from package. 4. Open bottle of sterile water or sterile saline. 5. Put sterile glove on one hand and use hand to insert catheter, with suction off, into the tracheostomy tube. 6. Begin with withdrawing the catheter using a rotary motion and intermittent suction. a. Suction no longer than fifteen (15) seconds. 7. Clear suction catheter and suction tubing by inserting catheter into sterile water or saline with suction on. 8. Oxygenate the patient again. 9. Repeat procedure once if necessary. Suctioning more than twice at

	one time may induce hypoxia. **REMOVAL OF DRIED SECRETIONS FROM TRACHEOSTOMY** 1. Put on gloves, full-face protection, and suction patient as above if necessary. 2. Monitor patient for need for REMOVAL OF DRIED SECRETIONS FROM TRACHEOSTOMY: • Thick mucous build up in and around the tracheostomy tube may form a crust build up and/or mucous plug. 3. Remove soiled dressings if necessary. If soiled dressings are removed, change gloves prior to applying clean dressings. 4. Use saline soaked 4X4's to cleanse around the stoma site. 5. Do not remove ties used to secure tracheostomy tube in place.
Document	1. Who performed procedure. 2. BSI and equipment used. 3. Indications for procedure. 4. Time of procedure. 5. Any complications or side effects. 6. Were desired effects attained.
Complications and Trouble-shooting	Hypoxia from suctioning—Oxygenate and ventilate as needed

OSF HEALTHCARE

UNCUFFED TRACHEOSTOMY TUBES

Purpose:	To provide adequate ventilatory support in patients with un-cuffed tracheostomy tubes.
Note:	More and more patients are having surgical tracheostomies done as a treatment for sleep apnea. These patients are unable to maintain their airway when they sleep due to the short thick anatomy of their upper airways. The Tracheostomy tubes for these patients have no cuff so that the patients are still able to talk when they are awake. If they suffer a cardiac or respiratory arrest, their airway must be managed differently because of air leaks caused by the lack of a cuff. Because there is no cuff on these Tracheostomy tubes, ventilation with a BVM is ineffective because instead of sending all of the ventilation air into the lungs, some of it escapes through the upper airway. In other words, **an un-cuffed airway in a dyspneic or apneic patient is not secure.**
Indications	Patient in respiratory arrest, presence of an uncuffed tube
Contra-indications	Patient has a cuffed ET tube
Equipment	Appropriate sized ET tube
Procedure	1. Assess the patient's airway for a "pilot balloon". (This looks just like the balloon on an ET tube and serves the same purpose.) If there is a pilot balloon, make sure the balloon is inflated. The balloon is inflated with 5 ml of air just like an ET tube balloon. Once the pilot balloon is inflated, the airway is secure and the patient can be ventilated with a BVM to check placement and ventilation continued. 2. If there is no pilot balloon or on the right side of the flange it says "no cuff", this is an un-cuffed tube. For patients not on a ventilator this would be the norm. If you are unsure if the trach is cuffed or not, try to ventilate the patient. If the trach is un-cuffed: • the patient's color will not improve with ventilation, there will be poor rise and fall of the chest and breath sounds will be poor • there will be an expulsion of air through the lips with bagging (like the sound a horse makes through his lips) • you will see air bubbles forming around the lips. 3. Call Medical Control and explain the situation. Prepare to replace the Tracheostomy tube with an endotracheal tube. 4. Select an ET tube size based on the size of the Tracheostomy tube. The trach tube size is on the left side of the flange. • Lubricate the tube with water-soluble lubricant.

	• Remove the tracheostomy tube • Insert the ET tube. (remember it only needs to be placed a short distance to reach the carina compared to oral intubation). Right main stem bronchus intubation is very easy to do with this technique. • Confirm placement by listening to breath sounds on both sides and over the stomach. • Secure the tube with cloth or pink tape. (Silk tape will slip due to the secretions). Secure the tube first, then wrap the tape around the patient's head and back around the tube. • Recheck tube placement. DO NOT CUT THE ET TUBE OFF SHORT. • Ventilate with BVM 5. If unable to insert the ET tube into the stoma, intubate the patient using the standard oral technique, cover the stoma site with sterile gauze to prevent air escaping the stoma site and ventilate with BVM.
Document	Medical Control contact, size of ET tube placed, methods of confirmation, patients ventilator status post procedure
Complications and Trouble-shooting	If unable to insert the ET tube into the stoma, intubate the patient using the standard oral technique, cover the stoma site with sterile gauze to prevent air escaping the stoma site and ventilate with BVM.

AUTOMATIC VENTILATOR

Purpose:	To provide an automated capability to ventilate an intubated patient
Note:	Should a mechanical problem develop or the patient appears to be ventilated improperly, (i.e. adverse change in pulse ox, lung sounds, rise and fall of chest wall, etc.), disconnect the unit immediately and ventilate the patient by other means
Indications	• ALS providers only • Apnea • Patient is intubated • At least 8 years old or 45 kg (90 pounds)
Contra-indications	• Respiratory Distress • Breathing patient • Unable to intubate patient • Untreated tension pneumothorax
Equipment	System approved automatic ventilator

Procedure	1. Intubate patient (if not already done)
	  • Verify tube placement
	  • Verify presence of equal lung sounds
	  ➢ If equal lung sounds are not present:
	  ➢ Visualize tube placement
	  ➢ Consider tension pneumothorax or hemothorax and treat accordingly
	2. Attach the ventilator to gas source. Assure ample supply of oxygen.
	3. Attach patient valve outlets to ventilator.
	4. Set breaths per minute (BPM)
	  • Average adult=12-20 BPM
	  • Average child=20 BPM
	5. Set tidal volume (Vt), titrate to rise and fall of chest
	  • Average adult=600-800 ml
	  • Average child=400-600 ml
	  • Do not exceed 800 ml
	6. Set inspiratory time, adult or child
	7. Verify ventilator is delivering oxygen adequately (look, listen, and feel at end of vent tubing)
	8. Attach ventilator tubing to patient ET tube
	9. Verify patient ventilatory status
	  • Rise and fall of chest
	  • Equal, bilateral breath sounds
	  • Pulse oximetry
	  • CO2 color change

	• Update vital signs
Document	Type of ventilator, ventilator settings
Complications and Trouble-shooting	If decreased lung sounds consider pneumothorax, if decreased spo2 or increased etco2 consider equipment failure, check oxygen for capacity or possible leak

OSF HEALTHCARE

TRANSTRACHEAL VENTILATION with Quick Trach 2

Purpose:	To establish guidelines in the use of a Direct tracheal airway
Note:	**ALS Procedure Only**
Indications	
Contra-indications	Other airway attempts by more traditional means have not been attempted
Equipment	1. Gloves and face protection. 2. Quick trach 2 complete set 3. Ambu BVM 4. Supplemental Oxygen
Procedure	1. Put on gloves. 2. Determine whether there has been any splattering of blood or body fluids. If so, put on full-face protection. 3. Remove contents from the package 4. Remove the syringe from the Quick Trach 5. Draw up saline into the syringe 6. Support and stabilize the trachea 7. Find the Crycoid membrane 8. Using one hand, insert the Quicktrach perpendicular to the skin through the cricoid membrane. 9. Best practice is to advance whilst aspirating 10. Resistance will be lost as you move from tissue into the trachea and bubbles will be visible.

	11. Bubbles will be visible in the syringe. If the liquid is not has not been used the plunger will move freely 12. Change the insertion to 45 degrees. This will help keep the trocar from damaging the posterior wall. 13. Advance till you reach the red stopper 14. Withdraw the trocar First remove the green connector with your thumb (until you hear a click) 15. Remove the red stopper 16. Using the syringe as a handle, advance the rest of way into the trachea and remove the trocar completely. 17. Inflate the cuff and secure the tube with holder. 18. Attach the extension and ventilate, auscultate the lungs and watch for chest rise. 19. Use monitoring devices for placement, Capnography, ETCO2

Document	1. Who performed/attempted the task. 2. BSI and equipment used. 3. Ventilations per minute. 4. Any complications or undesired side effects. Time procedure was performed.

Rapid Sequence Intubation

FR/EMR, BLS, ILS

1. N/A

ALS

1. PRE-OXYGENATE: Position the patent and pre-oxygenate with high flow oxygen by mask for 2-5 minutes. Do not manually ventilate the patient unless ventilatory assistance is needed; if so, use BVM to provide respiratory support.
2. PREPARE: Assess for difficult airway and likelihood of difficulty with bag and mask ventilation. Have airway adjuncts and alternative airway readily available. If you anticipate difficulty with intubation or bag and mask ventilation call for help early and have a primary and secondary plan for airway management consider using video laryngoscopy initially. Assemble the required equipment and draw up the medications in labeled syringes. Ensure that the IV functions well. Continuously monitor the cardiac rhythm and pulse oximetry if conditions allow. Have immediately available an iGel or BIAD, and the emergency cricothyrotomy kit. **RSI requires the use of a video laryngoscope**
3. PRE-MEDICATION:

a.) Fentanyl1-3 mcg/kg IV slowly over several minutes

b.) Sedation: May use any of the following:

Midazolam0.1 mg/kg IV

Ketamine 1-2 mg/kg IV preferred agent for status asthmaticus

Etomidate 0.2-0.4 mg/kg (good for increased ICP, has minimal CV effect.)

NOTE:

- Continue pre-oxygenation for 2-3 minutes (allows medications to work) prior to Step 4, if time allows and the patient has effective respiratory effort/support.
- Consider removing the C-collar if present while providing in-line manual immobilization of the head and neck to aid intubation, also consider using video laryngoscopy as a first line in these patients.

4. PARALYZE, then INTUBATE

Paralytic medications:

a. Succinylcholine (Anectine) 1.5-2mg/kg IV

*i. Succinylcholine **contraindications** include:*

1. 5 days or more post-burn or major trauma

2. Patient with a history of chronic paralysis, malignant hyperthermia, know Acetylcholinesterase *deficiency, or neuromuscular disorder (i.e. MS)*

3. Known hyperkalemia

b. Rocuronium (Zemuron) 1 mg/kg IV

i. Preferred agent for pediatric intubations unless known or predicted difficult airway

ii. Preferred agent if known or suspected contraindications to Succinylcholine

NOTE:

- Apnea, jaw relaxation, and decreased resistance to bag/mask ventilations indicate that the patient is sufficiently relaxed to proceed with intubation.
- Intubate, check tube placement, secure tube, and continue to assist respirations.

1. For CONTINUED NEUROMUSCULAR BLOCKADE after intubation, administer:

    c. Rocuronium (Zemuron) 0.5-1.0 mg/kg IVP

    For CONTINUED SEDATION, administer:

    a) Midazolam (Versed) 0.05mg/kg (3-5 mg in adults) every 15-30 minutes prn after intubation

    b) Fentanyl 1-3 mcg/kg IV over 2 minutes

    c) Ketamine 0.5-1.5 mg/kg every 5-10 minutes

2. UNSUCCESSFUL PLACEMENT:

    If endotracheal intubation is unsuccessful, and you are unable to ventilate the patient with BVM, consider attempting to gain airway control using one of the following techniques: (Refer to the Advanced Procedure Manual: Airway Procedures: Failed Airway Algorhythm (510.010))

    a) Place iGel

    b) Attempt placing bougie through iGel, and exchanging for ETT (only if iGel ineffective)

    c) Consider surgical airway if the above methods are unsuccessful

    NOTE: If intubation is unsuccessful and additional paralytics are needed, a non-depolarizing agent should be considered after ease of bagging and airway back up has been carefully considered.

RSI requires the use of a video laryngoscope.

OSF HEALTHCARE

DEEP TRACHEAL SUCTIONING OF THE INTUBATED PATIENT

Purpose:	To establish guidelines for the performance of deep tracheal suctioning of the intubated patient.
Note:	The suctioning time must be monitored to prevent prolonged hypoxia
Indications	1. The patient is unable to clear the airway spontaneously 2. The secretions / aspirate are of detriment to the patient 3. All other methods to remove secretions / aspirate have failed.
Contra-indications	
Equipment	• Disposable gloves, sterile glove and full-face protection (mask and goggles or full-face shield. • Oxygen. • Sterile water or sterile saline. • Bag-valve-mask. • Suction catheters of various sizes depending on the size of the endotracheal tube (sizes 10, 12, 14 & 16 will accommodate most pediatric and adult patients). • Suction unit.
Procedure	1. Put on gloves and full-face protection (mask and goggles or full-face shield). 2. Pre-oxygenate patient. 3. Turn suction on and attach suction catheter to suction unit with removing catheter from package. 4. Open bottle of sterile water or sterile saline. 5. Put sterile glove on one hand and with the sterile gloved hand insert catheter through tube as far as it will go with suction off. 6. Begin withdrawing the catheter using rotary motion and intermittent suction. 7. Clear suction catheter and suction tubing by inserting catheter into sterile water or saline with suction on. 8. Oxygenate patient again. 9. Repeat procedure once if necessary. Suctioning more than twice at one time may induce hypoxia.
Document	• Who performed the procedure. • BSI and equipment used. • Size of suction catheter used. • Results of suctioning procedure (amount and type of drainage and any change in patient condition). • Any complications. • Time of procedure.

Complications and Trouble-shooting	[redacted]

DEEP TRACHEAL SUCTIONING OF THE NEONATE

Purpose:	To establish guidelines for suctioning the lower airways in the newborn with meconium aspiration.
Note:	[redacted]
Indications	
Contra-indications	
Equipment	• Gloves and full-face protection (mask and goggles or full-face shield). • Suction catheters sized for the newborn (size 6, 8 & 10). • Bulb aspirator. • Meconium aspirator. • Several 4X4 gauze. • Laryngoscope handle with infant blades. • Newborn E.T. tubes. • Oxygen. • Suction unit set on lowest setting.
Procedure	1. Put on full-face protection (mask and goggles or full-face shield). 2. Assemble all necessary equipment. 3. Monitor patient for necessity for DEEP TRACHEAL SUCTIONING: • Meconium staining of the amniotic fluid is present or meconium is present on the infants face or in the nose and pharynx. • Meconium may present as a green discoloration or particulate matter. • To prevent meconium aspiration, infants require thorough hypopharyngeal suctioning before initiation of respiration. Thus, ideally, management begins during the delivery of the infant. 4. After the head has been delivered, but before the thorax is delivered, the mouth and nose should be cleared of the meconium fluid. Using a bulb aspirator, gently suction mouth, both nostrils and posterior pharynx to remove any blood or amniotic fluid. A piece of gauze wrapped around the index finger may be used to collect tenacious collections of meconium from the mouth, pharynx and exterior of the nares. 5. Immediately after delivery and prior to inducing respiratory effort aspirate meconium from the trachea by way of the endotracheal tube: • Connect suction to the appropriate size endotracheal tube. If a meconium aspirator is available, place it between the endotracheal tube and the suction tubing. • Intubate the patient in the manner described in the Endotracheal Intubation section of this document.

	• Apply suction directly to the endotracheal tube and withdraw slowly. Suctioning should be repeated after reintubation if the presence of significant meconium return from the initial suctioning to remove as much meconium as possible. When the meconium clears after several intubations and suctionings, use of suction catheters inserted through the endotracheal tube may be adequate and reduce the need for continuing intubations. It may not be possible to clear the trachea of all meconium before the need to initiate positive pressure ventilation.
Document	• Who performed the procedure. • BSI and equipment used. • Size of the suction catheter used. • Results of suctioning procedure (amount and type of drainage and any change in patient condition). • Any complications. • Time of procedure.
Complications and Trouble-shooting	

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

Purpose:	The purpose of this procedure is to establish guidelines for the use of CPAP devices.
Note:	1. Should the patient fail to show improvement with CPAP, remove the CPAP device and assist ventilations with BVM or other advanced airway device as needed. 2. Consider using sedation to alleviate possible anxiety associated with the CPAP device. 3. Pulse oximetry must be used continuously
Indications	• Signs of CHF with pulmonary edema and one or more of the following: • Currently on medications such as digoxin or lasix • Pedal edema • Severe and/or sudden onset SOB • Orthopnea • Anxious • Diaphoresis • Rales or coarse wheezes • Hypertension • Near drowning
Contra-indications	**Absolute Contraindications (DO *NOT* USE):** • Age < 8 • Respiratory or Cardiac Arrest • Agonal respirations • Severely depressed level of consciousness • Systolic BP <100 • Signs and symptoms of pneumothorax • Inability to maintain airway patency • Major trauma (especially head trauma with signs of ICP or significant • chest trauma) • Facial anomalies or trauma (e.g., burns, fractures) • Vomiting **Relative Contraindications (USE CAUTIOUSLY):** • History of Asthma/COPD • History of Pulmonary Fibrosis • Decreased LOC • Claustrophobia or inability to tolerate mask (after first 1-2 minutes trial) **(Consider use of Ativan)**

Equipment	▪ CPAP equipment ▪ Oxygen supply ▪ Pulse oximetry ▪ Cardiac Monitor ▪ Bag-Valve-Mask ▪ 6.Advanced airway adjuncts
Procedure	1. Patient preparation 2. Place patient in a seated position with legs dependant 3. Apply cardiac monitor and assess vital signs (BP, HR, RR, SpO2). Reassess V/S every 5 minutes after application of the CPAP device. 4. Treat patient according to treatment protocols. 5. Connect the generator to the oxygen source, set oxygen flowmeter for appropriate PEEP pressure based on manufacture specification 6. Select appropriate size mask (large for most adults, small for very small adults and children), and attach mask to corrugated tubing. 7. Attach CPAP valve to center hole of mask. 8. Attach strap to mask, if not pre-attached. 9. Verify that air is flowing to the mask. 10. Explain the procedure to the patient. 11. Ensure that the gas is flowing, and then hold the mask to the patient's face. Gently place your other hand on the back of the patient's head to confirm a good air seal. 12. Within a few minutes (once the patient is comfortable) use the head strap to hold the mask in place. 13. Some air leakage is acceptable unless it is in the eye area. 14. Check this frequently during transport as the patient's needs may change. 15. In most cases, the patient should improve in the first 5 minutes
Document	▪ Who performed procedure. ▪ BSI and equipment used. ▪ Time of application.
Complications and Trouble-shooting	ILS/ALS may increase to 10 cmH20, if patient becomes unresponsive or loses venilatory drive switch to BVM ventilations. ALS consider Drug Assisted Intubation

PULSE OXIMETER

Purpose:	To establish guidelines for the application of a pulse oximeter.
Note:	Not to be relied on in suspected CO exposure
Indications	All pre hospital patients
Contra-indications	Exposure to CO
Equipment	▪ Gloves and full-face protection (mask and goggles or full-face shield). ▪ Pulse oximeter.
Procedure	1. Put on gloves. 2. Determine whether there has been any splattering of blood or body fluids. If so, put on full-face protection. 3. Assess the patient for indications for application of pulse oximeter. • Any patient that has, or could develop, respiratory or circulatory compromise. ➢ Be aware that a patient with cold extremities or in shock may produce false low readings. 4. Apply pulse oximeter. • Attach sensor unit cable to pulse oximeter. • Apply to any finger. ➢ Assure that fingertip is clean and that fingernail is clean (no fingernail polish). 5. Obtaining pulse oximeter reading. • Apply pulse oximeter as above. • Turn power on. • Obtain reading.
Document	▪ Who performed the procedure? ▪ Equipment used. ▪ Percentage of oxygen saturation every five (5) to (10) minutes as with other vital signs. ▪ Time of each recording.
Complications and Trouble-shooting	Cold temperatures and decreased profusion will affect values. Warm up the hand. Confirm that pulse rate matches what is displayed on device. Remember treat patient presentation not the technology.

CARBON MONOXIDE MONITORING (Optional Equipment)

Purpose:	Carbon monoxide poisoning is one of the single most common poisoning exposures in the United States. Carbon monoxide, or CO, is an odorless, colorless gas that can cause sudden illness and death. Carbon monoxide is found in combustion fumes, such as those produced by cars and trucks, gasoline engines, camp stoves, lanterns, burning charcoal and wood, gas ranges, heating systems, generators and poorly vented chimneys. Structural fires are another common source of CO exposure for both victims and fire fighters. Carbon monoxide from these sources can build up in enclosed or semi-enclosed spaces. Breathing it can poison people and animals in these spaces. All people and animals are at risk for carbon monoxide poisoning Certain groups including pregnant women/fetuses, infants, and people with chronic heart disease, anemia, or respiratory problems are more susceptible to its effects. CO toxicity causes impaired oxygen delivery and utilization at the cellular level. CO affects several different sites within the body but has its most profound impact on the organs with the highest oxygen requirement (e.g., brain, heart). Misdiagnosis commonly occurs because of the vagueness and broad spectrum of complaints. Symptoms often are attributed to a viral illness, frequently “the flu” in winter months. It is important to remember that symptoms may not correlate well with measured HbCO levels. The following list includes commonly recognized symptoms associated with carbon monoxide poisoning. Any of the following should alert suspicion if related to a potential source of CO and when more than one patient in a group or household presents with similar complaints at the same time: Malaise Palpitations Drowsiness Syncope Distractibility Hallucination Vomiting Visual disturbance Memory impairment Dyspnea on exertion Flu-like symptoms Coma Lethargy Confusion Seizure Weakness Confabulation Gait disturbances Diarrhea Fecal and urinary incontinence Fatigue Chest Pain Headache Depression Impulsiveness Dizziness Agitation Nausea Abdominal pain Carbon monoxide should be a diagnosis of exclusion, within the scope of pre-hospital practice. Common, identifiable causes of the above symptoms

	should be entertained. For example, hypoglycemia or drug overdose. Not just a winter phenomenon, carbon monoxide poisoning has been seen in other climates and seasons after natural disasters, when residents use generators or pumps which are not properly ventilated. Any process which burns fuel [gasoline, diesel, kerosene, propane, natural gas, charcoal, wood etc.] in an engine, heater or construction equipment can emit C.O.
Note:	**Special Considerations** **Pediatric Patients** . **Smokers**: Cigarette smoke produces some degree of carbon monoxide. Heavy smokers can have carboxyhemoglobin levels up to 10%. Smoking status should be taken into consideration and this information combined with symptoms and history of environmental carbon monoxide. **Pregnant Women:** Pregnant women maybe at higher risk in carbon monoxide situations. This is because of the increased susceptibility of the fetus to the effects of carbon monoxide. The fetal SpCO% maybe 10-15% higher than the maternal readings. All pregnant women with possible CO exposure should be encouraged to have definitive COHb blood levels and physician evaluation.
Indications	Suspected CO exposure
Contra-indications	[redacted]
Equipment	CO Monitor
Procedure	1. Apply Carbon Monoxide Monitor per manufacturer directions.
Document	▪ Who performed the procedure. ▪ Equipment used. ▪ Time of each recording.
Complications and Trouble-shooting	Cold temperatures and decreased profusion will affect values. Warm up the hand. Confirm that pulse rate matches what is displayed on device. Remember treat patient presentation not the technology.

OSF HEALTHCARE

CARDIOPULMONARY RESUSCITATION

Purpose:	To assure current guidelines and standards are met during the performance of cardiopulmonary resuscitation.
Note:	Frequently change compressors as CPR is physically exhausting
Indications	Patient is pulseless, pediatric patient with a pulse rate <60
Contra-indications	Patient has an LVAD that CPR is contraindicated for, these devices will have a pump that is to be squeezed instead of compressions
Equipment	In theory, none absolutely needed. However, some type of protection barrier should be used during the mouth to mouth phase of cardiopulmonary resuscitation. • Gloves and full-face protection (mask and goggles or full-face shield).
Procedure	Follow the current American Heart Association guidelines.
Document	1. The date, time and who started CPR. 2. How long CPR was performed. 3. Patient condition before, during and after resuscitation efforts. • Vital signs. • Presence or absence of pulses during chest compressions. • Skin color. • Level of consciousness. 4. BSI used.
Complications and Trouble-shooting	[redacted]

AUTOMATIC EXTERNAL DEFIBRILLATOR

Purpose:	To establish guidelines for the application of an automatic external defibrillator to a patient who presents with cardiac arrest.
Note:	
Indications	Patient is in cardiac arrest
Contra-indications	Patient is <1 year of age
Equipment	1. Gloves and full-face protection (mask and goggles or full-face shield). 2. Automatic external defibrillator. 3. Defib pads.
Procedure	1. Put on gloves. 2. Determine whether there has been splattering of blood or body fluids. If so, put on full-face protection. 3. Assess patient for indications for application of automatic external defibrillator. • Patient ≥ one • Unconscious. • Not breathing. • Pulseless. • If unwitnessed perform 2 minutes of CPR • Start CPR while applying automatic external defibrillator. Apply defib pads: ➢ Place positive electrode on left chest mid-axillary over forth-intercostal space. ➢ Place negative electrode on anterior right chest, inferior to clavicle. 4. Defibrillation procedure: • Attach cable to defib pad and then to patient. • Turn power on. • Stop CPR and have everyone “clear” the patient when directed. • Assure that other motion is stopped while AED is doing its assessment. • Do not touch the patient or cable during analysis. • If a “SHOCK ADVISED” message appears, repeat the ‘CLEAR THE PATIENT”. • It is programmed to shock 1 time. • If patient is not in shockable rhythm, it will advise you to check breathing and pulse. • When check pulse message is noted, check the pulse. ➢ If no pulse, resume CPR.

	➢ If there is a pulse, support ventilation with 100% oxygen and monitor patient. • If ILS or ALS provider, follow appropriate protocols. • After 2 minute of CPR, repeat 1 shock or continue CPR if NO SHOCK is indicated. Pediatric Patients: 1. Use pediatric pads if available and AED can recognize pediatric pads. 2. If no pediatric pads use adult 3. Placement should be front and back
Document	1. Who performed procedure. 2. BSI and equipment used. 3. Time of application. 4. Number of shock administered
Complications and Trouble-shooting	Device failure is extremely rare, if it occurs resume CPR attempt to restart the device, if that fails request another EMS vehicle. File incident report with the system office. Check pad placement to assure good contact with the skin. Dry and shave chest as necessary

OSF HEALTHCARE

SEMI-AUTOMATIC EXTERNAL DEFIBRILLATOR

Purpose:	To establish guidelines for the application of an automatic external defibrillation to a patient who presents with cardiac arrest.
Note:	
Indications	Patient in Cardiac Arrest
Contra-indications	Patient is <1 year of age
Equipment	1. Gloves and full-face protection (mask and goggles or full-face shield). 2. Automatic external defibrillator. 3. Defib pads.
Procedure	1. Put on gloves. 2. Determine whether there has been any splattering of blood or body fluids. If so, put on full-face protection. 3. Assess patient for indications for application of automatic external defibrillator. • Patient ≤ one • Unconscious. • Not Breathing. • Pulseless. 4. Start CPR while applying automatic external defibrillator. 5. Anterior-anterior placement. • Place positive electrode on left chest mid-axillary over fourth intercostal space. • Place a negative electrode on anterior right chest, inferior to clavicle. 6. Defibrillator procedure. • Attach cable to defib pad and then to patient. • Turn power on. • Stop CPR and have every one "CLEAR" the patient when directed. • Press the "PUSH TO ANALYZE" button. • Assure that other motion is stopped while AED is doing its assessment. • Do not touch the patient or cable during analysis. • If a "SHOCK ADVISED" message appears, repeat the "CLEAR THE PATIENT" command. • When "PUSH TO SHOCK" message appears, confirm that no one is touching the patient and press the "PUSH TO SHOCK" button. • When "NO SHOCK ADVISED" message appears check the pulse. ➢ If no pulse, resume CPR. ➢ If there is a pulse, support ventilation with 100% oxygen. • Follow appropriate protocol. • After one minute of CPR, reanalyze and repeat steps g through l.

Document	1. Who performed procedure. 2. BSI and equipment used. 3. Time of application. 4. Rhythm strips if available.
Complications and Trouble-shooting	Device failure is extremely rare, if it occurs resume CPR attempt to restart the device, if that fails request another EMS vehicle. File incident report with the system office. Check pad placement to assure good contact with the skin. Dry and shave chest as necessary

ELECTROCARDIOGRAM

Purpose:	To establish guidelines for the proper application of the ECG.
Note:	1. Gloves and full-face protection (mask and goggles or full-face shield). 2. ECG monitor. 3. ECG electrodes.
Indications	Patients with chest pain, syncope, patients being administered medication
Contra-indications	
Equipment	ECG Monitor, Monitor Electrodes, Safety Razor, Betadine
Procedure	1. Put on gloves. 2. Determine whether there has been any splattering of blood or body fluids. If so, put on full-face protection. 3. Assemble all necessary equipment and supplies. 4. Select the location for electrode placement and clean the site if there is sweat or dirt present: • Lead II – Place the negative electrode on the right (white) midclavicular/second intercostal space. The ground electrode is placed on the left midclavicular/second intercostal space (black). The positive electrole is placed on the left midaxillary fifth intercostal space (red).
Document	1. Who performed the procedure. 2. BSI and equipment used. 3. Time the procedure performed. 4. Rhythm strips should accompany documentation. Rhythm strips should be obtained any time that changes are noted in the rhythm, when procedures are performed or when medication is administered. The time should be noted on the rhythm strip. 5. Identify rhythm and any changes in the rhythm.
Complications and Trouble-shooting	Poor patch contact—shave any excess hair, excessive sweat use of towel to dry and if needed betadine swab.

12-LEAD EKG

Purpose:	The 12-Lead EKG is used to support the diagnosis of Acute Myocardial Infarction (AMI).
Note:	Remember that female presentation of acute coronary syndrome is atypical. Consider 12 Lead EKG for any abdominal pain above the navel
Indications	Chest pain patients, syncope, weakness, acute shortness of breath, stroke presentation
Contra-indications	
Equipment	1. Gloves. 2. 12-Lead EKG monitor. 3. Electrodes.
Procedure	1. Put on gloves. 2. Determine indication is met for 12-lead EKG (chest pain that is cardiac in origin). 3. Assemble all necessary supplies and equipment. 4. Electrode placement: *Lead — Electrode location.* *V1 — Fourth intercostal space at the right sternal border.* *V2 — Fourth intercostal space at the left sternal border.* *V3 — Midway between location V2 and V4.* *V4 — Mid-clavicular line in the fifth intercostal space.* *V5 — Anterior axillary line on the same horizontal level of V4.* *V6 — Mid-axillary line on the same horizontal level as V4 and V5.* *RA & LA — Anywhere on the arm (prefer midway between the elbow & shoulder.* *RL & LL — A few inches above ankle (to reduce muscle artifact may be placed on the upper leg as close to the torso as possible).* 5. Connect monitoring cables to electrodes. 6. Turn on machine. 7. Enter patient name and age and 8. Press 12-lead indicator button. 9. Transmit 12-lead to receiving hospital 10. After arrival at receiving facility remove EKG cables and disconnect from 12

	lead machine.
Document	1. Time of procedure and who performed EKG. 2. Document the rhythm (ILS/ALS Only) BLS may document automated interpretation. 3. Document any noted ectopy
Complications and Trouble-shooting	Poor patch contact—shave any excess hair, excessive sweat use of towel to dry and if needed betadine swab.

EXTERNAL PACEMAKER

Purpose:	To establish guidelines for the application of an external pacemaker in the adult patient (18 years of age or older) who presents with, symptomatic bradycardia, 2nd degree heart block type II (Mobitz II), and 3rd degree heart block refractory to Atropine.
Note:	Consider sedation with Ketamine .3 mg/kg IV, Midazolam 0.05 mg/kg (Max 5 mg) IN
Indications	symptomatic bradycardia, 2nd degree heart block type II (Mobitz II), and 3rd degree heart block refractory to Atropine.
Contra-indications	Under 18 years of age
Equipment	1. Gloves and full-face protection (mask and goggles or full-face shield). 2. Pacemaker unit (this procedure describes use of the "Quick-Pace" electrodes). 3. ECG monitor.
Procedure	1. Put on gloves. 2. Determine whether there has been any splattering of blood or body fluids. If so, put on full-face protection. 3. Assess patient for indications for external pacing: • Systolic blood pressure of 90 or below and heart rate of below 60 beats per minute: ➢ Decreased level of consciousness due to bradycardia or, ➢ Chest pain of suspected myocardial origin, Shortness of breath, pulmonary congestion, or CHF. 4. Apply pacemaker: • Anterior-Lateral placement is preferred: ➢ Place negative electrode on left anterior chest halfway between the xiphoid process and the left nipple with the upper edge of the electrode below the nipple line. ➢ Place the positive electrode on the left posterior chest beneath the scapula and lateral to the spine. • Anterior-Anterior placement (only to be used when anterior-posterior positioning is not possible). ➢ Place negative electrode on left chest mid-axillary over fourth intercostal space. ➢ Place positive electrode on anterior right chest, inferior to clavicle. 5.Pacing Procedure: • Attach ECG monitor to patient. Patient must remain monitored during entire pacing procedure. • Connect pacing cable to ECG monitor. • Connect Quick-Pace electrodes to pacing cable – matching electrode

	color to connector color. • Position pacing electrodes as above. • Push “PACER” button. • Increase pacing rate to 60 beats per minute. • Observe monitor. “Sensor marker” (.) should appear on each QRS complex. If sensing marker is not present on QRS or appears elsewhere, adjust ECG size control for optimal sensing. If this fails, select another lead and re-adjust ECG size. If ECG size is adjusted too low, pacer will not be able to operate in a synchronous mode and ECG will be difficult to assess. If ECG size is adjusted too high, ECG artifact may inhibit pacing appropriately. • Activate pacemaker by pushing the “start/stop” button. The indicator will flash and a positive pacing spike will be seen with each pacing impulse. • Slowly increase current (mA). Watch monitor for electrical capture of pacing stimulus. Assess pulse and blood pressure for evidence of mechanical capture. • The recorder will document the selected pacing parameters. • If the intrinsic heart rate exceeds the pacing heart rate, the pacemaker will sense the cardiac activity and will not discharge. • Musculoskeletal contractions may be observed while pacing. This may be somewhat uncomfortable for some conscious patients. Discomfort may be minimized by using the lowest current that produces capture and by varying the position of the pacing electrodes. In some cases Versed sedation may be necessary at ALS level only.
Document	1. Who performed the procedure. 2. BSI and equipment used. 3. Which placement was used. 4. Rhythm strips before and after application of pacemaker. 5. Side effects. 6. Time of application
Complications and Trouble-shooting	Device failure is extremely rare, if it occurs resume CPR attempt to restart the device, if that fails request another EMS vehicle. File incident report with the system office. Check pad placement to assure good contact with the skin. Dry and shave chest as necessary

DEFIBRILLATION AND SYNCHRONIZED CARDIOVERSION

Purpose:	To establish guidelines for defibrillation and/or synchronized cardioversion for the patient experiencing lethal arrhythmias.
Note:	
Indications	Cardiac Arrest, Rhythms and Condition outlined in protocol manual
Contra-indications	
Equipment	1. Gloves and full-face protection (mask and goggles or full-face shield). 2. ECG monitor and defibrillator. 3. Defibrillation Patches
Procedure	1. Apply ECG electrodes in the usual manner or use the "quick look" paddles to confirm rhythm. 2. If rhythm shown is one for which defibrillation is indicated, confirm absence of pulses, and proceed as below: • Apply defibrillation pads to patient's bare chest. • Turn on and charge defibrillator to appropriate energy level. • Place pads on patient's chest in the correct position. One paddle is placed over the right sternal border at the second intercostal space and one over the apex of the heart. • Insure that no one is in direct or indirect contact with the patient and advise all team members to clear. • Defibrillate the patient by pushing the button on the monitor • Re-evaluate the ECG rhythm and pulses and continue care as directed by MCAEMS Protocols and Standing Orders. 3. If rhythm displayed requires synchronized cardioversion, proceed as below: • Premedicate whenever possible. If time and the patient's clinical condition permit, give conscious sedation. • Apply pads. • Turn and charge defibrillator to appropriate energy level. ○ PSVT/A-fib 100J ○ V-tach with a pulse 100J ○ Torsades 200J ○ Joule Progression 100- 200-300-360 • Place pads on the chest in the correct position (one pad is placed over the right sternal border at the second intercostal space and one pad over the apex of the heart). • Push the "sync" button on the monitor. • Insure that no one is in direct or indirect contact with the patient and advise team members to clear. • Cardiovert the patient by pushing the button on the monitor Hold buttons

	until shock is delivered. • Re-evaluate the ECG rhythm and continue care as directed by OSF Saint James EMS Protocols or Medical Control
Document	Number and dosage of shocks
Complications and Trouble-shooting	None in the emergency enviroment

OSF HEALTHCARE

VALSALVA MANEUVERS

Purpose:	To establish guidelines for the performance of vagal maneuvers such as Valsalva.
Note:	**ILS/ALS Only**
Indications	Narrow Complex Tachycardia Stable Patient
Contra-indications	60 years old or greater, Carotid bruit, CVA history, endartectomy scar
Equipment	1. Gloves and full-face protection (mask and goggles or full-face shield). 2. ECG monitor. 3. Patent IV.
Procedure	1. Put on gloves. 2. Determine if there has been any splattering of blood or body fluids. If so, put on full-face protection. 3. Assemble all necessary supplies and equipment. 4. Assess monitored patient and determine that dysrhythmia is PSVT and that the patient is hemodynamically stable. 5. If unable to differentiate between PSVT, sinus tachycardia or atrial flutter, vagal maneuvers may be attempted. If patient is experiencing PSVT, rhythm will either be converted or nothing will happen. In contrast, if rhythm is ST of AF, a transient slowing of the ventricular response may occur during the procedure. (Sometimes a vagal maneuver will transiently slow down the PSVT). 6. Perform the vagal maneuver permitted under MCAEMS Protocols or by orders from Medical Control. • Valsalva – direct the patient to exhale against the closed glottis. Have the patient push with his/her abdominal muscles against your hand. 7. If after several attempts there has been no change, consult Medical Control for further orders. If the rhythm is PSVT, the arrhythmia will either abruptly terminate or do nothing. 8. Monitor the patient for desired effects. 9. Monitor the patient for potential complications. • Syncope, CVA, sinus arrest, high grade AV block, prolonged asystole and ventricular tachyrhythmia in patients with digitalis toxicity. • Should not be attempted in patients with history of sick sinus syndrome, carotid bruits, cerebrovascular disease or when digitalis toxicity exists.
Document	1. Results of initial assessment and indications for procedure. 2. How order was obtained and by whom. 3. Site used for the procedure and how it was performed. 4. Time procedure was completed. 5. Difficulties with the procedure.

	6. Changes in the patient's condition following the procedure. 7. Complications.
Complications and Trouble-shooting	**SYNCOPE** 1. Put on gloves. 2. Determine if there has been any splattering of blood or body fluids. If so, put on full-face protection. 3. 4. Assemble all necessary supplies and equipment. 5. Monitor the patient for potential SYNCOPE AND/OR ARRHYTHMIAS: • Complications may develop in elderly patient or patients with a previous history of carotid bruits, cerebrovascular disease, digitalis toxicity or sick sinus syndrome. • Syncope may present with an abrupt change in the heart rate and accompanying symptoms such as pallor, diaphoresis and hypotension. 6. Patients receiving vagal maneuvers should have an IV in place prior to the procedure being performed. This allows for quick pharmacological intervention. 7. Dysrhythmias that develop should be treated according to OSF Saint James EMS Protocols for the specific dysrhythmia.

BLEEDING CONTROL

Purpose:	To assure that bleeding is rapidly controlled with safe methods.
Note:	
Indications	Trauma with active bleeding
Contra-indications	
Equipment	1. Gloves and full-face protection (mask & goggles or full-face shield). 2. Dressing material.
Procedure	1. Put on gloves. 2. Determine whether there has been any splattering of blood or body fluids. If so, put on full-face protection. 3. Direct pressure and elevation. • Apply a dressing material keeping the dressing and the wound as clean as possible. • Elevate wound above the heart and use direct or diffuse pressure. • If bleeding occurs through the original dressing after using direct or diffuse pressure then remove the dressing and look for a major bleeding point. • Apply fingertip pressure directly on the point of bleeding. • Large gaping wounds may require packing with sterile gauze and direct hand pressure if direct fingertip pressure fails to control bleeding. 4. Pressure points • Document time and location pressure started. • MAINTAIN direct pressure to the wound. • Check distal pulses after pressure point application. 5. Splints • Reduction of motion of bone ends will reduce the amount and aggravation of tissue damage and bleeding associated with a fracture. • Use of air pressure split can help control severe bleeding associated with lacerations of soft tissue or when bleeding is associated with fractures. 6. Tourniquet • Document time, locations, who started and duration of tourniquet application. • Use at least a 2” band for the tourniquet. (e.g. Blood Pressure Cuff) • Check distal pulses before and after application. 7. Quick Clot • Take Proper Body Substance Isolation (BSI) procedures • Tear open package of QuikClot® 1st Response™ • Remove excess pooled blood from wound, while preserving any clots already in the wound if possible.

	• Pack QuikClot® 1st Response™ tightly and directly onto bleeding source. More than one may be required. Product may feel warm (typically 105°F/ 40.5°C). • Quickly apply pressure until bleeding stops. Suggested time 3 to 5 minutes of continuous pressure. • Leave QuikClot® 1st Response™ in place. Wrap to secure the product in the wound. • Not for internal use
Document	1. Location and type of bleeding. 2. Method of controlling the bleeding. 3. Response to therapy. 4. BSI used.
Complications and Trouble-shooting	If a previous method fails attempt another technique

BANDAGING TECHNIQUES AND WOUND CARE

Purpose:	To assure that the proper type of dressing is applied to the appropriate patient.
Note:	Assure that circulation remains in tact after bandaging by assessing pulse motor and sensory
Indications	Active bleeding, open wound, open sore
Contra-indications	
Equipment	1. Gloves and full-face protection (mask and goggles or full-face shield). 2. Bandaging material.
Procedure	1. Put on gloves. 2. Determine whether there has been any splattering blood or body fluids. If so, put on full-face protection. 3. Closed wounds: • Cold pack to wound – Assure that there is some type of protective barrier between cold pack and patient. • Compression – A light pressure dressing is applied to help reduce swelling. • Elevation – Elevate the wounded area above the heart level if there are no other injuries to that area. 4. Open wounds: • Apply a snug bandage in a distal to proximal fashion over the dressing already applied. • Check distal pulses, movement and sensation before and after bandage is applied and every 10 minutes thereafter. • MAINTAIN pressure and elevation to wound. • Bandages should be as clean as possible. 5. Special wound care: • Open chest wounds. ➢ Occlusive dressing. ➢ Vaseline gauze. ➢ Plastic wrap. ➢ Flutter valve dressing. ➢ Seal on expiration. ➢ Observe for development of pneumothorax. • Open abdominal wound. ➢ Apply a sterile, moist dressing to the evisceration. ➢ Cover the moist dressing with a dry dressing. ➢ DO NOT put tissue back in. • Impaled object ➢ DO NOT remove the object still impaled. ❖ Exception of airway involvement ❖ Impaled in cheek.

	❖ Obstructed airway. ❖ CPR ➢ Secure the object to aid in bleeding control. ➢ Apply a bandage around the object to aid in bleeding control. • Eye injuries ➢ Cover both eyes with a loose dressing. ➢ If enucleation has occurred use some type of protective cup and cover both eyes. • Infected wounds ➢ Follow proper infection control procedures. • Amputation ➢ Control hemorrhage. ➢ Loose, bulky, bandage to the stump. ➢ Obtain the missing body parts and then wrap with a moist, clean dressing. ➢ Place the moist dressing and body parts into a plastic bag and then place the bag onto an ice water solution. ➢ DO NOT let the body parts come in contact with the ice water solution. a. Burns ➢ Eliminate source of burn. (Scene Safety) ➢ Protect the airway. ➢ Apply a dry, sterile dressing to the affected area. ➢ May cool burns of 1 degree with water for pain relief. ➢ Use caution not to rupture any blisters that may appear. ➢ Determine depth and percent of body area burned (“rule of nines”).
Document	1. Type and location of wound. 2. Pulses, color, movement and sensation, distal to the injury, before and after the wound was cared for. 3. Type of dressing, who applied it and when it was applied. 4. How, when and who cared for the wound. 5. Depth and percent of body area burned (“rule of nines”). 6. BSI used.
Complications and Trouble-shooting	[redacted]

SPINAL IMMOBILIZATION

Purpose:	To assure that a patient requiring spinal immobilization is secured to the proper piece of equipment in the appropriate manner.
Note:	A cervical spinal immobilization device must be sized appropriately before being applied to the patient. An improperly sized cervical spinal immobilization device can cause further injury and can do more harm than good.
Indications	Suspected head, neck injury as a result of trauma
Contra-indications	Consider field spinal motion restriction decision tree if appropriate
Equipment	1. Gloves and full-face protection (mask and goggles or full-face shield). 2. Rigid cervical immobilization device. 3. KED. 4. Long spine board. 5. Straps or spider straps, or equivalent 6. Head immobilizer for the long spine board. 7. Blankets. 8. Towels. 9. Pediatric Immobilization device.
Procedure	**BASIC SPINAL IMMOBILIZATION** 1. Put on gloves. 2. Determine whether there has been any splattering of blood or body fluids. If so, put on full-face protection. 3. Cervical immobilization. • Manually maintain cervical stability and also maintain a patient airway. A jaw thrust maneuver is used to maintain the airway in a patient with airway compromise. ➢ DO NOT hyper-extend the neck. ➢ NO TRACTION. 4. Apply a rigid cervical collar. • Use manufactures guidelines for actual application of the cervical collar. • Maintain manual stabilization until patient is completely secured to the long spine board. • Maintain a patient airway. • Prepare to immobilize the patient to the short or long spine board. 5. Spinal immobilization. • Extrication device application. ➢ Maintain cervical stability and have a cervical collar in place prior to applying an extrication device.

- Use the manufacturer's guidelines in application of the specific extrication device.

- Move patient to a long spine board and secure as indicated.

6. Long spine board application.
   - Move patient to long spine board. Use of the log roll method is recommended.
   - Using a minimum of three to five straps, secure the patient to the long spine board in a manner so that the cervical, thoracic, lumbar, sacral and coccyx spine are immobilized.
   - Secure the head of the patient to the long board in a manner in which the cervical spine is completely immobilized. Use padding around the head if necessary to keep the cervical spine immobile. A commercially manufactured device is preferred. Towel rolls may be used. The use of sandbags is prohibited.

KED APPLICATION

1. Maintain cervical stability and have cervical collar in place prior to applying the KED.
2. Place the KED behind the patient with the help of a partner.
3. Using a minimum of two straps, secure the patient to the KED so that there is complete immobilization of the thoracic spine.
4. Secure the head to the KED in a manner that holds the cervical spine in complete immobilization. If necessary using padding to fill the void between the cervical collar and the KED.
5. Move patient to a long spine board and secure as defined in basic spinal immobilization.

SIZING A CERVICAL SPINAL IMMOBILIZATION DEVICE

1. While your partner is used to stabilize the head of the patient, prepare to measure the patient's neck for proper size fitting cervical immobilization device.
2. Place your fingers on the patient's neck under the corner of the jawbone.
3. Determine the height (length) to the shoulder using the width of your hand or fingers.
4. Size the device to the same measurement as the patient's neck.

OSF HEALTHCARE

SPLINTING TECHNIQUE

Purpose:	To assure that the appropriate type of splint and splinting technique is used on the patient requiring splinting of a mid shaft femur fracture.
Note:	
Indications	Visual deformity, pain on movement or palpation
Contra-indications	
Equipment	1. Gloves and full-face protection (mask and goggles or full-face shield). 2. Splinting material. 3. Traction splint.
Procedure	1. Put on gloves. 2. Determine whether there has been any splattering of blood or body fluids. If so, put on full-face protection. 3. General rules for splinting. • Remove clothing from area to be splinted. • Check pulses, color, movement and sensation distal to the injuries. • Control hemorrhage and cover all wounds. • Splint the joint above and below the possible fracture site. • Pad the splints. • Fill in any space between the patient and the splint with padding. • Minimize movement of the area being splinted. • Check pulses, color, movement and sensation distal to the injuries before and after splint is applied. 4. Traction splinting. • Follow the general rules for splinting. • For actual splint application, follow the manufacture guidelines for the specific type of traction splint.
Document	1. What type of splint was applied. 2. Who and when the splint was applied. 3. Pulses, color, movement and sensation, distal to the injury, before and after the splint was applied. 4. Changes in the patient after the splint application.
Complications and Trouble-shooting	If loss of pulse, motor, or sensory post splinting assess splint for excessive tightness

CHEST DECOMPRESSION

Purpose:	To establish guidelines for emergency decompression of a tension pneumothorax, by ALS personal, when in combination with: • Arrest or pre-arrest situation (SBP<90). • Absent or diminished lung sounds on affected side. • Tracheal deviation. • May see JVD.
Note:	
Indications	Decreased lung sounds, hemodynamically unstable, tracheal deviation
Contra-indications	Simple pnuemothorax
Equipment	1. Gloves and full-face protection (mask and goggles or full-face shield). 2. Antiseptic cleaning solution. 3. Large bore over-the catheter (14-18 gauge). 4. Stethoscope. 5. Asherman Chest Seal 6. Tape.
Procedure	1. Put on gloves and full-face protection (mask and goggles or full-face shield). 2. Assemble all necessary equipment and supplies. 3. Assess patient to assure that condition is due to tension pneumothorax: a. Shock. b. Poor ventilation despite an open airway. c. Neck vein distention. May not be present if there is associated hemorrhage. d. Tracheal deviation away from the side of injury. (May be late sign). e. Absent or diminished breath sounds on the affected side. f. Tympany (hyperresonance to percussion on the affected side). 4. Give patient high flow oxygen and ventilatory assistance. 5. Determine that the indications for decompression are present. 6. Identify the intercostal space between the 2nd and 3rd rib in the mid-clavicular line on the affected side. 7. Prepare the puncture site. Cleanse with antiseptic cleansing solution. Start with small area and wipe in widening circles around it allowing a broad margin around the site to be punctured. Perform the decompression in the following manner: 8. Insert the needle/catheter into the skin over the third rib (mid-clavicular) and direct it just over the top of the rib. Insert the catheter through parietal pleura until air escapes. 9. Remove the needle and leave the catheter in place.

	10. Dispose of the needle appropriately 11. Cover with an Asherman chest seal. Monitor the 12. Patient for potential complications.
Document	1. Who performed the procedure 2. Size of catheter 3. Lung sounds before and after 4. Did the procedure have to be repeated
Complications and Trouble-shooting	LACERATION OF INTERCOSTAL VESSEL 1. Monitor patient for potential laceration of Intercostal Vessel. a. Poor placement of the needle used for decompression can result in a lacerated vessel. Symptoms will depend upon the size and type of vessel laceration and may be difficult to detect initially. b. Patient may present with signs and symptoms of hemothorax and/or hemorrhagic shock (tachycardia, tachypnea, hypotension, chest may be dull to percussion and have absent or congested lung sounds at the site of injury. 2. Laceration of intercostal vessels can be avoided with proper placement of the needle prior to decompression. The intercostal artery and vein run along the inferior borders of the ribs. Placement above the rib will prevent laceration of these vessels. 3. Management will include administration of 100% oxygen and treatment for any signs and/or symptoms of hemorrhagic shock. (Fluid replacement and monitoring of vital signs.) PNEUMOTHORAX 1. Monitor patient for pneumothorax re-occurrence: a. Pneumothorax may be created if not already present. b. Pneumothorax will be characterized by diminished or absent lung sounds on the affected side. 2. The occurrence of pneumothorax may be minimized by adequately assessing the patient for positive symptoms of tension pneumothorax (deviation of the trachea away from the affected side, distended neck veins and further signs of respiratory compromise) prior to attempting to decompress the chest. 3. Administer 100% oxygen and continue to assess patient.

OSF HEALTHCARE

GLUCOSE TESTING

Purpose:	To establish guidelines for blood glucose testing.
Note:	Agencies must maintain calibration and competency log in accordance with IDPH CLIA regulation, see system policy. Required to utilize one time use sharp safe devices in accordance with IDOL regulation
Indications	Known diabetic, altered level of consciousness
Contra-indications	
Equipment	1. Gloves and full-face protection (mask and goggles or full-face shield). 2. Glucose monitoring device. 3. Test strips. 4. Glucose control high & low (if applicable). 5. Calibration test strip (if applicable). 6. Sterile lancets.
Procedure	1. Put on gloves. 2. Determine whether there has been any splattering of blood or body fluids. If so, put on full-face protection. 3. Assemble all necessary supplies and equipment. 4. Select a suitable finger and cleanse finger with alcohol swab. 5. Set up glucose monitoring device per manufacturer's directions. 6. Obtain a blood sample and complete glucose testing per manufacturer's direction. 7. Record results. 8. Remove the test strip and discard in biohazard container. 9. Place a dressing over the puncture site.
Document	1. Who performed task. 2. Numbers of attempts. 3. BSI and equipment used. 4. Site of finger stick. 5. Any complications or undesirable side effects. 6. Time procedure was performed. 7. Document the results.
Complications and Trouble-shooting	For best results utilize side of finger and apply pressure moving from the second pad of the finger to the top to push more blood to the area. If not enough blood to fill test strip repeat the procedure. Do not redoes the same strip.

OSF HEALTHCARE

INTRAVENOUS ACCESS, PERIPHERAL SITES

Purpose:	To establish guidelines for the initiation of peripheral IVs to provide a route for replacement of fluids, electrolytes or blood products or to provide a route for administration of drugs.
Note:	Unless otherwise ordered by protocol or Medical Direction, IV flow rates should be set at TKO (
Indications	Protocol, hemodynamic instability, medication administration required, prophylactic insertion
Contra-indications	
Equipment	1. Gloves and full-face protection (mask and goggles or full-face shield). 2. Intravenous cannulas. a. Hollow needle (including those attached to a syringe and the "butterfly" type). b. Indwelling plastic catheter over a hollow needle (angiocath). 3. IV fluid. 4. Infusion set. 5. Extension set. 6. Antiseptic cleaning solution. 7. Sterile dressing. 8. IV securing devise (adhesive tape cut into strips or commercial IV securing device). 9. 2 X 2. 10. Tourniquet (soft rubber tubing, flat latex, tourniquet, commercial tourniquet or BP cuff)
Procedure	**Peripheral IV** 1. Assemble all necessary supplies and equipment. Check the IV fluid for correct solution, expiration date, seal leakage and contamination or cloudiness. 2. Select a suitable vein. In general, the forearm is the preferred site, with the back of the hand second. Avoid the following: a. Areas of bone articulation. b. Areas where arterial pulsations are palpable. c. Veins near or distal to injured areas. d. Veins of the lower extremities. e. Areas where there is obvious skin disease or skin injury or tattoo. f. Avoid IV access on side of mastectomy and old shunt sites. 3. Secure the tourniquet proximal to the selected IV site. Check to make sure that the distal pulse is still present. If not, loosen the tourniquet slightly. 4. Prepare the vein puncture site. Cleanse with antiseptic cleansing solution. Start from the area above the vein and wipe in widening circles around it, allowing a broad margin around the site to be punctured. 5. Stabilize the vein by applying pressure on the skin distal to the point of entry. With the bevel of the IV catheter needle up, pass the needle through the skin and enter the vein from either side or above. You should be able to feel the needle "pop" through into the vein. When the needle has entered the vein, there will be blood return through the needle. If using the over-the-needle catheter, advance the needle about 2

	mm beyond the point where the blood return was first encountered. Advance the catheter over the needle into the vein. Carefully withdraw the needle 6. **DO NOT RECAP THE NEEDLE**. Dispose of the needle in a puncture resistant container. 7. Release the tourniquet. 8. Attach the IV tubing and open the clamp to permit unimpeded flow. The fluid should flow freely in a steady stream into the infusion reservoir. If the flow appears minimal, pull back slightly on the catheter, as the tip may be against the wall of the vein. 9. When good flow has been established, secure the catheter in place using tape or a commercial IV securing device. Loop the IV tubing and secure it to the arm **EXTERNAL JUGULAR VEIN SITE** **(ALS Only After Failed Peripheral, and Failed IO Attempts)** 1. Assemble all necessary supplies and equipment. Check the IV fluid for correct solution, expiration date, seal leakage and contamination or cloudiness. 2. Place the patient in a supine, head down position to fill the jugular vein; turn the patient's head to the side opposite the selected IV site. 3. Cleanse the skin with antiseptic cleansing solution. Start from the area above the vein and wipe in widening circles around it, allowing a broad margin around the site to be punctured. 4. Stabilize the vein by applying light pressure with one finger just above the clavicle. With the bevel of needle up, pass the needle through the skin and enter the vein midway between the angle of the jaw and mid-clavicular line. The needle should be inserted toward the heart. You should be able to feel the needle "pop" through into the vein. When the needle has entered the vein, there will be blood return through the needle. 5. DO NOT RECAP THE NEEDLE. Dispose of the needle in a puncture resistant biohazard container. 6. Attach the IV tubing and open the clamp to permit unimpeded flow. The fluid should flow freely in a steady stream into the infusion reservoir. If the flow appears minimal, pull back slightly on the catheter, as the tip may be against the wall of the vein. 7. When good flow has been established, secure the catheter in place using tape or a commercial IV securing device. Do not put circumferential dressings around the neck
Document	1. Who performed/attempted the task? 2. Number of attempts vs. successful. 3. BSI and equipment used. 4. Drip rate. 5. Site of IV insertion. 6. Any complications or undesired side effects. 7. Time procedure was performed.
Complications and Trouble-shooting	Infiltration, Thrombophlebitis, Circulatory Overload, Air Embolism, Catheter Shear, Arterial Puncture,

BLOOD DRAW

Purpose:	To obtain blood samples from the patient at the time of IV being started.
Note:	EMS is not to do field draws for the purpose of law enforcement evidence collection
Indications	Pre-Hospital IV Start
Contra-indications	Patient is not being transported to medical facility
Equipment	1. Blood tubes in colors Blue, Light Green, Purple, and Gold. 12 or 20cc syringe. 2. Bloods tends not to break apart when use of a 12cc syringe
Procedure	1. Establish the IV 2. Use 12 or 20cc syringe to draw back blood samples 3. Transfer blood into blood tubes 4. Blue all the way till it stops filling 5. Light Green 6. Purple 7. Gold 8. DO NOT RECAP THE NEEDLE. Dispose of the needle in a puncture resistant biohazard container.
Document	1. Time and who performed procedure. 2. BSI and equipment used. 3. Any complications or undesired effects. 4. Changes in patient condition before and after intervention
Complications and Trouble-shooting	[redacted]

ASSEMBLY OF IV ADMINISTRATION SET

Purpose:	To establish guidelines for the assembly of IV administration set.
Note:	
Indications	Established IV and the need to administer fluid
Contra-indications	
Equipment	1. IV bag in ordered amount and fluid type. 2. Microdrip, macrodrip, Buretrol or blood tubing administration set as determined by patient condition and/or protocol.
Procedure	1. Assemble all necessary supplies and equipment. Check IV for correct solution, expiration date, seal leakage, contamination or cloudiness. 2. Spike the IV bag using the volume control chamber in the same way that you would for regular IV. 3. Once the bag and drip set are connected and hung, close the flow clamp at the bottom of the volume control chamber. 4. Open the flow clamp above the chamber, which regulates the flow from the IV bag into the volume chamber. Fill the chamber with the appropriate desired ml volume of the IV solution. Then close the clamp to stop further flow of fluid from the IV bag. 5. Open the flow clamp at the bottom of the chamber and fill the drip chamber and tubing with fluid in the customary manner.
Document	1. Fluid type and amount. 2. Time prepared and by whom. 3. Mini (60 gtt/min.), macro (10-15gtt/min.), Buretrol, or Trauma tubing administration set.
Complications and Trouble-shooting	If fluid not flowing assess for closed clamps or kinks, assess for continued IV patency by utilizing saline flush, IV may be up against a valve.

ADMINISTRATION OF MEDICATIONS

Purpose:	To establish guidelines for administering fluids or medications by intravenous bolus.
Note:	Several steps including PPE, medication rights etc were omitted from the later administrations procedures in the interest of space. They are still to be undertaken and common sense should prevail.
Indications	Protocol
Contra-indications	Documented patient allergy, or other contraindication outlined in protocol
Equipment	2. Antiseptic cleansing solution. 3. Syringe (large enough to contain the required amount of fluid or medications). 4. Needle – preferably 18 gauge, and a filtered needle if drawing from an ampule 5. Medication or fluid to be administered.
Procedure	**IV Push** 1. Assemble all necessary supplies and equipment. Check for correct medications or fluid you are to administer. 2. Assess IV for patency. 3. Confirm the order/dosage by Medical Control or Protocol. 4. Ascertain from the patient if he or she has an allergy to the medications or fluid you are to administer. 5. Explain the medication administration procedure to the patient. 6. Obtain the fluid or medication. 7. If you are using an ampule, shake it down. This will force the solution to the lower portion to prevent spillage. 8.Using a 4x4 gauze pad or alcohol prep wrapped around the ampule, break the ampule. 9.Affix the 18 gauge filter needle to the syringe and withdraw the solution from the ampule. 10.If withdrawing the medication from a multi-dose vial, remove the top of the vial to expose the rubber membrane. 11.Cleanse the rubber top of the medication vial with the antiseptic cleansing solution. 12.Draw up air into the syringe, with the needle attached, equal to the amount of fluid that is to be withdrawn. 13.Insert the needle into vial, expel air into vial, keep the needle below the fluid level and withdraw the required amount of fluid. 14.Withdraw the syringe/needle and invert the syringe (needle up) and expel the air. 15.Locate a medication port on the IV administration set and cleanse it with antiseptic cleansing solution. 16.Insert needle with syringe into medication port. 17.Pinch IV ring above the administration site. 18. Administer the solution in a slow, deliberate fashion. Be aware of slower administration times with some medications. 19. Remove the needle with syringe and wipe off the medication port with antiseptic

cleaning solution.
20. DO NOT RECAP THE NEEDLE. Dispose of the needle/syringe in a puncture resistant biohazard container.
21. Release the pinched line.
22. In some cases, where more than one medication is to be given through the same IV line, it may be necessary to flush the line in between administrations.
23. Confirm the correct dosage administered and closely monitor the patient for the desired therapeutic effects or possible side effects.
24. Monitor for potential complications.

IM Injection

1. Draw up the medication into the syringe.
2. Choose a site for injection. IM injections are usually given in the thick gluteal muscles of the buttock's upper outer quadrant, toward lateral superior portion of quadrant, or in the outer part of the upper arm, the deltoid muscle. If injecting the gluteal muscle, the needle is inserted into the upper, outer portion of the buttock by drawing two (2) imaginary lines that divide the buttock in four (4) quadrants. The flesh at this site is stretched and flattened until the needle has penetrated the skin. If using the deltoid, the skin may be pinched until the needle has penetrated the skin.
3. Insert the needle at a 90 degree angle to the skin.
4.Gently aspirate the syringe to assure that a blood vessel has not been entered. If a blood return is noted, withdraw the syringe and needle, apply light pressure to the area, dispose of the syringe/medication/needle in a puncture resistant biohazard container and begin again.
5.Inject the medication slowly.
6.Remove the syringe and needle.

Sub-Q Injection

1. Draw up the medication into the syringe.
2. Choose a site for injection. Subcutaneous injections are administered in an area where bones and blood vessels are not near the surface. The areas commonly used are the upper part of the arms and thighs. The lower abdomen is sometimes used, i.e. insulin.
3. Prepare the site for injection. Cleanse with the antiseptic cleansing solution. Start with a small area and wipe in widening circle around the site allowing a broad margin around the site to be punctured.
4.Insert the needle into the subcutaneous tissue at a 45-50 degree angle depending on the relative obesity of the patient.
5.Gently aspirate the syringe to assure that a blood vessel has not been entered. If blood return is noted, withdraw the syringe and needle. Apply light pressure to the area. Dispose of the syringe. medication/needle in a provided biohazard container and begin again.
6.Inject the medication.
7.Remove the syringe and needle

Nebulizer Administration

1. Explain the administration procedure to the patient.
   a. If the mist will be inhaled via mouthpiece, the patient must tightly seal his lip around the mouthpiece and breathe only through his mouth.
   b. If the mist will be inhaled via a mask, there should be a tight fit to the face to avoid any excess leakage. The mask employed in this situation should be one, which is properly designed or adapted for inhalation medication administration.
2. Instill the medication into the dropper. Place the cover back on the nebulizer and assemble according to manufacturer's direction for the equipment being used. Connect the nebulizer to the oxygen source and turn on the oxygen to the required flow.
3. Place patient into a sitting position for maximum respiratory movement and direct the patient to inhale slowly and deeply to allow his lungs to be filled and to then exhale as completely as possible before the next inspiration.
4. If patient needs to expectorate, have 4X4's and emesis pan available.
5.Continue the procedure until the nebulizer is no longer discharging the humidified oxygen mixture.
6.Re-connect any previous oxygen to patient.
7.If indicated for BVM pre-oxygenate the patient.
8.Hook the "T" piece to the bag.
9.The blue tubing is then hooked to the "T" piece.
10. Use a multi adapter to connect the tubing to the mask of the BVM or to the ET tube and administer medication.
11.Auscultate lung fields following procedure to assess any change in patient condition.
12.Monitor the patient for desired therapeutic effects and/or potential complications.

Epi-Pen

1. Epi-Pen resembles a large felt-tip marker pen. The outer shell houses a recessed intramuscular needle, a pre-measured dose of Epinephrine 1:1,000, and a spring-loaded device that propels the needle and medication into the patient.
2. When the needle end of the Epi-Pen is pushed against a large muscle, such as the vastus lateralis of the thigh or the deltoid muscle, the resistance encountered is registered by the spring-loaded mechanism. When the resistance exceeds a preset limit, the mechanism activates and drives the needle from the barrel and into the muscle. This also disperses the Epinephrine stored within the device through the needle and into the muscle.
3. Clean the outer thigh site with alcohol.
4. To use an Epi-Pen, remove the gray safety cap from the back end of the device and place the black tip firmly against the outer thigh.
5. With a smooth motion, push in hard until the needle enters the skin and then hold the Epi-Pen in place for ten more seconds to allow the epinephrine to be injected through the needle and into the muscle.
6. Continue to monitor the patient for signs of improvement or the need for

	additional treatment. Take and record vital signs on a regular basis.
Document	1. Who attempted/performed task. 2. Number of attempts vs. successful. 3. BSI and equipment used. 4. Name, concentration and dosage of medication. 5. Site of administration. 6. Any complications or undesired side effects. 7. Were desired therapeutic effects attained. 8. Time medication was administered.
Complications and Trouble-shooting	Vein Rupture, Toxicity, Allergic Reactions

OSF HEALTHCARE

PRESSURE INFUSER

Purpose:	To establish guidelines for how to use pressure infusers
Note:	IV pressure infusers are used to force fluid out of an IV bag to infuse fluid volume into a patient's circulatory system more rapidly than would be possible using only gravity and the customary drip method.
Indications	IO Infusion, need to push fluid quickly in hemodynamically unstable patients
Contra-indications	
Equipment	1. IV pressure infuser. (If available). 2. Blood Pressure cuff. 3. IV solution.
Procedure	1. Commercial IV pressure infuser are designed to cover a one liter or smaller IV bag. A blood pressure cuff wrapped around an IV bag will work just as well. When using a blood pressure cuff, you have to continuously inflate the cuff as the bag of fluid empties so that the cuff maintains its pressure upon and does not slip off the IV bag. An extra pair of hands squeezing the IV bag will also work well as a pressure infuser. 2. When using the commercial IV pressure infuser, slide the IV bag into the cover until it is completely inside the infuser. 3. With the IV started and running wide open into the vein, begin inflating the bladder with the bulb pump until the drip chamber fills up and you get a good stream of fluid running through the tubing. 4. Monitor the IV site to insure that the vein is handling the volume of fluid being forced through it. 5. When an IV infuser if being used the IV bag does not have be hung or carried above the patient, since the flow is not dependent upon gravity as long as the inflation pressure in the pressure infuser is maintained.
Document	1. Who performed/attempted the task. 2. BSI and equipment used. 3. Drip rate and type of pressure infuser used. 4. Site of IV insertion. 5. Any complications or undesired side effects. 6. Time procedure was performed.
Complications and Trouble-shooting	

OSF HEALTHCARE

SALINE LOCK

Purpose:	To establish guidelines for the initiation of a saline lock.
Note:	
Indications	Starting of an IV, but no immediate need to begin fluid administration
Contra-indications	
Equipment	2. Indwelling plastic catheter over a hollow needle. (Angiocath). 3. Antiseptic cleansing solution. 4. Sterile dressing. 5. IV securing device (adhesive tape cut into strips or commercial IV securing device). 6. Tourniquet. 7. J-loop with injection site. 8. Sterile 3 cc syringe with fill needle and 2 cc of saline from a multi-dose vial (multi-dose vial will be discarded after single patient use) or Tubex holder/syringe and a 2 cc cartridge of normal saline. 9. Saline injection for flush.
Procedure	1. Check the saline solution for correct solution, amount, expiration date, seal leakage, contamination, cloudiness or abnormal color. 2. Cleanse the rubber stopper of adapter with alcohol and prime adapter and j-loop with saline. 3. Select a suitable vein. In general, the forearm is the preferred site, with the back of the hand second. Avoid the following: a. Areas of bone articulation. b. Areas where arterial pulsations are palpable. c. Veins near or distal to injured areas. d. Veins of the lower extremities. e. Areas where there is obvious skin disease or skin injury. 4. Secure the tourniquet proximal to the selected IV site. Check to make sure that the distal pulse is still present. If no, loosen the tourniquet slightly. 5. Prepare the venipuncture site. Cleanse with antiseptic cleansing solution. Start from the area above the vein and wipe in widening circles around it, allowing a broad margin around the site to be punctured. If using iodine, a final wipe with alcohol is recommended. 6. Stabilize the vein by applying pressure on the skin distal to the point of entry. With the bevel of the IV catheter needle up, pass the needle through the skin and enter the vein from either side or above. You should feel the needle “pop” through the vein, there will be a blood return through the needle. When the needle has entered the vein, there will be a blood return through the needle. Advance the needle about 2 mm beyond the point where the blood return was first encountered. Advance the catheter over the needle into the vein. Carefully withdraw the needle, holding the catheter steady. 7.DO NOT RECAP THE NEEDLE. Dispose of the needle in a puncture resistant biohazard container. 8. J-Loop and saline lock should be prefilled with saline. 9.Can be flushed with additional saline once hooked up. 10.Instill prescribed amount of saline flush. 11.Secure the J-loop/angiocath in place using tape or a commercial IV securing device.

Document	1. Who attempted/performed the task. 2. Number of attempts vs. successful. 3. BSI and equipment used. 4. Amount of saline flush used. 5. Site of saline lock and time procedure was performed. 6. Any complications or undesirable side effects.
Complications and Trouble-shooting	[redacted]

ADDITION OF MEDICATIONS TO IV LINES

Purpose:	To establish guidelines for the addition of medications to IVs.
Note:	Amiodarone Drips, Magnesium Drips
Indications	Medication Drip Called for Via Protocol or Online Medical Control
Contra-indications	
Equipment	1. IV solution in bag. 2. microdrip or macrodrip administration set as ordered. 3. Extension set if required. 4. Syringe and needle for withdrawal of medication from ampule or vial or prepackaged medication in syringe with needle. 5. Antiseptic cleansing solution
Procedure	1. Assemble all necessary equipment and supplies. Check for correct medication, solution, expiration date, seal leakage, contamination, abnormal color or cloudiness. 2. Obtain the appropriate concentration and amount of medication to be administered. 3. Cleanse the injection port on the IV bag. 4. Inject the medication into the bag through the injection port. 5. DO NOT RECAP THE NEEDLE. Dispose of the needle/syringe in a puncture resistant biohazard container. 6. Invert the bag 2-3 times to mix the medication with the IV fluid. 7. Label the bag with medication information: a. Name of medication. b. Amount and concentration of medication. c. Paramedic's name. d. Time medication was added. e. Flow rate for IV fluid. 8.Attach tubing to IV and run as a "piggyback" to the original IV
Document	1. Who performed the task. 2. BSI and equipment used. 3. Name, concentration and dosage of medication. 4. Concentration of medication/fluid. 5. Flow rate of medication/fluid. 6. Complications or undesired side effects. 7. Time administered. 8. Desired therapeutic effects attained
Complications and Trouble-shooting	

USE OF RESTRAINTS

Purpose:	To establish guidelines for the use of safe reasonable force necessary to keep a patient from injuring himself/herself or others. Reasonableness is determined by all circumstances, remembering that scene safety is paramount.
Note:	Medical Control Order NOT required if patient poses an imminent threat to themselves or others. Always use the least amount of force necessary to restrain patient.
Indications	Violent, Combative patients who pose an imminent threat to themselves or others
Contra-indications	Ability to control situation with less invasive means
Equipment	1. Soft or leather restraints (Leather Restraints are discouraged for infection control reasons, but are allowed) 2. Posey or sheet 3. Commercial soft
Procedure	1. Form a plan. 2. Be sure adequate help is available. 3. One person is assigned to calm and reassure the patient. 4. Approach with at least 4 persons (one for each limb). 5. Acting in unison, take hold and secure all four limbs to cot with restraints. Secure patient's midsection (waist) with a Posey or sheet to prevent patient from "bucking." Position patient supine.
Document	1. Who performed the procedure. 2. BSI and equipment used. 3. Time of application. 4. Documentation on Utstein style report.
Complications and Trouble-shooting	**Ensure circulatory checks every 10 minutes to ensure that circulation to the affected extremities has not been impeded**

AV FISTULAS, SHUNTS, AND GRAFTS

PURPOSE:	To have a vascular access point of last resort in cardiac arrest patients when other, less invasive techniques have failed after repeated attempts (intraosseous, endotracheal, intravenous).
NOTE:	• Utilization of these sites is accompanied with significant difficulties and high complication rates. • All other vascular access sites must be exhausted. At no time shall this procedure be utilized for the mere convenience of the provider.
INDICATIONS	**As a last resort in cardiac arrest patients after repeated attempts at less invasive means have been <u>EXHAUSTED</u>.**
CONTRA-INDICATIONS	• Less invasive means of vascular access are available • Less invasive means of vascular access have not been exhausted • Patients not in cardiac arrest
EQUIPMENT	• 14g or 16g IV catheter • Alcohol prep pads
PROCEDURE	1. Cleanse site twice with alcohol prep pad. Use a new pad for each cleansing. 2.Follow typical intravenous access procedure. 3. Do not use an IV catheter smaller than 16g. 4. If attempt fails or tubing is pulled from entrance site, apply direct pressure immediately. Place tourniquet if otherwise indicated.
DOCUMENT	• All prior vascular access attempts • Explicitly state reason all other intravascular sites were inaccessible/exhausted.

OSF HEALTHCARE

Gastric Tube Insertion

PURPOSE:	To decompress the stomach and to prevent gastric distention.
NOTE:	• To decrease the chances of gastric trauma, only dual-lumen, salem-sump style tubes are approved for use. • Blind insertion devices should have gastric access ports (i.e. King LTS-D). BIADs without gastric access ports will not allow for simultaneous orogastric or nasogastric insertion. • The gastric port on King LTS-D BIADs will allow passage for up to a 18 french gastric tube. • PRIOR TO ATTEMPTING: ensure gastric tube is not larger than nare (nasotracheal) or oropharynx (orogastric).
INDICATIONS	As indicated in approved system protocol.
CONTRA-INDICATIONS	• Gastric bypass • Esophageal disorders (cancer, varices) • Gastrectomy or esophagectomy • Penetrating neck trauma • Suspected fractures of basilar skull • Facial trauma with suspected fractures • RELATIVE: ingestion of caustic substances
EQUIPMENT	• Gastric tube, 18 french (sump-style) • Lubricant jelly (water soluble) • Tape (for marking and for securing) • Irrigation syringe, 60 ml or larger, with catheter tip (ensure device is compatible with gastric tube in use) • Suction equipment ready and prepared for use • Stethoscope
PROCEDURE	16. Determine need and appropriateness for OG or NG tube placement a. Do not place OG or NG tube prior to addressing more pressing life threats b. Ensure gastric tube is not larger than nare (NG) or oropharynx (OG) 17. Position patient a. Conscious (NG): high Fowler's with neck flexed (chin on chest) b. Unconscious (OG): supine 18. Estimate insertion depth: a. Nasogastric: measure from tip of nose, over ear, to a point midway between xyphoid process and umbilicus. Mark with a piece of tape. b. Orogastric: measure from corner of mouth, over ear, to a point midway between xyphoid process and umbilicus. Mark with a piece of tape. 19. Lubricate tube generously. (If placing NG tube, apply cetacaine spray to posterior throat and spray phenylephrine 1% into desired nasal passage. 20. Insertion: a. Nasogastric: direct tube along the floor of nostril to posterior pharynx. Then direct tube down through the nasopharynx. Instruct

	patient to repeatedly swallow. Continue advancing until tape mark is at nostril. b. Orogastric: Direct tube to the back of the tongue. Then direct tube downwards through oropharynx. Continue advancing until tape mark is at oropharynx. c. BIAD orogastric: Direct tube through gastric port. Continue advancing until tape mark is at the opening of the gastric port. 21. If at any time during insertion patient's airway is compromised or severe resistance is encountered, abandon attempt and remove tube. Prepare for suctioning. 22. Verifying placement: a. Aspirate gastric contents with syringe b. Inject 10-20 ml of air into tube and auscultate over epigastrum for gurgling/swooshing sound c. Confirm lung sounds d. WARNING: fogging of tube during respirations is indicative of tracheal placement. e. If tube is not placed properly, remove tube and reattempt if indicated. DO NOT ATTEMPT MORE THAN TWO TIMES. Other life-saving and/or indicated patient care should not be interrupted or delayed for repeat attempts. 23. If properly placed, secure with tape and/or tube holder. Ensure the air vent lumen is patent. Failing to do so may cause gastric trauma. 24. Connect to low, continuous suctioning (45-60 mmHg).
Document	• Time • Provider • Verifications • Complications and reason for failure (if applicable)

OSF HEALTHCARE

Insertion of an EZ-IO

Purpose:	To provide procedural guidance for insertion and maintenance of the EZ-IO Intraosseous Infusion System.
Note:	1. Ensure the administration of a rapid SYRINGE BOLUS (flush) prior to infusion NO FLUSH = NO FLOW Rapid syringe bolus (flush) the EX-IO PD/AD/LD catheter with 10 ml of normal saline Repeat syringe bolus (flush) as needed 2. Pain: prior to IO syringe bolus(flush) or continuous infusion in patients that are responsive to pain, (ensure that the patient has no allergies or sensitivity to lidocaine) SLOWLY infuse lidocaine2% (preservative and epinephrine-free) through the EZ-IO catheter (via the EZ-Connect)into the medullary space over 30-60 seconds and then wait 15-30 seconds for the anesthetic to take effect. Pediatric Patients: 0.5mg/kg lidocaine 2% (preservative and epinephrine free) Adult patients: 2% (preservative and epinephrine free) lidocaine dosing begins at 1 ml and is slowly titrated, 1ml at a time until the patient is comfortable. Titrated doses of the lidocaine should be given with increasing pressure as this will allow for expanded anesthetic effect in the medullary space. Lidocaine is to be used as an anesthetic and not as analgesia and may need to be repeated. 3. Flow rates will be slower than achieved with intravenous (IV) access. To improve continuous infusion rates, use a pressure bag (or BP cuff). 4. Insertion of the EZ-IO in conscious patients or patients responsive to pain has been noted to cause mild to moderate discomfort comparable to the insertion of a large bore IV catheter. IO infusion, however, has been noted to cause severe discomfort.
Indications	Intraosseous access is indicated for immediate vascular access in acute medical conditions in which immediate vascular access is needed. Intraosseous access has been proven useful for infusion/fluid therapy, medication administration, blood drawing or vascular access maintenance.
Contra-indications	1. Fracture of the bone selected for IO infusion (consider another approved site of insertion) 2. Excessive tissue at insertion site with absence of anatomical landmarks (consider another approved site of insertion) 3. Previous significant orthopedic procedures (i.e. prosthesis or hardware placement) (consider another approved site of insertion) 4. Infection at the site selected (consider another approved site of insertion)
Equipment	EZ-IO Needle EZ-IO Driver
Procedure	2. Prepare the EZ-IO driver and needle set: a. EZ-IO PD for patients weighing between 3kg and 39kg. b. EZ-IO AD for patients weighing greater than 40kg. c. EZ-IO LD for patients with excessive tissue 3. Assemble equipment per manufacturer's recommendation. 4. Locate an appropriate insertion site. Approved sites include Proximal Tibia, Distal Tibia, and Proximal Humerus. a. EZ-IO AD: (commonly for 40kg and over) **Proximal Tibia**- Insertion site is approximately 2cm (depending on patient anatomy) below the patella and approximately 2 cm (depending on patient anatomy) medial to the tibial tuberosity. **Distal Tibia**- Insertion site is located approximately 3 cm (depending on patient anatomy) proximal to the most prominent aspect of the medial malleolus. Place one

	finger directly over the medial malleolus; move approximately 2 cm (depending on the patient anatomy) proximal and palpate the anterior and posterior borders of the tibia to assure that your insertion site is on the flat center aspect of the bone. Proximal Humerus- Insertion site is located on the most prominent aspect of the greater tubercle. Slide thumb up the anterior shaft of the humerus until you feel the greater tubercle, this is the surgical neck. Approximately 1 cm (depending on patient anatomy) above the surgical neck is the insertion site. Ensure that the patient's hand is resting on the abdomen and that the elbow is adducted (close to the body). b. **EZ-IO LD**: (for use on patients with excessive tissue over the insertion site or when the 5mm mark on the AD needle is not visible after penetration into the tissue) **Proximal Tibia**- Insertion site is approximately 2 cm(depending on patient anatomy) below the patella and approximately 2 cm (depending on the patient anatomy)medial to the tibial tuberosity. **Distal Tibia**- Insertion site is located approximately 3 cm (depending on patient anatomy)proximal to the most prominent aspect of the medial malleolus. Place one finger directly over the medial malleolus; move approximately 2 cm (depending on patient anatomy)proximal and palpate the anterior and posterior borders of the tibia to assure that your insertion site is on the flat center aspect of the bone. **Proximal Humerus**- Insertion site is located directly on the most prominent aspect of the greater tubercle. Slide thumb up the anterior shaft of the humerus until you feel the greater tubercle, this is the surgical neck. Approximately 1cm (depending on patient anatomy) above the surgical neck is the insertion site. Ensure that the patient's hand is resting on the abdomen and that the elbow is adducted (close to the body). c. **EZ-IO PD**: (commonly for 3-39kg, consider tissue density over the landmark desired**) Proximal Tibia**- If NO tuberosity is present, the insertion is located approximately 4cm below the patella and then medial along the flat aspect of the tibia. If the tuberosity IS present, the insertion site is located approximately 2cm medial to the tibial tuberosity along the flat aspect of the tibia. Carefully feel for the "give" or "pop" indicating penetration into the medullary space**. Distal Tibia** Place one finger directly over the medial malleolus; move approximately 2 cm (depending on the patient anatomy) proximal and palpate the anterior and posterior of the tibia to assure that your insertion site is on the flat center aspect of the bone. **Proximal Humerus**- The insertion is located directly on the most prominent aspect of the greater tubercle. Slide thumb up the anterior shaft of the humerus until you feel the greater tubercle, this is the surgical neck. Approximately 1cm (depending on patient anatomy) above the surgical neck is the insertion site. Ensure that the patient's hand is resting on the abdomen and that the elbow is adducted and positioned at the level of the spine. The proximal humerus may be difficult or impossible to palpate in children less than 5 years of age as the greater tubercle has not yet developed. In these cases, the insertion will most likely be a shaft insertion. 5. Prep the site with Betadine and set up infusion solution as for regular IV. 6. Stabilize site and insert appropriate needle set. a. Position the driver at the insertion site with the needle set at a 90-degree angle to the bone surface. Gently pierce the skin with the needle set until the needle touches the bone. b. Check to ensure that at least 5mm of catheter is visible (no black line), patient

	may have excessive soft tissue over selected insertion site and needle set may not reach the medullary space. Consider an alternative site for insertion or a longer needle set. c. Penetrate the bone cortex by squeezing driver's trigger and applying gently, consistent, steady, downward pressure (allow the driver to do the work). d. Release the driver's trigger and stop the insertion process when: i. A sudden "give or pop" is felt upon entry into the medullary space ii. When desired depth is obtained. 7. Remove EZ-IO driver from needle set while stabilizing catheter hub. 8. Remove stylet from the catheter; place stylet in EZ-IO shuttle or approved sharps container. 9. Attach 5-10 ml syringe and aspirate bone marrow to confirm placement. a. IO catheter should be at a 90 degree angle and firmly seated in the tibial bone. b. The IO catheter should flush freely without difficulty or evidence of extravasation. 10. Connect the luer-lock equipped IV administration set. 11. For conscious patients (or for previously unresponsive patients who become conscious): administer Lidocaine to reduce discomfort from infusion. 12. Flush the IO catheter with 10ml of normal saline. 13. Utilize a pressure bag for continuous infusions where applicable. If a pressure bag is not available, wrap a BP cuff around the bag of normal saline and inflate the cuff until the desired flow rate is achieved. 14. Dress site, secure tubing and apply wristband as directed. 15. Closely monitor EZ-IO site en route.
Document	
Complications and Trouble-shooting	

Version History

The following is the update lineage to the EMS protocols manual. Editions prior to June 1, 2015 are NOT included in this history. Providers shall routinely check the system website to verify this copy is the most current edition. Only the most current edition, as listed on the website, shall be used for medical guidance. Previous editions shall be considered obsolete.

Version	Date of Enactment	List of Changes from Previous
Initial Draft	N/A: Internal release only	N/A: not released to public
1.0	09/23/2019	