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Monitor and 12 Lead should be performed on the following patients:

- Universal Patient Care Protocol
- Allergic Reaction (progressed to Anaphylaxis)
- Altered Mental Status
- Bradycardia
- HTN
- Overdose/Toxic ingestion
- Post resuscitation/Induced Hypothermia (ROSC)
- Stroke
- Syncope
- Ventricular Tachycardia
- Chest Pain: STEMI
- Hyperthermia
- Hypothermia
- Burns
- Patients with risk factors (Hx, HTN, Diabetes, Obesity, etc.)
- Dizziness
- Dyspnea
- Epigastric Pain
- Vomiting

Anytime a monitor is applied a 12 Lead should be performed.

Procedure:

1. Assess patient and monitor cardiac status.
2. Administer oxygen as patient condition warrants.
3. If patient is unstable, definitive treatment is the priority. If patient is stable or stabilized after treatment, perform a 12 Lead ECG.
4. Prepare ECG monitor and connect patient cable with electrodes.
5. Enter the required patient information (patient name, etc.) into the 12 lead ECG device.
6. Expose chest and prep as necessary. Modesty of the patient should be respected.
7. Apply chest leads and extremity leads using the following landmarks:
   - RA -Right arm (place on right anterior forearm muscle)
   - LA -Left arm (place on left anterior forearm muscle)
   - RL -Right leg (place on right medial calf muscle)
   - LL -Left leg (place on left medial calf muscle)
   - V1 -4th intercostal space at right sternal border
   - V2 -4th intercostal space at left sternal border
   - V3 -Directly between V2 and V4
   - V4 -5th intercostal space at midclavicular line
   - V5 -Level with V4 at left anterior axillary line
   - V6 -Level with V5 at left midaxillary line
8. Instruct patient to remain still.
9. Press the appropriate button to acquire the 12 Lead ECG.
10. If the monitor detects signal noise (such as patient motion or a disconnected electrode), the 12 Lead acquisition will be interrupted until the noise is removed.
11. Once acquired, transmit the ECG via LifeNet to the appropriate hospital.
12. Contact the receiving hospital to notify them that a 12 Lead ECG has been sent.
13. Monitor the patient while continuing with the treatment protocol.
14. Document the procedure, time, and results on/with the patient care report (PCR)

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Capnography is REQUIRED with the use of all invasive airway procedures including endotracheal, nasotracheal, cricothyrotomy, or Blind Insertion Airway Devices (BIAD).
- Capnography is REQUIRED after administration of Haloperidol, Midazolam, or Fentanyl.
- Capnography is indicated for patients on CPAP.
- Capnography is indicated for Respiratory Distress Patients with any of the following:
  - RR > 29 or < 12
  - Poor general impression
  - Hypoxia
  - Decreased level of responsiveness

Procedure:

1. Attach capnography sensor to the BIAD, endotracheal tube, or oxygen delivery device.
2. Note CO₂ level and waveform changes. These will be documented on each respiratory failure, cardiac arrest, or respiratory distress patient.
3. The capnometer shall remain in place with the airway and be monitored throughout the prehospital care and transport.
4. Any loss of CO₂ detection or waveform indicates an airway problem and should be documented.
5. The capnogram should be monitored as procedures are performed to verify or correct the airway problem.
6. Document the procedure (initial, ongoing, and prior to patient turnover) and results on/with the Patient Care Report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications for Blind Insertion Airway Device (BIAD) Use:

- Patient is unconscious and apneic.
- Appropriate intubation is impossible due to patient access or difficult airway anatomy.
- Inability to secure an endotracheal tube in a patient who does not have a gag reflex where at least one failed intubation attempt has occurred.

Procedure:

1. Preoxygenate and hyperventilate the patient.
2. Select the appropriate tube size for the patient.
3. Lubricate the tube.
4. Grasp the patient's tongue and jaw with your gloved hand and pull forward.
5. Gently insert the tube rotated laterally 45-90 degrees so that the blue orientation line is touching the corner of the mouth. Once the tip is at the base of the tongue, rotate the tube back to midline. Insert the airway until the base of the connector is in line with the teeth and gums.
6. Inflate the pilot balloon with 45-90 ml of air depending on the size of the device used.
7. Ventilate the patient while gently withdrawing the airway until the patient is easily ventilated.
8. Auscultate for breath sounds and sounds over the epigastrium and look for the chest to rise and fall.
9. Secure the tube.
10. **Confirm** tube placement using end-tidal CO₂ detector.
11. It is **REQUIRED** that the airway (if equipment is available) be monitored continuously through Capnography and Pulse Oximetry.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System. Assessment should include direct observation at least once per certification cycle.

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**North Carolina College of Emergency Physicians**

**Standards Procedure (Skill)**

**Airway: BIAD King**

**Clinical Indications for Blind Insertion Airway Device (BIAD) Use:**

- Patient is unconscious and apneic.
- Appropriate intubation is impossible due to patient access or difficult airway anatomy.
- Inability to secure an endotracheal tube in a patient who does not have a gag reflex where at least one failed intubation attempt has occurred.

**Procedure:**

1. Preoxygenate and hyperventilate the patient.
2. Select the appropriate tube size for the patient.
3. Lubricate the tube.
4. Grasp the patient's tongue and jaw with your gloved hand and pull forward.
5. Gently insert the tube rotated laterally 45-90 degrees so that the blue orientation line is touching the corner of the mouth. Once the tip is at the base of the tongue, rotate the tube back to midline. Insert the airway until the base of the connector is in line with the teeth and gums.
6. Inflate the pilot balloon with 45-90 ml of air depending on the size of the device used.
7. Ventilate the patient while gently withdrawing the airway until the patient is easily ventilated.
8. Auscultate for breath sounds and sounds over the epigastrium and look for the chest to rise and fall.
9. Secure the tube.
10. **Confirm** tube placement using end-tidal CO₂ detector.
11. It is **REQUIRED** that the airway (if equipment is available) be monitored continuously through Capnography and Pulse Oximetry.

**Certification Requirements:**

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System. Assessment should include direct observation at least once per certification cycle.
Clinical Indications for Blind Insertion Airway Device (BIAD) Use:

- Patient is unconscious and apneic.
- Inability to secure an endotracheal tube in a patient who does not have a gag reflex where at least one failed intubation attempt has occurred.
- Appropriate intubation is impossible due to patient access or difficult airway anatomy.
- This airway does not prevent aspiration of stomach contents.

Clinical Contraindications:

- Deforming Facial Trauma
- Pulmonary Fibrosis
- Morbid Obesity

Procedure:

1. Select the appropriate tube size for the patient.
2. Check the tube for proper inflation and deflation.
3. Completely deflate the tube prior to insertion.
4. Lubricate the posterior aspect of the mask with a water-soluble jelly.
5. Pre-Oxygenate the patient with 100% Oxygen
6. Insert the LMA into the hypopharynx until resistance is met.
7. Inflate the cuff until a seal is obtained.
8. Connect the LMA to BVM and assess for breath sounds and air entry. Secure the tube.
10. Monitor oxygen saturation with pulse oximetry and heart rhythm with ECG
11. It is REQUIRED that the airway (if equipment is available) be monitored continuously through Capnography and Pulse Oximetry.
12. Re-verify LMA placement after every move and upon arrival in the ED
13. Document the procedure, time, and result (success) on/with the patient care report (PCR)

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System. Assessment should include direct observation once per certification cycle.
Clinical Indications:
- Failed Airway Protocol
- Management of an airway when standard airway procedures cannot be performed or have failed in a patient ≥ 12 years old.

Procedure:
1. Have suction and supplies available and ready.
2. Locate the cricothyroid membrane utilizing anatomical landmarks.
3. Prep the area with an antiseptic swab (Betadine).
4. Attach a 10-cc syringe to an 21G - 1 & 1/2-inch needle.
5. Insert the needle (with syringe attached) perpendicularly through the cricothyroid membrane with the needle directed posteriorly.
6. During needle insertion, gentle aspiration should be applied to the syringe. Rapid aspiration of air into the syringe indicates successful entry into the trachea. Do not advance the needle any further. Attach forceps (if available) and remove syringe.
7. With the needle remaining in place, make a 1-inch vertical incision through the skin and subcutaneous tissue above and below the needle using a scalpel. Using blunt dissection technique, expose the cricothyroid membrane. This is a bloody procedure. The needle should act as a guide to the cricothyroid membrane.
8. With the needle still in place, make a horizontal stabbing incision approx. 1/2 inch through the membrane on each side of the needle. Remove the needle.
9. Using the tracheal hook to maintain surgical opening, insert the cuffed tube into the trachea. (Cric tube from the kit or a #6 endotracheal tube is usually sufficient).
10. Inflate the cuff with 5-10cc of air and ventilate the patient while manually stabilizing the tube.
11. All of the standard assessment techniques for insuring tube placement should be performed (auscultation, chest rise & fall, end-tidal CO₂ detector, etc.) Esophageal bulb devices are not accurate with this procedure.
12. Secure the tube.
13. Apply end tidal carbon dioxide monitor (Capnography) and record readings on scene, en route to the hospital, and at the hospital.
14. Document ETT size, time, and result (success) on the patient care report (PCR). Document all devices used to confirm initial tube placement and after each movement of the patient.
15. Consider placing an OG tube to clear stomach contents after the airway is secured.
16. **It is REQUIRED that the airway (if equipment is available) be monitored continuously through Capnography and Pulse Oximetry.**
17. **It is strongly recommended that an Airway Evaluation Form be completed with all intubations.**

Certification Requirements:
- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications for Continuous Positive Airway Pressure (CPAP) Use:

- CPAP is indicated in all patients whom inadequate ventilation is suspected that is not associated with Asthma. This could be as a result of pulmonary edema, pneumonia, COPD, etc.

Clinical Contraindications for Continuous Positive Airway Pressure (CPAP) Use:

- Patients with SBP < 110.
- Unconscious patients or patients with Decreased Mental Status
- Patients with absent gag reflex or excessive respiratory secretions
- Apneic patients
- Facial features or deformities that prevent an adequate mask seal

Procedure:

1. Ensure adequate oxygen supply to ventilation device.
2. Explain the procedure to the patient.
3. Consider placement of a nasopharyngeal airway.
4. Place the delivery mask over the mouth and nose. Oxygen should be flowing through the device at this point.
5. Secure the mask with provided straps starting with the lower straps until minimal air leak occurs.
6. If the Positive End Expiratory Pressure (PEEP) is adjustable on the CPAP device adjust the PEEP beginning at 0 cmH$_2$O of pressure and slowly titrate to achieve a positive pressure as follows. (If not adjustable, use the pressures listed below):
   - 7.5 cm H$_2$O for Pulmonary Edema, Near Drowning, possible aspiration or pneumonia
   - 5 cm H$_2$O for COPD
7. Evaluate the response of the patient assessing breath sounds, oxygen saturation, and general appearance. Apply Waveform Capnography and monitor throughout transport.
8. Titrate oxygen levels to the patient’s response if possible. Many patients respond to low FIO2 (30-50%).
9. Encourage the patient to allow forced ventilation to occur. Observe closely for signs of complications.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Sudden onset of respiratory distress often with coughing, wheezing, gagging, or stridor due to a foreign-body obstruction of the upper airway.

Procedure:

1. Assess the degree of foreign body obstruction
   - Do not interfere with a mild obstruction allowing the patient to clear their airway by coughing.
   - In severe foreign-body obstructions, the patient may not be able to make a sound. The victim may clench his/her neck in the universal choking sign.
2. **For an infant**, deliver 5 back blows (slaps) followed by 5 chest thrusts repeatedly until the object is expelled or the victim becomes unresponsive.
3. **For a child**, perform a subdiaphragmatic abdominal thrust (Heimlich Maneuver) until the object is expelled or the victim becomes unresponsive.
4. **For adults**, a combination of maneuvers may be required.
   - First, subdiaphragmatic abdominal thrusts (Heimlich Maneuver) should be used in rapid sequence until the obstruction is relieved.
   - If abdominal thrusts are ineffective, chest thrusts should be used. Chest thrusts should be used primarily in morbidly obese patients and in patients who are in the late stages of pregnancy.
5. If the victim becomes unresponsive, begin CPR immediately but look in the mouth before administering any ventilations. If a foreign-body is visible, remove it.
6. **Do not perform blind finger sweeps in the mouth and posterior pharynx.** This may push the object farther into the airway.
7. In unresponsive patients, EMT-Paramedic level professionals should visualize the posterior pharynx with a laryngoscope to potentially identify and remove the foreign-body using Magill forceps.
8. Document the methods used and result of these procedures in the patient care report (PCR).

Certification Requirements:

Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Airway: Endotracheal Tube Introducer (Bougie)

Clinical Indications:
- Patients meet clinical indications for oral intubation
- Initial intubation attempt(s) unsuccessful
- Predicted difficult intubation

Contraindications:
- Three attempts at orotracheal intubation (utilize failed airway protocol)
- Age less than eight (8) or ETT size less than 6.5 mm

Procedure:
1. Prepare, position and oxygenate the patient with 100% oxygen;
2. Select proper ET tube without stylet, test cuff and prepare suction;
3. Lubricate the distal end and cuff of the endotracheal tube (ETT) and the distal 1/2 of the Endotracheal Tube Introducer (Bougie) (note: Failure to lubricate the Bougie and the ETT may result in being unable to pass the ETT);
4. Using laryngoscopic techniques, visualize the vocal cords if possible using Sellick’s/BURP as needed;
5. Introduce the Bougie with curved tip anteriorly and visualize the tip passing the vocal cords or above the arytenoids if the cords cannot be visualized;
6. Once inserted, gently advance the Bougie until you meet resistance or “hold-up” (if you do not meet resistance you have a probable esophageal intubation and insertion should be re-attempted or the failed airway protocol implemented as indicated);
7. Withdraw the Bougie ONLY to a depth sufficient to allow loading of the ETT while maintaining proximal control of the Bougie;
8. Gently advance the Bougie and loaded ET tube until you have hold-up again, thereby assuring tracheal placement and minimizing the risk of accidental displacement of the Bougie;
9. While maintaining a firm grasp on the proximal Bougie, introduce the ET tube over the Bougie passing the tube to its appropriate depth;
10. If you are unable to advance the ETT into the trachea and the Bougie and ETT are adequately lubricated, withdraw the ETT slightly and rotate the ETT 90 degrees COUNTER clockwise to turn the bevel of the ETT posteriorly. If this technique fails to facilitate passing of the ETT you may attempt direct laryngoscopy while advancing the ETT (this will require an assistant to maintain the position of the Bougie and, if so desired, advance the ETT);
11. Once the ETT is correctly placed, hold the ET tube securely and remove the Bougie;
12. Confirm tracheal placement according to the intubation protocol, inflate the cuff with 3 to 10 cc of air, auscultate for equal breath sounds and reposition accordingly;
13. When final position is determined secure the ET tube, reassess breath sounds, apply end tidal CO2 monitor, and record and monitor readings to assure continued tracheal intubation.

Certification Requirements:
- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System. Assessment should include direct observation at least once per certification cycle.
Clinical Indications:

- A spontaneously breathing patient in need of intubation (inadequate respiratory effort, evidence of hypoxia or carbon dioxide retention, or need for airway protection).
- Rigidity or clenched teeth prohibiting other airway procedures.
- Patient must be 12 years of age or older.

Procedure:

1. Premedicate the patient with nasal spray.
2. Select the largest and least obstructed nostril and insert a lubricated nasal airway to help dilate the nasal passage.
3. Preoxygenate the patient. Lubricate the tube. The use of a BAAM device is recommended.
4. Remove the nasal airway and gently insert the tube keeping the bevel of the tube toward the septum.
5. Continue to pass the tube listening for air movement and looking for to and fro vapor condensation in the tube. As the tube approaches the larynx, the air movement gets louder.
6. Gently and evenly advance the tube through the glottic opening on the inspiration. This facilitates passage of the tube and reduces the incidence of trauma to the vocal cords.
7. Upon entering the trachea, the tube may cause the patient to cough, buck, strain, or gag. Do not remove the tube! This is normal, but be prepared to control the cervical spine and the patient, and be alert for vomiting.
8. Auscultate for bilaterally equal breath sounds and absence of sounds of the epigastrium. Observe for symmetrical chest expansion. The 15mm adapter usually rests close to the nostril with proper positioning.
9. Inflate the cuff with 5-10 cc of air.

**10. Confirm tube placement using an end-tidal CO₂ monitoring or esophageal bulb device.**
11. Secure the tube.
12. Reassess airway and breath sounds after transfer to the stretcher and during transport. These tubes are easily dislodged and require close monitoring and frequent reassessment.
13. Document the procedure, time, and result (success) on/with the patient care report (PCR).

**14. It is REQUIRED that the airway (if equipment is available) be monitored continuously through Capnography and Pulse Oximetry.**
15. It is strongly recommended that an Airway Evaluation Form be completed with all intubations.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Inability to adequately ventilate a patient with a Bag Valve Mask or longer EMS transport distances require a more advanced airway.
- An unconscious patient without a gag reflex who is apneic or is demonstrating inadequate respiratory effort.

Procedure:

1. Prepare, position and oxygenate the patient with 100% Oxygen.
2. Select proper ET tube (and stylette, if used), have suction ready.
3. Using laryngoscope, visualize vocal cords. (Use Sellick maneuver/BURP to assist you).
4. Limit each intubation attempt to 30 seconds with BVM between attempts.
5. Visualize tube passing through vocal cords.
6. **Confirm and document tube placement using an end-tidal CO₂ monitoring.**
7. Inflate the cuff with 3-to10 cc of air; secure the tube to the patient’s face.
8. Auscultate for bilaterally equal breath sounds and absence of sounds over the epigastrium. If you are unsure of placement, remove tube and ventilate patient with bag-valve mask.
9. Consider using a Blind Insertion Airway Device if intubation efforts are unsuccessful.
10. If Available apply end tidal carbon dioxide monitor (Capnography) and record readings on scene, en route to the hospital, and at the hospital.
11. Document ETT size, time, result (success), and placement location by the centimeter marks either at the patient’s teeth or lips on/with the patient care report (PCR). Document all devices used to confirm initial tube placement. Also document positive or negative breath sounds before and after each movement of the patient.
12. Consider placing an NG or OG tube to clear stomach contents after the airway is secured with an ET tube.
13. **It is REQUIRED that the airway (if equipment is available) be monitored continuously through Capnography and Pulse Oximetry.**
14. **It is strongly recommended that an Airway Evaluation Form be completed with all intubations.**

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System. Assessment should include direct observation at least once per certification cycle.
Airway: Suctioning-Basic

Clinical Indications:

- Obstruction of the airway (secondary to secretions, blood, or any other substance) in a patient who cannot maintain or keep the airway clear.

Procedure:

1. Ensure suction device is in proper working order with suction tip in place.
2. Preoxygenate the patient as is possible.
3. Explain the procedure to the patient if they are coherent.
4. Examine the oropharynx and remove any potential foreign bodies or material which may occlude the airway if dislodged by the suction device.
5. If applicable, remove ventilation devices from the airway.
6. Use the suction device to remove any secretions, blood, or other substance.
7. The alert patient may assist with this procedure.
8. Reattach ventilation device (e.g., bag-valve mask) and ventilate or assist the patient.
9. Record the time and result of the suctioning in the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Obstruction of the airway (secondary to secretions, blood, or any other substance) in a patient currently being assisted by an airway adjunct such as a naso-tracheal tube, endotracheal tube, BIAD, tracheostomy tube, or a cricothyrotomy tube.

Procedure:

1. Ensure suction device is in proper working order.
2. Preoxygenate the patient as is possible.
3. Attach suction catheter to suction device, keeping sterile plastic covering over catheter.
4. Using the suprasternal notch and the end of the airway into the catheter will be placed as guides, measure the depth desired for the catheter (judgment must be used regarding the depth of suctioning with cricothyrotomy and tracheostomy tubes).
5. If applicable, remove ventilation devices from the airway.
6. With the thumb port of the catheter uncovered, insert the catheter through the airway device.
7. Once the desired depth (measured in #4 above) has been reached, occlude the thumb port and remove the suction catheter slowly.
8. A small amount of Normal Saline (10 ml) may be used if needed to loosen secretions for suctioning.
9. Reattach ventilation device (e.g., bag-valve mask) and ventilate the patient.
10. Document time and result in the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Patients experiencing bronchospasm. (Albuterol and Atrovent)
- Respiratory depression from suspected narcotic overdose (Narcan)

Procedure:

1. Gather the necessary equipment.
2. Assemble the nebulizer kit.
3. Instill the premixed drug (such as Albuterol or other approved drug) into the reservoir well of the nebulizer.
4. Connect the nebulizer device to oxygen at 4 - 6 liters per minute or adequate flow to produce a steady, visible mist.
5. Instruct the patient to inhale normally through the mouthpiece of the nebulizer. The patient needs to have a good lip seal around the mouthpiece.
6. The treatment should last until the solution is depleted. Tapping the reservoir well near the end of the treatment will assist in utilizing all of the solution.
7. Monitor the patient for medication effects. This should include the patient’s assessment of his/her response to the treatment and reassessment of vital signs, ECG, and breath sounds.
8. Document the treatment, dose, and route on/with the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Airway: Tracheostomy Tube Change

Clinical Indications:

- Presence of Tracheostomy site.
- Urgent or emergent indication to change the tube, such as obstruction that will not clear with suction, dislodgement, or inability to oxygenate/ventilate the patient without other obvious explanation.

Procedure:

1. Have all airway equipment prepared for standard airway management, including equipment of orotracheal intubation and failed airway.
2. Have airway device (endotracheal tube or tracheostomy tube) of the same size as the tracheostomy tube currently in place as well as 0.5 size smaller available (e.g., if the patient has a #6.0 Shilley, then have a 6.0 and a 5.5 tube).
3. Lubricate the replacement tube(s) and check the cuff.
4. Remove the tracheostomy tube from mechanical ventilation devices and use a bag-valve apparatus to pre-oxygenate the patient as much as possible.
5. Once all equipment is in place, remove devices securing the tracheostomy tube, including sutures and/or supporting bandages.
6. If applicable, deflate the cuff on the tube. If unable to aspirate air with a syringe, cut the balloon off to allow the cuff to lose pressure.
7. Remove the tracheostomy tube.
8. Insert the replacement tube. Confirm placement via capnography.
9. If there is any difficulty placing the tube, re-attempt procedure with the smaller tube.
10. If difficulty is still encountered, use standard airway procedures such as oral bag-valve mask or endotracheal intubation (as per protocol). **More difficulty with tube changing can be anticipated for tracheostomy sites that are immature – i.e., less than two weeks old.**
   **Great caution should be exercised in attempts to change immature tracheotomy sites.**
11. Document procedure, confirmation, patient response, and any complications in the PCR

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System. Assessment for this skill should include direct observation at least once per certification cycle.
Clinical Indications:

- Management of the ventilation of a patient during a prolonged or interfacility transport of an intubated patient.

Procedure:

1. Transporting personnel should review the operation of the ventilator with the treating personnel (physician, nurse, or respiratory therapy) in the referring facility prior to transport if possible.
2. All ventilator settings, including respiratory rate, FiO₂, mode of ventilation, and tidal volumes should be recorded prior to initiating transport. Additionally, the recent trends in oxygen saturation experienced by the patient should be noted.
3. Prior to transport, specific orders regarding any anticipated changes to ventilator settings as well as causes for significant alarm should be reviewed with the referring medical personnel as well as medical control.
4. Once in the transporting unit, confirm adequate oxygen delivery to the ventilator.
5. Frequently assess breath sounds to assess for possible tube dislodgment during transfer.
6. Frequently assess the patient’s respiratory status, noting any decreases in oxygen saturation or changes in tidal volumes, peak pressures, etc.
7. Note any changes in ventilator settings or patient condition in the PCR.
8. Consider placement of an OG tube to clear stomach contents if available.
9. **It is REQUIRED that the airway be monitored continuously through Capnography and Pulse Oximetry.**
10. If any significant change in patient condition, including vital signs or oxygen saturation or there is a concern regarding ventilator performance/alarms, remove the ventilator from the endotracheal tube and use a bag-valve mask with 100% O₂. Contact Medical Control immediately.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Patients with suspected hypoxemia.

Procedure:

1. Apply probe to patient’s finger or any other digit as recommended by the device manufacturer.
2. Allow machine to register saturation level.
3. Record time and initial saturation percent on room air if possible on/with the patient care report (PCR).
4. Verify pulse rate on machine with actual pulse of the patient.
5. Monitor critical patients continuously until arrival at the hospital. If recording a one-time reading, monitor patients for a few minutes as oxygen saturation can vary.
6. Document percent of oxygen saturation every time vital signs are recorded and in response to therapy to correct hypoxemia.
7. In general, normal saturation is 97-99%. Below 94%, suspect a respiratory compromise.
8. Use the pulse oximetry as an added tool for patient evaluation. Treat the patient, not the data provided by the device.
9. The pulse oximeter reading should never be used to withhold oxygen from a patient in respiratory distress or when it is the standard of care to apply oxygen despite good pulse oximetry readings, such as chest pain. Supplemental oxygen should be used when necessary, to obtain a target oxyhemoglobin saturation of at least 94%.
10. Factors which may reduce the reliability of the pulse oximetry reading include but are not limited to:
   - Poor peripheral circulation (blood volume, hypotension, hypothermia)
   - Excessive pulse oximeter sensor motion
   - Fingernail polish (may be removed with acetone pad)
   - Carbon monoxide bound to hemoglobin
   - Irregular heart rhythms (atrial fibrillation, SVT, etc.)
   - Jaundice
   - Placement of BP cuff on same extremity as pulse ox probe.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Temperature Measurement

Clinical Indications:

- Monitoring body temperature in a patient with suspected infection, hypothermia, hyperthermia, or to assist in evaluating resuscitation efforts.
- **Temperature Measurement is a REQUIRED Vital Sign.**
- If it is not practical to obtain temperature measurement on scene, it should be obtained as soon as the patient is loaded to the ambulance for transport. Any situation that prevents temperature measurement should be documented in the PCR (i.e. airway compromise or other emergent condition requiring intervention).

Procedure:

1. Primary method for temperature measurement will be temporal for infants or adults. For infants or adults that can not tolerate the temporal thermometer: oral, axillary, or rectal temperature should be obtained (steps 5 to 9 below).
2. Temporal thermometer should be cleaned before and after use with an alcohol prep and both the device and skin should be dry for correct measurement. Turn the temporal thermometer on and wait for the beep or indicator to signal that the device is ready.
3. Place the device firmly on the temple, between the end of the eyebrow and the hairline.
4. Leave the device in place until there is indication an accurate temperature has been recorded (per the “beep” or other indicator specific to the device).
5. To obtain an oral temperature, ensure the patient has no significant oral trauma and place the thermometer under the patient’s tongue with appropriate sterile covering.
6. To obtain an axillary temperature, place the temperature probe under the arm pit. Leave the device in place until there is indication an accurate temperature has been recorded (per the “beep” or other indicator specific to the device).
7. Prior to obtaining a rectal temperature, assess whether the patient has suffered any rectal trauma by history and/or brief examination as appropriate for patient’s complaint.
8. To obtain a rectal temperature, cover the thermometer with an appropriate sterile cover, apply lubricant, and insert into rectum no more than 1 to 2 cm beyond the external anal sphincter.
9. Record time, temperature, method (temporal, oral, axillary, rectal), and scale (C° or F°) in Patient Care Report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Blood Glucose Analysis

Clinical Indications:

- Patients with suspected hypoglycemia (diabetic emergencies, change in mental status, bizarre behavior, etc.)

Procedure:

1. Gather and prepare equipment.
2. Blood samples for performing glucose analysis will be obtained through a finger-stick.
3. Place correct amount of blood on reagent strip or site on glucometer per the manufacturer’s instructions.
4. Time the analysis as instructed by the manufacturer.
5. Document the glucometer reading and treat the patient as indicated by the analysis and protocol.
6. Repeat glucose analysis as indicated for reassessment after treatment and as per protocol.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Any patient ≥ 15 years old or ≥ 50 kg.

Procedure:

1. Scene size-up, including universal precautions, scene safety, environmental hazards assessment, need for additional resources, by-stander safety, and patient/caregiver interaction
2. Assess need for additional resources.
3. Initial assessment includes a general impression as well as the status of a patient’s airway, breathing, and circulation.
4. Assess mental status (e.g., AVPU) and disability (e.g., GCS).
5. Control major hemorrhage and assess overall priority of patient.
6. Perform a focused history and physical based on patient’s chief complaint.
7. Assess need for critical interventions.
8. Complete critical interventions and perform a complete secondary exam to include a baseline set of vital signs as directed by protocol.
9. Maintain an on-going assessment throughout transport; to include patient response/possible complications of interventions, need for additional interventions, and assessment of evolving patient complaints/conditions.
10. Document all findings and information associated with the assessment, performed procedures, and any administration of medications on the PCR.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
North Carolina College of Emergency Physicians
Standards Procedure (Skill)
Assessment: Pediatric

Clinical Indications:

- Any child < 15 years old or weight < 50 kg.

Procedure:

1. Scene size-up, including universal precautions, scene safety, environmental hazards assessment, need for additional resources, by-stander safety, and patient/caregiver interaction
2. Assess patient using the pediatric triangle of ABCs:
   - Airway and appearance: speech/cry, muscle tone, inter-activeness, look/gaze, movement of extremities
   - Work of breathing: absent or abnormal airway sounds, use of accessory muscles, nasal flaring, body positioning
   - Circulation to skin: pallor, mottling, cyanosis
3. Establish spinal immobilization if suspicion of spinal injury
4. Establish responsiveness appropriate for age (AVPU, GCS, etc.)
5. Color code using Broselow-Luten tape
6. Assess disability (pulse, motor function, sensory function, papillary reaction)
7. Perform a focused history and physical exam. Recall that pediatric patients easily experience hypothermia and thus should not be left uncovered any longer than necessary to perform an exam.
8. Record vital signs (BP > 3 years of age, cap refill < 3 years of age)
9. Include Immunizations, Allergies, Medications, Past Medical History, last meal, and events leading up to injury or illness where appropriate
10. Treat chief complaint as per protocol

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:
- Any patient with pain.

Definitions:
- Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage.
- Pain is subjective (whatever the patient says it is).

Procedure:
1. Initial and ongoing assessment of pain intensity and character is accomplished through the patient’s self report.
2. Pain should be assessed and documented in the PCR during initial assessment, before starting pain control treatment, and with each set of vitals.
3. Pain should be assessed using the appropriate approved scale.
4. Three pain scales are available: the 0 – 10, the Wong - Baker "faces", and the FLACC.
   - **0 – 10 Scale**: the most familiar scale used by EMS for rating pain with patients. It is primarily for adults and is based on the patient being able to express their perception of the pain as related to numbers. Avoid coaching the patient; simply ask them to rate their pain on a scale from 0 to 10, where 0 is no pain at all and 10 is the worst pain ever.
   - **Wong – Baker "FACES" scale**: this scale is primarily for use with pediatrics but may also be used with geriatrics or any patient with a language barrier. The faces correspond to numeric values from 0-10. This scale can be documented with the numeric value.

   ![Wong-Baker Faces Scale](image)

   - **FLACC scale**: this scale has been validated for measuring pain in children with mild to severe cognitive impairment and in pre-verbal children (including infants).

   ![FLACC Scale](image)

Certification Requirements:
- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Suspected Stroke Patient

Procedure:

1. Assess and treat suspected stroke patients as per protocol.
2. The Cincinnati Prehospital Stroke Screen (CPSS) FAST form should be completed for all suspected stroke patients (see appendix). There are 4 main areas associated with the CPSS:
   a. Facial Droop
   b. Arms
   c. Speech
   d. Time
3. If the patient seems to meet the criteria of the CPSS, follow the EMS Stroke plan and alert the receiving hospital of a Stroke Activation as early as possible
4. Perform a blood draw on the patient and label the collection tubes with the patients information. Document this procedure in the PCR.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:
- Basic life support for the patient in cardiac arrest

Procedure:
1. Assess the patient’s level of responsiveness (shake and shout)
2. If no response, open the patient’s airway with the head-tilt, chin-lift and look, listen, and feel for respiratory effort. If the patient may have sustained C-spine trauma, use the modified jaw thrust while maintaining immobilization of the C-spine. For infants, positioning the head in the sniffing position is the most effective method for opening the airway.
3. Check for pulse (carotid for adults and older children, brachial for infants) for at least 10 seconds. If no pulse, begin chest compressions based on chart below:

<table>
<thead>
<tr>
<th>Age</th>
<th>Location</th>
<th>Depth</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant</td>
<td>Over sternum, between nipples (inter-mammary line), 2-3 fingers</td>
<td>1.5 inches</td>
<td>At least 100/minute</td>
</tr>
<tr>
<td>Child</td>
<td>Over sternum, just cephalad from xyphoid process, heel of one hand</td>
<td>2 inches</td>
<td>At least 100/minute (3 compressions Every 2 seconds)</td>
</tr>
<tr>
<td>Adult</td>
<td>Over sternum, just cephalad from xyphoid process, hands with interlocked fingers</td>
<td>At least 2 inches</td>
<td>At least 100/minute (3 compressions Every 2 seconds)</td>
</tr>
</tbody>
</table>

4. If patient is an adult, go to step 5. If no respiratory effort in a pediatric patient, give two ventilations. If air moves successfully, go to step 5. If air movement fails, proceed to the Airway Obstruction Procedure.
5. Go to Cardiac Arrest Procedure. Begin ventilations in the adult as directed in the Cardiac Arrest Procedure
6. Provide 8 - 10 breaths per minute with the BVM. Use EtCO2 to guide your ventilations as directed in the Cardiac Arrest Protocol.
7. Chest compressions should be provided in an uninterrupted manner. Only brief interruptions (< 5 seconds with a maximum of 10 seconds) are allowed for rhythm analysis, defibrillation, and performance of procedures

Certification Requirements:
- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Patients in cardiac arrest (pulseless, non-breathing).
- Age 1 to 8 years, use Pediatric Pads if available
- Follow manufacturer’s age/weight range if specified on pads.

Contraindication:

- Pediatric patients who are so small that the pads cannot be placed without touching one another.

Procedure:

1. If multiple rescuers available, one rescuer should provide uninterrupted chest compressions while the AED is being prepared for use.
3. Remove any medication patches on the chest and wipe off any residue.
4. If necessary, connect defibrillator leads: white to the anterior chest pad and the red to the posterior pad.
5. Activate AED for analysis of rhythm.
6. **Stop CPR and clear the patient** for rhythm analysis. Keep interruption in CPR as brief as possible.
7. Defibrillate if appropriate by depressing the “shock” button. **Assertively state “CLEAR” and visualize that no one, including yourself, is in contact with the patient prior to defibrillation.** The sequence of defibrillation charges is preprogrammed for monophasic defibrillators. Biphasic defibrillators will determine the correct joules accordingly.
8. Begin CPR (chest compressions and ventilations) immediately after the delivery of the defibrillation.
9. After 2 minutes of CPR, analyze rhythm and defibrillate if indicated. Repeat this step every 2 minutes.
10. If “no shock advised” appears, perform CPR for two minutes and then reanalyze.
11. Transport and continue treatment as indicated.
12. **Keep interruption of CPR compressions as brief as possible. Adequate CPR is a key to successful resuscitation.**
13. If pulse returns please use the Post Resuscitation Protocol

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System. Assessment should include direct observation at least once per certification cycle.
Clinical Indications:

- Cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia

Procedure:

1. Ensure that Chest Compressions are adequate and interrupted only when absolutely necessary.
2. Clinically confirm the diagnosis of cardiac arrest and identify the need for defibrillation.
3. After application of an appropriate conductive agent if needed, apply defibrillation hands free pads (recommended to allow more continuous CPR) or paddles to the patient’s chest in the proper position
   - Paddles: right of sternum at 2nd ICS and anterior axillary line at 5th ICS
   - Pads: Anterior-Lateral Position
     For patients with implanted pacers/defibrillators, paddles or pads can be in AP or AL positions. The presence of implanted pacers/defibrillators should not delay defibrillation. Attempt to avoid placing paddles or pads directly above device.
4. Set the appropriate energy level (Adult: 200J, 300J, 360J) (Ped: 2 J/kg, 4 J/kg, 4 J/kg)
5. Charge the defibrillator to the selected energy level. **Continue chest compressions while the defibrillator is charging.**
6. Hold Compressions, assertively state, “CLEAR” and visualize that no one, including yourself, is in contact with the patient.
7. Deliver the countershock by depressing the shock button for hands free operation.
8. Immediately resume chest compressions and ventilations for 2 minutes. After 2 minutes of CPR, analyze rhythm and check for pulse only if appropriate for rhythm.
9. Repeat the procedure every two minutes as indicated by patient response and ECG rhythm.
10. Keep interruption of CPR compressions as brief as possible. Adequate CPR is a key to successful resuscitation.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System. Assessment should include direct observation at least once per certification cycle.
Clinical Indications:

- Unstable patient with a tachydysrhythmia (rapid atrial fibrillation, supraventricular tachycardia, ventricular tachycardia)
- Patient has a pulse (the pulseless patient requires unsynchronized cardioversion, i.e., defibrillation)

Procedure:

1. Ensure the patient is attached properly to a monitor/defibrillator capable of synchronized cardioversion. Place pads in Anterior-Lateral position on chest.
2. Have all equipment prepared for unsynchronized cardioversion/defibrillation if the patient fails synchronized cardioversion and the condition worsens.
3. Consider the use of sedating medications.
4. Set energy selection (Adult: 100J, 200J, 300J, 360J) (Ped: 1 J/kg, 2 J/kg, 2 J/kg)
5. Set monitor/defibrillator to synchronized cardioversion mode.
6. Make certain all personnel are clear of patient.
7. Press and hold the shock button to cardiovert. Stay clear of the patient until you are certain the energy has been delivered. NOTE: It may take the monitor/defibrillator several cardiac cycles to “synchronize”, so there may be a delay between activating the cardioversion and the actual delivery of energy.
8. Note patient response and perform immediate unsynchronized cardioversion/defibrillation if the patient’s rhythm has deteriorated into pulseless ventricular tachycardia/ventricular fibrillation, following the procedure for Defibrillation-Manual.
9. If the patient’s condition is unchanged, repeat steps 2 to 8 above, using escalating energy settings.
10. Repeat until maximum setting or until efforts succeed. Consider discussion with medical control if cardioversion is unsuccessful after 2 attempts.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System. Assessment should include direct observation at least once per certification cycle, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Patients with symptomatic bradycardia (less than 60 per minute) with signs and symptoms of inadequate cerebral or cardiac perfusion such as:
  - Chest Pain
  - Hypotension
  - Pulmonary Edema
  - Altered Mental Status, Confusion, etc.
  - Ventricular Ectopy

Procedure:

1. Attach standard four-lead monitor.
3. Rotate selector switch to pacing option.
4. Adjust heart rate to 80 BPM for an adult and 100 BPM for a child.
5. Note pacer spikes on EKG screen.
6. Slowly increase milliamps until capture of electrical rhythm on the monitor.
7. If unable to capture while at maximum current output, stop pacing immediately.
8. If capture observed on monitor, check for mechanical capture (corresponding pulse) and assess vital signs.
9. Consider the use of sedation if patient is uncomfortable.
10. Document the dysrhythmia and the response to external pacing with ECG strips in the PCR.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System. Assessment should include direct observation at least once per certification cycle.
Clinical Indications:

- Patients with hypotension (SBP < 90), clinical signs of shock, and at least one of the following signs:
  - Jugular vein distention.
  - Tracheal deviation away from the side of the injury (often a late sign).
  - Absent or decreased breath sounds on the affected side.
  - Hyper-resonance to percussion on the affected side.
  - Increased resistance when ventilating a patient.

- Patients in traumatic arrest with chest or abdominal trauma for whom resuscitation is indicated. These patients may require bilateral chest decompression even in the absence of the signs above.

Procedure:
1. Don personal protective equipment (gloves, eye protection, etc.).
2. Administer high flow oxygen.
3. Identify and prep the site:
   - Locate the second intercostals space in the mid-clavicular line on the same side as the pneumothorax.
   - If unable to place anteriorly, lateral placement may be used at the fourth ICS mid-axillary line with Medical Control authorization.
   - Prepare the site with an aseptic technique.
4. Insert the catheter (14ga x 3.25 ARS system for adults) into the skin over the third rib and direct it just over the top of the rib (superior border) into the interspace.

   **Needle Selection**
   
   Adult (Age 15 and up) = ARS 14ga needle  
   Child (Age 1 through 14) = 18ga IV needle  
   Child (Age 1 month to 1 year) = 20ga IV needle  
   Neonates (Age < 1 month) = 22ga IV needle  

   *Pediatric needle decompression is extremely rare.*

   *If there is any doubt if the procedure is indicated, Contact Medical Control.*

5. Advance the catheter through the parietal pleura until a “pop” is felt and air or blood exits under pressure through the catheter, then advance catheter only to chest wall.
6. Remove the needle, leaving the plastic catheter in place.
7. Secure the catheter hub to the chest wall with dressings and tape.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System. Assessment should include direct observation once per certification cycle.
Clinical Indications:
- Need for spinal immobilization as determined by protocol

Procedure:
1. Gather a backboard, straps, C-collar appropriate for patient’s size, tape, and head rolls or similar device to secure the head.
2. Explain the procedure to the patient
3. Place the patient in an appropriately sized C-collar while maintaining in-line stabilization of the C-spine. This stabilization, to be provided by a second rescuer, should not involve traction or tension but rather simply maintaining the head in a neutral, midline position while the first rescuer applied the collar.
4. Once the collar is secure, the second rescuer should still maintain their position to ensure in-line stabilization (the collar is helpful but will not do the job by itself.)
5. Place the patient on a long spine board with the log-roll technique if the patient is supine or prone. For the patient in a vehicle or otherwise unable to be placed prone or supine, place them on a backboard by the safest method available that allows maintenance of in-line spinal stability.
6. Stabilize the patient with straps and head rolls/tape or other similar device. Once the head is secured to the backboard, the second rescuer may release manual in-line stabilization.
7. NOTE: Some patients, due to size or age, will not be able to be immobilized through in-line stabilization with standard backboards and C-collars. Never force a patient into a non-neutral position to immobilize them. Such situations may require a second rescuer to maintain manual stabilization throughout the transport to the hospital. Special equipment such as football players in full pads and helmet may remain immobilized with helmet and pads in place.

Certification Requirements:
- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Immobilization of an extremity for transport, either due to suspected fracture, sprain, or injury.
- Immobilization of an extremity for transport to secure medically necessary devices such as intravenous catheters.

Procedure:

1. Assess and document pulses, sensation, and motor function prior to placement of the splint. If no pulses are present and a fracture is suspected, consider reduction of the fracture prior to placement of the splint.
2. Remove all clothing from the extremity.
3. Select a site to secure the splint both proximal and distal to the area of suspected injury, or the area where the medical device will be placed.
4. Do not secure the splint directly over the injury or device.
5. Place the splint and secure with Velcro, straps, or bandage material (e.g., kling, kerlex, cloth bandage, etc.) depending on the splint manufacturer and design.
6. Document pulses, sensation, and motor function after placement of the splint. If there has been a deterioration in any of these parameters, remove the splint and reassess.
7. If a femur fracture is suspected and there is no evidence of pelvic fracture or instability, the following procedure may be followed for placement of a femoral traction splint:
   - Assess neurovascular function as in #1 above.
   - Place the ankle device over the ankle.
   - Place the proximal end of the traction splint on the posterior side of the affected extremity, being careful to avoid placing too much pressure on genitalia or open wounds. Make certain the splint extends proximal to the suspected fracture. If the splint will not extend in such a manner, reassess possible involvement of the pelvis.
   - Extend the distal end of the splint at least 6 inches beyond the foot.
   - Attach the ankle device to the traction crank.
   - Twist until moderate resistance is met.
   - Reassess alignment, pulses, sensation, and motor function. If there has been deterioration in any of these 3 parameters, release traction and reassess.
8. Document the time, type of splint, and the pre and post assessment of pulse, sensation, and motor function in the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Any patient who may harm himself, herself, or others may be gently restrained to prevent injury to the patient or crew. This restraint must be in a humane manner and used only as a last resort. Other means to prevent injury to the patient or crew must be attempted first. These efforts could include reality orientation, distraction techniques, or other less restrictive therapeutic means. Physical or chemical restraint should be a last resort technique.

Procedure:

1. **Attempt less restrictive means of managing the patient.**
2. Request law enforcement assistance.
3. Ensure that there are sufficient personnel available to physically restrain the patient safely.
4. Restrain the patient in a lateral or supine position. No devices such as backboards, splints, or other devices will be on top of the patient. The patient will never be restrained in the prone position.
5. The patient must be under constant observation by the EMS crew at all times. This includes direct visualization of the patient as well as cardiac and pulse oximetry monitoring.
6. The extremities that are restrained will have a circulation check at least every 15 minutes. The first of these checks should occur as soon after placement of the restraints as possible. This MUST be documented on the PCR.
7. Documentation on/with the patient care report (PCR) should include the reason for the use of restraints, the type of restraints used, and the time restraints were placed. **Use of the Restraint Checklist is required.**
8. If the above actions are unsuccessful, or if the patient is resisting the restraints, consider administering medications per protocol. (Chemical restraint may be considered earlier.)
9. If a patient is restrained by law enforcement personnel with handcuffs or other devices, EMS personnel can not remove, a law enforcement officer must accompany the patient to the hospital in the transporting EMS vehicle.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:
- When medication administration is necessary and the medication must be given via the IM route.

EMT-Paramedic:
- Can administer IM medications in all protocols.

EMT-Intermediate:
- Can only administer IM Epinephrine 1:1000 as listed in Protocol 18, Adult Allergic Reaction/Anaphylaxis and Protocol 51, Pediatric Allergic Reaction/Anaphylaxis.

Procedure:

1. Receive and confirm medication order or perform according to standing orders.
2. Prepare equipment and medication expelling air from the syringe.
3. Explain the procedure to the patient and reconfirm patient allergies.
4. The possible injection sites for intramuscular injections include the arm, buttock and thigh.
   - Injection volume should not exceed 2 cc for the arm, thigh, or buttock.
5. The thigh should be used for injections in pediatric patients and injection volume should not exceed 1 cc.
6. Expose the selected area and cleanse the injection site with alcohol.
7. Insert the needle into the skin with a smooth, steady motion
   - IM: 90-degree angle / skin flattened
8. Aspirate for blood
9. Inject the medication.
10. Withdraw the needle quickly and dispose of properly without recapping.
11. Apply pressure to the site.
12. Monitor the patient for the desired therapeutic effects as well as any possible side effects.
13. Document the medication, dose, route, and time on/with the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Imminent delivery with crowning

Procedure:

1. Delivery should be controlled so as to allow a slow controlled delivery of the infant. This will prevent injury to the mother and infant.
2. Support the infant’s head as needed.
3. Check the umbilical cord surrounding the neck. If it is present, slip it over the head. If unable to free the cord from the neck, double clamp the cord and cut between the clamps.
4. Suction the airway with a bulb syringe.
5. Grasping the head with hands over the ears, gently pull down to allow delivery of the anterior shoulder.
6. Gently pull up on the head to allow delivery of the posterior shoulder.
7. Slowly deliver the remainder of the infant.
8. Clamp the cord 2 inches from the abdomen with 2 clamps and cut the cord between the clamps.
9. Record APGAR scores at 1 and 5 minutes.
11. The placenta will deliver spontaneously, usually within 5 minutes of the infant. Do not force the placenta to deliver.
12. Massaging the uterus may facilitate delivery of the placenta and decrease bleeding by facilitating uterine contractions.
13. Continue rapid transport to the hospital.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Transport of a patient with an existing arterial line.

Procedure:

1. Make certain arterial line is secured prior to transport, including intersection of arterial catheter and IV/Monitoring lines.
2. Use available equipment for monitoring of arterial pressures via arterial line.
3. Do not use the arterial line for administration of any fluids or medications.
4. If there is any question regarding dislodgement of the arterial line and bleeding results, remove the line and apply direct pressure over the site for at least five minutes before checking to ensure hemostasis.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Any patient where intravenous access is indicated (significant trauma, emergent or potentially emergent medical condition).

No more that a total of 3 attempts at Venous Access per patient (including IO attempts). If further attempts are warranted, contact Medical Control for orders.

Procedure:

1. Saline locks may be used (if available) as an alternative to an IV tubing and IV fluid in every protocol at the discretion of the ALS professional.
2. Paramedics can use intraosseous access where threat to life exists as provided for in the Venous Access-Intraosseous procedure.
3. Use the largest catheter bore necessary based upon the patient’s condition and size of veins.
4. Fluid and setup choice is preferably:
   - Normal Saline with a macro drip (10 gtt/cc) for medical conditions, trauma or hypotension.
   - Normal Saline with a micro drip (60 gtt/cc) for medication infusions.
5. Inspect the IV solution for expiration date, cloudiness, discoloration, leaks, or the presence of particles.
6. Connect IV tubing to the solution in a sterile manner. Fill the drip chamber half full and then flush the tubing bleeding all air bubbles from the line.
7. Place a tourniquet around the patient’s extremity to restrict venous flow only.
8. Select a vein and an appropriate gauge catheter for the vein and the patient’s condition.
9. Prep the skin with an antiseptic solution.
10. Insert the needle with the bevel up into the skin in a steady, deliberate motion until the bloody flashback is visualized in the catheter.
11. Advance the catheter into the vein. Never reinsert the needle through the catheter. Dispose of the needle into the proper container without recapping.
12. Draw blood samples when appropriate.
13. Remove the tourniquet and connect the IV tubing or saline lock.
14. Open the IV to assure free flow of the fluid and then adjust the flow rate as per protocol or as clinically indicated.

   Rates are preferably:
   - Adult: KVO: 60 cc/hr (1 gtt/6 sec for a macro drip set)
   - Pediatric: KVO: 30 cc/hr (1 gtt/12 sec for a macro drip set)

   If shock is present, follow appropriate protocols for fluid boluses.
15. Cover the site with a sterile dressing and secure the IV and tubing.
16. Label the IV with date and time and place “EMS IV” sticker on the tubing.
17. Document the procedure, time and result (success) on/with the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Venous Access: External Jugular Access

Clinical Indications:

- External jugular vein cannulation is indicated in a critically ill patient ≥ 8 years of age who requires intravenous access for fluid or medication administration and in whom an extremity vein is not obtainable.
- External jugular cannulation can be attempted initially in life threatening events where no obvious peripheral site is noted.

Procedure:

1. Place the patient in a supine head down position. This helps distend the vein and prevents air embolism.
2. Turn the patient’s head toward the opposite side if no risk of cervical injury exists.
3. Prep the site as per peripheral IV site.
4. Align the catheter with the vein and aim toward the same side shoulder.
5. “Tourniqueting” the vein lightly with one finger above the clavicle, puncture the vein midway between the angle of the jaw and the clavicle and cannulate the vein in the usual method.
6. Attach the IV and secure the catheter avoiding circumferential dressing or taping.
7. Document the procedure, time, and result (success) on/with the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:
- Patients where rapid, regular IV access is unavailable with any of the following:
- Cardiac arrest.
- Multisystem trauma with severe hypovolemia.
- Severe dehydration with vascular collapse, shock, and/or loss of consciousness.
- Respiratory failure / Respiratory arrest.
- Severe Burns.

Contraindications:
- Current or suspected fracture of the bone selected for IO infusion
- Inability to locate site due to absence of anatomic landmarks
- Infection at the site selected for insertion
- Significant orthopedic procedures to site (joint replacement, prosthesis, previous IO within 24-48 hrs)

Procedure:
1. Don personal protective equipment (gloves, eye protection, etc.).
2. **Humeral placement in ADULTS who are at least 40 kg**: Place patient’s hand over the abdomen (elbow adducted and humerus internally rotated). Identify the most prominent aspect of the greater tubercle, 1 to 2 cm above the surgical neck.
   - **Proximal tibia placement in PEDIATRICS who are at least 3kg**: Identify anteromedial aspect of the proximal tibia, the tibial tuberosity. Insertion site is 1-2 cm below this.
3. Prep the site (Proximal Humerus for Adults, Proximal Tibia for Pediatrics) with antiseptic wipe.
4. Ensure correct needle selection.
   - 25mm needle is blue and used for pediatric patients (3kg and over) at the proximal tibia site.
   - 45mm needle is yellow and used for adult patients (40kg and over) at the humeral site.
5. Remove the needle cap and aim the needle tip downward at a 45-degree angle to the horizontal plane, for humerus insertion in adults. Aim the tip at 90 degree angle to the proximal tibia in pediatrics.
   - **The correct angle will result in the needle hub lying perpendicular to the skin.**
6. Push the needle tip through the skin until the tip rests against the bone. The 5mm mark must be visible above the skin for confirmation of adequate needle length.
7. **ADULTS**: Gently drill into the humerus until the hub reaches the skin.
   - **Peds**: Gently drill into the proximal tibia until you feel a loss of resistance (“pop” or “give”).
8. Remove the stylet and place in a sharps container. Place the EZIO stabilizer dressing over the hub.
9. Attach a primed EZ-Connect extension set to the hub and firmly secure by twisting clockwise.
10. Pull the tabs off the EZ-stabilizer dressing to expose the adhesive and attach to the skin.
11. Aspirate for blood or bone marrow and secure patient’s extremity.
12. You may administer 10 to 20 mg (1 to 2 cc) of 2% Lidocaine in adult patients who are awake or experience infusion-related pain.
13. Provide a rapid and vigorous flush of 10ml Normal Saline. **“NO FLUSH = NO FLOW”**
14. Attach the IV line and adjust flow rate. A pressure bag may assist with achieving desired flows.
15. Following the administration of any IO medications, flush the IO line with 10 cc of IV fluid.
16. Document the procedure, time, and result (success) on/with the patient care report (PCR).

For manual PEDIATRIC insertion, hold the intraosseous needle at a 60 to 90 degree angle, aimed away from the nearby joint and epiphyseal plate, twist the needle handle with a rotating grinding motion applying controlled downward force until a “pop” or “give” is felt, indicating loss of resistance. Do not advance the needle any further.

Certification Requirements:
- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System. Assessment should include direct observation at least once per certification cycle.
Venous Access: Blood Draw

Clinical Indications:

- Collection of a patient’s blood for laboratory analysis

Procedure (Standard):

1. Utilize universal precautions as per OSHA.
2. Select vein and prep the site using an aseptic technique with alcohol and or Betadine.
3. Select appropriate blood-drawing devices.
4. Draw appropriate tubes of blood for lab testing.
5. Assure that the blood samples are labeled with the correct information (a minimum of the patients name, along with the date and time the sample was collected).
6. Deliver the blood tubes to the appropriate individual at the hospital.
7. Complete documentation of procedure in the patient care report (PCR)

Note: Venous Access: Blood Draws will be drawn for all patients with suspected cardiac events, stroke, or sepsis.

Procedure (Law Enforcement):

1. Utilize universal precautions as per OSHA.
2. Use appropriate blood drawing kit (provided on the unit).
3. Have the officer and patient complete the consent form provided in the kit.
4. Complete the chain of possession form provided in the kit.
   - Select vein and prep the site using an aseptic technique with Betadine (DO NOT USE ALCOHOL).
5. Select appropriate blood-drawing devices (in kit).
6. Draw appropriate tubes of blood for lab testing (2 tubes in kit).
7. Assure that the blood samples are labeled with the correct information (a minimum of the patients name, along with the date and time the sample was collected).
8. Deliver the blood tubes to Law Enforcement personnel.
9. Complete documentation of procedure in the patient care report (PCR)

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Inability to obtain adequate peripheral access.
- Access of an existing venous catheter for medication or fluid administration.
- Central venous access in a patient in cardiac arrest.

If patient is in extremis, contact Medical Control to access existing catheters if necessary. If patient is in Cardiac Arrest, existing catheters may be accessed on standing order.

Procedure:

1. Clean the port of the catheter with alcohol wipe.
2. Using sterile technique, withdraw 10 ml of blood and discard syringe in sharps container.
3. Using 5cc of normal saline, access the port with sterile technique and gently attempt to flush the saline.
4. If there is no resistance, no evidence of infiltration (e.g., no subcutaneous collection of fluid), and no pain experienced by the patient, then proceed to step 4. If there is resistance, evidence of infiltration, pain experienced by the patient, or any concern that the catheter may be clotted or dislodged, do not use the catheter.
5. Begin administration of medications or IV fluids slowly and observe for any signs of infiltration. If difficulties are encountered, stop the infusion and reassess.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Transport of a patient with a central venous pressure line already in place

Procedure:

1. Prior to transportation, ensure the line is secure.
2. Medications and IV fluids may be administered through a central venous pressure line. Such infusions must be held while the central venous pressure is transduced to obtain a central venous pressure, but may be restarted afterwards.
3. Do not manipulate the central venous catheter.
4. If the central venous catheter becomes dysfunctional, does not allow drug administration, or becomes dislodged, contact medical control.
5. Document the time of any pressure measurements, the pressure obtained, and any medication administration in the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Transport of a patient with a Swan-Ganz catheter that is in place prior to transport.

Procedure:

1. Make certain catheter is secure prior to transport.
2. Under the supervision of the nurse or physician caring for the patient, make certain the transport personnel are aware of the depth at which the catheter is secured.
3. **UNDER NO CIRCUMSTANCES SHOULD TRANSPORT PERSONNEL ADVANCE THE SWAN-GANZ CATHETER.**
4. The sterile plastic sheath that surrounds the catheter should not be manipulated.
5. The ports of the catheter may be used to continue administration of medications or IV fluids that were initiated prior to transport. These should be used as any other IV port with attention to sterile technique.
6. If applicable, measurements from the catheter may be obtained during transport and used to guide care as per local protocols and medical control orders.
7. If at anytime during the transport difficulties with the function of the Swan-Ganz catheter is noted, contact medical control.
8. Document the time and any adjustments or problems associated with the catheter in the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Protection and care for open wounds prior to and during transport.

Procedure:

1. Use personal protective equipment, including gloves, gown, and mask as indicated.
2. If active bleeding, elevate the affected area if possible and hold direct pressure. Do not rely on "compression" bandage to control bleeding. Direct pressure is much more effective.
3. Once bleeding is controlled, irrigate contaminated wounds with saline as appropriate (this may have to be avoided if bleeding was difficult to control). Consider analgesia per protocol prior to irrigation.
4. Cover wounds with sterile gauze/dressings. Check distal pulses, sensation, and motor function to ensure the bandage is not too tight.
5. Monitor wounds and/or dressings throughout transport for bleeding.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
**Clinical Indications:**

- Serious hemorrhage that cannot be controlled by other means.

**Contraindications:**

- Wounds involving open thoracic or abdominal cavities.

(Follow manufacturer’s guidelines if contraindications or indications differ)

**Procedure:**

1. Apply approved non-heat-generating hemostatic agent per manufacturer’s instructions.
2. Supplement with direct pressure and standard hemorrhage control techniques.
3. Apply dressing.

**Certification Requirements:**

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Patient with uncomplicated conducted electrical weapon (Taser®) probes embedded subcutaneously in non-sensitive areas of skin.
- Taser probes are barbed metal projectiles that may embed themselves up to 13 mm into the skin.

Contraindications:

- Patients with conducted electrical weapon (Taser®) probe penetration in vulnerable areas of body as mentioned below should be transported for further evaluation and probe removal
- Probes embedded in skin above level of clavicles, female breasts, or genitalia
- Suspicion that probe might be embedded in bone, blood vessel, or other sensitive structure.

Procedure:

- Ensure wires are disconnected from weapon.
- Stabilize skin around probe using non-dominant hand.
- Grasp probe by metal body with pliers or hemostats to prevent puncture wounds to EMS personnel.
- Remove probe in single quick motion.
- Wipe wound with antiseptic wipe and apply dressing.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:
- Life threatening extremity hemorrhage that can not be controlled by other means.
- Serious or life threatening extremity hemorrhage and tactical considerations prevent the use of standard hemorrhage control techniques.

Contraindications:
- Non-extremity hemorrhage
- Proximal extremity location where tourniquet application is not practical

Procedure:
1. Place tourniquet proximal to wound
2. Tighten per manufacturer instructions until hemorrhage stops and/or distal pulses in affected extremity disappear.
3. Secure tourniquet per manufacturer instructions
4. Note time of tourniquet application and communicate this to receiving care providers
5. Dress wounds per standard wound care protocol
6. If delayed or prolonged transport and tourniquet application time > 45 minutes: consider reattempting standard hemorrhage control techniques and removing tourniquet

Certification Requirements:
- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Any patient who may have been exposed to significant hazardous materials, including chemical, biological, or radiological weapons.

Procedure:

1. In coordination with HazMAT and other Emergency Management personnel, establish hot, warm and cold zones of operation.
2. Ensure that personnel assigned to operate within each zone have proper personal protective equipment.
3. In coordination with other public safety personnel, assure each patient from the hot zone undergoes appropriate initial decontamination. This is specific to each incident; such decontamination may include:
   - Removal of patients from Hot Zone
   - Simple removal of clothing
   - Irrigation of eyes
   - Passage through high-volume water bath (e.g., between two fire apparatus) for patients contaminated with liquids or certain solids. Patients exposed to gases, vapors, and powders often will not require this step as it may unnecessarily delay treatment and/or increase dermal absorption of the agent(s).
4. Initial triage of patients should occur after step #3. Immediate life threats should be addressed prior to technical decontamination.
5. Assist patients with technical decontamination (unless contraindicated based on #3 above). This may include removal of all clothing and gentle cleansing with soap and water. All body areas should be thoroughly cleansed, although overly harsh scrubbing which could break the skin should be avoided.
6. Place triage identification on each patient. Match triage information with each patient’s personal belongings which were removed during technical decontamination. Preserve these personnel affects for law enforcement.
7. Monitor all patients for environmental illness.
8. Transport patients per local protocol.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Presence of an epidural catheter in a patient requiring transport

Procedure:

1. Prior to transport, ensure catheter is secure and that transport personnel are familiar with medication(s) being delivered and devices used to control medication administration.
2. No adjustments in catheter position are to be attempted.
3. No adjustments in medication dosage or administration are to be attempted without direct approval from on-line medical control.
4. Report any complications immediately to on-line medical control.
5. Document the time and dose of any medication administration or rate adjustment in the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- Transport of a patient with an intra-ventricular catheter in place

Procedure:

1. Prior to transport, ensure the catheter is secure.
2. Prior to transport, determine from the referring hospital/physician the desired patient position (e.g., supine, head of bed elevated 30 degrees, etc.).
3. Prior to transport, determine the height at which the drain is to be maintained, given the patient position desired from #2 above (if applicable).
4. Do not manipulate or move the drain.
5. If the patient or height of the drain is altered, immediately correct based on the pre-determined configuration in step 2 and 3 above.
6. Report any problems immediately to on-line medical control.
7. Document the time and any adjustments or problems in the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Gastric Tube Insertion

Clinical Indications:

- Gastric decompression in intubated patients or patients with BIAD in place (using gastric lumen) or endotracheal intubation. (Orogastric Tube ONLY)
- For use only in patients who have ROSC with abdominal distention.

Procedure:

1. Estimate insertion length by superimposing the tube over the body from the mouth to the stomach.
2. In the setting of an intubated patient or a patient with facial trauma, oral insertion of the tube is preferred after securing airway.
3. Continue to advance the tube gently until the appropriate distance is reached.
4. Confirm placement by injecting 10cc of air and auscultate for the swish or bubbling of the air over the stomach. Additionally, aspirate gastric contents to confirm proper placement.
5. Secure the tube.
6. Decompress the stomach of air and food either by connecting the tube to suction.
7. Document the procedure, time, and result (success) on/with the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
All Levels of Certification

Purpose:
The Lucas Chest Compression System provides consistent, optimal CPR support for cardiac arrest patients even under conditions which may hinder the effectiveness of manual techniques. It is designed to perform in exact accordance with the AHA’s Guidelines for CPR and Emergency Cardiac Care and will achieve these standards continuously and without tiring. The Lucas 2 Chest Compression System provides advanced, definitive therapy to patients without the need to continuously perform manual CPR.

Therefore, unless medically contraindicated, the Lucas 2 Chest Compression System is to be used on every applicable cardiac arrest patient. Failure to do so will be considered less than optimal patient care and a violation of this procedure.

Clinical Indications:
- All adult cardiac arrest.

Contraindications:
- If it is not possible to position the LUCAS safely or correctly on the patients chest.
- Too small patient: if you cannot enter the PAUSE mode or ACTIVE mode when the pressure pad touches the patient’s chest and LUCAS alarms with 3 fast signals.
- Too large patient: If you cannot lock the upper part of LUCAS to the Back Plate without compressing the patients chest.

Procedure:
1. Start / Continue CPR on patient with minimum interruptions.
2. Push ON/OFF on the user control panel for 1 second to power up the Lucas 2 system to start a self test. The green LED key illuminates when the device is ready.
3. Remove the Lucas 2 back plate from the bag, stop CPR, supports the patients head, carefully place the back plate below the armpits.
5. Hold the handles on the support legs to remove the Lucas 2 upper part from the bag, pull the release rings once to make sure that the claw locks are open.
6. Attach the support leg that is nearest to you to the back plate.
7. Stop manual CPR.
8. Attach the other support leg to the back plate, so that the two support legs lock against back plate (listen for click). Pull up once to make sure that the parts are correctly attached.
9. Use your finger to make sure that the lower edge of the suction sup is immediately above the end of the sternum.
10. Adjust the height of the suction cup to set the start position. Make sure that the Lucas is in the ADJUST mode and push the suction cup down with 2 fingers until the pressure pad touches the patients chest without compressing the chest.
11. Push PAUSE to lock the start position – then remove your fingers from the suction cup.
12. Push ACTIVE (continuous) OR ACTIVE (30:2) to start the compressions.
Clinical Indication:
- Cardiopulmonary arrest 12 years and older (medical etiology)
- The ITD should be utilized to assist with control of ventilatory rate and improve cardiac preload for patients who are receiving CPR.
- It may be utilized with BVM / BIAD however the preferred utilization is with an endotracheal tube.

Contraindication:
- Patients under 12 years of age
- Cardiopulmonary arrest related to trauma
- The ITD should not be utilized for patients who have spontaneous respirations. It should be removed from the endotracheal tube once spontaneous respirations have returned.

Procedure:
1. Ensure airway is adequate per Airway/Failed Airway Protocol.
2. Place the ITD between the ET tube and the ETCO2 detector (for intubated patients)
3. Flip the red switch to the “on” position so that the respiratory timing lights flash.
4. Provide a rapid breath after each flash of the LED timing lights.
5. Perform chest compressions per CPR Procedure.
6. Once there is return of spontaneous circulation, remove the ITD.
   Allow the ETCO2 value to control your respiratory rate (bag faster if ETCO2 > 50, bag slower if ETCO2 < 30). The ITD should be removed if the patient has spontaneous respirations or spontaneous circulation.
7. Carefully monitor the placement of the endotracheal tube after movement of the patient, placement of the ITD, and/or removal of the ITD.

Special Notes:
- Administer endotracheal medications directly into endotracheal tube.
- If a pulse returns, discontinue CPR and the ResQPod. If the patient rearrests, resume CPR with the ResQPod.
- Do not delay compressions if the ResQPod is not readily available

Clinical Indications:
Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
Clinical Indications:

- When medication administration is necessary and the medication must be given via the IV, IM, or SQ (not auto-injector) route or as an alternative route in selected medications.

Procedure:

1. The EMT-I/P or Student understands that the administration of any given drug is complex, involving such considerations as the patient’s age, weight, clinical status, allergy history, concomitant medical problems, and other drugs he/she may be taking. Thus, it is critical that you obtain complete and accurate information about the patient to make prudent and correct decisions about drug administration.

2. Make sure you understand the indications, contraindications, dosage, and route clearly. If unsure, seek another reliable source of information (i.e., reference guide, NCOEMS Patient Care Treatment Protocols, EMT-I/P partner, preceptor, online Medical Control) for verification. Do Not Assume.

3. If the patient is conscious, or if there is another reliable source of information, confirm that the patient is not allergic to the drug that is being administered.

4. Read the label carefully as you take the vial or syringe from its box and again before you give the drug. Note the drug concentration printed on the label and the drug’s date of expiration.

5. Check for defects in the vial, preloaded syringe, or ampule, and make sure that the fluid inside is not cloudy, discolored, or precipitated. Check whether the container itself appears to be cracked or damaged. If the medication looks suspicious in any way, do not use it.

6. Always adhere to the “SIX RIGHTS” of drug administration:
   - Right Patient
   - Right Drug
   - Right Dose
   - Right Route
   - Right Time
   - Right Documentation

7. Prior to administration always state aloud the medication name, concentration (if applicable), the dose, and the route by which it is to be given as an additional safety measure. You are responsible for the direct and indirect (i.e., student) administration of the drug and its possible consequences, so be absolutely certain which drug is to be administered, in what dose, and by which route.

8. If you are administering more than one drug, make sure that the drugs are compatible. Some drugs will not mix with others. For example, if sodium bicarbonate (NaHCO3) is mixed with calcium chloride (CaCl), an insoluble precipitate, calcium carbonate (CaCO3), will form in the solution. Should any cloudiness occur after a drug has been injected into IV tubing, clamp the tubing immediately and replace it with a new administration set.

9. Monitor the patient for possible adverse side effects.

10. Dispose of the syringe and needle safely. Do not try to recap the needle, for the likelihood is quite high of sticking yourself in the process; rather, dispose of the needle and syringe in a sharps container.

Any medication that is drawn into an unlabeled syringe must be administered by the same person drawing up the medication and must be labeled with the following information before administration:

- Medication name
- Date
- Concentration
- Amount

Simply taping an ampule or vial to an unlabeled syringe for identification is not acceptable.

Medications in preloaded syringes are not to be diluted or drawn into another syringe for administration.
North Carolina College of Emergency Physicians
Standards Procedure (Skill)
Mark I Kit

Purpose: These are antidotes to be used in instances of exposure to a nerve or organophosphate agent.

Use: The Mark I is to be used only if you are part of the Emergency Services Response Plan and have received specific training in the administration of the Mark I Kit.

Contents: (1) Atropine Auto-Injector (2 mg total dose per injection) (2) 2-PAM (2-PAM CL; pralidoxime chloride) 600 mgs. total dose per injection.

NOTE: These injectors are not to be used as a prophylactic modality. There is to be no self-administration of the antidote.

I: Mark I Kit
(a) To be used only in a disaster situation and only if you are a part of the Emergency Services Response Plan and have received specific training in the administration of the Mark I Kit.
(b) The Mark I Kit is only to be utilized under direct authority of on scene Paramedic direction.

II: Auto Injector Use
(a) Pre measured doses in auto-injectors should be safe for most adults.
(b) Atropine auto-injector and Pralidoxime (2 PAM CL) may be administered by qualified emergency personnel and designated emergency responders who have had adequate training in on-site recognition and treatment of nerve and or organophosphate agent intoxication in the event of a chemical release. This is specific to the disaster setting.
(c) Medical treatment is directed to relieving respiratory distress and alleviating seizures.

III: Indications for use of the Auto Injectors
(a) It is a concern that the use of auto-injectors could lead to administration of inappropriate and harmful doses during a non-chemical agent or minimal exposure situations. The auto-injectors are to be used only if the patient presents with SLUDGEM + RESPIRATION and AGITATION.
(b) The Atropine and 2-PAM CL auto injectors should be used by qualified emergency medical personnel and designated emergency responders only after the following events have occurred:
   1) The recognition of the existence of a potential chemical or organophosphate agent release in an area.
   2) Some or all of the symptoms of the nerve agent poisoning cited below are present:

SLUDGEM + RESPIRATION and AGITATION
S – salivation (excessive drooling)
L – lacrimation (tearing)
U – urination
D – defecation / diarrhea
G – GI upset (cramps)
E – emesis (vomiting)
M – muscle (twitching, spasm, “bag of worms”)
+ RESPIRATION – difficulty breathing / distress (sob, wheezing)

+ AGITATION + CNS SIGNS – confusion, agitation, seizures, coma.

3) Atropine must be given first, **do not give anything else until the effects of atropine become apparent**. Only when the effects of the atropine have been seen can you then give 2 – PAM CL.

4) If symptoms resolve, then only monitoring is necessary.

5) If severe signs and symptoms are present; three (3) Atropine auto-injectors and three (3) 2-PAM CL injectors should be administered in rapid succession (stacked).
   1. Remove secretions
   2. Maintain an open airway
   3. Use artificial ventilation in necessary and possible
   4. Repeat Atropine immediately as directed

6) Pralidoxime (2-PAM CL) is most effective if administered immediately after the poisoning but not before Atropine, especially for severe exposures.

7) If available Diazepam (Valium) may be cautiously given, under direct medical control, if convulsions are not controlled.

8) When the nerve agent has been ingested, exposure may continue for some time due to slow absorption from the lower bowel, and fatal relapses have been reported after initial improvement. Continued medical monitoring and transport is mandatory.

9) If dermal exposure has occurred, decontamination is critical and should be done with standard decontamination procedures. Patient monitoring should be directed to the same signs and symptoms as with all nerve or organophosphate exposures.

**Atropine**

Atropine usage for WMD will fall under the protocol of Organophosphate poisoning. The drug is supplied in multiple formats which is:

- 0.5 mg Auto Injector
- 1.0 mg Auto Injector
- 8 mg vial

Atropine given in larger doses will be due to organophosphate or nerve agent exposure. Personnel should follow the SLUDGEM acronym for administration

**Valium**

Valium given as a result for WMD exposure will still be done so due to seizure caused by exposure to Nerve agents. Prior to or following the administration of either the 2-PAM or large dose atropine, patients may experience seizures. The patients should be given the valium according to standing seizure protocol.
North Carolina College of Emergency Physicians
Standards Procedure (Skill)
Immunization / Medication Distribution

**History**
- Follow Local Health Department Criteria for the specific immunization or Medication being administered.
- In general the patient must be without evidence of an active infection to receive an immunization.

**Local implementation of this protocol must be done as a component of the EMS System’s local health department community immunization or medication distribution program.**

**Procedure 54**

**The purpose of this protocol is to provide a protocol driven process for EMS professionals to assist with large public health immunization or medication distribution initiatives.**

**Pearls**
- The most common site for subcutaneous injection is the arm. Subcutaneous injection volume should not exceed 1 ml (cc).
- Common sites for an intramuscular injection include the arm, buttock, and thigh. Intramuscular injection volume should not exceed 2 ml (cc).
- The thigh is the recommended site for pediatric intramuscular injections. Pediatric intramuscular injection volume should not exceed 1 ml (cc).
- Documentation of the immunization or medication administration must be done using a local health department approved record. The creation of an EMS patient care report is not required but a log of all patient contacts associated with the immunization or medication distribution program must be maintained by the EMS System.

**Review Immunization Guide provided by the Health Department for patient selection criteria, vaccine or medication contraindications, and immunization procedure**

- Confirm patient eligibility for the medication or vaccine including age, medical history, contraindications, and allergies

  **No Contraindications**

- **Administer Vaccine or Medication using the required route**

  **Over the Counter Medications**

  **Monitor patient for signs or symptoms of an allergic reaction or vaccine specific reaction**

  **No Complications or Reaction**

  **Complete required health department documentation and provide post immunization or medical written instruction**

**Refer to the Local Health Department RN or MD for further care**