Harnett County EMS System
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* denotes procedure unique to the Harnett County EMS System

Airway: BIAD King

B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

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

- Inability to adequately ventilate a patient with a Bag Valve Mask or longer EMS transport distances require a more advanced airway.
- 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.
- Patient must be unconscious.

Procedure:

1. Preoxygenate 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. The large pharyngeal balloon secures the device.
10. **Confirm tube placement using end-tidal CO_2 detector.**
11. **It is required that the airway be monitored continuously through the use of Capnography and Pulse Oximetry.**
12. **If the patient is transported to an Emergency Department an Airway Evaluation Form must be completed and signed by the receiving physician.**

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 Harnett County EMS System. Assessment should include direct observation at least once per certification cycle.

Airway: Cricothyrotomy - Surgical

Clinical Indications:

P PARAMEDIC P

- Failed Airway Protocol
- Management of an airway when standard airway procedures cannot be performed or have failed in a patient ≥ 12 years old or patients larger than the length based medication tape.

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.
4. While securing trachea with non-dominant hand, make a 1 inch vertical incision through the skin and subcutaneous tissue overlying the cricothyroid membrane.
5. Using blunt dissection, expose the cricothyroid membrane.
6. Make a 0.5 inch horizontal stabbing incision through the cricothyroid membrane.
7. Using tracheal hook to maintain surgical opening, dilate the opening using tracheal dilator.
8. With dilator in place, remove tracheal hook and insert 6.5 cuffed ET tube through surgical opening.
9. Inflate the cuff with 5-10cc air and ventilate the patient while manually stabilizing the tube.
10. All of the standard assessment techniques for ensuring tube placement should be performed (auscultation, chest rise & fall, end-tidal CO_2 detector, etc.)
11. Secure the tube using commercial tube holder or acceptable alternative.
12. **Apply end tidal carbon dioxide monitor (Capnography) and record readings on scene, en route to the hospital, and at the hospital.**
13. Document ETT size, time, result (success), and placement location on the patient care report (PCR). Document all devices used to confirm initial tube placement and after each movement of the patient.
14. **Complete the Airway Evaluation Form.**

Certification Requirements:

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Airway: Adult - Endotracheal Intubation

A	AEMT	A
P	PARAMEDIC	P

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 CO_2 monitor, and record and monitor readings to assure continued tracheal intubation.**

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Airway: Intubation Nasotracheal

A	AEMT	A
P	PARAMEDIC	P

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.
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 CO_2 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 be monitored continuously through the use of Capnography and Pulse Oximetry.**
15. **If the patient is transported to an Emergency Department an Airway Evaluation Form must be completed and signed by the receiving physician.**

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 Harnett County EMS System.

Standards Procedure (Skill) Airway Section
Airway: Video Laryngoscopy

A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Failure to protect the airway
- Impending Airway Compromise
- An unconscious patient with pooling secretions or is demonstrating inadequate respiratory effort
- A component of the Airway: Drug Assisted Intubation Procedure

Procedure:

1. Evaluate for difficult airway (LEMON Law, MONS, RODS, SHORT) – See Adult Difficult Airway Assessments
2. Prepare equipment (Video Laryngoscope, BVM, Suction, BIAD, Gum Elastic Bougie, Cricothyrotomy Kit, Waveform Capnography, or other airway adjuncts as available.).
3. Pre-Oxygenate patient with 100% oxygen via NRB Mask or BVM. Apneic Oxygenation: May continue high-flow oxygen via NC during entire procedure.
4. Monitor oxygen saturation with pulse oximetry, waveform capnography with ETCO2, and heart rhythm with ECG.
5. Select the appropriate size blade based on the size of the ETT being used.
6. Turn on the Airtraq Avant Laryngoscope light, inserting the blade fully until it clicks into position and the camera automatically turns on.
7. Ensure recorder is on and recording the intubation.
8. Lubricate ETT and place into the lateral channel aligning the tip of the ETT with the end of the lateral channel.
9. Insert the Airtraq Laryngoscope Blade into the midline of the patient's mouth ensuring not to insert too deeply.
10. Continue insertion until the epiglottis is identified placing the blade in the vallecula or the tip under the epiglottis, lifting it out of the way.
11. Gently lift up the Airtraq Laryngoscope Blade to expose the vocal cords, while moving the blade to align the cords in the center of the visual field.
12. Gently advance the ETT in the lateral channel through the vocal cords into correct position.
13. Inflate ETT cuff and check for proper position.
14. Separate ETT from the Airtraq Laryngoscope Blade by pulling it laterally from the channel, while firmly holding the ETT in position.
15. Remove the Airtraq Laryngoscope Blade from the patient's airway and ventilate through the ETT per protocol.
16. **Verify ET Placement through Continuous Waveform Capnography via End Tidal CO2, auscultation of stomach and lung fields, chest rise and fall, and increasing oxygen saturations.**
17. Re-verify tube placement after every move and upon arrival in the ED or destination
18. Document ETT Size, Time, result (success), and placement location by the centimeter marks either at the patients teeth or gum with the patient care report (PCR). Documents all devices/methods to confirm initial placement and with patient movement. Airway evaluation form is required including a signature from the receiving physician at the ED confirming proper tube placement. Upload Recording into patient care report.
19. **Dispose of the Blade <u>ONLY</u>. Do not discard video display unit or recording device. Disinfect the Video Display Unit after each use while ensuring it is ready for service.**

Certification Requirements:

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North Carolina College of Emergency Physicians
Standards Procedure (Skill)
Airway: Drug Assisted Intubation

Clinical Indications:

P PARAMEDIC P

- Need for advanced airway control in a patient who has a gag reflex or trismus (jaw clinching)
- Failure to protect the airway. Unable to ventilate and / or oxygenate. Impending airway compromise
- A minimum of 2 EMT-Paramedics on scene able to participate in patient care
- This protocol is only for use in patients longer than a Length-based Resuscitation Tape.

Clinical Contraindications:

- Refer to drug list for contraindications regarding use of Rocuronium.

Procedure:

1. Perform focused neurological exam
2. Evaluate for difficult airway (LEMON)-see appendix
3. Prepare equipment (intubation kit, BVM, suction, DAI medications, BIAD, Cricothyrotomy kit, waveform capnography, other airway adjuncts as available)
4. Pre-oxygenate patient with 100% oxygen via NRB mask or BVM. Apneic oxygenation: May continue high-flow oxygen via NC during entire procedure
5. Monitor oxygen saturation with pulse oximetry and heart rhythm with ECG
6. Ensure functioning IV / IO access. Two (2) IV sites are preferable
8. In-line c-spine stabilization by second caregiver (in setting of trauma)
9. Administer Ketamine by rapid IV push
10. Administer Rocuronium, await fasciculation and jaw relaxation
11. Perform external laryngeal manipulation to improve view during laryngoscopy with the right hand.
12. Intubate trachea or place BIAD if intubation unsuccessful or felt to be unsuccessful during procedure.
13. Verify ET placement through auscultation, Capnography, and Pulse Oximetry
14. May repeat Rocuronium if inadequate relaxation
15. Release cricoid pressure (if utilized) and secure tube
16. **Continuous Capnography and Pulse Oximetry is required for DAI. Pre-intubation, minimal during intubation, and post-intubation readings must be recorded in the PCR.**
17. Re-verify tube placement after every move and upon arrival in the ED
18. Document ETT or BIAD 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/methods used to confirm initial tube placement initially and with patient movement.
19. **Completion of the Airway Evaluation Form is required including a signature from the receiving physician at the Emergency Department confirming proper tube placement.**

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 Harnett County EMS System. Assessment should include direct observation at least once per certification cycle.

Airway: Tracheostomy Tube Change

A	AEMT	A
P	PARAMEDIC	P

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 standard measures except for esophageal detection (which is ineffective for surgical airways).
9. If there is any difficultly 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 Harnett County EMS System. Assessment for this skill should include direct observation at least once per certification cycle.

Airway: Foreign Body Obstruction

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

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 my clutch his/her neck in the universal choking sign.
2. **For an infant**, deliver 5 back 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 the 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, AEMT and 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 Harnett County EMS System.

Airway: Cricothyrotomy - Needle

P PARAMEDIC P

Clinical Indications:

- Failed Airway Protocol
- Preferred method of rescue airway in infants and children
- Obstruction above the level of the cricothyroid membrane

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.
4. While securing trachea with non-dominant hand, insert 14g angiocath directed 30-45 degrees caudally using a 10cc syringe to aspirate as you enter the membrane.
5. Advance catheter over needle until the hub rest on the skin surface, removing needle and placing needle into approved sharps container.
6. Attach a 3.0 ETT Adapter directly to the angiocath.
7. Attach BVM to ETT Adapter and ventilate with slow ventilations allowing for exhalation through angiocath.
8. All of the standard assessment techniques for ensuring tube placement should be performed (auscultation, chest rise & fall, end-tidal CO_2 detector, etc.)
9. Secure the needle using tape or acceptable alternative.
10. **Apply end tidal carbon dioxide monitor (Capnography) and record readings on scene, en route to the hospital, and at the hospital.**
11. Document needle size, time, result (success), and placement location on the patient care report (PCR). Document all devices used to confirm initial needle placement and after each movement of the patient.
12. **Complete the Airway Evaluation Form.**

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: Pediatric - Intubation Oral Tracheal

A	AEMT	A
P	PARAMEDIC	P

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.
- A component of Drug Assisted Intubation

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 end-tidal CO_2 waveform 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. 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. **It is required that the airway be monitored continuously through the use of Capnography and Pulse Oximetry.**
13. **If the patient is transported to an Emergency Department an Airway Evaluation Form must be completed and signed by the receiving physician.**

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 Harnett County EMS System. Assessment should include direct observation at least once per certification cycle.

Assessment: Adult

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Any patient requesting a medical evaluation that is too large to be measured with a Length-based Resuscitation Tape.

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 Harnett County EMS System.

Assessment: Pain Assessment and Documentation

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

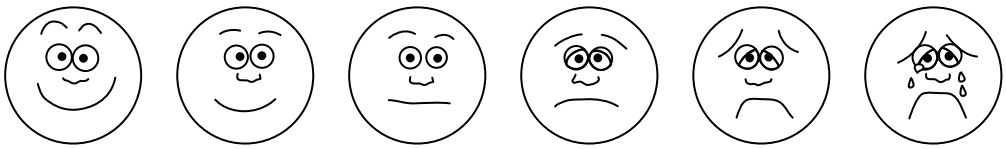
- Any patient with pain.

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.



0	2	4	6	8	10
No hurt	Hurts little bit	Hurts little more	Hurts even more	Hurts whole lot	Hurts worst

From Hockenberry MJ, Wilson D, Winkelstein ML: Wong's Essentials of Pediatric Nursing, ed. 7, St. Louis, 2005, p. 1259. Used with permission. Copyright, Mosby.

   - 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).

CATEGORIES	SCORING		
	0	1	2
FACE	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested.	Frequent to constant quivering chin, clenched jaw.
LEGS	Normal position or relaxed.	Uneasy, restless, tense.	Kicking, or legs drawn up.
ACTIVITY	Lying quietly, normal position moves easily.	Squirming, shifting back and forth, tense.	Arched, rigid or jerking.
CRY	No cry, (awake or asleep)	Moans or whimpers; occasional complaint	Crying steadily, screams or sobs, frequent complaints.
CONSOLABILITY	Content, relaxed.	Reassured by occasional touching hugging or being talked to, distractable.	Difficulty to console or comfort

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 Harnett County EMS System.

Assessment: Pediatric

Clinical Indications:

- Any child that can be measured with a Length-based Resuscitation Tape.

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

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 Length-Based Medication 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 Harnett County EMS System.

Blood Glucose Analysis

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

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 can be obtained through a finger-stick or when possible simultaneously with intravenous access.
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.
7. Perform Quality Assurance on glucometers at least once every 7 days, if any clinically suspicious readings are noted, and/or as recommended by the manufacturer and document in the log.

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 Harnett County EMS System.

Capnography

B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Capnography shall be used when available with the use of all invasive airway procedures including NIPPV, endotracheal, nasotracheal, cricothyrotomy, or Blind Insertion Airway Devices (BIAD).
- Capnography should also be used when possible with any acute respiratory distress patient.
- Capnography should be used when the following medications have been administered to any patient:
  - Ketamine
  - Morphine
  - Versed
  - Fentanyl
  - Rocuronium

Procedure:

1. Attach capnography sensor (Nasal Cannula Detector or $ETCO_2$ Detector) to the patient, BIAD, endotracheal tube, or oxygen delivery device.
2. Note CO_2 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 CO_2 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 and results on/with the Patient Care Report (PCR) and the Airway Evaluation Form.

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 Harnett County EMS System.

Airway: Pulse Oximetry

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

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 92-98%. Below 90%, 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 is not required if the oxyhemoglobin saturation is $\geq$ 92%, unless there are obvious signs of heart failure, dyspneic, or hypoxic to maintain to 92-98%.
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 Harnett County EMS System.

Reperfusion Checklist

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

Rapid evaluation of a patient with suspected acute stroke and/or acute myocardial infarction (STEMI) to:

- Determine eligibility and potential benefit from fibrinolysis..
- Rapid identification of patients who are not eligible for fibrinolysis and will require interventional therapy.

Procedure:

1. Follow the appropriate protocol for the patient's complaint to assess and identify an acute condition which could potentially benefit from fibrinolysis. If a positive finding is noted on one of the following assessments, proceed to step 2.
   - Perform a 12-lead ECG to identify an acute ST elevation myocardial infarction (STEMI).
   - Perform the Los Angles Pre-hospital Stroke Screen to identify an acute stroke
2. Complete the Reperfusion Check Sheet to identify any potential contraindications to fibrinolysis. (See Appendix) *Red text below indicates absolute contraindications for the purposes of Stroke Triage and Destination Plan*
   - History of structural Central Nervous System disease (age >= 18, history of aneurysm or AV-malformation, tumors, masses, hemorrhage, etc.)
   - Significant closed head or facial trauma within the previous 3 months
   - Systolic Blood Pressure greater than 180 mm Hg
   - Diastolic Blood Pressure greater than 110 mm Hg
   - Right vs. Left Arm Systolic Blood Pressure difference of greater than 15 mm Hg
   - Recent (within 6 weeks) major trauma, surgery (including laser eye surgery), gastrointestinal bleeding, or severe genital-urinary bleeding
   - Bleeding or clotting problem or on blood thinners
   - CPR performed greater than 10 minutes
   - Currently Pregnant
   - Serious Systemic Disease such as advanced/terminal cancer or severe liver or kidney failure.
3. Identify if the patient is currently in heart failure or cardiogenic shock. For these patients, a percutaneous coronary intervention is more effective.
   - Presence of pulmonary edema (rales greater than halfway up lung fields)
   - Systemic hypoperfusion (cool and clammy)
4. If any contraindication is noted using the check list and an acute Stroke is suspected by exam or a STEMI is confirmed by ECG, activate the EMS Stroke Plan or EMS STEMI Plan for fibrinolytic ineligible patients. This may require the EMS Agency, an Air Medical Service, or a Specialty Care Transport Service to transport directly to an specialty center capable of interventional care within the therapeutic window of time.
5. Record all findings 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 Harnett County EMS System.

Stroke Screen Step 1: LA Prehospital

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Suspected Stroke Patient

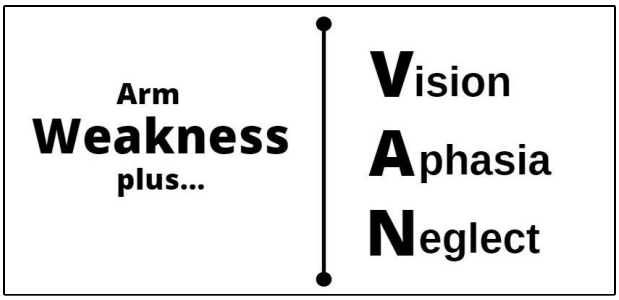
Procedure:

1. Assess and treat suspected stroke patients as per protocol.
2. The Los Angeles Prehospital Stroke Screen (LAPSS) form should be completed for all suspected stroke patients (see appendix). There are six screening criteria items on the LAPSS form.
3. Screen the patient for the following criteria:
   - Age over 45 years
   - No history of a seizure disorder
   - New onset of symptoms in last 24 hours
   - Patient ambulatory prior to event
   - Blood glucose between 60-400
4. The final criterion consists of performing a patient exam looking for **facial droop**, **unilateral grip weakness/absenc**e, or **unilateral arm weakness**. One of these exam components must be positive to answer "yes" on the screening form.
5. **If all of the LAPSS screening criteria are met ("yes" to all criteria OR if unknown), follow the EMS System Stroke Plan and alert the receiving hospital of a possible stroke patient as early as possible.**
6. If the patient has positive initial stroke screen (LAPSS), proceed to Step 2 of this procedure to screen for a large vessel occlusion using the VAN assessment.
7. The completed LAPSS form should be attached or documented 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 Harnett County EMS System.

Stroke Screen Step 2: VAN Assessment



	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Suspected Stroke Patient with POSITIVE initial LA Prehospital Stroke Scale (LAPSS)

Procedure:

Step 1: Is Arm Weakness Present?

- If arm weakness is present, continue the VAN assessment in Step 2 below.
- If arm weakness is absent, the patient is **VAN Negative**. Stop VAN assessment here.

Step 2: Does the patient have Visual Disturbance, Aphasia, OR Neglect?

Assess for:
1. Visual Disturbance – Is there new onset blindness, double vision, or visual field cut?
2. Aphasia – Did the patient lose the ability to speak coherently (word salad) or lose the ability to understand your speech (repeat and name 2 objects, close eyes, make fist)?
3. Neglect – Does the patient have a forced gaze to one side or is ignoring one side of the body? When you touch both sides of the patient's body, can the patient tell you are touching both sides?

- If the patient does NOT have Visual Disturbance, Aphasia, or Neglecct, then **VAN Negative**
- If the patient has ANY degree of arm weakness PLUS ONE or more of the above VAN symptoms, then there is concern for a large vessel occlusion and patient is **VAN Positive**

- **If all of the LAPSS screening criteria are met ("yes" to all criteria OR if unknown), follow the EMS System Stroke Plan to determine transport destination and alert the receiving hospital of a possible stroke patient as early as possible.**
- The completed VAN form should be attached or documented 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 Harnett County EMS System.

Temperature Measurement

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Monitoring body temperature in a patient with suspected infection, hypothermia, hyperthermia, or to assist in evaluating resuscitation efforts.

Procedure:

1. For adult patients that are conscious, cooperative, and in no respiratory distress, an oral temperature is preferred (steps 2 to 4 below). For infants or adults that do not meet the criteria above, a rectal temperature is preferred (steps 5 to 7 below).
2. 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.
3. Have the patient seal their mouth closed around thermometer.
4. If using an electric thermometer, 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). If using a traditional thermometer, leave it in place until there is no change in the reading for at least 30 seconds (usually 2 to 3 minutes). Proceed to step 7.
5. 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.
6. 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.
7. Record time, temperature, method (oral, 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 Harnett County EMS System.

Orthostatic Blood Pressure Measurement

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Patient situations with suspected blood, fluid loss, or dehydration with no indication for spinal immobilization. Orthostatic vital signs are not routinely recommended.
- Patients ≥ 8 years of age, or patients larger than the Length-Based Resuscitation Tape.
- Orthostatic Vital Signs are not sensitive nor specific for volume loss / dehydration and may induce syncope in some cases. Assessment of orthostatic vital signs are not routinely recommended.

Procedure:

1. Gather and prepare standard sphygmomanometer and stethoscope.
2. With the patient supine, obtain pulse and blood pressure.
3. Have the patient sit upright.
4. After 30 seconds, obtain blood pressure and pulse.
5. If the systolic blood pressure falls more than 30 mmHg or the pulse rises more than 20 bpm, the patient is considered to be orthostatic.
6. If a patient experiences dizziness upon sitting or is obviously dehydrated based on history or physical exam, formal orthostatic examination should be omitted and fluid resuscitation initiated.

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 Harnett County EMS System.

Cardiac: 12 – Lead ECG

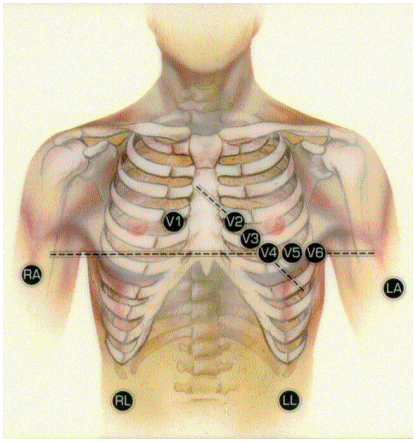
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Suspected cardiac patient
- Suspected tricyclic overdose
- Electrical injuries
- Syncope

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
   - LA -Left arm
   - RL -Right leg
   - LL -Left leg
   - 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 data by fax 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. Download data as per guidelines and attach a copy of the 12 lead to the PCR.
15. 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 Harnett County EMS System.

Cardiac: Cardioversion

P PARAMEDIC P

Clinical Indications:

- Unstable patient with a tachydysrhythmia (rapid atrial fibrillation, supraventricular tachycardia, ventricular tachycardia)
- Patient is not pulseless (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.
2. Have all equipment prepared for unsynchronized cardioversion/defibrillation if the patient fails synchronized cardioversion and the condition worsens.
3. Consider the use of pain or sedating medications.
4. Set energy selection to the appropriate setting.
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 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.
10. Repeat until until efforts succeed. Consider discussion with medical control if cardioversion is unsucessful after 2 attempts.
11. Note procedure, response, and time 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. Assessment should include direct observation at least once per certification cycle, or other mechanisms as deemed appropriate by the Harnett County EMS System.

Cardiac: External Pacing

P PARAMEDIC P

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.
2. Apply defibrillation/pacing pads.
   - *Primary Pad Placement*: right of sternum at 2nd ICS and anterior axillary line at 5th ICS
   - *Secondary Pad Placement*: Anterior & Posterior position
3. Select the Pacing option on your defibrillator/monitor.
4. Adjust heart rate to 70 BPM for an adult and 100 BPM for a child.
5. Note pacer spikes on EKG screen.
6. Start Pacing at 70mA for adults and 10mA for child and rapidly increase until capture of electrical rhythm on the monitor.
   a. *If unable to capture while at maximum output, stop pacing immediately.*
   b. *If unable to capture & pacing has stopped, change defib pad placement and repeat steps 4-6*
8. If capture observed on monitor, check for corresponding pulse and assess vital signs.
9. Consider the use of sedation or analgesia 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 Harnett County EMS System. Assessment should include direct observation at least once per certification cycle.

Cardiac: Cardiopulmonary Resuscitation (CPR)

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Basic life support for the patient in cardiac arrest

Procedure:

1. Assess the patient's level of responsiveness.
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:

Age	Location	Depth	Rate
Infant	Over sternum, between nipples (inter-mammary line), 2-3 fingers	At least 1/3 AP diameter of chest About 1.5 inches 4 cm	Continuous compressions at least 100 – 120/minute
Child	Over sternum, just cephalad from xyphoid process, heel of one hand	At least 1/3 AP diameter of chest About 2 inches 5 cm	Continuous compressions at least 100 – 120/minute
Adult	Over sternum, just cephalad from xyphoid process, hands with interlocked fingers	At least 2 inches 5 cm	Continuous compressions at least 100 – 120/minute

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 1 breath every 6 seconds with the BVM or BIAD. 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
8. Document the time and 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 Harnett County EMS System.

Cardiac: Defibrillation-Automated

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Patients in cardiac arrest (pulseless, non-breathing).
- Age < 8 years, use Pediatric Pads if available.

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.**
2. Apply defibrillator pads per manufacturer recommendations. Based on 2010 guidelines, place pads preferably in AP or AL position when implanted devices (pacemakers, AICDs) occupy preferred pad positions and attempt to avoid placing directly over device.
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 Harnett County EMS System. Assessment should include direct observation at least once per certification cycle.

Cardiac: Defibrillation-Manual

P PARAMEDIC P

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. Apply defibrillation hands free defibrillation pads to the patient's chest in the proper position.
   - *Primary Pad Placement*: right of sternum at 2nd ICS and anterior axillary line at 5th ICS
   - *Secondary Pad Placement*: Anterior & Posterior position
     - ** For patients with implanted pacers/defibrillators, defibrillation pads can be in AP or AL positions.*
     - ** The presence of implanted pacers/defibrillators should not delay defibrillation.*
     - ** Attempt to avoid placing defibrillation pads directly above implanted pacers/defibrillation device.*
4. Set the appropriate energy level
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**.
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 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 Harnett County EMS System. Assessment should include direct observation at least once per certification cycle.

Dual Sequential Defibrillation

Clinical Indications:

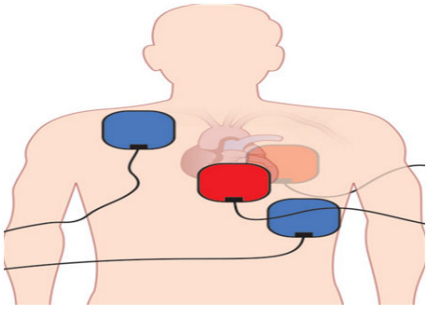
P PARAMEDIC P

- Cardiac arrest with persistent ventricular fibrillation or pulseless ventricular tachycardia.
- Refractory ventricular fibrillation or pulseless ventricular tachycardia where ≥ 3 shocks delivered.

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. Prepare sites for second pad set attachment and apply defibrillation hands free pads:

- Pads: First defibrillator pads in anterior-posterior position
- Pads: Second defibrillator pads in anterior-lateral position
- Ensure pads are not in contact with one another



For patients with implanted pacers/defibrillators:
Avoid placing paddles or pads directly above device.

4. Set the appropriate energy level and assure controls for both defibrillator / monitors are accessible to provider performing defibrillation.
5. At next pulse / rhythm check, if refractory or persistent VF/VT continues:
   Charge the defibrillator to the selected energy level.
   Continue chest compressions while the defibrillator is charging.
6. May provide a single shock at this point with the second defibrillator / monitor to provide a change in energy vector delivered to the heart then move to step 7 if VF / VT persists.
7. **When both monitor / defibrillators have reached selected energy setting:**
   Hold Compressions, assertively state, "CLEAR" and visualize that no one, including yourself, is in contact with the patient.
   (Double Simultaneous): Provider depresses both defibrillator shock buttons simultaneously.
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 Harnett County EMS System. Assessment should include direct observation at least once per certification cycle.

Cardiac: Mechanical CPR (AutoPulse)

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Non-Traumatic Adult Patient in cardiac arrest with effective manual chest compressions being performed.

Relative Contraindications:

- Device does not properly fit patient
- Pectus Deformity
- Provider discretion precludes use of AutoPulse device

Notes/Precautions:

- Minimize interruptions in chest compressions to place device; there should be **no** interruptions greater than ten (10) seconds.
- AutoPulse will be considered for placement only **after** completion of two (2) cycles of chest compressions.

Procedure:

Placement

1. Continue Manual CPR with Defibrillation Pads in place.

2. Place the “Change of Vector” defibrillation pads prior to putting device in place.

3. Power Up the AutoPulse and allow the unit to start the self test.

4. Position the device above the patients head opening the carrying case.

5. Place the chest band on the open carrying case with the Velcro side facing upward. Unclip the lower chest straps prior to application. Leave the tarp rolled in the current position on the carrying case.

6. Stop Manual Compressions and carefully put the AutoPulse under the patient.
   Use one of the following procedures to accomplish this:
   a. Hold the patient’s wrists/shoulders and lift the patient’s upper body a small distance.
   b. Roll the patient from side to side.

7. Resume Manual CPR.

8. Close the chest bands ensuring that the bands are directly under the patients armpits with the bans closing at the center of the chest.

9. Press the CONTINUE/START (green button) twice to begin chest compressions.

Cardiac: Mechanical CPR (AutoPulse)

Adjustment & Operation

10. The compression point should be at the same spot as for manual CPR according to guidelines.

11. ALWAYS apply the chest stabilization strap application as the AutoPulse stabilization strap helps secure the correct position during operations.

13. Once the patient has a sustained ROSC, extend the band to allow for greater chest excursion and tidal volume during BVM usage.

14. Extra Battery must remain with AutoPulse throughout entire patient care encounter.

Ventilation

15. AutoPulse operates in two modes Continuous or 30:2. Continuous mode should be utilized when advanced airway has been obtained (King LTD or ETT). 30:2 mode should be utilized when BLS measures are being utilized. For Continuous Mode the green LED signal will blink eight (8) times per minute and provide and audible signal to alert for ventilations during ongoing compressions. For 30:2 mode the device will provide an alert tone during the compression cycle along with an intermittent LED to alert the operator before each ventilation pause.

MOVEMENT/TARP

16. Pull Yellow handles on tarp towards the patients feet simultaneously. Move patient as needed utilizing the handles on the device.

Precaution

If at any time the AutoPulse device emits a continuous alarm, remove the band immediately and resume normal compressions. Do not attempt to troubleshoot the device while it is in place on a cardiac arrest patient.

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 Harnett County EMS System. Assessment should include direct observation at least once per certification cycle.

Cardiac: Mechanical CPR (Lucas3™)

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Non-Traumatic Adult Patient in cardiac arrest with effective manual chest compressions being performed.

Relative Contraindications:

- Device does not properly fit patient
- Pectus Deformity
- Provider discretion precludes use of LUCAS3 device

Notes/Precautions:

- Minimize interruptions in chest compressions to place device; there should be **no** interruptions greater than ten (10) seconds.
- LUCAS3 will be considered for placement only **after** completion of two (2) cycles of manual chest compressions.

Procedure:

Placement

1. Continue Manual CPR with Defibrillation Pads in place.

2. Place the “Change of Vector” defibrillation pads prior to putting device in place.

3. Push ON/OFF on the user control panel for one (1) second to power up LUCAS3 in the bag and start the self test. The green LED adjacent to the adjust key illuminates when the LUCAS3 is ready for use.

4. Position the carrying case with its top nearest to you and remove the LUCAS3 from carrying case.

5. Remove the LUCAS3 Back Plate from the carrying case.

6. Stop Manual Compressions and carefully put the LUCAS3 back plate under the patient, immediately below the arm pits.
   Use one of the following procedures to accomplish this:
   a. Hold the patient’s wrists/shoulders and lift the patient’s upper body a small distance.
   b. Roll the patient from side to side.

7. Resume Manual CPR.

8. Attach the support leg that is nearest to you to the back plate. DO NOT STRADDLE THE PATIENT TO PLACE THE LUCAS3.

9. Stop Manual CPR and attach the other support leg to the Back Plate, so that the two support legs lock against the Back Plate. (Pull up once to make sure that the parts are correctly attached).

Cardiac: Mechanical CPR (Lucas3™)

Adjustment & Operation

10. The compression point should be at the same spot as for manual CPR according to guidelines. Use your finger to make sure the lower edge of the suction cup is immediately above the end of the sternum.

11. Adjust the height of the suction cup to set the start position.
    a. Make sure the LUCAS3 is in the ADJUST mode.
    b. Push the suction cup down with two fingers until the pressure pad touches the patient's chest without compressing the chest.
    c. Push PAUSE to lock the Start Position – then remove your fingers from the suction cup.
    d. Check for proper position. If not, push ADJUST, pull up the suction cup to readjust the central and/or height position for a new start position. Push PAUSE.
    e. Push ACTIVE (Continuous) or ACTIVE (30:2) to start the compressions.

12. ALWAYS apply the stabilization strap application as the LUCAS3 stabilization strap helps secure the correct position during operations.

13. Once the patient has a sustained ROSC, release and retract the pressure pad to allow for greater chest excursion and tidal volume during BVM usage.

Ventilation

14. LUCAS3 operates in two modes Continuous or 30:2. When you push the selected ACTIVE key the device will operate in the selected mode. Continuous mode should be utilized when advanced airway has been obtained (King LTD or ETT). 30:2 mode should be utilized when BLS measures are being utilized. For Continuous Mode the green LED signal will blink eight (8) times per minute and provide and audible signal to alert for ventilations during ongoing compressions. For 30:2 mode the device will provide an alert tone during the compression cycle along with an intermittent LED to alert the operator before each ventilation pause.

Precaution

If at any time the LUCAS3 device emits a continuous alarm, remove the device immediately and resume normal compressions. Do not attempt to troubleshoot the device while it is in place on a cardiac arrest patient.

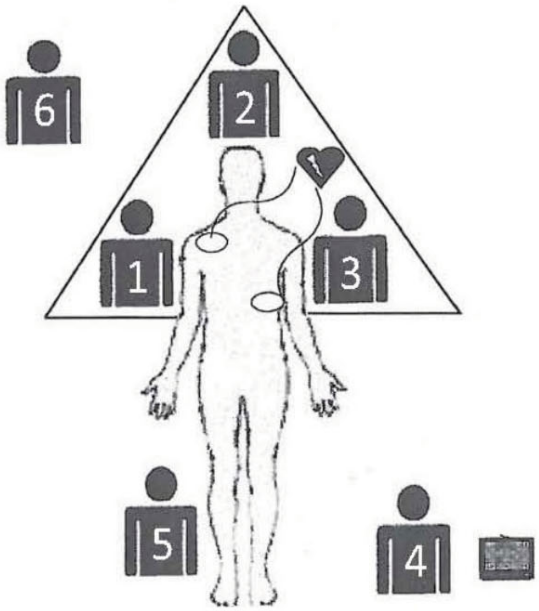
Certification Requirements:

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 Harnett County EMS System. Assessment should include direct observation at least once per certification cycle.

Cardiac: CPR Triangle

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

CPR Procedure



FIRST ARRIVING PROVIDER(s) SHOULD PLACE AED, ANALYZE RHYTHM AND BEGIN COMPRESSIONS

The Code team is then assembled as additional providers arrive on scene

The CPR Triangle

Position 1:

Chest Compressor

Position 2:

AED/Airway/Ventilation

Position 3:

Chest Compressor

NOTES:

The three positions in the "CPR Triangle" are working together to provide continuous high-quality CPR, including initial use of an AED and appropriate airway management.

ALS Team + CPR Triangle

Position 4: (PARAMEDIC)

Team Leader (Established immediately, sometimes simultaneously with "CPR Triangle" roles. Operates monitor/AED and facilitates the resuscitation.

Position 5: (PARAMEDIC)

IO/IV/Meds

NOTES:

These two positions complete the ALS components and form the primary code team. This establishes a platform for effective team dynamics.

Primary Code Team + Supervisor

Position 6: (SUPERVISOR/OTHER)

Situational management

NOTES:

This position may be a supervisor or other individual trained to engage the family when required. This role may serve as assistance for other tasks guided by the primary code team.

Parenteral Access: Venous Blood Draw

A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Collection of a patient's blood for laboratory analysis
- Suspected Stroke

Procedure:

1. Utilize universal precautions as per OSHA.
2. Select vein and prep as usual.
3. Select appropriate blood-drawing devices.
4. Draw appropriate tubes of blood for lab testing.

Stroke Kit Blood Draw Order		
1st	Light Blue	Sodium Citrate
2nd	Gold	Serum Separator
3rd	(2) Green	Lithium Heparin
4th	Lavendar	EDTA (Whole Blood)

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.

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 Harnett County EMS System.

Parenteral Access: Central Line Maintenance

Clinical Indications:

P PARAMEDIC P

- 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 Harnett County EMS System.

Parenteral Access: Epidural Catheter Maintenance

Clinical Indications:

P PARAMEDIC P

- 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 Harnett County EMS System.

Parenteral Access: Ventricular Catheter Maintenance

P PARAMEDIC P

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 Harnett County EMS System.

Parenteral Access: Existing Catheters

Clinical Indications:

P PARAMEDIC P

- 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.

Procedure:

1. Clean the port of the catheter with alcohol wipe.
2. Using sterile technique, withdraw 5-10 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 5. 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.
6. Record procedure, any complications, and fluids/medications administered 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 Harnett County EMS System.

Parenteral Access: External Jugular Access

A	AEMT	A
P	PARAMEDIC	P

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.

Contraindications:

- External Jugular Access not obtained within 1st attempt.
- Patient cannot tolerate being flat.
- Patient is actively vomiting.
- Patient is agitated, moving head.
- Patient has a neck mass.
- Patient has a VP shunt on side of intended insertion.
- Cervical Spinal Trauma.
- Soft Tissue Neck Trauma near site of intended insertion.
- Circumferential Burns to the neck.
- Inability to identify anatomical landmarks for cannulation.
- Evidence of infection at or near the intended insertion site.

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. (A 5cc/10cc Syringe attached to the IV Needle may assist in cannulation)
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 Harnett County EMS System.

Parenteral Access: Venous-Extremity

A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

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

Procedure:

1. Saline locks may be used as an alternative to an IV tubing and IV fluid in every protocol at the discretion of the ALS professional.
2. Paramedic/AEMT 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. Select Appropriate Fluid and Drip Set based on patients condition.
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:

    • Adult: 500 cc fluid boluses repeated as long as lungs are dry and BP < 90. Consider a second IV line.

    • Pediatric: 20 cc/kg blouses repeated PRN for poor perfusion.
15. Cover the site with a sterile dressing and secure the IV and tubing.
16. Label the IV with date and time, catheter gauge, and name/ID of the person starting the IV.
17. Document the procedure, time and result (success) on/with the patient care report (PCR).
18. The Maximum IV attempts should not exceed: 3 attempts each by 2 ALS Providers.

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 Harnett County EMS System.

Parenteral Access: Intraosseous

A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Rapid, regular IV access is unavailable with any of the following:
- Cardiac arrest.
- Multisystem trauma with severe hypovolemia.
- Severe dehydration with vascular collapse and/or loss of consciousness.
- Respiratory failure / Respiratory arrest.
- Burns.

Contraindications:

- Fracture proximal to proposed intraosseous site.
- History of Osteogenesis Imperfecta
- Current or prior infection at proposed intraosseous site.
- Previous intraosseous insertion or joint replacement at the selected site.

Procedure:

1. Don personal protective equipment (gloves, eye protection, etc.).
2. **Proximal tibia:** Identify anterior-medial aspect of the proximal tibia (bony prominence below the knee cap). The insertion location will be 1-2 cm (2 finger widths) below this.
   Distal tibia: If this site is not suitable, and patient is an adult, identify the anterior-medial aspect of the distal tibia (2 cm proximal to the medial malleolus).
   Distal femur: If this site is not suitable, and patient is a pediatric, identify the patella with the leg out-stretched to prevent bending of the knee. The insertion site is approximately 1 cm above the patella and approximately 1 – 2 cm medially.
   Proximal humerus: Acceptable insertion site for adult patients. Locate the insertion site 1 – 2 cm above the surgical neck on the most prominent aspect of the greater tubercle. This is located on the lateral aspect of the ball of the humerus. Direct the needle at a 45 degree angle or toward the opposite hip.
3. Prep the site recommended by the device manufacturer with providone-iodine ointment or solution.
4. For manual pediatric devices, 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.
5. For the EZ-IO intraosseous device, hold the intraosseous needle at a 60 to 90 degree angle, aimed away from the nearby joint and epiphyseal plate, power the driver until a “pop” or “give” is felt indicating loss of resistance. Do not advance the needle any further. Utilize the yellow needle for the proximal humerus. The pink needle is only intended for use in neonatal patients.
6. Remove the stylet and place in an approved sharps container.
7. Attach a syringe filled with at least 5 cc NS; aspirate bone marrow for manual devices only, to verify placement; then inject at least 5 cc of NS to clear the lumen of the needle.
8. Attach the IV line and adjust flow rate. A pressure bag may assist with achieving desired flows.
9. Stabilize and secure the needle with dressings and tape.
10. Paramedic may administer 10 to 20 mg (1 to 2 cc) of 2% Lidocaine in adult patients who experience infusion-related pain. This may be repeated prn to a maximum of 60 mg (6 cc).
11. Following the administration of any IO medications, flush the IO line with 10 cc of IV fluid.
12. 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 Harnett County EMS System. Assessment should include direct observation at least once per certification cycle.

Parenteral Access: Swan-Ganz Catheter Maintenance

P PARAMEDIC P

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 Harnett County EMS System.

Parenteral Access: Port-A-Catheter Access

P PARAMEDIC P

Clinical Indications:

- Access if an existing Port A Catheter for medication or fluid administration.

Procedure:

1. Medical Control Order Required, except in setting of Cardiac Arrest.
2. Locate Port A Catheter and examine site for any signs of edema or leakage. **(DO NOT USE)** if edema is present at site.
3. Explain procedure to conscious patients.
4. Don sterile gloves.
5. Clean site with alcohol pad in circular motion starting at center and rotating outward.
6. Clean site Betadine pad in same manner as above and allow to dry.
7. Palpate Port and insert appropriate needle device into center of port with clamp closed and 10cc syringe attached to device tubing. Insert device until flush with skin.
8. Release clamp and withdraw 10cc blood from Port A Catheter clamp and disposed of syringe into sharps container.
9. Connect IV tubing to access device. Release clamp and set flow to desired rate.
10. Cover site with sterile OP site and sterile dressing. Label site with date, time and technician initial.
11. Record procedure in patient care report along with any complications.
12. Stop fluid administration if any signs of infiltration noted.

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 Harnett County EMS System.

Airway: Suctioning-Advanced

A	AEMT	A
P	PARAMEDIC	P

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, Combitube, 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 Harnett County EMS System.

Airway: Suctioning-Basic

B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

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 Harnett County EMS System.

Airway: Nebulizer Inhalation Therapy

B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Patients experiencing bronchospasm.

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. Assess and document peak flows before and after nebulizer treatments.
9. 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 Harnett County EMS System.

B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Non-Invasive Positive Airway Pressure (NIPPV) is indicated in all patients whom inadequate ventilation is suspected. This could be as a result of Pulmonary Edema, CHF, COPD, Pneumonia, or Asthma.
- Agencies may utilize Continuous and/or Bi-Level Positive Airway Pressure Devices

Clinical Contraindications:

- Decreased Mental Status.
- Facial features or deformities that prevent an adequate mask seal.
- Excessive respiratory secretions.

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 Pressure is adjustable on the NIPPV device adjust and slowly titrate to achieve a positive pressure as follows:

<u>Continuous Positive Airway Pressure Device (CPAP):</u>

- Bronchospasm - start at 5cmH_2O
- Pulmonary Edema - start at 10cmH_2O

7. Evaluate the response of the patient assessing breath sounds, oxygen saturation, and general appearance.
8. Titrate oxygen levels to the patient's response. Many patients respond to low FIO2 (30-50%).
9. Encourage the patient to allow forced ventilation to occur. Observe closely for signs of complications. The patient must be breathing for use of the NIPPV device.
10. Document time and response on 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 Harnett County EMS System.

Airway: Ventilator Operation

P PARAMEDIC P

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, FiO_2, 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. **It is required that the airway be monitored continuously through Capnography and Pulse Oximetry.**
9. 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% O_2. 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 Harnett County EMS System.

Childbirth

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

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.
10. Follow the **Newly Born Protocol** for further treatment.
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 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 Harnett County EMS System.

Decontamination

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

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 Harnett County EMS System.

Injections: Intramuscular

B	*EMT**	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

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

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
    - Injection volume should not exceed 4 cc in the thigh or buttock.
6. The thigh should be used for injections in pediatric patients and injection volume should not exceed 1 cc.
7. Expose the selected area and cleanse the injection site with alcohol.
8. Insert the needle into the skin with a smooth, steady motion

    IM: 90-degree angle
    skin flattened

9. Aspirate for blood
10. Inject the medication.
11. Withdraw the needle quickly and dispose of properly without recapping.
12. Apply pressure to the site.
13. Monitor the patient for the desired therapeutic effects as well as any possible side effects.
14. Document the medication, dose, route, and time on/with the patient care report (PCR).

** EMT may administer Epinephrine for anaphylaxis, by IM route.*

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 Harnett County EMS System.

Restraints: Physical

B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

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 and **Contact Medical Control**.
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 highly recommended.
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 Harnett County EMS System.

Injections: Medication Administration - Epi 1:1,000

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- In a effort to control cost associated with health care, the use of Manually Delivered Epinephrine 1:1,000 will be utilized by County approved EMR/EMT's
- Epinephrine 1:1,000 IM is used in moderate to severe allergic reactions/anaphylaxis.
- EMR/EMT;s may use Epinephrine 1:1,000 Auto-Injector if available.
- If Auto-Injector is not available, then use Epinephrine 1:1,000 vial or ampule.

Relative Contraindications for Epinephrine 1:1,000 Administration (Vial or Ampule)

- Mild Reactions (Flushing, hives, itching, erythema with normal blood pressure and perfusion)
- Advanced cardiac disease such as a CHF exacerbation

Procedure:

1. Receive and confirm medication order or perform according to standing orders.
2. Prepare equipment and observe standard personal protection measures.
3. Explain the procedure to the patient and confirm the patient is not allergic to epinephrine.
4. Examine the medication, including the name and expiration date, inspect for discoloration or particles in the medication. Do not administer if discolored or if particles are present.
5. "Shake Down" the ampule. This will force the liquid to the lower portion of the ampule so that it can be broken without medication loss.
6. Break the ampule with a 2 x 2 pad to prevent injury.
7. Draw out using a filtered needle with a 1cc syringe and invert the syringe to expel the air.
8. Choose a suitable site. The easiest and most accessible site is the deltoid muscle in the arm.
9. The mid, lateral thigh should be used in pediatric patients.
10. Prepare the site by cleaning it with providone-iodine or alcohol preparation using a firm circular motion.
11. Change the needle to a 21-25 gauge 1 ½ inch to administer the medication.
12. Insert the needle into the muscle at a 90 degree angle with a smooth, steady motion.
13. Aspirate the syringe to assess for blood. If you have blood return, withdraw the needle and reattempt in another site after changing needles.
14. Inject medication slowly over 5-10 seconds.
15. Withdraw the needle and syringe quickly. Do not recap the needle.
16. Apply pressure over the injection site.
17. Dispose of the syringe and needle in an approved sharps container.
18. Cover with an adhesive strip (Band-Aid)
19. Closely monitor the patient for the desired therapeutic effects and possible undesired side effects.
20. Document medication, dose, route, and time on/with patient care report.
21. Ampules are sullied with 1mg/1ml of Epinephrine 1:1,000.

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 Harnett County EMS System.

Chest Decompression

P PARAMEDIC P

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.
   - Prepare the site with providone-iodine ointment or solution.
4. Insert the catheter (For adults and pediatric patients, use the Pneumofix catheter if available; if unavailable, use a 14 gauge IV catheter. Use a 20 gauge catheter for neonates) into the skin over the third rib and direct it just over the top of the rib (superior border) into the interspace.
5. Insert the catheter into the skin over the selected rib and direct it just above the rib into the interspace.
6. Advance the catheter until a “pop” is felt or there is a rush of air or blood. For the Pneumofix, look for movement of the green indicator towards the patient.
7. Remove the needle, leaving the catheter in place. Secure the catheter hub to the chest wall.
8. For 14/20 gauge catheters consider placing a finger cut from an exam glove over the catheter hub. Cut a small hole in the end of the finger to make a flutter valve. Secure the glove finger with tape or a rubber band. (Note – don’t waste much time preparing the flutter valve; if necessary control the air flow through the catheter hub with your gloved thumb.) For Pneumofix catheter do NOT create a flutter valve.

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 Harnett County EMS System. Assessment should include direct observation once per certification cycle.

Spinal Motion Restriction

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Need for Spinal Motion Restriction as determined by protocol.
- **<u>Guidelines for appropriate use of long spine board (LSB) OR any equivalent device below:</u>**

1. **Spine boards or similar rigid devices, should NOT be used during transport or during inter-facility transfers.** They should be utilized for extrication and / or patient transfers, as well as support for chest compressions. They DO NOT improve outcomes and can induce pain, agitation / anxiety, respiratory compromise, and decreased tissue perfusion at pressure points.

2. Devices such as the long or short spine board, scoop stretcher, soft-body splints, etc., should be considered extrication devices rather than transport-devices. Instead, use of Spinal Motion Restriction which includes a rigid cervical collar, manual in-line spine stabilization, maintaining spinal alignment with movement and transfers, and securing to the ambulance stretcher.
3. Penetrating trauma to head, torso, or back with no evidence of spinal injury does not require Spinal Motion Restriction.

Procedure:

1. Gather LSB, scoop, ambulance cot, or other Spinal Motion Restriction device, securing devices, and appropriate C-collar.
2. Explain the procedure to the patient and assess / record neurological exam and pulse status.
3. Place the patient in an appropriately sized C-collar while maintaining in-line stabilization of the C-spine by second provider. In-line stabilization should not involve traction / tension, but rather maintain the head in a neutral, midline position while the first rescuer applies the collar.
4. Once the collar is secure, the second rescuer should still maintain their position to ensure stabilization (the collar is helpful but will not do the job by itself.)
5. If indicated, place patient on a Spinal Motion Restriction device with log-roll or similar technique dependent on circumstances, if patient is supine or prone. During extrication or where otherwise unable to be placed prone or supine, place on Spinal Motion Restriction device by the safest method available that allows maintenance of in-line spinal stability.
6. Stabilize the patient with straps / head rolls / tape / other devices as needed. Once the head is secured to the Spinal Motion Restriction device / stretcher, the second rescuer may release manual in-line stabilization. **Once the patient arrives at the stretcher, REMOVE the rigid Spinal Motion Restriction device while maintaining spinal alignment using log-roll or multi-rescuer lift techniques and transfer and secure to the stretcher for transport.**
7. NOTE: Spinal precautions may be achieved by many methods. Never force a patient into a certain 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.
8. Document the time of the 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 Harnett County EMS System.

Splinting

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

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 3 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 Harnett County EMS System.

Wound Care-General

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

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.
6. Document the wound and assessment and care 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 Harnett County EMS System.

Wound Care-Hemostatic Agent

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

- Serious hemorrhage that can not be controlled by other means.

Contraindications:

- Wounds involving open thoracic or abdominal cavities.

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 Harnett County EMS System.

Wound Care-Conducted Electrical Weapon Removal

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

Clinical Indications:

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

Contraindications:

- Patients with conducted electrical weapon 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 Harnett County EMS System.

Wound Care-Tourniquet

	MR	
B	EMT	B
A	AEMT	A
P	PARAMEDIC	P

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 Harnett County EMS System.