

Procedures

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Standards Procedure (Skill)

12 Lead ECG

Requirement:

- All EMS transport agencies are required to provide 12 Lead ECG capability. Other EMS providers must have approval from the EMS Medical Director.
- 12 Lead ECG interpretation is for EMT-Paramedic level only, other levels may acquire a 12 Lead ECG and report the machine interpretation.

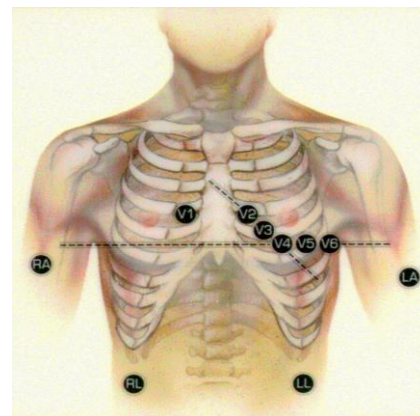
Clinical Indications:

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

B	EMT	B
I	EMT- I	I
P	EMT- P	P

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, as available.
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. **Notify the receiving hospital immediately if there is an interpretation of an acute myocardial infarction (acute M.I).**
12. Transmit the ECG data by fax to the appropriate hospital if an acute M.I is suspected, as available.
13. Contact the receiving hospital to notify them that a 12 Lead ECG has been sent.
14. Monitor the patient while continuing with the treatment protocol.
15. Download data as per guidelines and attach a copy of the 12 lead to the ACR.
16. Document the procedure, time, and results on/with the patient care report (PCR)



Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System.
- EMS agencies providing 12 Lead ECG must complete a 12 Lead ECG class that has been approved by the EMS Medical Director.

Procedure 1

This procedure has been altered from the original 2009 NCCEP Procedure by the local EMS Medical Director

2009

Standards Procedure (Skill)
Airway: BIAD-Combitube

Combitubes are not utilized in the Buncombe/Madison/Yancey EMS Systems.

Standards Procedure (Skill)

Airway: BIAD King LTD

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.
- EMT & EMT-Intermediate levels may only use this device for pulseless and apnic patients.
- 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.

B	EMT	B
I	EMT- I	I
P	EMT- P	P

Procedure:

1. Preoxygenate and hyperventilate the patient.
2. Select the appropriate tube size for the patient.

Size 2	35"- 45" tall or 12-25 Kg	25-35 cc of air
Size 2.5	41"- 51" tall or 25-35Kg	30-40 cc of air
Size 3	4-5 ft tall	50-60 cc of air
Size 4	5-6 ft tall	60-80 cc of air (most common)
Size 5	> 6 ft tall	70-90 cc of air
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. If necessary, adjust cuff inflation pressure to maximize seal, each patient is different.
- 8. Ventilate the patient while gently withdrawing the airway until the patient is easily ventilated.**
9. Auscultate for breath sounds and sounds over the epigastrium and look for the chest to rise and fall.
10. The large pharyngeal balloon secures the device.
- 11. Confirm tube placement using end-tidal CO₂ detector.**
- 12. It is strongly recommended that the airway (if equipment is available) be monitored continuously through Capnography and Pulse Oximetry.**
- 13. It is strongly recommended that an Airway Evaluation Form be completed with any BIAD use.**

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.

Standards Procedure (Skill)
Airway: BIAD-Laryngeal Mask Airway (LMA)

LMAs are not used in the Buncombe/Madison/Yancey EMS system.

Standards Procedure (Skill)

Airway: CPAP/Bi-Level

Requirement:

All EMT-Intermediate level transport agencies are required to provide CPAP or Bi-Level capabilities.

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

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

I	EMT- I	I
P	EMT- P	P

Procedure:

CPAP:

1. Ensure adequate oxygen supply to ventilation device.
2. Explain the procedure to the patient.
3. Consider placement of a nasopharyngeal airway.
4. Place the delivery mask over the mouth and nose. Oxygen should be flowing through the device at this point.
5. Secure the mask with provided straps starting with the lower straps until minimal air leak occurs.
6. If the Positive End Expiratory Pressure (PEEP) is adjustable on the CPAP device adjust the PEEP beginning at 0 cmH₂O of pressure and slowly titrate to achieve a positive pressure as follows:
 - 5 – 10 cmH₂O for Pulmonary Edema, Near Drowning, possible aspiration or pneumonia
 - 3 – 5 cm H₂O for COPD
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 optimal use of the CPAP device.
10. Document time and response on patient care report (PCR).

Bi-level:

1. Follow manufacturer guidelines for equipment set-up and operations.
2. Ensure adequate oxygen supply to ventilation device.
3. Explain the procedure to the patient.
4. Consider placement of a nasopharyngeal airway.
5. Place the delivery mask over the mouth and nose.
6. Secure the mask with provided straps or other provided devices.
7. Begin with high pressure (P. high) of 10cm H₂O and low pressure (P. low) of 5cm H₂O and increase as patient tolerates/clinical situation dictates. Maintain a minimum difference of 5cm H₂O between high pressure and low pressure.
8. Adjust default rate of 8 to patients clinical situation increasing as needed.
9. Adjust FIO₂ to maintain patient SPO₂ greater than 90%.

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.
- EMS agencies providing CPAP or Bi-Level must complete education that has been approved by the EMS Medical Director, prior to implementation.

Airway: Cricothyrotomy-Surgical

Clinical Indications:

P

EMT- P

P

- Failed Airway Protocol
- Management of an airway when standard airway procedures cannot be performed or have failed in a patient \geq 12 years old.

Procedure:

1. Locate the cricothyroid membrane utilizing anatomical landmarks.
2. Surgically prep area with copious amounts of betadine. Use aseptic technique for entire procedure.
3. Stabilize thyroid cartilage with one hand.
4. Make horizontal skin incision over lower half of cricothyroid membrane.
5. Palpate cricothyroid membrane. Carefully incise through the membrane.
6. Use trach spreader to widen and maintain opening in the tissue.
7. Remove blade from site.
8. Insert the tracheostomy tube or ET tube (#6 endotracheal tube is usually sufficient) and inflate cuff. Ventilate the patient while stabilizing the tube.
9. All of the standard assessment techniques for insuring tube placement should be performed (auscultation, chest rise & fall, end-tidal CO₂ detector/monitoring, etc.)
10. Secure the tube.

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.

Standards Procedure (Skill)

Airway: Endotracheal Tube Introducer (Bougie)

Endotracheal tube introducers are not utilized in the Buncombe/Madison/Yancey EMS systems.



Airway: Foreign Body Obstruction

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	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 may clutch his/her neck in the universal choking sign.
2. **For an infant**, deliver 5 back blows (slaps) followed by 5 chest thrusts repeatedly until the object is expelled or the victim becomes unresponsive.
3. **For a child**, perform a subdiaphragmatic abdominal thrust (Heimlich Maneuver) until the object is expelled or the victim becomes unresponsive.
4. **For adults**, a combination of maneuvers may be required.
 - First, subdiaphragmatic abdominal thrusts (Heimlich Maneuver) should be used in rapid sequence until the obstruction is relieved.
 - If abdominal thrusts are ineffective, chest thrusts should be used. Chest thrusts should be used primarily in morbidly obese patients and in 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, EMT-Intermediate and EMT-Paramedic level professionals should visualize the posterior pharynx with a laryngoscope to potentially identify and remove the foreign-body using Magil forceps.
8. Document the methods used and result of these procedures in the patient care report (PCR).

Certification Requirements:

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



Clinical Indications:

- The End-Tidal CO₂ detector shall be used with any Endotracheal Tube or Blind Insertion Airway Device use.

B	EMT	B
I	EMT- I	I
P	EMT- P	P

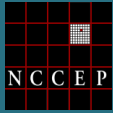
It is strongly recommended that continuous Capnography be used in place of or in addition to the use of an End-Tidal CO₂ detector.

Procedure:

1. Attach End-Tidal CO₂ detector to the Blind Insertion Airway Device or the Endotracheal Tube.
2. Note color change. A color change or CO₂ detection will be documented on each respiratory failure or cardiac arrest patient.
3. The CO₂ detector shall remain in place with the airway and monitored throughout the prehospital care and transport unless continuous Capnography is used. Any loss of CO₂ detection or color change is to be documented and monitored as procedures are done to verify or correct the airway problem.
4. Tube placement should be verified frequently and always with each patient move or loss of color change in the End-Tidal CO₂ detector.
5. Document the procedure and the results on/with the Patient Care Report (PCR) as well as on 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: Intubation Confirmation-Esophageal Bulb

Esophageal Bulbs are not utilized in the Buncombe/Madison/Yancey EMS systems.



Airway: Intubation Drug Assisted

Clinical Indications:

- Need for advanced airway control in a patient who has a gag reflex or trismus (jaw clenching).

Clinical Contraindications:



- Significant burns between 24 hours old and 2 weeks old.
- Known neuromuscular disease such as myasthenia gravis, amyotrophic lateral sclerosis, muscular dystrophy, Guillain-Barre syndrome.
- Chronic renal failure and on hemodialysis
- Age less than 12 years
- Patient or family history of malignant hyperthermia
- A minimum of 2 EMT-Paramedics on scene able to participate in patient care

Procedure:

1. Pre-oxygenate patient with 100% oxygen via NRB mask or BVM
2. Monitor oxygen saturation with pulse oximetry and heart rhythm with ECG
3. Ensure functioning IV access
4. Evaluate for difficult airway (LEMON)-see appendix
5. Perform focused neurological exam
6. Prepare equipment (intubation kit, BVM, suction, RSI medications, BIAD, Cricothyrotomy kit, waveform capnography)
7. Administer Etomidate
8. Stroke/head trauma suspected? If yes, Lidocaine 1mg/kg
9. In-line c-spine stabilization by second caregiver (in setting of trauma)
10. Apply cricoid pressure (by third caregiver)
11. Administer Succinylcholine and await fasciculation and jaw relaxation
12. Intubate trachea
13. Verify ET placement through auscultation, Capnography, and Pulse Oximetry
14. May repeat Succinylcholine if inadequate relaxation after 2 minutes
15. Release cricoid pressure and secure tube
- 16. Continuous Capnography and Pulse Oximetry is required for Drug Assisted Intubation. The pre-intubation levels, minimal levels during intubation, and post-intubation levels must be recorded in the PCR.**
17. Re-verify tube placement after every move and upon arrival in the ED
18. 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/methods used to confirm initial tube placement initially and with patient movement.
19. Consider placing a gastric tube to clear stomach contents after the airway is secured.
- 20. 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 local EMS System. Assessment should include direct observation at least once per certification cycle.



Airway: Intubation Nasotracheal

Clinical Indications:

P EMT- P P

- A spontaneously breathing patient without evidence of head trauma 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.
- **Use for EMT-Paramedic level only**

Procedure:

1. Premedicate the patient with nasal spray.
2. Select the largest and least obstructed nostril and insert a lubricated nasal airway to help dilate the nasal passage.
3. Preoxygenate the patient. Lubricate the tube. The use of a BAAM device is recommended.
4. Remove the nasal airway and gently insert the tube keeping the bevel of the tube toward the septum.
5. Continue to pass the tube listening for air movement and looking for to and fro vapor condensation in the tube. As the tube approaches the larynx, the air movement gets louder.
6. Gently and evenly advance the tube through the glottic opening on the inspiration. This facilitates passage of the tube and reduces the incidence of trauma to the vocal cords.
7. Upon entering the trachea, the tube may cause the patient to cough, buck, strain, or gag. Do not remove the tube! This is normal, but be prepared to control the cervical spine and the patient, and be alert for vomiting.
8. Auscultate for bilaterally equal breath sounds and absence of sounds of the epigastrium. Observe for symmetrical chest expansion. The 15mm adapter usually rests close to the nostril with proper positioning.
9. Inflate the cuff with 5-10 cc of air.
10. Confirm tube placement using end-tidal CO₂ monitoring.
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. The airway shall be monitored continuously through Capnography and Pulse Oximetry.
15. An Airway Evaluation Form be completed with all intubations

Certification Requirements:

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

Airway: Intubation Oral Tracheal

I	EMT- I	I
P	EMT- P	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
- EMT-Intermediates that are approved per guidelines set forth by the EMS Medical Director may make a maximum of two intubation attempts for each adult (>12 years old) patient that is apneic and pulseless.

Procedure:

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

Certification Requirements:

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



North Carolina College of Emergency Physicians Standards Procedure (Skill) Airway – Nebulizer Inhalation Therapy



Clinical Indications:

- Patients experiencing bronchospasm.

B	EMT	B
I	EMT- I	I
P	EMT- P	P

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 local EMS System.

Airway: Respirator Operation

Respirators are not utilized in the Buncombe/Madison/Yancey EMS systems.

Airway: Suctioning-Advanced

I	EMT- I	I
P	EMT- P	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, King, tracheostomy tube, or a cricothyrotomy tube.

Procedure:

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

Certification Requirements:

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



Airway: Suctioning-Basic

B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

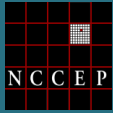
- Obstruction of the airway (secondary to secretions, blood, or any other substance) in a patient who cannot maintain or keep the airway clear.

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 local EMS System.



Airway: Tracheostomy Tube Change

Clinical Indications:

I	EMT- I	I
P	EMT- P	P

- 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 difficulty placing the tube, re-attempt procedure with the smaller tube.
10. If difficulty is still encountered, use standard airway procedures such as oral bag-valve mask or endotracheal intubation (as per protocol). **More difficulty with tube changing can be anticipated for tracheostomy sites that are immature – i.e., less than two weeks old. Great caution should be exercised in attempts to change immature tracheotomy sites.**
11. Document procedure, confirmation, patient response, and any complications in the PCR

Certification Requirements:

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

Standards Procedure (Skill)

Airway: Ventilator Operation

Clinical Indications:

- Management of the ventilated patient during a prolonged transport of an intubated patient.
- Patients requiring ongoing artificial ventilations.



Considerations:

- Patients should be maintained on a ventilator except for the following: CPR, equipment failure, unable to tolerate the mechanical ventilator, troubleshooting alarms and transport times <5min.
- Document Mode, Tidal Volume, Rate, FiO₂ and PEEP.
- Maintain PEEP levels when using Bag device for ventilation unless complications occur.
- All settings may be adjusted based on changes in patient condition.

Procedure:

1. Transporting personnel should review the operation of the ventilator with the training personnel (physician, nurse or respiratory therapist) in the referring facility prior to transport, if possible.
2. All ventilator settings, including respiratory rate, FiO₂, mode of ventilation, and tidal volumes should be recorded prior to initializing 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. 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. 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 ET tube and use a BVM with 100% O₂ and contact medical control immediately.
8. Note any changes in the ventilator settings or patient condition in the chart.
9. Assemble equipment specific mechanical ventilator being used.
10. Baseline settings when initiating mechanical ventilation.
 - a. Adult:
 - FIO₂ - 100%
 - Mode - SIMV or Assist/Control
 - Tidal Volume (VT) 8-10 cc/kg
 - Rate: 10-20 breaths per minute
 - I:E Ratio 1:2 - 1:3 or greater if needed
 - Flow Rate: 30-60 lpm
 - PEEP: 5-10cmH₂O
 - High Pressure Limit: 10-15 cmH₂O above PIP
 - Low Pressure Limit: 10-15 cmH₂O below PIP
 - b. Pediatric:
 - FIO₂: 100%
 - Mode: SIMV or Assist/Control
 - Tidal Volume: 8-10cc/kg Consult Broselow Tape
 - Rate: 15-20 breaths per minute Consult Broselow Tape
 - I:E Ratio: 1:2 typically, 1:3 or greater
 - Flow Rate: 30-60 lpm
 - PEEP: 3-5cmH₂O
 - High Pressure Limit: 10-15 cmH₂O above PIP
 - Low Pressure Limit: 10-15 cmH₂O below PIP
 - c. Infant:
 - FIO₂: 100%
 - Mode : SIMV Pressure Control
 - Rate: 20-40 per minute
 - I:E Ratio: 1:2 -1:3 or greater
 - Inspiratory Time 0.2-1.0 seconds
 - Flow Rate: 5-8 lpm
 - PEEP: 2-4cmH₂O
 - High Pressure Limit: 10-12cmH₂O above PIP
 - Low Pressure Limit: Set below PIP

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.

Arterial Access: Blood Draw

Arterial access blood draws are not utilized in the Buncombe/Madison/Yancey EMS systems.



Arterial Access: Line Maintenance

Clinical Indications:

P EMT-P P

- Transport of a patient with an existing arterial line.

Procedure:

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

Certification Requirements:

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



Assessment: Adult

Clinical Indications:

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

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Procedure:

- Scene size-up, including universal precautions, scene safety, environmental hazards assessment, need for additional resources, by-stander safety, and patient/caregiver interaction
- Assess need for additional resources.
- Initial assessment includes a general impression as well as the status of a patient's airway, breathing, and circulation.
- Assess mental status (e.g., AVPU) and disability (e.g., GCS).
- Control major hemorrhage and assess overall priority of patient.
- Perform a focused history and physical based on patient's chief complaint.
- Assess need for critical interventions.
- Complete critical interventions and perform a complete secondary exam to include a baseline set of vital signs as directed by protocol.
- 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.
- Document all findings and information associated with the assessment, performed procedures, and any administration of medications on the PCR.

Certification Requirements:

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



Pain Assessment and Documentation

Clinical Indications:

- Any patient with pain.

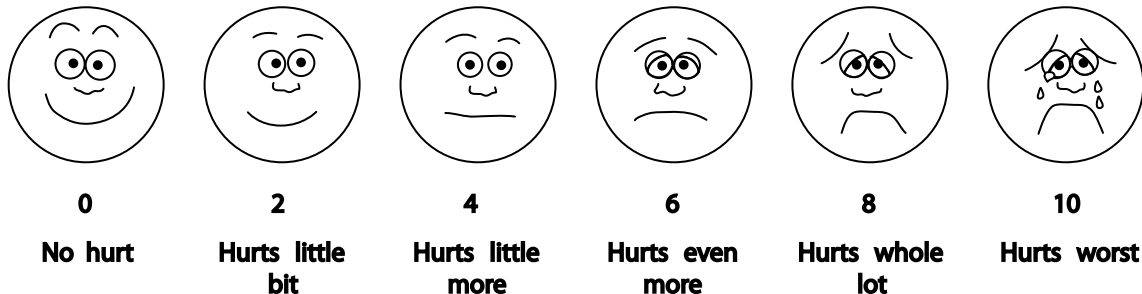
Definitions:

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

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Procedure:

- Initial and ongoing assessment of pain intensity and character is accomplished through the patient's self report.
- Pain should be assessed and documented in the PCR during initial assessment, before starting pain control treatment, and with each set of vitals.
- Pain should be assessed using the appropriate approved scale.
- 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.



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 local EMS System.



Assessment: Pediatric

Clinical Indications:

- Any child that can be measured with the Broselow-Luten Resuscitation Tape.

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Procedure:

- Scene size-up, including universal precautions, scene safety, environmental hazards assessment, need for additional resources, by-stander safety, and patient/caregiver interaction
- 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
- Establish spinal immobilization if suspicion of spinal injury
- Establish responsiveness appropriate for age (AVPU, GCS, etc.)
- Color code using Broselow-Luten tape
- Assess disability (pulse, motor function, sensory function, papillary reaction)
- 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.
- Record vital signs (BP > 3 years of age, cap refill < 3 years of age)
- Include Immunizations, Allergies, Medications, Past Medical History, last meal, and events leading up to injury or illness where appropriate.
- Treat chief complaint as per protocol

Certification Requirements:

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



Blood Glucose Analysis

Clinical Indications:

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

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

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 local EMS System.

Standards Procedure (Skill)

Capnography

This procedure shall be used for the use of an electronic End Tidal Carbon Dioxide (ETC02) monitoring device when available and time permits.

I	EMT- I	I
P	EMT- P	P

Clinical Indications:

ETC02 monitoring assists in providing a breath by breath trend of respirations and an early warning system for an immediate or impending respiratory crisis. ETC02 is useful in the following:

- As an adjunct to assure tracheal intubation.
- Intubated patients, may be used in place of a ETC02 detector.
- May use in non-intubated patients experiencing respiratory distress, hyper/hypoventilation, overdose and other causes of altered levels of consciousness.
- May be used in conjunction with CPAP/BI-Level.

Considerations:

Follow manufacturer's guidelines for each specific monitoring device's set up connections, operations and parameters.

Procedure:

1. For non-intubated patients:
 - Inform patient of the procedure and instruct them to breath normally.
 - Oxygen flow to capnography mask should be set at 1-8 Lpm.
2. Set alarms appropriate to patient's clinical condition.
3. Observe capnography for waveform and readings throughout care of the patient.
4. Document the following:
 - Waveform strips
 - Initial ETC02
 - ETC02 with each set of vital signs
 - Arrival ETC02
 - Note which device being used, e.g.: ventilator, BVM or capnography mask.

Pearls:

1. ETC02 35-45mmHg is a normal value.
2. ETC02 <35mmHg = "Hyperventilation/Hypocapnia" ETC02 >45mmHg = "Hypoventilation/Hypercapnia".
3. Hyperventilation can be caused from multiple causes, e.g.: anxiety, bronchospasm, pulmonary embolus, cardiac arrest, decreased cardiac output, hypotension, hypothermia, pulmonary edema.
4. Hypoventilation can be caused from a decreased level of consciousness from medical or trauma etiologies, severe SHOB, increased cardiac output, depressed respirations and chronic hypercapnia.
5. ETC02 can monitor effective CPR compressions by monitoring cardiac output, high numbers are best.
6. During CPR watch for any spikes in ETC02, this could indicate a return of circulation.
7. Monitor patients that are intubated and paralyzed for a curve or indentation in the waveform that may indicate they are starting to spontaneously breath and may require more medications.
8. Patients with suspected brain injury should keep ETC02 levels within normal ranges.
9. A "shark fin" pattern waveform indicates bronchoconstriction, e.g.: asthma, COPD, obstructed ETT.

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.

Standards Procedure (Skill)

Cardiac: External Pacing

P**EMT- P****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
- Asystole, pacing must be done early to be effective.
- PEA, where the underlying rhythm is bradycardic and reversible causes have been treated.

Procedure:

1. Attach standard four-lead monitor.
2. Apply pacing pads to the patient's chest according to manufacture recommendations.
3. Rotate selector switch to pacing option.
4. Adjust heart rate to 70 BPM for an adult and 100 BPM for a child.
5. Note pacer spikes on EKG screen.
6. Slowly increase output until capture of electrical rhythm on the monitor.
7. If unable to capture while at maximum current output, stop pacing immediately.
8. If capture observed on monitor, check for 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 local EMS System. Assessment should include direct observation at least once per certification cycle.



North Carolina College of Emergency Physicians Standards Procedure (Skill) Cardiopulmonary Resuscitation (CPR)



Clinical Indications:

- Basic life support for the patient in cardiac arrest

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Procedure:

1. Assess the patient's level of responsiveness (shake and shout)
2. If no response, open the patient's airway with the head-tilt, chin-lift and look, listen, and feel for respiratory effort. If the patient may have sustained C-spine trauma, use the modified jaw thrust while maintaining immobilization of the C-spine. For infants, positioning the head in the sniffing position is the most effective method for opening the airway
3. If patient is an adult, go to step 4. If no respiratory effort in a pediatric patient, give two ventilations. If air moves successfully, go to step 4. If air movement fails, proceed to the Airway Obstruction Procedure.
4. 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	0.5 to 1 inch (1/3 the anterior-posterior chest dimension)	At least 100/minute
Child	Over sternum, just cephalad from xiphoid process, heel of one hand	1 to 1.5 inches (1/3 the anterior-posterior chest dimension)	80 to 100/minute (3 compressions Every 2 seconds)
Adult	Over sternum, just cephalad from xiphoid process, hands with interlocked fingers	1.5 to 2 inches (1/3 the anterior-posterior chest dimension)	80 to 100/minute (3 compressions Every 2 seconds)

5. Go to Cardiac Arrest Procedure. Begin ventilations in the adult as directed in the Cardiac Arrest Procedure
6. Provide no more than 12 breaths per minute with the BVM. Use EtCO₂ to guide your ventilations as directed in the Cardiac Arrest Protocol.
7. Chest compressions should be provided in an uninterrupted manner. Only brief interruptions 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 local EMS System.

Standards Procedure (Skill)

Cardioversion

P EMT- P P

Clinical Indications:

Perfusing ventricular tachycardia or a supraventricular tachycardia (PSVT, atrial fibrillation, atrial flutter) in an unstable patient. The following symptoms may indicate an unstable patient.

- Chest pain
- Hypotension
- Respiratory distress
- Syncopal symptoms

Procedure:

1. Confirm the presence of the dysrhythmia and evaluate the patient's hemodynamic status. Adjust the QRS amplitude.
2. Premedicate with sedation. Be prepared to assist ventilations if necessary.
3. Apply defibrillation pads to the patient's chest.
4. Set the defibrillator to the cardioversion mode by depressing the SYNC button before each shock.
5. Use the appropriate energy levels in the following order:
 - **Adult: Monophasic** 100, 200, 300 W.S. **Biphasic** 75, 100, 120 W.S.
 - **Pediatric:** .5 J/kg, 1-2 J/kg.
6. Charge the capacitor to the appropriate energy level.
7. Assure proper placement of the paddles (same as for defibrillation) with 25 pounds of pressure on each paddle.
8. Assertively state "CLEAR" and visualize that no one, including yourself, is in contact with the patient.
9. Deliver the countershock by depressing both discharge buttons simultaneously and hold until the shock is delivered. There may be a momentary delay while the machine detects the R wave.
10. Assess the patient's response to the cardioversion.
11. Document the dysrhythmia and the response to cardioversion with EKG strips.

**If the patient deteriorates into ventricular fibrillation or pulseless ventricular tachycardia, prepare for immediate defibrillation!! (unsynchronized shock!!)

Certification Requirements:

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

Standards Procedure (Skill)

Chest Decompression

Clinical Indications:

P**EMT- P****P**

- 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 greater than 2 inch, 14 gauge angiocath (1 ¼ inch, 18 gauge angiocath in patients less than 8 years old) by directing the needle just over the top of the rib to avoid intercostal nerves and vessels which are located on the inferior rib borders.
5. Advance the catheter through the parietal pleura until a “pop” is felt and air or blood exits under pressure through the catheter, then advance catheter only to chest wall.
6. Remove the needle, leaving the plastic catheter in place.
7. Secure the catheter hub to the chest wall with dressings and tape.
8. 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.)

Certification Requirements:

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



Childbirth

Clinical Indications:

- Imminent delivery with crowning

B	EMT	B
I	EMT- I	I
P	EMT- P	P

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 rapid transport to the hospital.

Certification Requirements:

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



CNS Catheter: Epidural Catheter Maintenance

Clinical Indications:



- Presence of an epidural catheter in a patient requiring transport

Procedure:

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

Certification Requirements:

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



North Carolina College of Emergency Physicians Standards Procedure (Skill) CNS Catheter: Ventricular Catheter Maintenance



Clinical Indications:



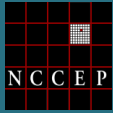
- Transport of a patient with an intra-ventricular catheter in place

Procedure:

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

Certification Requirements:

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



North Carolina College of Emergency Physicians Standards Procedure (Skill) Decontamination



Clinical Indications:

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

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Procedure:

- In coordination with HazMAT and other Emergency Management personnel, establish hot, warm and cold zones of operation.
- Ensure that personnel assigned to operate within each zone have proper personal protective equipment.
- 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).
- Initial triage of patients should occur after step #3. Immediate life threats should be addressed prior to technical decontamination.
- 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.
- 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.
- Monitor all patients for environmental illness.
- Transport patients per local protocol.

Certification Requirements:

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



Defibrillation: Automated

Clinical Indications:

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

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

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

Certification Requirements:

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

Standards Procedure (Skill)

Defibrillation: Manual

Clinical Indications:

- Cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia

Procedure:



1. Ensure that Chest Compressions are adequate and interrupted only when absolutely necessary.
2. Clinically confirm the diagnosis of cardiac arrest and identify the need for defibrillation.
3. After application of an appropriate conductive agent if needed, apply defibrillation hands free pads (recommended to allow more continuous CPR) or paddles to the patient's chest in the proper position
 - Paddles: right of sternum at 2nd ICS and anterior axillary line at 5th ICS
 - Pads: anterior-posterior position
4. Set the appropriate energy level
 - Adult monophasic – 360 joules
 - Adult biphasic – 120-200 joules; if unknown, select 200 joules
 - Peds – 2 joules/kg, any subsequent shock increase to 4 joules/kg
5. Charge the defibrillator to the selected energy level. Continue chest compressions while the defibrillator is charging.
6. If using paddles, assure proper contact by applying 25 pounds of pressure on each paddle.
7. Hold Compressions, assertively state, "CLEAR" and visualize that no one, including yourself, is in contact with the patient.
8. Deliver the countershock by depressing the discharge button(s) when using paddles, or depress the **shock button** for hands free operation.
9. 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.
10. Repeat the procedure every two minutes as indicated by patient response and ECG rhythm.
11. Keep interruption of CPR compressions as brief as possible. Adequate CPR is a key to successful resuscitation.

Certification Requirements:

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

Standards Procedure (Skill)

Gastric Tube Insertion

Clinical Indications:

P EMT-P P

- Gastric decompression in intubated patients.

Procedure:

1. Estimate insertion length by superimposing the tube over the body from the nose to the stomach.
2. Flex the neck **if not contraindicated** to facilitate esophageal passage.
3. Liberally lubricate the distal end of the tube and pass through the patient's nostril along the floor of the nasal passage. Do not orient the tip upward into the turbinates. This increases the difficulty of the insertion and may cause bleeding.
4. In the setting of an unconscious, intubated patient or a patient with facial trauma, oral insertion of the tube may be considered or preferred.
5. Continue to advance the tube gently until the appropriate distance is reached.
6. Confirm placement by injecting 20cc of air and auscultate for the swish or bubbling of the air over the stomach. Additionally, aspirate gastric contents to confirm proper placement.
7. Secure the tube.
8. Decompress the stomach of air and food either by connecting the tube to suction or manually aspirating with the large catheter tip syringe.
9. Document the procedure, time, and result (success) on/with the patient care report (PCR).

Certification Requirements:

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



Injections: Subcutaneous and Intramuscular

I	EMT- I	I
P	EMT- P	P

Clinical Indications:

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

Procedure:

- Receive and confirm medication order or perform according to standing orders.
- Prepare equipment and medication expelling air from the syringe.
- Explain the procedure to the patient and reconfirm patient allergies.
- The most common site for subcutaneous injection is the arm.
 - Injection volume should not exceed 1 cc.
- The possible injection sites for intramuscular injections include the arm, buttock and thigh.
 - Injection volume should not exceed 1 cc for the arm
 - Injection volume should not exceed 2 cc in the thigh or buttock.
- The thigh should be used for injections in pediatric patients and injection volume should not exceed 1 cc.
- Expose the selected area and cleanse the injection site with alcohol.
- Insert the needle into the skin with a smooth, steady motion

SQ: 45-degree angle
skin pinched

IM: 90-degree angle
skin flattened

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

Certification Requirements:

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



North Carolina College of Emergency Physicians Standards Procedure (Skill) Orthostatic Blood Pressure Measurement



	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Patient situations with suspected blood, fluid loss, or dehydration with no indication for spinal immobilization.
- Patients \geq 8 years of age, or patients larger than the Broselow-Luten tape

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 local EMS System.



Pulse Oximetry

Clinical Indications:

- Patients with suspected hypoxemia.

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Procedure:

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

Certification Requirements:

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



Reperfusion Checklist

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.

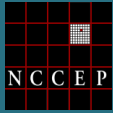
	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

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)
 - 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
 - History of structural Central Nervous System disease (tumors, masses, hemorrhage, etc.)
 - Significant closed head or facial trauma within the previous 3 months
 - 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 local EMS System.



Restraints: Physical

B	EMT	B
I	EMT- I	I
P	EMT- P	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:

- Attempt less restrictive means of managing the patient.
- Request law enforcement assistance and **Contact Medical Control**.
- Ensure that there are sufficient personnel available to physically restrain the patient safely.
- 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.
- 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.
- 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.
- 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.
- 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.)
- If a patient is restrained by law enforcement personnel with handcuffs or other devices EMS personnel can not remove, a law enforcement officer must accompany the patient to the hospital in the transporting EMS vehicle.

Certification Requirements:

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



Spinal Immobilization

Clinical Indications:

- Need for spinal immobilization as determined by protocol

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Procedure:

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



Splinting

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	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 local EMS System.

Standards Procedure (Skill)

Stroke Screen

Clinical Indications:

- Suspected stroke patient

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Procedure:

1. Assess and treat suspected stroke patients as per protocol.
2. Screen the patient using the modified Cincinnati Stroke Scale and provide clear documentation of the results.
3. Alert the receiving hospital of a possible stroke patient as early as possible.

Modified Cincinnati Stroke Scale:

Facial Droop

- Normal: Both sides of face move equally
- Abnormal: One side of face does not move at all

Arm Drift

- Normal: Both arms move equally or not at all
- Abnormal: One arm drifts compared to the other

Speech

- Normal: Patient uses correct words with no slurring
- Abnormal: Slurred or inappropriate words or mute

Time

- Time of symptom onset or last seen normal

Certification Requirements:

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

Temperature Measurement

Clinical Indications:

Patients with suspected abnormal temperature.

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Procedure:

1. Assess the need for temperature measurement.
2. Select the appropriate method (oral/rectal) for measuring the patient's temperature. Method selection will depend on the patient's age and his/her capability.
3. The thermometer should be covered with a disposable probe cover.
4. Depending on method selection:
 - Oral - place distal tip under the tongue and have patient hold it firmly with the tongue and closed lips
 - Rectal - lubricate the tip, insert the probe into the anal canal, and hold patient and thermometer
5. In most adult patients, the temperature can usually be taken orally. In infants and smaller children, temperature should be taken rectally when possible.
6. Leave the thermometer inserted for the indicated time or until the thermometer indicates that the necessary time has elapsed.
7. Remove the thermometer and observe the reading.
8. Record the measurement inclusive of reading, whether F° or C°, method, and time.
9. Dispose of the probe cover and clean the thermometer as recommended by the manufacturer.

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.

Standards Procedure (Skill)

Urinary Catheterization

Urinary catheterization is not utilized in the Buncombe/Madison/Yancey EMS systems.



Venous Access: Blood Draw

Clinical Indications:

- Collection of a patient's blood for laboratory analysis

I	EMT- I	I
P	EMT- P	P

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.
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 local EMS System.



North Carolina College of Emergency Physicians Standards Procedure (Skill) Venous Access: Central Line Maintenance



Clinical Indications:

P **EMT- P** **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 local EMS System.

Standards Procedure (Skill)

Venous Access: Existing Catheters

Clinical Indications:

Emergency administration of fluids for volume
Emergency administration of medications

P	EMT- P	P
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Procedure:

1. Confirm patient condition and need for rapid IV access.
2. Prepare necessary equipment, maintain sterile technique.
3. Clean connection port with alcohol (for implanted ports, locate port under skin, prep area with copious amounts of betadine), allow to air dry.
4. Release clamp, attempt to aspirate 5 ml of blood/fluid and then discard. Flush catheter with 5 ml normal saline to assure patency. Clamp shall be closed anytime the catheter is not connected to a syringe or IV fluids. (For implanted ports, prime set with saline, insert non-coring needle into septum with set attached.)
5. Never attempt to force fluid. If IV does not flow freely, do not use.
6. Connect IV tubing to port using normal saline at KVO rate unless fluid bolus is indicated.
7. Secure connection site, use as any other IV.

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.

Standards Procedure (Skill)

Venous Access: External Jugular Access

I	EMT- I	I
P	EMT- P	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.
- EMT-Intermediate level may use this procedure for cardiac arrest patients ≥ 8 years of age only.

Procedure:

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

Certification Requirements:

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

Standards Procedure (Skill)

Venous Access: Extremity

Clinical Indications:

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

I	EMT- I	I
P	EMT- P	P

Procedure:

- 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.
- Paramedics can use intraosseous access where threat to life exists as provided for in the Venous Access-Intraosseous procedure.
- Use the largest catheter bore necessary based upon the patient's condition and size of veins.
- Fluid and setup choice is preferably:
 - Normal Saline with a macro drip (10 gtt/cc) for medical conditions, and
 - Normal Saline with a micro drip (60 gtt/cc) for medication infusions.
- Inspect the IV solution for expiration date, cloudiness, discoloration, leaks, or the presence of particles.
- 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.
- Place a tourniquet around the patient's extremity to restrict venous flow only.
- Select a vein and an appropriate gauge catheter for the vein and the patient's condition.
- Prep the skin with an antiseptic solution.
- Insert the needle with the bevel up into the skin in a steady, deliberate motion until the bloody flashback is visualized in the catheter.
- Advance the catheter into the vein. **Never** reinsert the needle through the catheter. Dispose of the needle into the proper container without recapping.
- Draw blood samples when appropriate.
- Remove the tourniquet and connect the IV tubing or saline lock.
- 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.
- Cover the site with a sterile dressing and secure the IV and tubing.
- Label the IV with date and time, catheter gauge, and name/ID of the person starting the IV.
- Document the procedure, time and result (success) on/with the patient care report (PCR).

Certification Requirements:

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

Standards Procedure (Skill) Venous Access: Femoral Line

Femoral line venous access is not utilized in the Buncombe/Madison/Yancey EMS systems.

Standards Procedure (Skill)

Venous Access: Intraosseous

Clinical Indications:

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



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. Select the appropriate IO device: EZ-IO 3-39 kg, 40 kg and greater, LD excessive tissue needle size or the manual IO needle.
3. Locate insertion site for EZ-IO device:
 - (a) Primary insertion site is the proximal tibia, 1 finger width medial to the tibial tuberosity (bony prominence below knee cap).
 - (b) Secondary insertion site is the anteriomedial aspect of the distal tibia (2 cm proximal to the medial malleolus).
 - (c) An acceptable alternative site is the prominence of the anterior humeral head. Place the supine patient's elbow on the floor or stretcher and place the palm of the same extremity over the umbilicus. Palpate the middle of the humeral shaft, moving toward the head, locating the greater tubercle. Pinch the anterior and inferior humerus with the other hand ensuring that you have located the midline of the tubercle. Palpate for the most prominent area. Check arm adduction to avoid insertion site nerve injury.
4. Manual pediatric device:
 - (a) This shall be used as an alternative device to the EZ-IO Drill for patients less than 8 years old.
 - (b) Primary insertion site is the proximal tibia (bony prominence below knee cap). This insertion site is 1-2 cm (2 finger widths) below and medially.
 - (c) Secondary insertion site is the distal femur, midline 2-3 cm above the external condyles.
5. Prep the site with providone-iodine ointment or solution.
6. For the manual pediatric device proximal tibia site, hold the intraosseous needle at a 60 degree to 90 degree angle, aimed away from the knee joint and growth plate, twist the handle with a rotating grinding motion applying controlled downward force until a "pop" or "give" is felt or resistance is lost. Advance the needle no further.
7. For the EZ-IO device, hold the EZ-IO driver loosely with gravity pressure at a 90 degree angle, aimed away from the knee joint and any growth plate, power the driver until a "pop" or "give" is felt/resistance is lost. Advance needle no further. Avoid pulling back when the needle pops into the marrow space.
8. Remove the stylette and place in an approved sharps container.
9. Attach a syringe filled with at least 5 cc NS; aspirate bone marrow for manual devices only, to verify placement; then inject 10 cc of NS to clear the lumen of the needle.
10. Attach the IV line and adjust flow rate. A pressure infuser device may assist with achieving desired flows.
11. Stabilize and secure the needle with dressings and tape.
12. Administer 20-40mg of 2% Lidocaine in adult patients and 0.5 mg/kg in pediatric patients to help prevent site pain. The Lidocaine should be administered slowly over 15-30 seconds to be effective and may be repeated once at half the original dose if needed.
13. Following the administration of any IO medications, flush the IO line with 10 cc of IV fluid.
14. Document the procedure, time, and result (success) on/with the patient care report (PCR).

Certification Requirements:

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



North Carolina College of Emergency Physicians Standards Procedure (Skill) Venous Access: Swan-Ganz Catheter Maintenance



Clinical Indications:

P

EMT- P

P

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

Procedure:

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

Certification Requirements:

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



Wound Care-General

Clinical Indications:

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

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

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 local EMS System.

Standards Procedure (Skill)

Wound Care-Hemostatic Agent

Clinical Indications:

- Severe arterial or venous bleeding from an open wound.
- Bleeding unable to be controlled by direct pressure, wound packing or pressure dressing.

Hemostatic Agent (Celox):

- Celox will clot arterial venous bleeding, anticoagulated blood and bleeding in hypothermic patients.

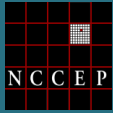
Procedure:

1. Identify the source if bleeding.
2. Attempt to use direct pressure and pressure bandage first.
3. Wipe or blot away excess blood from in or around the wound.
4. Open the package and pour the entire contents of the bag (35 grams, if space provides) into the wound.
5. The hemostatic agent should directly contact the source of bleeding, formation of a “crust” above the bleeding site may allow continued bleeding that is not visible.
6. If the wound is deep, pack the wound with sterile gauze.
7. Hold direct pressure on the wound with a bandage for 5 minutes.
8. If bleeding persists, consider placing more agent into the wound and continue holding pressure for another 5 minutes.
9. When the bleeding has stopped, bandage the wound and apply a pressure dressing and continue to monitor for re-bleeding.
10. Keep the wound dry, water or saline will break down the agent.

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

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.



Wound Care-Taser® Probe Removal

Clinical Indications:

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

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Contraindications:

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

Procedure:

- Ensure wires are disconnected from weapon.
- Stabilize skin around probe using non-dominant hand.
- Grasp probe by metal body using dominant hand.
- Remove probe in single quick motion.
- Wipe wound with antiseptic wipe and apply dressing.

Certification Requirements:

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



Wound Care-Tourniquet

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

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Procedure:

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

Certification Requirements:

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

Standards Procedure (Skill)

Rectal Diazepam Administration



Clinical Indications:

Treatment of status seizures in pediatric patients (≤ 5 years old) where IV access is unobtainable.

Procedure:

1. Draw appropriate amount of diazepam into Tb syringe.
2. Remove needle from syringe.
3. Lubricate syringe with a water based lubricant.
4. Advance the syringe 1 inch into the rectum.
5. Slowly administer the correct dose of diazepam.
6. Remove the syringe.
7. Hold the buttocks together for 1 minute to prevent leakage of the medication.

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.

Standards Procedure (Skill)

Epinephrine Auto-Injector

Clinical Indications:

Systemic allergic reaction, patient exhibiting one or more of the following:

- Urticaria - hives
- Respiratory distress or wheezing
- Edema - swelling of face

Procedure:

1. Confirm the patient's allergies, sign & symptoms.
2. Select appropriate epinephrine auto injector (< 30 kg use Epi-pen Jr.), wear gloves and check expiration date.
3. Inform the patient of procedure.
4. Select site for medication administration, deltoid area of shoulder. Thigh area may be used.
5. Prepare the selected site by cleansing with alcohol prep.
6. Remove protective cap from back of Epi-pen.
7. Press Epi-pen firmly onto site (90 degree angle to skin) until clicking noise is heard.
8. Hold the Epi-pen firmly against skin for 10 seconds.
9. Apply pressure to the site.
10. Dispose of the Epi-pen in appropriate biohazard container.
11. Monitor the patient for the desired effects and possible side effects.
12. Record the medication, route, dosage, and time of administration on the patient's record.

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.