TAB 8
MEDICAL PROCEDURES,
GUIDELINES AND
EQUIPMENT
TAB 8 GUIDELINE 1
NOTIFICATION TO MEDICAL DIRECTOR

1. **Anytime there is deviation from the EMS Guidelines that is not within the guidelines or not within the standard of care for prehospital EMS providers, or any one of the following procedures is performed**, then the details of the incident should be forwarded to the Medical Director or his designee IMMEDIATELY. The EMS / Fire officer should be notified of the procedure and then notification to the Medical Director should occur as soon as the unit is put back in service (Medical Director or designee are available 24 hours a day 7 days a week). Notification can be made via the NWOEMS QI Notification form located on the consortium website at [http://www.nwoems.com](http://www.nwoems.com). Email is appropriate for notification, but insure that you utilize at the top of the email “*Confidential Peer Review Information Protected by Ohio Revised Code §4765.12*” on all emails pertaining to patient information for quality assurance.

2. Complete the Northwest Ohio EMS QA / QI Form and submit to your chief / EMS supervisor for review. Information on that form should be sent to the Medical Director or one of his designee.

3. **Procedures requiring Medical Director Notification include:**
   a. Any attempted or successful LMA, King Airway or Endotracheal Intubation.
   b. Use of automated CPR Chest Compression Device.
   c. Use of AED.
   d. Fetal delivery.

Anytime another Health Care provider has a concern about the healthcare provided. This should be a phone call to the Medical Director or his designee.
NORTHWEST OHIO EMS
QUALITY IMPROVEMENT NOTIFICATION FORM
Confidential for Quality Improvement Only – (not part of medical record)

EMS Agency ___________________________ Date __________________

Incident Run Number ___________________________

Against Medical Advice
Patient History and Vital Signs __________________________________________

Was Patient Alert and had decisional capacity to make decisions YES / NO
Medical Control Notified YES / NO

Cardiac Arrest
Initial Rhythm __________________________________________
Procedures performed (Defibrillation, Intubation, Medication Administration) ______________________________

Automated CPR Device Utilized YES / NO
Return of Spontaneous Circulation YES / NO

Intubation or Advanced Airway Placement
Patient History and Vital Signs __________________________________________

Number of Intubation attempts ________ Successful YES / NO
Alternative Airway considered and type (King LT / LMA / Needle or Surgical Cric)

Medication Assisted Intubation / Rapid Sequence Induction YES / NO
Patient able to be ventilated YES / NO

IO Insertion
Patient History and Vital Signs __________________________________________

IV attempted first and how many times YES ______ / NO
IO Insertion Successful YES / NO

Needle Decompression
Patient History / Vital Signs / Physical Examination __________________________________________

Unusual Incident
________________________________________
________________________________________
________________________________________

NWO EMS (SVIAS) BLS – Tab 8 – Medical Procedures, Guidelines and Equipment – Updated 2017_12_01
NORTHWEST OHIO EMS
UNUSUAL OCCURRENCE / INCIDENT REPORT
Confidential for Quality Improvement Only – (not part of medical record)

Person Completing Form: _____________________________________________________
Phone #: ____________________________       E-Mail: ________________________

Date of Incident: _____________________       Type of Service: BLS: _____________
                                                      ALS: _____________

Names and certification numbers of EMS Personnel involved in incident:
________________________________________  ______________________
________________________________________  ______________________
________________________________________  ______________________

Nature of Incident (Check all that apply):

☐ PATIENT INJURY RESULTING FROM THE INCIDENT
☐ MEDICATION ERROR
☐ GUIDELINE VIOLATION
☐ MEDICAL / COMMUNICATION DEVICE FAILURE
☐ MEDICATION THEFT (Notification to DEA for narcotic theft is mandatory)
☐ REPORTABLE MOTOR VEHICLE CRASH
   VEHICLE LICENSE PLATE #:________________________
   PRIMARY GARAGING LOCATION: ______________________
☐ VEHICLE FIRE     ☐ VEHICLE THEFT
   VEHICLE LICENSE PLATE #:________________________
   PRIMARY GARAGING LOCATION: ______________________
☐ DELAY IN EMERGENCY DEPARTMENT TRANSFER (Greater than 30minutes)
   FACILITY NAME: ______________________________________
   ARRIVAL TIME AT FACILITY __________________________
   COMPLETION OF TRANSFER TIME: ______________________
☐ OTHER (EXPLAIN) __________________________________
   __________________________________________________
   __________________________________________________
Brief description of incident:

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

________________________________________
SIGNATURE and TITLE                      DATE SIGNED

THIS FORM MUST BE FORWARDED TO AN EMS OFFICER OR FIRE / EMS CHIEF WITHIN 24 HOURS
The pulse oximeter is an instrument used to ascertain a patient’s arterial oxyhemoglobin saturation (%SpO$_2$). Measuring the absorption of infrared light passing through the tissue does this.

Advantages:
- Early warning system (may alert the paramedic before cardiac monitors).
- The pulse oximeter will enhance the paramedic’s ability to identify, assess and treat hypoxia for any reason (ie drug overdose).
- The pulse oximeter will assist in monitoring the effectiveness of other treatments (ie bronchodilators).
- The pulse oximeter will assist in monitoring O$_2$ saturation during suctioning and intubation.
- The pulse oximeter will assist in the assessment of perfusion in patients with orthopedic injuries.

Ranges:
- 94% – 100% Ideal Range
- 90% - 94% Mild to moderate hypoxemia
- 85% - 90% Severe hypoxemia
- Below 85% If patient is symptomatic, intubate and ventilate.

Factors affecting reading:
- Excessive ambient light, especially sunlight
- Excessive motion
- Nail polish – green, black or red
- Moisture in sensor
- Improper sensor attachment
- Poor patient perfusion
- Venous pulsation
- Anemia or low hemoglobin
- Sensor not at heart level
- Pierced ears (when using ear lobe sensor)
- Temperature
- Low battery
### NEBULIZED AEROSOL TREATMENTS

#### INDICATIONS
- Acute respiratory distress with
  - History of COPD | Asthma
  - Shortness of breath
  - Wheezing
  - Retractions or accessory muscle use
  - Tachypnea (respiratory rate > 25 / min)
  - Unable to complete full sentences
  - Fatigue
  - Pulse oximetry reading < 90%
  - Stridor
  - Croup

#### CONTRAINDICATIONS
- Chest pain
- Allergy to medications
- Arrhythmias

#### MANDATORY
- EMT may administer patients own albuterol, or can obtain online medical control to administer albuterol from EMS supply
- Paramedic may only initiate nebulized medications of saline / racemic epinephrine / calcium gluconate

#### Procedure
- Gather the necessary equipment
- Assemble the nebulizer kit
- Instill the premixed medication into the reservoir well of the nebulizer
- Connect the nebulizer device to oxygen at 6 – 8 liters per minute or adequate flow to produce a steady, visible mist
- Instruct the patient to inhale normally through the mouthpiece of the nebulizer. The patient needs to be a good lip seal around the mouthpiece if not using a mask
  - Use mouthpiece if patient is able to hold nebulizer effectively
  - Use nebulizer mask if patient is unable to hold nebulizer effectively
- The procedure should last approximately ten (10) minutes. Upon nearing the end of the treatment, the condensation will need to be moved down to the bottom of the bowl so it can be drawn up the siphon tube. To do this, shake the chamber or strike the chamber with your fingertip
- 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
- Document the treatment, dose and route on the patient care report
- Monitor the patient’s pulse rate, oximeter, color and respiratory effort for improvement or deterioration
- Dosing of an aerosol treatment is a single unit dose, reassess treatment response after completion of aerosol and administer a second unit dose if indicated
# TAB 8 GUIDELINE 4
## CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

<table>
<thead>
<tr>
<th>INDICATIONS</th>
<th>CONTRAINDICATIONS</th>
<th>POSSIBLE COMPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Asthmatic / COPD / CHF / pulmonary edema / Pneumonia / Submersion / Near-drowning / CO poisoning</td>
<td>• Severely depressed level of consciousness or unconsciousness</td>
<td>• Gastric distention</td>
</tr>
<tr>
<td>• Awake and able to follow commands</td>
<td>• Patient is in respiratory arrest / apneic</td>
<td>• Aspiration</td>
</tr>
<tr>
<td>• Is over 12 years old and &gt; 40 kg and is able to fit the CPAP mask</td>
<td>• Inability to maintain airway patency</td>
<td>• Reduced cardiac output / hypotension</td>
</tr>
<tr>
<td>• Has the ability to maintain an open airway</td>
<td>• Suspected pneumothorax or has suffered trauma to the chest</td>
<td>• afterload of the heart during CPAP therapy</td>
</tr>
<tr>
<td>• Demonstrates two or more of the following</td>
<td>• Tracheostomy</td>
<td>• Hypoventilation</td>
</tr>
<tr>
<td>• Retractions or accessory muscle use</td>
<td>• Actively vomiting or has upper GI bleeding</td>
<td>• Pulmonary barotrauma</td>
</tr>
<tr>
<td>• Tachypnea (respiratory rate &gt; 24 / min)</td>
<td>• Facial anomalies / facial trauma / recent surgery to the face</td>
<td>• Severe anxiety / combativeness due to mask intolerance</td>
</tr>
<tr>
<td>• Pulse oximetry reading &lt; 92%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Inability to speak in full sentences due to dyspnea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Bibasilar of diffuse rales or medical history and presenting complaints</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• consistent with cardiogenic pulmonary edema</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Place the patient in a seated position with legs dependent.
- While one member of the team is setting up the CPAP equipment, the second team member should treat the patient according to established Asthma / COPD / CHF treatment protocols.
- Setting up the system
  - Ensure all necessary equipment is available and assembled.
  - Assemble the patient mask, securing device, tubing and PEEP valve.
  - Connect directly to a 50 psi oxygen source using the quick connect / disconnect valve, listen for leaks.
  - Check device to ensure free of obstruction and verify proper valve setting for intended use. Verify proper valve function.
  - Apply O2 / CO₂ nasal filter line to patient (for end-tidal CO₂ monitoring), attach that to the monitor. Monitor for obstructive capnogram waveform.
  - Place delivery mask over the mouth and nose. Have patient hold the mask and instruct them to breathe slowly and deeply.
  - Secure the mask with provided straps and tighten to desired fit minimizing any air leakage.
  - Evaluate the response in the patient. Reassess breath sounds, oxygen saturation, and general appearance of the patient.
  - Adjust the CPAP pressure valve based on the recommended level and response by the patient.
- **Recommended CPAP Pressure Valve Settings**

<table>
<thead>
<tr>
<th>Patient Condition</th>
<th>Initial Valve Setting</th>
<th>No Improvement / Patient tolerating mask</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHF / Pulmonary Edema</td>
<td>10 cm H₂O</td>
<td>10.0 cm H₂O</td>
</tr>
<tr>
<td>COPD / Asthma / Pneumonia</td>
<td>5 cm H₂O</td>
<td>7.5 cm H₂O</td>
</tr>
<tr>
<td>Submersion / Near Drowning</td>
<td>5 cm H₂O</td>
<td>7.5 cm H₂O</td>
</tr>
<tr>
<td>CO Poisoning</td>
<td>5 cm H₂O</td>
<td>7.5 cm H₂O</td>
</tr>
</tbody>
</table>

- **Flow Safe II CPAP System**

<table>
<thead>
<tr>
<th>Flow (LPM)</th>
<th>CPAP / PEEP (approx. cm H₂O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 – 9</td>
<td>5.0 cm H₂O</td>
</tr>
<tr>
<td>10 – 12</td>
<td>7.5 cm H₂O</td>
</tr>
<tr>
<td>13 – 14</td>
<td>10 cm H₂O</td>
</tr>
<tr>
<td>Flush</td>
<td>13 cm H₂O</td>
</tr>
</tbody>
</table>
**TAB 8 GUIDELINE 5**

**AIRWAY MANAGEMENT**

<table>
<thead>
<tr>
<th>INDICATIONS</th>
<th>CONTRAINICATIONS</th>
<th>MANDATORY</th>
</tr>
</thead>
</table>
| - Patients in deep coma  
- Respiratory arrest or cardiopulmonary arrest  
- Patients where complete obstruction of the airway appears imminent | - Patients with an intact gag reflex  
- Patients where irritation of the pharynx might cause laryngeal spasm  
- Croup or epiglottitis | - Take no longer than 30 seconds per attempt (adult) or 15 seconds (pediatric)  
- Other techniques of airway management maybe indicated if there is a suspected injury to the c-spine  
- Verify successful endotracheal intubation by auscultation of the chest and end-tidal CO₂ detector |

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**LEGEND**

- EMR  
- EMT  
- A-EMT  
- EMT-P  
- MC Order

---

**Supplemental Oxygen**  
Keep SpO₂ > 94%

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**Assess ABC’s**
- Respiratory Rate  
- Respiratory Effort  
- Adequacy of Ventilation  
- Pulse Oximetry

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**Basic Maneuvers First**
- Open Airway  
- Nasal / Oral Airway Adjunct  
- Bag Valve Mask (BVM)

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**Obstruction**

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**Unsuccessful**  
**Becomes Inadequate**

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**Reassess Patient for Pulse / Breathing**

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**Obtain ALS Backup**
- Continue to attempt BVM until successful or ALS arrives  
- Blind Insertion Airway Device (If pulseless AND apneic)

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**Successful**
- Maintain SpO₂ > 94% and EtCO₂ between 35 – 45

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**Contact Medical Control**

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SPECIAL CONSIDERATIONS:

1. The most important airway device and the most difficult to use correctly and effectively is the Bag Valve Mask. Few prehospital airway emergencies cannot be temporized or managed with proper BVM techniques

2. Blind Insertion Airway Device (BIAD):
   a. King LTS-D Airway Device
   b. Laryngeal Mask Airway (LMA)

3. Capnography device **MUST be used and checked with each patient movement and documented on the run sheet.**

4. Ventilate the adult patient 8 – 10 breaths / minute (pediatric per pediatric tables) with 100% oxygen, and document correct tube placement and depth using numbers on the ET Tube at the lip.

5. Difficult Airway Assessment
   a. **Difficult BVM Ventilation (MOANS):**
      i. Difficult Mask seal due to facial hair, anatomy, blood or secretions / trauma
      ii. Obese or late pregnancy
      iii. Age > 55
      iv. No teeth (roll gauze and place between gums and cheeks to improve seal)
      v. Stiff or increased airway pressures (Asthma, COPD, Obese, Pregnant).
   b. **Difficult BIAD (RODS):**
      i. Restricted mouth opening
      ii. Obstruction / Obese or late pregnancy
      iii. Distorted or disrupted airway
      iv. Stiff or increased airway pressures (Asthma, COPD, Obese, Pregnant)

6. Trauma
   a. Utilize in-line cervical stabilization during intubation, BIAD or BVM use
   b. During insertion of BIAD the cervical collar front should be open or removed to facilitate translation of the mandible / mouth opening

7. Complications
   a. Oropharyngeal trauma
   b. Fractured teeth or dentures, damaged gums
TAB 8 GUIDELINE 6

INTUBATION – KING LTS-D AIRWAY

1. The King LTS-D is a “dual lumen” airway designed for use as a primary or back up airway in the event intubation is not authorized or not successful. **The King LTS-D is the preferred advanced airway for the EMT** and approved for all scopes of practices.

2. Indications

   a. EMT’s may utilize the King LTS-D for the unconscious, apneic or near apneic patient or in cases when CPR is initiated.

   b. The King LTS-D may be used initially or after beginning CPR with Bag Valve Mask ventilations.

3. Contraindications

   a. Responsive patients with an intact gag reflex

   b. Patients with known esophageal injury / disease

   c. Patients who have ingested caustic substances

4. Procedure

   a. Assess for absence of gag reflex, hypoventilation or apnea and visible foreign body in the airway

   b. Size of device is based on height of the patient with a size four being the most widely used size for patients 5 – 6 feet in height.

   c. Lubricate only the posterior surface of the King LTS-D to avoid blockage of the aperture or aspiration of the lubricant.

   d. Place King LTS-D per next page flow sheet.

<table>
<thead>
<tr>
<th>Size</th>
<th>2</th>
<th>2.5</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Criteria</td>
<td>35 – 45 inches (90 – 115 cm) Or 12 – 25 Kg</td>
<td>41 – 51 inches (105 – 130 cm) Or 25 – 35 Kg</td>
<td>4 – 5 feet (122 – 155 cm)</td>
<td>5 – 6 feet (155 – 180 cm)</td>
<td>&gt; 6 feet (&gt; 180 cm)</td>
</tr>
<tr>
<td>Connector Color</td>
<td>Green</td>
<td>Orange</td>
<td>Yellow</td>
<td>Red</td>
<td>Purple</td>
</tr>
<tr>
<td>Cuff Pressure</td>
<td>60 cm H₂O</td>
<td>60 cm H₂O</td>
<td>60 cm H₂O</td>
<td>60 cm H₂O</td>
<td>60 cm H₂O</td>
</tr>
<tr>
<td>KLTD Cuff Volume</td>
<td>25 – 35 mL</td>
<td>30 – 40 mL</td>
<td>45 – 60 mL</td>
<td>60 – 80 mL</td>
<td>70 – 90 mL</td>
</tr>
</tbody>
</table>
• **STEP 1** - Position the patient in sniffing position (if c-spine injury not suspected). Hold the King LTS-D at the connector with dominant hand. With non-dominant hand, hold mouth open and apply chin lift after grasping the lower jaw.

• **STEP 2** - Introduce the King LTS-D airway rotated laterally 45 – 90 degrees such that the blue orientation line is touching the corner of the mouth. Introduce the tip into the mouth and under the base of the tongue rotating tube to the midline.

• **STEP 3** - Advance tube until base of connector is aligned with the teeth or gums. Never force the tube into position.

• **STEP 4** - Attach BVM while gently ventilating, slowly withdraw tube until ventilation is easy and free flowing with visual chest rise and fall.

• **STEP 5** - Inflate cuff according to size
  - Size 2  25 – 35 ml
  - Size 2.5  30 – 40 ml
  - Size 3  45 – 60 ml
  - Size 4  60 – 80 ml
  - Size 5  70 – 90 ml

• **STEP 6** - Ventilate the patient every 6 seconds with 100% oxygen, and document correct tube placement and depth of insertion.

• **STEP 7** - Capnography device **MUST** be used and checked with each patient movement and documented on the run sheet.

• **STEP 8** - Secure the King LTS-D to the patient using tape / Thomas Tube Holder or any other acceptable means.

• **STEP 9** - May decompress the stomach by insertion of lubricated appropriate sized Nasogastric or Orogastric Tube and attached to suction.
5. **SPECIAL CONSIDERATIONS:**
   
a. Does not protect the airway from the effects of regurgitation and aspiration  
b. High airway pressures may divert gas either to the stomach or to the atmosphere  
c. Intubation of the trachea cannot be ruled out as a potential complication of the insertion of the KING LTS-D  
d. It can and should be used with capnography and up to an 18 F nasogastric tube can be placed through the Gastric Access Lumen to decompress the stomach.
TAB 8 GUIDELINE 7

CAPNOGRAPHY

1. End tidal carbon dioxide is the measurement of the % carbon dioxide in the airway. Capnography provides a numeric reading (% CO₂ present) as well as graphic display (waveform). ETCO₂ is very useful in the patient with an advanced airway in place in helping to determine the adequacy of ventilation and perfusion. In order for there to be a measurable carbon dioxide level there must be cardiac output as well as lungs that are being ventilated and perfused.

2. Indications
   a. Confirmation of proper placement for endotracheal tube, King LT, laryngeal mask airway, surgical cricothyrotomy
   b. Acute dyspnea
   c. Assisted ventilations

3. Interpreting Capnography
   a. Normal range for EtCO₂ is 35 – 45 mmHg
   b. There are 4 phases of the waveform that require analysis.
      i. The flat A – B baseline segment (Respiratory Baseline) represents the beginning of exhalation of CO₂ – free gas that is contained in dead space from the conduction airways (trachea, bronchi). This value normally is zero.
      ii. The B – C segment (Expiratory Upstroke), a sharp rise, represents exhalation of a mixture of dead space gases and alveolar gases.
      iii. The C – D segment represents the alveolar plateau, characterized by exhalation of mostly alveolar gas. Point D is the end-tidal (EtCO₂) value that is recorded and displayed by the monitor, (peak concentration of CO₂ occurring at the end of expiration).
      iv. The D – E segment (Inspiratory Down stroke), a sharp fall, reflects the inhalation of gases that are CO₂ – free (room air or supplemental oxygen). Alterations of the normal capnograph or EtCO₂ values are the result of changes in metabolism, circulation, ventilation, or equipment function.
4. When no CO₂ is detected, 3 factors must be quickly evaluated for cause:
   a. Loss of airway – improper tube placement, improper ventilation
   b. Circulatory collapse – Massive PE, cardiac arrest, low cardiac output
   c. Equipment malfunction – disconnected or malfunctioning bag-valve or ventilator

5. Procedure:
   a. Open tubing connector door and connect ETCO₂ filter line tubing by turning clockwise
      i. Tubing should be connected to monitor before being connected to the patient’s airway.
   b. Verify ETCO₂ display is on.
   c. Connect filter line to patient airway.

6. SPECIAL CONSIDERATIONS:
   a. CO₂ monitoring initiates as soon as the filter line is connected. Display will auto scale to appropriate value parameters.
   b. CO₂ alarms are preset:
      i. High alarm – 70 mm Hg.
      ii. Low alarm – 5 mm Hg.
   c. The apnea alarm will sound and “Alarm Apnea” will be displayed on the screen when no valid breath has been detected for 30 seconds. The ETCO₂ monitor is intended only as an adjunct in patient assessment and is not to be used as a diagnostic apnea monitor. An apnea message and alarm will display only if a valid breath has not been detected for 30 seconds. Monitoring should be used with clinical signs and symptoms.
   d. Carefully route the patient tubing (filter line) to reduce the possibility of entanglement or strangulation.

         End-tidal CO₂ monitoring is appropriate for adult and pediatric patients.
TAB 8 GUIDELINE 8
TRACHEOSTOMY TUBE CARE

<table>
<thead>
<tr>
<th>INDICATIONS</th>
<th>CONTRAINDICATIONS</th>
<th>COMPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management of an obstructed tracheostomy airway</td>
<td>Patient able to maintain airway via tracheostomy tube</td>
<td>Post procedure bleeding</td>
</tr>
<tr>
<td>Secretions in tracheostomy tube</td>
<td></td>
<td>Asphyxia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aspiration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Creation of a false passage into tissue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hemorrhage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Laceration of the esophagus or trachea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mediastinal emphysema</td>
</tr>
</tbody>
</table>

- Clearing an Obstructed Tracheostomy Tube
  - Position patient. Ensure that the outer opening of the tube is clear.
  - Check that the tube is in the proper location. The wings or flange should be against the neck, and the obturator should not be in place.
  - If a fenestrated tube (holes for upward flow of air to the upper airway) is in place, remove the decannulation plug.
  - If a double lumen tube is in place, remove the inner cannula to clear secretions.
  - If none of the above maneuvers work, suction the tube with a suction catheter.

- Suctioning a Tracheostomy Tube (may be performed by EMT / Advanced EMT / Paramedic / Nurses)
  - Choose a suction catheter small enough to pass through the tube.
  - Prepare suction unit for use and attach suction catheter.
  - Give oxygen (over tracheostomy tube) with a mask, and then loosen secretions by placing 1 – 2 mL of normal saline into the tube with a syringe.
  - Insert the suction catheter approximately 2 inches (5 cm) into the tube. If the patient begins to cough, the catheter is through the tube and into the trachea, and the depth of insertion is too deep. Do not use suction while inserting the catheter, and never force the catheter.
  - Cover the suction port (hole) and suction for 3-5 seconds, while slowly removing the catheter. Never suction for longer than 10 seconds. Always monitor heart rate and coloring during this procedure. Stop suctioning immediately if the heart rate drops significantly or the patient’s coloring worsens.
  - If the obstruction is removed, and the patient can breathe on his/her own, do not suction further. If additional suctioning is needed, apply oxygen (by blow-by or direct ventilation) and repeat steps as necessary.
  - Always provide supplemental oxygen after suctioning by using the blow-by method or with manual ventilations.
• Replacing a Tracheostomy Tube  (may be performed by Advanced EMT / Paramedic / Nurses)
  • Insert a tracheostomy tube of the same size and model whenever possible. If this is not available, use a smaller tube or an endotracheal tube of the same outer diameter as the tracheostomy tube.
  • If the tube uses an insertion obturator, place this in the tube. If the tube has an inner and outer cannula, use the outer cannula and obturator for insertion.
  • Moisten or lubricate the tip of the tube (and obturator) with water, sterile saline, or a water-soluble lubricant.
  • Gently insert the tube with an arching motion (follow the curvature of the tube) posteriorly and then downward. Slight traction on the skin above or below the stoma may help.
  • Once the tube is in place, remove the obturator, attach the bag-mask device, and attempt to ventilate. If the tube uses an inner cannula, insert to allow mechanical ventilation with a bag-valve device.
  • Check for proper placement by watching for bilateral chest rise, listening for equal breath sounds, and observing the patient. Signs of improper placement include lack of chest rise, unusual resistance to assisted ventilation, air in the surrounding tissues, and lack of patient improvement.
  • If the tube cannot be inserted, withdraw the tube, administer oxygen, and ventilate as needed.
  • Use a smaller-size tracheostomy tube for the second attempt. If still unsuccessful with a smaller tracheostomy tube, insert an endotracheal tube through the stoma. Check the length of the original tracheostomy tube, note the markings on the endotracheal tube, and advance it to the same depth as the original tube. Do not advance the tube too far, or it may go into the right main stem bronchus.
  • If still unsuccessful, use a suction catheter as a guide. Insert a small sterile suction catheter through the tracheostomy tube. Without applying suction, insert the suction catheter into the stoma. Slide the tracheostomy tube along the suction catheter and into the stoma, until it is in the proper position. Remove the suction catheter. Assess ventilation through the tracheostomy tube.
  • If still unsuccessful, consider orotracheal intubation or transport the patient with ventilation through the stoma using a pediatric mask, or through a bag-mask device over the nose and mouth while covering the stoma with a sterile gauze.
  • After proper placement, cut the ends of the tracheostomy ties or tape diagonally (allows for easy insertion), pass through eyelets (openings) on the flanges, and tie around the patient’s neck, so that only a little finger can pass between the ties and the neck.

SPECIAL CONSIDERATIONS:
  1. There are several types of tracheostomy tubes, and they come in many sizes and lengths, cuffed and uncuffed versions. The size is written on the wings or flanges of the tube. The inner and outer diameters are often on the wings as well. All tracheostomy tubes have a standard outer opening or hub outside the neck so a bag-mask device can be attached. For some tubes, an adapter may be needed to make this connection.
CIRCULATION | SHOCK
TAB 8 GUIDELINE 9
SCENE REHABILITATION: GENERAL

INITIAL PROCESS
- Patients logged into General Rehabilitation Documentation
- VS Assessed / Recorded (If HR > 110 then obtain Temp)
- Patients assessed for signs / symptoms

Significant Injury
Cardiac Complaint: Signs / Symptoms
- Respiratory Complaint: Serious Signs / Symptoms
- Respiratory Rate < 8 or > 40
- Diastolic Blood Pressure < 80

Heat Stress
- Active Cooling Measures
  - Forearm immersion, cool shirts, cool mist fans, etc for 10 – 20 minutes
- Rehydration Techniques
  - 12 – 32 oz Oral Fluid over 20 minutes. Oral rehydration may occur along with Active Cooling Measures

Cold Stress
- Active Warming Measures
  - Dry patient, place in warm area. Hot packs to axilla and / or groin
- Rehydration Techniques
  - 12 – 32 oz Oral Fluid over 20 minutes. Oral rehydration may occur along with Active Warming Measures

Reassess individual and Vital Signs after 20 minutes in General Rehabilitation Section

VITAL SIGNS CAVEATS

BLOOD PRESSURE:
- Prone to inaccuracy on scenes. Must be interpreted in context.
- Individuals at special events may have elevated blood pressure due to physical exertion and is not typically pathologic.
- Individuals with SBP > 160 mmHg or DBP > 100 mmHg may need extended rehabilitation. However this does not necessarily prevent them from returning to the event.

TEMPERATURE:
- Individuals may have increased temperature during rehabilitation.

LEGEND
- EMR
- EMT
- A-EMT
- EMT-P
- MC Order

Extend Rehabilitation Time Until VS Improve.
Consider Transport

HR ≥ 110 BPM → YES
Temp ≥ 100.6 → YES

HR ≥ 110 BPM → NO
Temp ≥ 100.6 → NO

Discharge Individual from General Rehabilitation Section
SPECIAL CONSIDERATIONS:

1. This guideline should be utilized for evaluating patrons of certain special events that may or may not otherwise meet the definition of a patient.

2. Paramedic on-scene has full authority in deciding when individuals meet the definition of a patient and / or require further treatment or transport.

3. Regarding documentation under this guideline, individuals who are evaluated only at the rehabilitation center require a narrative-based patient log entry under one PCR for all of these individuals. However, if a patient receives ALS care more than over-the-counter medications and/or is transported to an emergency department, the patient requires a separate run number and full PCR like any other patient.

4. People taking anti-histamines, blood pressure medication, diuretics or stimulants are at increased risk for cold and heat stress.

5. Establish rehab location such that it provides shelter, privacy and freedom from smoke or other
### TAB 8 GUIDELINE 10

#### SCENE REHABILITATION: RESPONDER

**Universal Patient Care**

- **INITIAL PROCESS**
  - Personnel logged into Responder Rehabilitation Section
  - VS Assessed / Recorded
  - Pulse Oximetry and SpCO (if available)
  - Personnel assessed for signs / symptoms

**20 Minute Rest Period**

Firefighters should consume at least 8 oz of fluid between SCBA change-out

**Pulse Rate > 85 % NFPA Age Predicted Maximum**

- **NO**
  - **SBP ≥ 160**
    - **NO**
      - **DBP ≥ 100**
      - Respiration < 8 or > 40
    - **YES**
  - **YES**
    - Mandatory Rest Period
    - Rehydration is Most Important
    - Re-evaluate in 10 minutes

**Pulse Oximetry < 92 % SpCO > 10 %**

- **NO**
  - **Temperature ≥ 100.6**
    - **NO**
  - **YES**

**Discharge Responder from Rehabilitation Section**

- **Reports for Reassignment**

**IV Protocol**

- Fluid Bolus Up to 2000 mL
- Until Pulse Rate ≤ 110 or Less and SBP ≥ 100

**NFPA Age Predicted 85% Maximum Heart Rate**

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Heart Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 - 25</td>
<td>170</td>
</tr>
<tr>
<td>26 – 30</td>
<td>165</td>
</tr>
<tr>
<td>31 – 35</td>
<td>160</td>
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<td>36 – 40</td>
<td>155</td>
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<td>41 – 45</td>
<td>152</td>
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<td>46 – 50</td>
<td>148</td>
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<tr>
<td>51 – 55</td>
<td>140</td>
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<tr>
<td>55 – 60</td>
<td>136</td>
</tr>
<tr>
<td>61 – 65</td>
<td>132</td>
</tr>
</tbody>
</table>

**REMOVE:**
- PPE
- Body Armor
- Chemical Suits
- SCBA
- Turnout Gear
- Other equipment as indicated

**CONTINUE:**
- Heat and Cold Stress treatment Techniques from General Rehab Protocol

**LEGEND**

- EMT
- EMT-P
- A-EMT
- EMR
- MC Order

- Injury / Illness / Complaint should be treated using appropriate treatment protocol beyond need for oral or IV hydration

- Mandatory Rest Period
- Rehydration is Most Important
- Re-evaluate in 10 minutes
- Contact Medical Control
- Transport to appropriate facility

- No improvement after 30 minutes of additional rehabilitation consider Transport

- Transport to appropriate facility
SPECIAL CONSIDERATIONS:

1. This guideline is to be utilized for public safety responders, usually firefighters, on the scene of an incident.

2. Rehabilitation officer has full authority in deciding when responders may return to duty.

3. Utilize this guideline in conjunction with the rehab steps and guidance in the General Rehabilitation Guideline.

4. May be utilized with adult responders on fire, law enforcement, rescue, EMS and training scenes.

5. Responders taking anti-histamines, blood pressure medication, diuretics or stimulants are at increased risk for cold and heat stress.

6. Rehabilitation Section is an integral function within the Incident Management System.

7. Establish section such that it provides shelter, privacy and freedom from smoke or other hazards.
CARDIAC | BLS
TAB 8 GUIDELINE 11
12 LEAD EKG PROCEDURE

EMT and Advanced EMT may apply and electronically transmit an EKG under the scope of practice. **At no point, will the EMT of Advanced EMT attempt to interpret the EKG.** Pre-hospital EKG’s may facilitate early activation of STEMI centers through appropriate primary triage and referral.

This procedure can be performed by an EMT in the presence of an Advanced EMT or Paramedic, or if the EMT will be transmitting the EKG to online medical control and as long as it does not delay patient transport. EMTs are not allowed to interpret any cardiac monitor or EKG.

<table>
<thead>
<tr>
<th>INDICATIONS</th>
<th>EXCLUSION CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Adults with complaints of non-traumatic, heart-related symptoms.</td>
<td>- Patient for whom the acquisition of the pre-hospital EKG will cause significant time delay or other circumstance that is not in the best interest of patient care at that time.</td>
</tr>
<tr>
<td>- Person who accesses the emergency medical system with suspected acute coronary syndrome.</td>
<td>- Patient who refuses to allow an EKG to be obtained.</td>
</tr>
<tr>
<td>- Person who accesses the emergency medical system that is requested by a physician to acquire a 12 Lead EKG.</td>
<td>- Any other circumstance that is not in the best interest of the patient.</td>
</tr>
</tbody>
</table>
| - Patient with previous cardiac history and all medical patients over the age of 40 with the following risk factors:  
  - Smoker  
  - Hypertension  
  - Obesity / Sedentary  
  - Diabetes  
  - Family history  
  - Elevated cholesterol | A copy of the 12 lead EKG will be hand delivered to the receiving hospital and should have the patient’s name appearing on the 12 lead EKG. A second copy of the 12 lead EKG shall be attached to the run report for appropriate documentation. |

1. 12 lead interpretive findings should be reported to on-line MEDICAL CONTROL during the patient assessment and sent via cell phone (transmission) if possible
2. Towels should be used as needed to protect the modesty of your patient. In the female patient, the chest leads must be positioned under the breasts
3. 12 Lead EKG Procedure
   a. If feasible, the 12 Lead EKG should be acquired in supine position, if unable to do so then obtain in a sitting or semi-sitting position. Many of your cardiac patients will be orthopneic and unable to tolerate the supine position
   b. Prep skin as time and patient condition allows
c. Attach Limb and precordial leads accordingly to standard ECG placements as described:

- **Limb leads (4)**
  - Left anterior axillary line
    - left anterior shoulder
  - Right anterior axillary line
    - right anterior shoulder
  - Left anterior superior iliac crest
    - Left hip / lower abdomen
  - Right anterior superior iliac crest
    - right hip / lower abdomen

- **Precordial leads (6)**
  - V1 fourth intercostal space just to the right of the sternum
  - V2 fourth intercostal space just to the left of the sternum
  - V3 in between V2 and V4
  - V4 fifth intercostal space mid-clavicular line
  - V5 anterior axillary line level with V4
  - V6 mid axillary line level with V4 and V5
  - V4R fifth intercostals space in right mid-clavicular line

a. Instruct the patient to remain still during the 12 Lead acquisition for 10 seconds.
b. Serial 12 Lead EKG should be acquired every 5 – 10 minutes or with a change in the patient’s condition.
c. Write on the 12 lead what position it was acquired in and attach a copy of the 12 Lead EKG to the run sheet
2. Right Sided EKG Procedure
   a. Indications of a RV wall infarction may include:
      i. Hypotension and clear lung fields
   b. Obtain right sided if on-line medical control requests right sided

- Limb leads (4)
  - Left anterior axillary line
    - left anterior shoulder
  - Right anterior axillary line
    - right anterior shoulder
  - Left anterior superior iliac crest
    - left hip
  - Right anterior superior iliac crest
    - right hip

- Precordial leads (6)
  - V1R fourth intercostal space just to the left of the sternum
  - V2R fourth intercostal space just to the right of the sternum
  - V3R in between V2R and V4R
  - V4R fifth intercostals space in right mid-clavicular line
  - V5R anterior axillary line level with V4R
  - V6R right mid axillary line level with V4R and V5R
3. Posterior EKG Procedure
   a. Obtain posterior EKG if on-line medical control requests
   b. Label the Posterior EKG
      i. Note “Posterior EKG” in the machine, if able
      ii. Handwrite “Posterior EKG” on the 12 Lead EKG printout if not already part of
          the electronic printout
      iii. Re-label V4 – V6 on the printout to V7 – V9

   • Limb leads (4)
     o Left anterior axillary line
       ▪ left anterior shoulder
     o Right anterior axillary line
       ▪ right anterior shoulder
     o Left anterior superior iliac crest
       ▪ left hip
     o Right anterior superior iliac crest
       ▪ right hip
   
   • Place three additional EKG electrodes as follow:
     o TIP: start at V9 (the last electrode) and
       work forward
     o V9 – left spinal border, same horizontal
       line as V4 – 5
     o V8 – midscapular line, same horizontal
       line as V7 and V9
     o V7 – posterior axillary line, same
       horizontal line as V6

   • Place ECG lead cables as follows (using a standard 12-lead machine):
     o Locate lead cables V1 – V6. Connect lead cables to electrodes as follow:
     o Lead cable V6 connects to electrode V9
     o Lead cable V5 connects to electrode V8
     o Lead cable V4 connects to electrode V7
     o Lead cables V1 – V3 are connected the same way as when obtaining a standard EKG
## TAB 8 GUIDELINE 12
### AUTOMATED EXTERNAL DEFIBRILATOR

<table>
<thead>
<tr>
<th>INDICATIONS</th>
<th>CONTRAINDICATIONS</th>
<th>IMMEDIATELY AFTER THE A.E.D. BECOMES AVAILABLE</th>
</tr>
</thead>
</table>
| • Pulseless and apneic patient not meeting D.O.A. or D.N.R. criteria.  
  • Consider the use of child pads or attenuator for victims < 8 years of age or < 55 pounds. | • If patient is found in water, remove from water and dry patient thoroughly.  
  • Do not use an AED in an explosive atmosphere or extremely wet atmosphere.  
  • If a medication patch is found, remove patch and wipe clean before applying defibrillation pads.  
  • Do not place defibrillation pads directly over patient’s implanted defibrillator or pacemaker. | (for any patient meeting the above “Indications”), it shall be attached to the patient and if appropriate defibrillation delivered as outlined below. This must happen within the first 2 minutes of the A.E.D.’s arrival. |

### AED Maintenance
- Defibrillation cables should be inspected for damage and/or wear.
- Defibrillation pads should be routinely inspected to assure that they are within their expiration and are not open.
- Assure that batteries are charged and spares are available.

### Turn A.E.D. power on.
- Expose patient’s chest and apply defibrillator pads to ensure good contact either anterior-posterior or anterior-lateral position.
  - Anterior-lateral position:
    • White cable - Angle between the sternum and right clavicle.
    • Red cable - Over the lower left ribcage (axillary area).
- Plug cables into AED.
- Stop CPR and clear the patient.
- Press the analyze button.
  - If advised by the defibrillator, charge defibrillator, assure patient is clear and push button to deliver shock.
  - If a “No Shock” message is received at any time during analysis, assess for a pulse.
    • No pulse - perform C.P.R. for two minutes before analyzing rhythm again.
    • Pulse present - check breathing.
- Immediately resume CPR and then assess pulse.
  - No pulse - continue C.P.R. for two minutes using supplemental oxygen and airway adjunct.
  - If pulse present and patient is not breathing, secure airway and ventilate with B.V.M. & supplemental oxygen.
  - If pulse & adequate spontaneous respirations are present, place patient in recovery position & place on oxygen 15 LPM via complex mask.
- After two (2) minutes of C.P.R., push analyze button.
  - If advised by AED, charge AED, assure patient is clear and push button to deliver shock.
  - Do not deliver more than six (6) attempts at defibrillation unless directed to by medical control.
  - Remember to continue B.L.S. treatment if rhythm is not converted.
  - An AED is okay to utilize on a metal roof as long as the provider is not in direct contact with the patient.
TAB 8 GUIDELINE 13

RESQ CPR SYSTEM

1. Purpose
   a. This document provides suggested specifications for the use of the ResQ CPR System™, which is composed of the ResQPOD ITD® 16 and the ResQPUMP® ACD-CPR Device.
   b. The ResQPOD ITD 16 is an impedance threshold device (ITD) that regulates airflow into the lungs during CPR to enhance the negative pressure (i.e., vacuum) in the chest, allowing more blood to be pulled back to the heart, and lowering intracranial pressure (ICP).
   c. The ResQPUMP ACD-CPR Device is used to perform active compression decompression CPR (ACD-CPR), which is intended to promote complete and active chest wall recoil to further enhance the vacuum. Used together, these devices increase blood flow to the brain and vital organs, and improve the likelihood of survival.

2. Indications
   a. The ResQ CPR System is intended for use as a CPR adjunct to improve the likelihood of survival in adult patients with non-traumatic cardiac arrest

3. Contraindications
   a. Do not use the ResQPUMP if the patient’s chest is not large enough for the ResQPUMP suction cup to provide adequate compressions/decompressions during use
   b. ResQPUMP should not be used in patients who have had a recent sternotomy (within 6 months)
   c. Pregnant women
   d. Children under the age of 16

4. Precautions
   a. Improper use of the ResQ CPR System could cause serious injury to the patient and ineffective chest compressions/decompressions. The ResQ CPR System should only be used by personnel who have been trained in its use.
   b. Safety and effectiveness of the ResQ CPR System in the setting of traumatic injury (wounds resulting from sudden physical injury) have not been established.
   c. Improper positioning of the ResQPUMP suction cup may result in possible injury to the rib cage and/or internal organs, and may also result in suboptimal circulation during ACD-CPR.
d. Moisture, gels, or other lubricating materials on the patient’s chest should be removed before applying the ResQPUMP. Failure to do so may result in sliding of the suction cup on the chest, ineffective chest compressions/decompressions, and possible injury to the rib cage or internal organs.

5. Performing CPR using the CPR System
   a. Before beginning CPR with the ResQCPR System assess patient for signs of circulation (e.g., consciousness, breathing, coughing, movement, pulse).
   b. If no signs of life are present, begin performing CPR with the ResQCPR System as soon as possible, but do not delay manual chest compressions while preparing the ResQCPR devices.
   c. Place ResQPUMP ACD-CPR Device:
      i. Position the suction cup in the middle of the sternum between the nipples (mid-nipple line). Make sure that the edge of the suction cup does not extend below the xiphoid process, as this could result in inadequate suction and/or rib injury.
      ii. Turn on metronome and begin performing compressions:
          1. Perform chest compressions at the recommended compression to ventilation ratio. Use a 50% duty cycle, spending equal time compressing and lifting. Avoid interruptions.
          2. Compression:
             a. Compress with elbows locked and shoulders directly over the sternum. Bend at the waist, using the entire upper body and large thigh muscles to compress and lift.
             b. Compress at a rate of 80/min using the metronome (push button) as a guide (compress on one tone, lift on the other tone).
             c. Compress to recommended depth (e.g. 2” or 5 cm). Observe the force required to achieve that depth, as it will vary according to how compliant the chest is. The tip of the red arrow indicates the force being applied. Once the amount of force required is known, use that target as a guide for continued compressions. The approximate amount of force required to compress the chest 5 cm is as follows:
                i. 30 kg: soft/supple chest
                ii. 40 kg: chest of average compliance
iii. 50 kg: stiff/rigid chest
d. Use the force gauge to monitor forces and rescuer fatigue.

3. Decompression:
a. To fully achieve the benefits of ACD-CPR, actively pull up until the tip of the red arrow on the force gauge registers \( \approx 10 \) kg. It is not necessary to lift with more than 10 kg of force.
b. Lift using the upper body and large thigh muscles, and bend at the waist. If the suction cup dislodges, then pull up slightly less.
d. Attach the ResQPOD ITD 16 to the facemask as soon as chest compressions begin; use a 2-handed technique to maintain a tight facemask seal and airway position.
e. After 30 compressions, pause and use one hand to administer two ventilations over one second duration each until the chest rises.
f. Continue to provide a 30:2 compressions to ventilation ratio until a pulse returns or an advanced airway is placed. Rotate ACD-CPR duties every two minutes (or more often) to avoid fatigue.
g. Once an advanced airway (e.g. ET tube, supraglottic airway) is placed:
   i. Confirm tube placement and secure with commercial tube restraint.
   ii. Move the ResQPOD to the airway and turn on the timing assist lights.
   iii. Provide asynchronous ventilations; ventilate once over one second until chest rise is seen, each time light flashes (10/min).
   iv. Perform continuous chest compressions at 80/min. Do not pause compressions for ventilations.
h. If ROSC occurs, discontinue ResQCPR including ResQPOD and support ventilations as indicated
   i. If the patient re-arrests, resume use of both devices immediately

6. Cleaning
   a. ResQPump should be cleaned after every use. The silicone rubber cushion cup attracts dust and suction may be difficult to obtain. Store the ResQPump in a case to keep it clean
   b. To clean the handle, wipe it with a damp cloth and mild detergent. Never immerse the handle in water or autoclave to clean
   c. To clean the suction cup. Wash the suction cup with a mild detergent and rinse with tap water
d. The handle and cup may be chemically disinfection after washing using bleach solution (1 part 5% liquid household bleach and 9 parts water) or Cavicide. Wipe the handle with a dampened cloth (do not immerse or rinse) to remove chemical residue. The cup may be rinsed with water afterwards.

SPECIAL CONSIDERATIONS:
1. Signs and symptoms of improved cerebral blood flow (e.g. eye opening, gagging, spontaneous breathing, and limb or body movement) have been reported in patients without a pulse but who are undergoing ResQCPR. If these occur, check quickly to see if a pulse has returned. If the patient remains in cardiac arrest, continue ResQCPR and contact your medical control authority for guidance on managing these signs and symptoms in an arrested patient.
**TAB 8 GUIDELINE 14**

**RESQPOD**

The ResQPOD is an Impedance Threshold Device (ITD) that improves hemodynamics in spontaneously breathing patients. This device regulates pressures within the thorax which:

- Doubles the blood flow to the heart
- Increases the blood flow to the brain by 50%
- Doubles the systolic blood pressure
- Increases survival rates
- Increases the likelihood of successful defibrillation

**INDICATIONS**

- The ResQPOD device should be used on all patients in cardiopulmonary arrest if it is available and not otherwise contraindicated
- Use in any age > 1 year

**CONTRAINDICATIONS**

- Not to be used on patients with spontaneous circulation. It should be removed from the respiratory circuit once spontaneous circulation is achieved
- Flail chest
- Pediatrics < 1 year of age

<table>
<thead>
<tr>
<th>Use with a BVM and oral or nasal airway</th>
<th>Indicaions</th>
<th>Contraindications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attach the ResQPOD to the mask</td>
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<tr>
<td>Ventilate after each light blink (10 / min)</td>
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<td></td>
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<tr>
<td>Maintain an airtight seal</td>
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<tr>
<td>For an intubated patient or use with LMA or King LTS-D</td>
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</tr>
<tr>
<td>Confirm tube placement; secure with commercial tube restraint.</td>
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</tr>
<tr>
<td>Connect ResQPOD directly to ET, King airway or LMA.</td>
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<tr>
<td>Connect adapter to ventilation port of ResQPOD.</td>
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</tr>
<tr>
<td>Connect EtCO₂ filter line to adapter; filter line attached to monitor (LP12).</td>
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</tr>
<tr>
<td>Connect ventilation source (bag-valve device or ATV).</td>
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</tr>
<tr>
<td>Do not give medications through the ResQPOD. Instill through ET only.</td>
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<tr>
<td>Perform continuous chest compressions and ventilations as outlined in the current AHA guidelines. Avoid unnecessary delays or interruptions in chest compressions.</td>
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</tr>
<tr>
<td>Turn on ResQPOD timing assist lights. Ventilate asynchronously at timing light flash rate.</td>
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<tr>
<td>Remove secretions from ResQPOD by shaking or blowing out with the ventilation source.</td>
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</tr>
<tr>
<td><strong>Upon return of spontaneous circulation (ROSC), and EtCO₂ &gt; 40 mm Hg, remove the ResQPOD from the ventilation circuit.</strong></td>
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</tr>
<tr>
<td>In the event that spontaneous circulation is lost, re-attach the ResQPOD to the advanced airway and utilize as outlined above.</td>
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<tr>
<td>Carefully monitor placement of the advanced airway after movement of the patient, placement of the ResQPOD, and/or removal of the ResQPOD.</td>
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<tr>
<td>Document the ResQPOD procedure and results in the patient care report (PCR).</td>
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</tbody>
</table>
TAB 8 GUIDELINE 15
AUTOMATED CHEST COMPRESSION DEVICE:
ZOLL AUTOPULSE

1. Indications
   a. Use on adult patients who have acute circulatory arrest defined as absence of spontaneous
      breathing and pulse, and loss of consciousness.
   b. Patients not meeting the D.O.A. or D.N.R criteria.

2. Contraindications
   a. Patients under the age of 18 (unless adult appearing in size)
   b. **Patient weight maximum is 300 pounds, Minimum is 90 pounds**
   c. Traumatic cardiac arrest

3. Precautions
   a. Always minimize any interruptions to compressions when using the AutoPulse
   b. Deployment of AutoPulse should not postpone initiation of manual compressions
   c. Do not place or position the patient on the AutoPulse in either a face down orientation or
      on the patient’s side
   d. Do not place any straps or restraints (or otherwise constrain) the LifeBand during active
      operation
   e. Do not use the AutoPulse platform along to carry a patient. Reeve Sleeve / MegaMover
      Litter / Smithcot Stretcher / backboard should be used to move the patient.

4. Application
   a. Turn the AutoPulse on (switch at top middle of board above the patients head), ensure
      that the battery is securely latched before moving the AutoPulse or initiating chest
      compressions.
      i. If a fault/user advisory is displayed, check installation of the band clip into the
         drive shaft slot. **DO NOT STOP MANUAL COMPRESSIONS**
   b. Place the patient in a seated upright position.
   c. Remove all clothing from torso front and back.
   d. Place the AutoPulse platform behind the patient’s back while still in a seated upright
      position. Yellow arrow should be pointed up.
   e. Lay the AutoPulse and patient down to the ground ensuring that the head aligns onto
      yellow line and the shoulders are at the black line on the platform. This ensures that the
patient is correctly aligned on the AutoPulse platform and that the LifeBand Load-distributing Band (LBD) will be correctly positioned.
f. Connect Chest / LifeBand across the chest of the patient.
   i. Do not twist bands and maintain bands at 90 degrees to platform.
g. Lift the chest band straight up to ensure it is free of twists
h. Press the “Green” button once to start sizing cycle. Do not touch the patient while the AutoPulse platform is analyzing the patient’s size.
i. Press the “Green” button a second time to start compression cycle.
j. Check for femoral pulses with compressions every 2 minutes.
k. Secure the patient to the AutoPulse platform with attached straps.
l. Prior to realigning the patient, to assess for pulses, upon ROSC, to pause or stop operation, press STOP “Orange” button.
m. **In case of mechanical malfunction of the AutoPulse the EMS responder will resort back to manual CPR for patient care.**

5. Complications
   a. Care should be used when moving patients with a large abdomen (shifting of excess flesh may cause the LifeBand to move or break)
   b. If disruption or malfunctions of LifeBand occurs resume manual CPR.

6. Decontamination
   a. AutoPulse should be cleaned according to manufacturer’s specifications
   b. Never reuse the LifeBand (these are single use only)
   c. Check AutoPulse for damage prior to restocking and returning to service

7. Removal of LifeBand
   a. Place AutoPulse face down.
   b. Lift hinged skirts, pinch 4 locked tabs and remove cover plate.
   c. Grasp band with the thumb and index finger of both hands. Push in the middle fingers and pull up the band to remove clip from the shaft.

8. Installation of new LifeBand
   a. Match arrow on the cover plate with arrow on platform.
   b. Insert head end of band clip into slot.
   c. Press tail end of band clip into guide plate slot and feel for click.
   d. Rotate shaft in either direction to verify band clip is seated in slot.
   e. Snap cover plate in place and flip down hinged skirts.
MEDICAL
TAB 8 GUIDELINE 16
BLOOD GLUCOSE MONITORING

1. Indications
   a. The blood glucose meter is the device used for determining the patient’s blood glucose level and giving a plasma value in milligrams per deciliter. Blood for testing may be either capillary or venous.
   b. It should be noted, venous and capillary values may differ by 10%.
   c. If the blood glucose meter malfunctions for any reason, this should not hinder patient care.

2. Procedure
   a. Safe scene, universal precautions
   b. Explain procedure to the patient
   c. Prep area with alcohol wipes and let dry
      i. This should be performed on the edges of the finger tips (not directly on the pad of the finger)
   d. Turn on the blood glucose meter and follow directions for placing test strip in the meter
   e. Obtain either capillary or venous sample preferably a capillary and put on test strip
   f. Glucose reading will take approximately 10 – 30 seconds
   g. Document reading on run form
TAB 8 GUIDELINE 17
MEDICATION ADMINISTRATION –
ADMINISTRATION OF ASPIRIN

1. Indications
   a. Patients presenting with chest pain or signs / symptoms of ACUTE CORONARY SYNDROME such as:
      i. Jaw pain, arm pain, diaphoresis, dyspnea, and tachycardia when the patient has a history of risk factors
   b. Risk factors:
      i. diabetes, hypertension coronary artery disease, smoking or age > 30 with any of the above signs or symptoms

2. Contraindications
   a. Aspirin allergy – TRUE history resulting in hives, itching, dyspnea and hypotension
   b. Active Gastrointestinal bleeding
   c. New signs / symptoms of a stroke (cerebral vascular accident)
   d. Any bleeding disorders

3. Procedure
   a. EMT shall assess for existence of any contraindications. If true contraindication(s) exist, then aspirin SHALL NOT be administered. Document on the run sheet why aspirin withheld
   b. If patient presents with any of the indications, four (4) 81 mg tablets of children’s chewable aspirin shall be given by mouth. Have the patient chew and swallow the tablets (use minimal amount of water, only if needed)
      i. Prior to administration ensure that the aspirin strength is 81 mg / tablet, and that the medication has not expired
   c. Patient (written) report must reflect time of aspirin administration, and the absence of all the contraindications. Verbal notification must be given to the paramedics and / or hospital as to the administration of the aspirin and reflected on the patient’s run sheet
TAB 8 GUIDELINE 18
MEDICATION ADMINISTRATION –
EPINEPHRINE AUTO-INJECTOR

1. Indications
   a. Must meet both
      i. Patient exhibits sign and symptoms of severe allergic reaction to include
         1. Respiratory distress and wheezing
         2. Hives / itching
         3. Shock symptoms, delayed capillary refill > 3 seconds
      ii. Patient has a physician prescribed medication for this
   b. Note: The EMT may take an EpiPen out of stock drugs if one (1) of the following conditions exist:
      i. The patient’s own medication is determined to be beyond the expiration date
      ii. The patient’s own medication is empty or malfunctioning
      iii. The patient does not have their Epi-Pen with them at the time of the emergency

2. Contraindications
   a. None

3. Administration
   a. If ALS unit not immediately available, administer EpiPen auto-injector or EpiPen Jr
   b. Assure medication is prescribed to your patient
   c. Assure medication is not discolored
   d. Remove cap from auto-injector
   e. Place tip of auto-injector against patient’s thigh lateral portion of thigh midway between waist and knee
   f. Push firmly against the thigh until injector activates
   g. Hold injector in place until medication is injected (at least 10 seconds)
   h. Properly dispose of injector
   i. Reassess patient

4. Continued treatment
   a. If the patient’s condition continues to worsen (decreased LOC, increased dyspnea or hypotension)
      i. Transport immediately to the closest hospital
      ii. Contact MEDICAL CONTROL for authorization of a second dose if available
iii. Administer BLS procedures as indicated

5. Side effects
   a. Chest pain | Anxiety
   b. Elevated heart rate
   c. Pallor
   d. Dizziness
   e. Headache
   f. Nausea or vomiting
TAB 8 GUIDELINE 19

MEDICATION ADMINISTRATION –

INHALATION MUCOSAL ATOMIZATION DEVICE (MAD)

1. Indications
   a. Used for atomizing topical solutions across the nasopharyngeal and oropharyngeal mucous membranes.
   b. For use when administering the following medications.
      i. Naloxone (Narcan) for opiate overdoses.

2. Procedure
   a. Aspirate the proper volume of highly concentrated medication required to treat the patient (an extra 0.1 ml of medication should be drawn up to account for the dead space within the atomizer at the end of the procedure).
   b. Twist off / remove the syringe from the needle / needleless device.
   c. Attach the atomizer tip via Luer locking mechanism - it twists into place. Slip Luer is also effective as long as the tip is firmly seated on the syringe tip.
   d. Using your free hand to hold the crown of the head stable, place the tip of the atomizer snugly against the nostril aiming slightly up and inward (towards the top of the opposite ear).
   e. Briskly compress the syringe plunger to deliver half of the medication into the nostril. (DISPENSE NO MORE THAN (1) ML OF MEDICATION PER NOSTRIL).
   f. Move the device over to the opposite nostril and administer the remaining medication into that nostril.
   g. Re-use the MAD on the same patient as needed, and then discard.
TAB 8 GUIDELINE 20
MEDICATION ADMINISTRATION –
NERVE AGENT | ORGANOPHOSPHATE

1. **A first responder, EMT, Advanced EMT, or Paramedic**, may administer drugs or dangerous drugs contained within a nerve agent antidote auto-injector kit, including a MARK I kit, in response to suspected or known exposure to a nerve or organophosphate agent provided the first responder or EMT is under physician medical direction and has received appropriate training regarding the administration of such drugs within the nerve agent antidote auto-injector kit, per EMS Scope of Practice, State of Ohio.

2. **DuoDote is indicated for the treatment of poisoning by organophosphorous nerve agents as well as organophosphorous insecticides.** DuoDote should only be administered to patients experiencing symptoms of organophosphate poisoning in a situation where exposure is known or suspected. DuoDote should be administered as soon as symptoms of organophosphate poisoning appears:

<table>
<thead>
<tr>
<th>Mild Symptoms</th>
<th>Severe symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Blurred vision</td>
<td>• Strange or confused behavior</td>
</tr>
<tr>
<td>• Excessive, unexplained teary eyes</td>
<td>• Severe difficulty breathing or copious secretions from lungs / airway</td>
</tr>
<tr>
<td>• Excessive, unexplained runny noise</td>
<td>• Severe muscular twitching and general weakness</td>
</tr>
<tr>
<td>• Increased salivation such as sudden drooling</td>
<td>• Involuntary urination and defecation</td>
</tr>
<tr>
<td>• Chest tightness or difficulty breathing</td>
<td>• Convulsions</td>
</tr>
<tr>
<td>• Tremors throughout the body or muscular twitching</td>
<td>• Unconsciousness</td>
</tr>
<tr>
<td>• Nausea and/or vomiting</td>
<td></td>
</tr>
<tr>
<td>• Unexplained wheezing, coughing or increased airway secretions</td>
<td></td>
</tr>
<tr>
<td>• Acute onset of stomach cramps</td>
<td></td>
</tr>
<tr>
<td>• Tachycardia or bradycardia</td>
<td></td>
</tr>
</tbody>
</table>

3. **Procedure - DuoDote application**
   a. Tear open plastic pouch at any of the notches
   b. Place the DuoDote Auto-Injector in your dominant hand, firmly grasp the center of the DuoDote Auto Injector with the Green Tip pointing down
c. With your other hand, pull off the gray safety release. The DuoDote Auto-Injector is now ready to be administered

d. The injection site is the mid-outer thigh area. The DuoDote Auto-Injector can inject through clothing, however, make sure pockets at the injection site are empty

e. Swing and firmly push the Green Tip straight down (90-degree angle) against the mid-outer thigh. Continue to firmly push until you feel the DuoDote Auto-Injector trigger

   i. After the auto-injector triggers, hold the DuoDote Auto-Injector firmly in place against the injection site for approximately 10 seconds

f. Remove the DuoDote Auto-Injector from the thigh and look at the Green Tip. If the needle is visible, the drug has been administered. If the needle is not visible, check to be sure the Gray safety release has been removed, and then repeat the above steps beginning with step D, but push harder in Step E

g. After the drug has been administered, push the needle against a hard surface to bend the needle back against the DuoDote Auto-Injector

   i. Put the used DuoDote back into the plastic pouch, if available. Leave used DuoDote with the patient to allow other medical personnel to see the number of DuoDote Auto-Injector (s) administered

h. Immediately move yourself and the patient away from the contaminated areas and seek definitive medical care for the patient
TAB 8 GUIDELINE 21
RERAINT GUIDELINE

At times it is necessary to physically restrain individuals who are incompetent to refuse treatment or transport. The intent of physical restraint is to protect the patient, emergency responders and the public from dangerous actions of individuals.

<table>
<thead>
<tr>
<th>Soft restraints (applied by EMS)</th>
<th>Hand restraints (applied by law enforcement)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kling or cravats</td>
<td>Handcuffs or wrist chains</td>
</tr>
<tr>
<td>Commercial soft restraints</td>
<td>Cable ties</td>
</tr>
<tr>
<td>Cloth (i.e. sheets or bath blankets)</td>
<td>Leg shackles</td>
</tr>
<tr>
<td></td>
<td>Hobble restraints</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spitting masks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-rebreather mask</td>
</tr>
<tr>
<td>Spit Net</td>
</tr>
<tr>
<td>Surgical Mask</td>
</tr>
</tbody>
</table>

1. Procedure
   a. Offer the patient a final chance to cooperate.
   b. Approach the patient swiftly from all sides at once.
   c. The EMTs should maintain communication with the patient.
   d. Place the patient in a supine position on a backboard and secure all extremities to the backboard.
      i. One arm up and one arm down will reduce the patient’s ability to struggle.
      ii. Secure the legs to the corners of the board, or crisscross their legs.
      iii. Continue to monitor the patient for signs and symptoms of hypoxia. Be prepared to release the restraints as necessary. Document your findings on the EMS run sheet.
      v. Monitor and document the neurovascular status of restrained extremities every 15 minutes. Adjust the device as necessary.
      vi. For patients that are spitting
         1. Ensure that the patient is not hypoxic, if so then place on Non-rebreather mask at 15 L O2.
2. Patients that are competent, but are continuously spitting on EMS personnel, Surgical mask or spitting net can be used.

3. DO NOT place rolled up towel / gauze into a patient’s mouth.

   vii. Notify on-line MEDICAL CONTROL of the patient’s status and the possible need for security.

SPECIAL CONSIDERATIONS:

1. If a restraint is applied by law enforcement, the officer should accompany the patient to the hospital in the squad.

2. **Personnel should not use the following restraint techniques**
   a. Choke holds
   b. Hog ties
   c. Restraints used in the prone position
   d. Restraint by sitting on the patient’s torso
   e. Restraint by sandwiching between the backboard
   f. Any restraint by any method that would interfere with breathing
# AVULSED TOOTH REIMPLANTATION

## Indications
- Only reimplant permanent teeth
- Best chance of success is when reimplantation occurs less than 5 minutes from injury (can go up to 15 minutes)

## Contraindications
- Do not reimplant if the alveolar bone / gingiva are missing or if the root is fractured
- Do not reimplant if the patient is immunosuppressed or reports having cardiac issues that require antibiotics prior to procedures
- Do not reimplant if the patient requires spinal immobilization

## Special Considerations:
- If patient is not a candidate for reimplantation, place tooth in interim storage media (Save-A-Tooth solution, low fat milk, patient’s saliva or normal saline)

## Instructions for Reimplantation
- Hold the tooth by the crown
- Quickly rinse the tooth with saline before reimplantation, but DO NOT BRUSH off or clean tooth of tissue
- Rinse and suction the clot from the socket
- Reimplant tooth firmly into socket with digital pressure
TAB 8 GUIDELINE 23
CHEST SEAL

There are multiple commercial grade chest seal occlusive dressings designed to treat open chest wounds, a life-threatening situation that could lead to tension pneumothorax and cardiac arrest. The majority of these devices have an adhesive dressing that allows for the ability to reseal, making for an ideal venting. These devices include a large coverage area and usually have an absorbent pad to help keep the wound clean.

1. Indications
   a. Open pneumothorax

2. Procedure
   a. Open package and remove the chest seal
   b. Clean and dry the area around the chest wound
   c. Grip tabs and remove the clear liner
   d. Place dressing, adhesive side down, centered around the wound
   e. Press dressing firmly to ensure adhesion
   f. One or both tabs can be used to facilitate placement, or lifting / removal of dressing
   g. Remove dressing using standard dressing removal techniques
TAB 8 GUIDELINE 24
HELMET REMOVAL

<table>
<thead>
<tr>
<th>Removal of helmet</th>
<th>Leave helmet in place</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Inability to access, assess and maintain airway and breathing</td>
<td>• Helmet fits well with little or no movement of head in helmet</td>
</tr>
<tr>
<td>• Improperly fitted helmet allowing for excessive head movement within helmet</td>
<td>• No impending airway or breathing problems</td>
</tr>
<tr>
<td>• Proper c-spine alignment and immobilization cannot be achieved</td>
<td>• Removal may cause further injury or harm</td>
</tr>
<tr>
<td>• Cardiac arrest</td>
<td>• Proper c-spine alignment and immobilization can be achieved with helmet in place</td>
</tr>
<tr>
<td>• EMTs are trained in technique</td>
<td>• There is no interference with the ability to assess and reassess airway and breathing</td>
</tr>
</tbody>
</table>

1. Sport (football, ice hockey, field hockey, fencing, baseball)
   a. Key points
      i. Typically, open anteriorly
      ii. Easier to access airway
      iii. If shoulder pads are used in conjunction with helmet and helmet is removed, then shoulder pads need to be removed simultaneously for proper c-spine alignment
   b. All are equipped to have facemask removed separate from helmet. In most cases, removal of facemask is all that is needed, as the alignment of c-spine can be obtained with the shoulder pads and helmet in place
      i. Remove facemask by cutting snubber straps that hold it in place to access airway
   c. Helmet Removal
      i. If helmet must be removed due to unusual circumstances, at least 4 people are needed
      ii. Shoulder pads need to be removed simultaneously. When shoulder pads are involved, use forearms to stabilize helmet and place hands at base of neck grasping the shoulder area
      iii. While maintaining manual c-spine, Helmet’s inside face pads may be loosened by using a tongue blade to unsnap them with a twisting motion. Then cut the shoulder pads laces and straps and all shirts / jerseys from end of sleeve to center to allow for quick removal
iv. Lift patient flat up for removal of equipment. Helmet should be grasped and tilted slightly to remove - DO NOT SPREAD SIDES OF BACK EDGE OF HELMET, WILL IMPINGE UPON NECK

v. At same lift, pull of shoulder pads and clothing
vi. Lower patient down and apply c-collar

2. Motorcycle / Bike / Skateboard

   a. Key points
      i. When full-faced, airway is harder to access and maintain
      ii. Face shield may be removed for airway access

   b. Helmet Removal
      i. Take eyeglasses off before attempting removal of helmet
      ii. One EMT stabilizes the helmet by placing hands on each side of the helmet with fingers on mandible to prevent movement
      iii. Second EMT removes any straps by cutting them, then places one hand on the mandible at the angle of the jaw and the other hand posteriorly at the occipital region
      iv. The EMT holding the helmet pulls the sides of the helmet outwards away from the head and gently slips the helmet halfway off and stops
      v. The EMT maintaining stabilization of the neck repositions hold by sliding the posterior hand superiorly to secure the head from falling back after complete helmet removal
      vi. Helmet is then completely removed
      vii. Place c-collar accordingly
## TAB 8 GUIDELINE 25
### PELVIC BINDER

<table>
<thead>
<tr>
<th>INDICATIONS</th>
<th>CONTRAINDICATIONS</th>
<th>MANDATORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used in the initial treatment to stabilize a pelvic injury and possible pelvic fractures</td>
<td>Patient too small to obtain the 6 inch gap needed for closure</td>
<td>Assess and Document pulse, sensation, and motor function before and after placement of pelvic binder</td>
</tr>
</tbody>
</table>

- **Initial Assessment**
  - Perform standard trauma or comprehensive secondary survey to determine if there is a possibility of a pelvic injury and possible pelvic fractures. This may include, but is not limited to:
    - Assess for abrasions and contusions around the pelvic area
    - Assess for superficial hematoma above inguinal ligament, scrotum, and thigh
    - Assess limb length discrepancy and deformity
    - Assess pelvic stability by bimanual compression of the iliac wings
    - Examinations of the rectal and vaginal areas for bleeding

- **Procedure**
  - Wrap the fabric belt around the supine patient
  - Fit pelvic binder around the pelvis so that the top of the pelvic binder is at the level of the greater trochanters or iliac crest (ideally the belt should cover the buttocks)
  - Then cut excess belt in front leaving a 6 – 8 inch gap of exposed pelvis
  - Apply pulley system / power unit to each side of the belt and slowly draw tension until snug
    - This provides simultaneous circumferential compression of the pelvic region
    - In male patients make certain genitalia are elevated out of groin area
  - Monitor vital signs
  - Document time and date device is applied in space provided

- **Special considerations**
  - If an obese patient requires, two belts may be affixed together using one power unit as an extender and the other as the pulley
  - Monitor pulse and blood pressure in accordance with your organizational protocols
  - Healthcare providers should release tension every 12 hours to check for skin integrity and provide wound care as necessary
  - Pelvic Binders should be replaced when soiled or after every 24 hours of use
  - Place Foley catheter prior to application as needed
  - Children under 50 lbs (23 Kg) may be too small to obtain the 6 inch gap needed for closure
TAB 8 GUIDELINE 26
SELECTIVE SPINAL IMMOBILIZATION

INDICATIONS
- Suspicion of spinal / neurological injury
- Provider decision to utilize the Spinal Immobilization Clearance protocol

CONTRAINdications
- Neurologic problems
- Spinal tenderness
- Altered mental status
- Intoxication
- Distracting injuries

MANDATORY
- Must be able to communicate with patient (NO LANGUAGE BARRIER)
- Patient must have mental capacity and decision making capacity to be able to use guideline

Consider based upon Mechanism of Injury (MOI)

Patient able to ambulate

Long board immobilization is not required

High-Risk Characteristics / Mechanism
- Age > 65
- Axial load / diving injuries
- Sudden acceleration / deceleration, lateral bending forces to neck / torso
- Violent impact to head, neck, torso, pelvis
- Numbness, tingling, paresthesia

Unreliable Patient Interaction
- Language Barriers: inability to communicate
- Lack of cooperation during exam
- Evidence of drug / alcohol intoxication
- Painful distracting injury such as long-bone fracture

Motor / Sensory Exam
- Wrist / hand extension bilaterally
- Foot plantar flexion bilaterally
- Foot dorsiflexion bilaterally
- Gross sensation in all extremities
- Check for paresthesia

Any patient that can self extricate from a vehicle with complaint of neck pain can be placed in rigid c-collar, and let them get out of vehicle themselves and ambulate to the stretcher

Legend
- EMR
- EMT
- A-EMT
- EMT-P
- MC Order

While performing selective spinal immobilization, maintain inline spinal immobilization

Patient > 65 or < 2 with Significant mechanism

Unable to reliably communicate with EMS provider to perform exam

Neuro Exam: Any focal weakness, numbness, paresthesia

Spinal Exam: Point tenderness to spinal process, midline pain with axial load or midline pain with ROM

Altered Mental Status
Any alteration in patient?

Intoxication: Any evidence?

Distracting Injury (serious): Any painful injury that might distract the patient from the pain of a c-spine injury?

Selective Spinal Immobilization Required

Spinal Immobilization Not Required
SELECTIVE SPINAL IMMOBILIZATION:

1. Patients with mechanism of injury with the potential for causing spine injury shall have a spine injury clinical assessment performed. The purpose of spinal immobilization (spinal motion restriction) should reduce patient discomfort and protect patients from additional harm. Spinal immobilization that increases pain should be avoided.
2. Selective spinal immobilization can include either cervical immobilization, or thoracic / lumbar / sacral (TLS) immobilization or cervical and TLS immobilization depending on complaint of pain, degree of injury.
   a. All altered patients should have full spinal immobilization.
   b. When in doubt always place a cervical collar on patient and at minimum maintain inline stabilization with patient on stretcher.
3. High risk injuries / Significant Mechanism of Injury (MOI)
   a. Always consider in all patients the use of c-collar and if necessary backboard
   b. Significant mechanism (consider immobilization)
      i. Fall from elevation $\geq$ 3 feet / 5 stairs
      ii. Axial load to head, e.g. diving
      iii. MVC high speed [> 45 mph (100km/hr)], rollover, ejection
      iv. Motorized recreational vehicles (motorcycle / 4-wheelers)
      v. Bicycle struck or collision
      vi. Pedestrian hit by high speed vehicle
      vii. Assault with significant head, neck or back trauma
4. Low risk characteristics / mechanisms
   a. These low-risk factors allow for safe omission of spinal immobilization in patients with GCS = 15
   b. Characteristics
      i. Simple rear-end collision
      ii. Ambulatory on scene at any time
      iii. No neck pain on scene
      iv. No midline cervical tenderness
5. Patients may remain on the extrication device if the crew deems it safer for the patient considering stability, time and patient comfort. This decision will be at the discretion of the crew.
6. **Penetrating trauma patients to the head, chest, abdomen or extremities do not require spinal immobilization.** Consider for patients with cervical penetration with concern of neurologic findings.

7. Patient with only cervical immobilization without TLS spine injury, elevate the head of the stretcher to 30 degrees while maintaining cervical spinal motion restriction.

**SPECIAL CONSIDERATIONS:**

1. The elderly may have altered perception of pain and therefore may not report the same intensity of symptoms as younger patients. Therefore, extra caution is in order when assessing elderly patients.

2. Keep in mind that patients who are immobilized properly on a long immobilization device with cervical immobilization will not be able to reliably protect their airways in the event they vomit. Therefore, it is imperative that a working suction device be handy to clear vomit from the patient's upper airway.

3. The mere smell of alcohol does not mean that the patient is intoxicated. However, if there is any question about whether or not the patient is intoxicated, then the patient should be treated as if he has a spine injury, at least until he is "calm, cooperative, sober, and alert enough to give a reliable exam."

4. **Exercise caution when applying spinal immobilization to patients with difficulty breathing and position appropriately.**
   a. Patients with acute or chronic difficulty breathing: spinal immobilization is known to reduce respiratory function as much as 20%.
   b. Respiratory compromise is experienced most by geriatric and pediatric patients secured to a long backboard.

5. **Combative patients: avoid methods or interactions that provoke increased spinal motion or agitation.**

**SPECIFIC TECHNIQUES**

1. Cervical spinal immobilization
   a. **Following procedure is to be used to properly immobilize the patient when injury to the cervical spine is considered**
   b. Cervical collars should be placed on patient prior to patient movement, if possible
   c. The cervical spine must be maintained in a neutral position at all times by direct manual and/or mechanical means. **DO NOT APPLY TRACTION AT ANY TIME.**
d. The following devices are approved mechanical adjuncts for cervical spine immobilization:
   i. Kendrick Extrication Device (KED), XP1, or equivalent
   ii. Cervical Immobilization Device (CID)
   iii. Rigid cervical collar properly fitted
   iv. If no collar can be made to fit patient, towel, blanket rolls, head block or similar device may be used to support neutral head alignment

e. If back board is used, straps must also be placed across the patient's chest, pelvis, and legs to secure their body to the long immobilizer. CAUTION: It is DANGEROUS to secure the head if the BODY is allowed to move on the long board. This will subject the neck to unacceptable torque and bending.

f. Lateral neck supports such as towel rolls, Head band, or equivalent must be applied and the patient's head and taped across the forehead and collar.

g. The cervical collar may be removed if interfering with airway management or airway placement, or if causing extreme patient distress.

2. Emergency patient removal
   a. Indicated when scene poses an imminent or potential life threatening danger to patient and / or rescuers
   b. Remove the patient from danger while best attempt is made to maintain spinal precautions
   c. Rapid extrication is indicated when patient condition is unstable (ie airway or breathing compromise, shock, unconsciousness, no pulse, or need for immediate intervention)

3. Self-Extrication procedure
   a. Patients, who are stable, alert and without neurological deficits may be allowed to self-extricate to the ambulance cot after placement of a cervical collar
   b. Limit movement of the spine during the process

4. Thoracic and lumbar spinal immobilization
   a. **Following procedure is to be used to properly immobilize the patient when injury to the thoracic and lumbar spine is considered and the patient condition prevents self-extrication**
   b. The spine must be maintained in a neutral position at all times by direct manual and/or mechanical means.
i. Rescuers should place the patient in a stable, neutral position where space is created to place backboard or other long extrication device in position near the patient

ii. Move the patient to supine position on the long extrication device

c. As soon as practical, the patient will be carefully placed on a long immobilizer. The following such devices are approved:
   i. Scoop stretcher
   ii. Long spine board (wood or equivalent radiolucent material)
   iii. Stokes litter (high angle rescue only)
   iv. Full body vacuum splint

d. The patient must be securely fastened to the long immobilizer with straps across the chest, pelvis, and legs to prevent any torque or twisting of any part of the spine. Airway secretions and vomitus are to be cleared using suction devices. If necessary, the patient to be log rolled together with the immobilization equipment for the purpose of airway maintenance.

e. The extrication device is used to move the patient to the ambulance / air medical stretcher
TAB 8 GUIDELINE 27
SPLINTING

1. Clinical Indications
   a. Immobilization of an extremity for transport, either due to suspected fracture, sprain, or injury.
   b. Immobilization of an extremity for transport to secure medically necessary devices (i.e., intravenous catheters).

2. General Splinting Procedure
   a. 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.
   b. Remove all clothing from the extremity.
   c. 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.
   d. Do not secure the splint directly over the injury or device.
   e. Place the splint and secure with Velcro, straps, tape, or bandage material depending on the splint manufacturer and design.
   f. Document pulses, sensation, and motor function after placement of the splint. If there has been deterioration in any of these 3 parameters, remove the splint and reassess.
   g. Document the time, type of splint, and the pre and post assessment of pulse, sensation, and motor function in the patient care report (PCR).

3. Types of splints
   a. Traction Splinting
      i. Traction splints are used to immobilize suspected femur fractures.
      ii. Guidelines set forth by the equipment manufacturer should be followed when applying the device.
   b. Hare Traction Splint (Application Procedure):
      i. Assess neurovascular function.
      ii. Place the ankle device over the ankle.
      iii. 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.

iv. Extend the distal end of the splint at least 6 inches beyond the foot.

v. Attach the ankle device to the traction crank.

vi. Twist until moderate resistance is met.

vii. Reassess alignment, pulses, sensation, and motor function. If there has been deterioration in any of these 3 parameters, release traction and reassess.

viii. Document the time, type of splint, and the pre and post assessment of pulse, sensation, and motor function in the patient care report (PCR).

c. Sager Traction Splint (Application Procedure)

i. Assess neurovascular function.

ii. Position the splint – Place the splint between the patient’s legs and apply the thigh strap snugly against the injured limb, seating the cushion against the patient’s perineum. Extend the inner shaft of the splint to place the pulley wheel just beyond the patient’s heel. When positioning the splint, the pulley wheel should be facing the injured limb.

iii. Set the splint – Apply the ankle harness firmly around the ankle above the medial and lateral malleolus. Pull the control tabs on the ankle harness to shorten the ankle sling, pulling it up against the sole of the foot. You are now ready to administer dynamic traction. Extend the splint shaft to achieve the amount of desired traction, while observing the amount registered on the traction scale. Check the thigh strap, re-tighten to retain snug fit.

iv. Secure the splint – Slip the largest leg cravat under the hollow behind the knee and see-saw it up to the upper thigh. Follow with the shortest cravat under the knee and see-saw down under the lower leg. Place the remaining cravat under the knee and then secure all three cravats binding the leg and splint together. Wrap the figure-8 strap snugly around the ankles and over the feet.

v. Reassess alignment, pulses, sensation, and motor function. If there has been deterioration in any of these 3 parameters, release traction and reassess.

vi. Document the time, type of splint, and the pre and post assessment of pulse, sensation, and motor function in the patient care report (PCR).
TAB 8 GUIDELINE 28
TOURNIQUET APPLICATION

1. Indications
   
   a. Uncontrolled extremity bleeding not responsive to direct pressure
   b. Extremity bleeding in Tactical or Unsafe environment

![Image of C-A-T tourniquet with instructions]

**Utilization of the Friction Adaptor Buckle**

When using two hands to apply the C-A-T or if the Self-Adhering Band becomes exceptionally dirty, use the Friction Adaptor Buckle to lock the band in place.

1. Pass Band Through the Inside Slit
2. Pass Band Through the Outside Slit
3. Pull the Band Tight
APPENDIX
TAB 8 GUIDELINE 29
WEIGHT CHART: POUNDS TO KILOGRAMS

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