



Douglas County Fire/EMS Department  
**Emergency Medical Services  
2015 Guidelines for Therapy**

**Effective: April 2015**

(Subject to revision prior to the end of this period, as authorized by the Medical Director)

# Douglas County Fire/EMS Medical Direction

EMS Medical Director - Raymond L. Fowler, MD, FACEP

These protocols and treatment guidelines have been approved for use by Douglas County Fire/EMS. Personnel must have a current EMS license with the Georgia Department of Human Resources and be in good standing with Douglas County Fire/EMS to operate under these treatment guidelines.

These protocols have been developed from nationally recognized standards and the latest scientific literature, where possible. They are in accordance with currently accepted medical practices advocated by organizations including the American Heart Association (AHA), the American College of Emergency Physicians (ACEP), the National Association of EMT's (NAEMT), and the National Association of Emergency Medical Service Physicians (NAEMSP).

An explanation between the terms protocols, standing orders and treatment guideline needs to be made. Protocols are written guidelines that state an appropriate course of action for individuals operating within an EMS system. Protocols are generally categorized into one of the following four areas: Administrative, patient transfer, patient triage, and patient treatments. A "treatment" protocol is more commonly referred to as a standing order or treatment guideline, but the terms are synonymous. Douglas County Fire Department has chosen to use the term "treatment guideline" to identify those protocols relating to patient care.

Treatment guidelines are those components of pre-hospital care the provider can initiate **before** establishing communications with Medical Control. This is an acceptable practice under the legal concept of delegated (authority) practice. The point in which Medical Control communication is required, is specified on each treatment guideline. Earlier contact is always advisable if questions, problems, or unusual cases exist.

Medical Control should be contacted and notified about all patients for whom ALS procedures or therapies are attempted or initiated; except for precautionary intravenous access procedures (IVs).

These treatment guidelines, in general, imply a specific sequence when providing patient care. It is important to remember that patients may require a variation in standard treatment guidelines. Therefore, the actual order in which items are performed for each patient must be individually determined by the responder for each patient. In addition, because of unusual circumstances encountered in emergency work, the clinical judgment exercised by field paramedics in conjunction with on-line Medical Control may call for variation from the established treatment guideline from time to time.

Pediatric means anyone who has not reached their 15th birthday. For legal considerations, such as the right to give consent or to refuse treatment, a pediatric patient is anyone who has not reached their 18th birthday.

***Douglas County Fire/EMS Protocols created By:***

*Raymond L. Fowler, MD, FACEP*

*Fire Chief Scott Spencer*

*Deputy Chief Kim Ransom*

*EMS Training Captain Pablo Lugo*

*EMS Training Lieutenant Stacie Farmer*

*DCFD Medical Advisory Committee*



Douglas County Fire/EMS  
Emergency Medical Services

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# 2015 Guidelines for Therapy

Treatment guidelines Approved By:

Raymond Fowler, M.D. FACEP

April 14<sup>th</sup> , 2015

Medical Director

Scott E. Spencer, CT. Fire Chief, EMS Director

April 14<sup>th</sup> , 2015

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# Standard Procedures – 12 Lead ECG

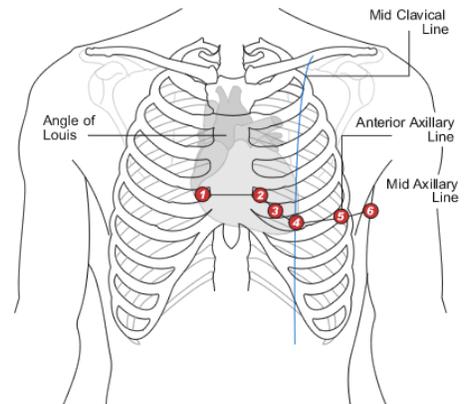
## Clinical Indications:

- Suspected cardiac patient
- Suspected tricyclic overdose
- Electrical Injuries
- Syncope
- Patients with unknown etiologies

F	First Responder
E	EMT/CT
P	Paramedic

## 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. In general, a 12 Lead ECG should be obtained in the first 10 minutes of the patient encounter, unless unstable.
4. Prepare ECG monitor and connect patient cable with electrodes.
5. Expose the chest and prep as necessary. Modesty of the patient should be respected.
6. Apply chest leads and extremity leads using the following landmarks.
  - RA – Right Arm
  - LA – Left Arm
  - RL – Right leg
  - LL – Left leg
  - V1- 4<sup>th</sup> intercostal space at right sternal border
  - V2 – 4<sup>th</sup> intercostal space at left sternal border
  - V3 – Directly between V2 and V4
  - V4 – 5<sup>th</sup> intercostals space at midclavicular line
  - V5 – Level with V4, directly in between V4 and V6
  - V6 – Level with V5 at left midaxillary line
7. Enter the required patient data in Zoll monitor.
8. Instruct the patient to breath normal and remain still.
9. Press “Acquire.”



## P Paramedic

10. Interpret ECG rhythm.
11. Follow appropriate treatment guideline.
12. Document the procedure, time, and results on/with the patient care report (PCR).

# Standard Procedure – Airway: Bag-Valve-Mask

F	First Responder
E	EMT/CT
P	Paramedic

## Clinical Indications:

- An unconscious patient without a gag reflex who is apneic or is demonstrating inadequate respiratory effort.

## Procedure:

1. Select the appropriate bag size and mask for the patient.
2. Open the airway using a head-tilt, chin-lift or a modified jaw thrust.
3. Correct any airway complications and utilize an airway adjunct when appropriate.
4. Ensure an appropriate mask seal and begin providing positive pressure ventilations.

**Bag-valve-mask (BVM) devices are often used prior to or in conjunction with endotracheal intubation. Ideally, usage of a BVM is a two (2) or three (3) person procedure. Proper BVM usage should use the following mnemonic scheme:**

- C C-spine control where indicated
  - O Oral airway in place
  - P Proper head and neck positioning
  - E Elevate the jaw
  - S Seal the mask (two hands)
- 
- S Steady, slow, single-hand, 1 second squeeze followed by quick release on the bag
  - O Oxygen supply sufficient and functioning properly
  - S Sellick's maneuver (cricoid pressure) as last resort

The proper use of a BVM in cardiac arrest is explained further in the cardiac arrest section.

# Standard Procedure – Airway: Capnography

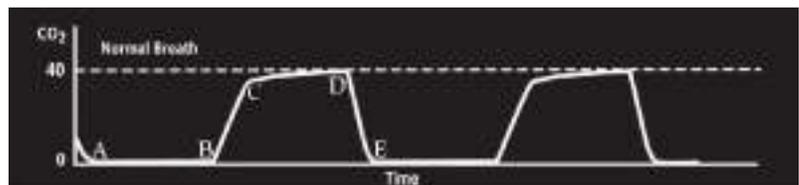
## Clinical Indications:

- Capnography shall be used as soon as possible in conjunction with any airway management adjunct, including endotracheal intubation, nasotracheal intubation, needle cricothyrotomy, QuickTrach, and King airway.
- Capnography shall be used as soon as possible in conjunction with basic bag-valve-mask ventilations not utilizing advanced airway adjuncts.
- Capnography should also be used on all patients treated with CPAP.
- When possible, Capnography should be used on all patients receiving Magnesium, and/or epinephrine for respiratory distress.

## Procedure:

1. Ensure proper airway management and ventilation.
2. Ensure the capnography cable is plugged into the Zoll monitor.
3. Allow the capnography unit to warm up.
4. Ensure the capnography has “zeroed” and reading 0 mmHg.
5. Attach the capnography sensor to the King airway, I-GEL, endotracheal tube, T connector on the BVM, or other oxygen delivery device.
6. Ventilate the patient several times.
7. Note ETCO<sub>2</sub> level and waveform. These will be documented on each patient care report (PCR) and DCFD airway form.
8. Proper ETCO<sub>2</sub> levels include:  
35-45 (38 ideal) mmHg for respiratory arrest, unconscious, or other patients utilizing capnography  
12-15 mmHg for cardiac arrest patients initially, rising during the arrest.
9. Ventilations should coincide with ETCO<sub>2</sub> levels when possible:
  - If the ETCO<sub>2</sub> level is lower than normal, slow the rate of ventilations. 4 ventilations per minute is the minimum number of breathes per minute.
  - If the ETCO<sub>2</sub> is greater than normal, increase the rate of ventilations. Consider causes of acidosis.
  - During cardiac arrest, allow ETCO<sub>2</sub> levels to rise.
  - During ROSC – If the patient is spontaneously breathing, allow the patient to adjust their own ETCO<sub>2</sub>
  - During ROSC – If the patient is not spontaneously breathing, the target ETCO<sub>2</sub> is 50mmHg.
10. The capnometer shall remain in place with the airway device and monitored throughout prehospital care and transport.
11. For the cardiac arrest patient, a rise in ETCO<sub>2</sub> levels indicates adequate perfusion pressures and could indicate a return of spontaneous circulation.
12. Any loss of CO<sub>2</sub> detection or waveform indicates an airway problem. Consider the following causes:  
D: Dislodgement  
O: Obstruction in the tube  
P: Pneumothorax  
E: Equipment failure
13. The capnogram should be monitored as procedures are performed to verify or correct any airway problem.
14. Document ETCO<sub>2</sub> findings in the patient care report (PCR)

F	First Responder
E	EMT/CT
P	Paramedic



# Standard Procedure – Airway: CPAP

E	EMT/CT
P	Paramedic

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

Any patient complaining of shortness of breath for the reasons other than pneumothorax AND:

- Is awake and oriented and able to cooperate;
- Has the ability to maintain an open airway (GCS greater than 10);
- Has a respiratory rate greater than 25 breaths per minute;
- Has a systolic blood pressure above 90 mmHg;
- Uses accessory muscles during respirations.

## Contraindications:

- Children under 13 years of age
- Facial deformities or patient too small for mask to seal. (If the mask doesn't fit, you can't use CPAP)
- Agonal respirations or respiratory arrest
- Pneumothorax
- Tracheostomy
- Unconsciousness

## Precautions:

- Impaired mental status and is not able to fully cooperate with the procedure
- Failed at past attempts at noninvasive ventilation
- Active upper GI bleeding or history of recent gastric surgery
- Complaints of nausea or is vomiting
- Inadequate respiratory effort
- Excessive secretions



## Procedure:

1. Explain the procedure to the patient. Place the patient on continuous pulse oximetry and waveform capnography. Ensure adequate oxygen supply to ventilation device (100% when starting and until SpO<sub>2</sub> is >96%).
2. Place the delivery device over the mouth and nose. Secure the mask with provided straps or the other provided devices.
3. Use 5 cm H<sub>2</sub>O of PEEP (Achieved with 15 lpm oxygen flow). Check for air leaks.
4. Monitor and document the patient's respiratory response to the treatment. Continue to coach patient to keep mask in place and readjust as needed.
5. If respiratory status deteriorates, remove device and provide BVM ventilation with or without endotracheal intubation.

## Removal Procedure:

- CPAP therapy should not be removed unless the patient cannot tolerate the mask or experiences continued or worsening respiratory failure.
- BVM ventilation and/or intubation should be considered if the patient is removed from CPAP therapy.

## Special Notes:

- Contact Medical Control as soon as you know you are going to use CPAP so the receiving hospital can be prepared for the patient.
- Upon arrival at the hospital, do not remove CPAP until hospital therapy is ready to be placed on patient.
- Most patients will improve in 5-10 minutes. If no improvement within this time, consider ventilation with a BVM and monitor the patient for gastric distention.
- Document the procedure on/with the patient care report (PCR).

# Standard Procedure – Airway: Foreign Body Obstruction

F	First Responder
E	EMT/CT
P	Paramedic

## Clinical Indications:

- Sudden onset of respiratory distress often with coughing, wheezing, gagging, or stridor due to a foreign-body obstruction of the upper airway.
- Respiratory arrest where ventilation cannot be accomplished after repositioning the 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 subdiaphragmatic abdominal thrusts (Heimlich Maneuver) until the object is expelled or the victim becomes unresponsive.
4. **For adults**, perform one of the following methods:
  - Subdiaphragmatic abdominal thrusts (Heimlich Maneuver) should be used in rapid sequence until the obstruction is relieved.
  - If abdominal thrusts are ineffective, chest thrusts should be used. Chest thrusts should be used primarily in morbidly obese patients and in patients who are in the late stages of pregnancy.
5. If the victim becomes unresponsive, begin CPR immediately but look in the mouth before administering ventilations. If a foreign body is visible, remove it.
6. **Do not perform a blind finger sweep in the mouth and posterior pharynx. This may push the object farther into the airway.**

## P Paramedic

7. In unresponsive patients, the paramedic level professional 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).

# Standard Procedure – Airway: Endotracheal Intubation

P Paramedic

## Clinical Indications:

- Inability to adequately ventilate a patient with a Bag Valve Mask.
- An unconscious patient without a gag reflex who is apneic or is demonstrating inadequate respiratory effort.
- Risk to benefit ratio of tracheal intubation versus a blind insertion airway device must be considered.
  - No intubation attempt may be made within the first **FIVE** minutes of EMS resuscitation attempt.
  - **ONLY ONE INTUBATION ATTEMPT IS ALLOWED.** If the intubation attempt fails, the use of a King Airway or other airway adjunct is recommended.

## Procedure:

1. Prepare, position and oxygenate the patient with 100% Oxygen.
2. Ensure adequate ventilation with basic airway maneuvers if possible. Ventilate for 2 minutes prior to intubation attempt.
3. Consider the use of a nasal cannula at 15 liters per minute in conjunction with BVM ventilations both prior to and during the intubation attempt.
4. Consider 3-3-2 scoring of “difficult airway management evaluation” and determine the most appropriate method for securing the patient’s airway.
  - Patient’s with a highly difficult airway may benefit from an initial blind insertion airway device, instead of attempting oral-tracheal intubation.
5. Select proper ET tube (and stylette if using), having suction ready.
6. **For patients in which an SpO<sub>2</sub> reading is available, intubation attempts must be terminated when the SpO<sub>2</sub> reading reaches 90%. For situations in which an SpO<sub>2</sub> reading is not available, the maximum amount of time ventilations may be paused for airway procedures of any kind is 30 seconds.** The patient must be pre-oxygenated between airway procedures.
7. Using the laryngoscope, visualize the vocal cords. (Use ELM/BURP to assist you as a last resort).
  - Suction the airway as needed.
8. Visualize the tube passing through the vocal cords then inflate the cuff with 3-10cc of air.
9. Confirm endotracheal tube placement by both:
  - a. Auscultating for absence of sounds over the epigastrium and presence of bilaterally equal breath sounds.
  - b. Monitoring waveform capnography.  
If present unilaterally or unequal, adjust tube position or consider whether this may be the patient’s baseline. In unsure of placement, remove the tube and ventilate the patient with a bag-valve-mask.
10. Apply end tidal carbon dioxide monitor. After 3 ventilations, ETCO<sub>2</sub> should be greater than 10 mmHg. If ETCO<sub>2</sub> is less than 10 mmHg:
  - Consider ventilation rate.
  - Consider DOPE (dislodgement, obstruction, pneumothorax, equipment failure).
  - Consider adequacy of chest compressions.  
Proper ETCO<sub>2</sub> levels include:  
35-45 (38 ideal) mmHg for respiratory arrest, unconscious, or other patients utilizing capnography.  
12-15 mmHg for cardiac arrest patients initially, with rising ETCO<sub>2</sub> levels.
11. Secure the tube to the patient’s face, and **apply a C-Collar (this is mandatory).**
12. 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 intubation on DCFD airway form.

# Standard Procedure – Airway: I-Gel Insertion (Supraglottic Airway Device)

## Clinical Indications:

- Cardiac arrest where initial BLS airway management has been completed per treatment guideline or sufficient personnel are present to perform without interruption of chest compressions.
- Non-cardiac arrest patient without a gag reflex for whom at least one failed intubation attempt has occurred OR in events where the I-GEL can be placed with less interruption to care.
- Appropriate endotracheal intubation is impossible due to patient access or difficult airway anatomy.

## Absolute Contraindications:

- Deforming facial trauma

E	EMT/CT
P	Paramedic

**Warning:** This airway may not prevent aspiration of stomach contents.



## Insertion Technique:

1. Grasp the lubricated **I-GEL** firmly along the integral bite block. Position the device so that the **I-GEL** cuff outlet is facing towards the chin of the patient.
2. The patient should be in the 'sniffing' position with head extended and neck flexed. The chin should be gently pressed down before proceeding to insert the **I-GEL**.
3. Introduce the leading soft tip into the mouth of the patient in a direction towards the hard palate.
4. Glide the device downwards and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt.

**WARNING: Do not apply excessive force on the device during insertion. It is not necessary to insert fingers or thumbs into the patient's mouth during the process of inserting the device. If there is early resistance during insertion a 'jaw thrust'**

5. At this point the tip of the airway should be located into the upper esophageal opening and the cuff should be located against the laryngeal framework. The incisors should be resting on the integral bite-block.

**WARNING: In order to avoid the possibility of the device moving out of position prior to being secured in place, it is essential that as soon as insertion has been successfully completed, the I-GEL is held in the correct position until and while the device is secured in place.**

6. **I-GEL** should be taped down from 'maxilla to maxilla', or "across the cheekbones".
7. If required, an appropriate size nasogastric tube may be passed down the gastric channel for further details on use of the gastric channel.

## Important notes regarding insertion technique:

- Sometimes a feel of 'give-way' is felt before the end point resistance is met. This is due to the passage of the bowl of the **I-GEL** through the faucial pillars (pharyngo-epiglottic folds)
- Once resistance is met and the teeth are located on the integral bite block, do not repeatedly push **I-GEL** down or apply excessive force during insertion.
- Document the procedure on the patient care report (PCR) and the DCFD Airway form.

# Standard Procedure – Airway: King (Supraglottic Airway Device)

E	EMT/CT
P	Paramedic

## Clinical Indications:

- Cardiac arrest where initial BLS airway management has been completed per treatment guideline or sufficient personnel are present to perform without interruption of chest compressions.
- Non-cardiac arrest patient without a gag reflex for whom at least one failed intubation attempt has occurred OR in events where the King can be placed with less interruption to care.
- Appropriate endotracheal intubation is impossible due to patient access or difficult airway anatomy.

## Absolute Contraindications:

- Deforming facial trauma

## Relative Clinical Contraindications:

- History of esophageal varices or liver cirrhosis

## Warning:

[This airway may not prevent aspiration of stomach contents.](#)

## Procedure:

1. Prepare, position and oxygenate the patient with 100% Oxygen.
2. Ensure adequate ventilation with basic airway maneuvers if possible.
3. Choose King LTS-D size per package recommendations.
4. Check the cuffs for proper inflation and deflation.
5. Lubricate device with water soluble lubricant.
6. Apply tongue jaw lift and introduce device to corner of mouth.
7. Advance tip between the tongue and soft palette rotating tube to midline.
8. Without excessive force, advance the tube until the base connector aligns with teeth or gums.
9. Inflate the cuff per the manufacturer's recommendations until a seal is obtained.  
**Ideal cuff inflation is the least amount of air possible to maintain an appropriate seal. The manufacturer's guidelines can assist you with inflation cc's, however, more or less air may be required.**
10. Connect the King LTS-D to an ambu bag, ventilate, and slowly withdraw tube until ventilations become easy and free flowing.
11. Listen for bilateral breath sounds.
12. Employ capnography.
13. If necessary, adjust cuff inflation pressure to maximize seal.
14. Document the procedure, time and result (success) on the patient care report (PCR) and DCFD airway form.



# Standard Procedure – Airway: Nebulizer

## Clinical Indications:

- Patients experiencing bronchospasm.

E	EMT/CT
P	Paramedic

## 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 cup of the nebulizer.
4. Connect the nebulizer device to oxygen at 8 liters per minute or adequate flow to produce a steady, visible mist. When necessary, this may be used in conjunction with CPAP at low positive pressures, or with BVM ventilations.
5. For the spontaneously breathing patient, instruct the patient to inhale normally through the mouthpiece of the nebulizer or through the appropriate mask to which it is attached.
6. The treatment should last until the solution is depleted. Tapping the reservoir cup 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, breath sounds, and ECG (if paramedic is present).
8. Document the treatment, dose, and route on/with the patient care report (PCR).



ADAM.

# Standard Procedure – Airway: Pharmacologically-Assisted Intubation (PAI)

P Paramedic

**Inclusion Criteria:** It may be necessary on occasion to sedate before or during transport in order to facilitate intubation of the patient with a compromised airway when standard methods have failed or would delay care. Only adequately trained Paramedics may perform this procedure. At least three rescuers are necessary to perform this procedure safely.

## Indications:

- Trauma patient with GCS less than or equal to eight (8) with an intact gag reflex who requires intubation.
- Trauma patient with significant facial trauma and poor airway control
- Burn patient with airway involvement and anticipated airway loss
- Severe asthma or COPD with hypoxia and respiratory exhaustion that fails CPAP
- Overdoses, (i.e. tricyclic anti-depressants) where loss of airway is anticipated
- Any combative, agitated, or confused patient who needs definitive airway control
- Any other patient approved by online medical direction

## Special Note:

A quick, but detailed, notation of pre-intubation neurological status is required for head injury and stroke patients.

## Contraindications:

When any of the indications are present, there are no contraindications.

## Procedure:

### THREE (3) MINUTES PRIOR TO INTUBATION:

1. Pre-oxygenate and Prepare:
  - a. Allow the patient to breathe 100% oxygen by mask (assist ventilation only if absolutely necessary).
  - b. Apply nasal cannula at flow rate of 15 liters per minute during pre-oxygenation process
  - c. Institute continuous monitoring of ECG (monitor for dysrhythmias), pulse oximetry, and waveform capnography.
  - d. Ensure functioning and secure IV access (functioning IO is acceptable).
  - e. Assemble required equipment and personnel:
    - a. Pharmacologically-Assisted Intubation Checklist
    - b. Oral airway, suction, O<sub>2</sub>, ET tube, stylet, laryngoscope, BVM, device to secure tube, and an appropriately sized cervical collar
    - c. PAI and pretreatment medications (two rescuers MUST confirm the appropriate drug dosages)
  - f. At least three rescuers are necessary (1 for intubation, 1 for medication administration and possible external laryngeal manipulation [if needed], and 1 time keeper/monitor)

### ONE (1) MINUTE PRIOR TO INTUBATION:

2. Sedate:

Midazolam, 2.5 to 5 mg slow IV/IO, up to a maximum single dose of 5 mg; Pediatric dose: 0.1 mg/kg slow IV/IO, up to a maximum of 5 mg.

**INTUBATION TIME:**

3. Perform orotracheal intubation within 30 seconds:
  - a. If unsuccessful, ventilate with BVM and 100% oxygen with slow steady ventilation.
  - b. Abandon intubation attempt and ventilate with 100% oxygen if ANY of the following events occur:
    - I. Heart rate falls by 10 beats per minute below baseline
    - II. SpO<sub>2</sub> falls by 10 percentage points below baseline
    - III. ETCO<sub>2</sub> rises by 5 mmHg above baseline
  - c. If unable to intubate the trachea in one attempt, insert an approved supraglottic airway device.

**THIRTY (30) TO SIXTY (60) SECONDS FOLLOWING INTUBATION:**

4. Confirm tube placement with physical exam techniques and waveform capnography.
5. Secure tube and restrict movement of the patient's head with a cervical collar and tape.
6. Acquire rhythm strip of ECG rhythm, current vital signs, and capnography waveform.

**DURING TRANSPORT:**

7. Implement continuous ECG, SpO<sub>2</sub> and ETCO<sub>2</sub> monitoring until care is transferred to the ED staff.
8. If the patient exhibits movement, coughing or other activity that might lead to extubation, administer:
  - a. Midazolam 2.5mg to 5 mg IV/IO/IM/IN (May re-dose 2.5mg after 5 minutes)
  - b. For additional dosing authorization, contact online medical control.

# Standard Procedure – Airway: Rusch QuickTrach

P Paramedic

## Clinical Indications:

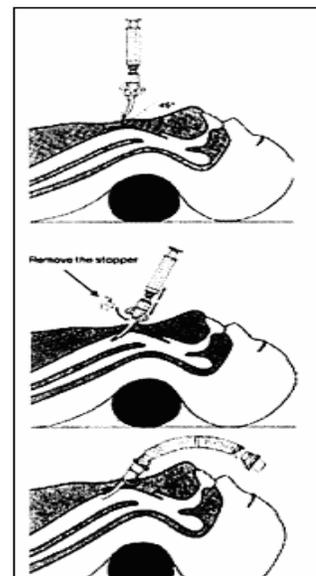
- Adult patient greater than 12 years of age or size of an adult.
- Acute upper airway obstruction, which cannot be relieved using basic airway maneuvers, finger sweep, or endotracheal visualization and Magill forceps removal.
- Respiratory arrest with facial or neck anatomy or injury that makes endotracheal intubation or insertion of a King airway impossible.

## Complications:

- Severe bleeding
- Vocal cord injury
- Failure to place catheter in trachea

## Procedure:

1. Pre-oxygenate the patient when possible.
2. Place the patient in a supine position and hyperextend the neck using stable positioning. Consider keeping the head in a neutral position in a trauma patient.
3. Secure the larynx laterally between thumb and forefinger.
4. Identify the cricothyroid membrane puncture site (midline between the cricoid cartilage and thyroid cartilage).
5. Cleanse the area using an aseptic technique with betadine swabs.
6. Firmly hold and introduce the device at a 90° angle into the trachea.  
Correct placement in the trachea should be determined by aspirating air into the syringe. If the neck is extremely thick, remove the stopper and re-introduce the device farther until air can be aspirated.  
When the catheter tip enters the tracheal lumen, a slight give will be felt. The patient may also cough when the catheter stimulates the tracheal wall.
7. Change to a 60° angle caudally and advance the device to the level of the stopper.
8. Remove the stopper and advance plastic catheter off the needle until the flange is resting on the patient's neck.
9. Remove the needle and syringe, and secure the device with the provided neck strap.
10. Ensure proper placement by listening for bilateral breath sounds.
11. Apply capnography and monitor ETCO<sub>2</sub>.
12. Continue with ventilations.
13. Document procedure on/with the patient care report (PCR).



# Standard Procedure – Airway: Suctioning

F	First Responder
E	EMT/CT
P	Paramedic

## 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.
- Obstruction of the airway in a patient being assisted by an airway adjunct such as an endotracheal tube, King airway, tracheostomy tube, or a cricothyrotomy tube.

## Procedure:

1. Ensure suction device is in proper working order with suction tip in place.
2. Pre-oxygenate 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 substances.
7. Suction attempts should be limited to:
  - 15 seconds for the adult patient
  - 10 seconds for a child age 1 year – signs of puberty
  - 5 seconds for an infant less than 1 year of age
8. Reattach ventilation devices and continue oxygenating the patient.
9. Record the time and result of the suctioning in the patient care report (PCR).

## P Paramedic

If an obstruction of the airway occurs in a patient being assisted by an airway adjunct such as an endotracheal tube, King airway, tracheostomy tube, or a cricothyrotomy tube:

10. Pre-oxygenate the patient if possible.
11. Attach suction catheter to suction device, keeping sterile plastic covering over catheter.
12. 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).
13. With the thumb port of the catheter uncovered, insert the catheter through the airway device.
14. Once the desired depth has been reached, occlude the thumb port and remove the suction catheter. (Note maximum suction times indicated above).
15. A small amount of Normal Saline (10 mL) may be used if needed to loosen secretions for suctioning.
16. Reattach the ventilation device and ventilate the patient.
17. Document time and result (success) in the patient care report (PCR).

# Standard Procedure – Airway: Ventilator Operation

## Clinical Indications:

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

P Paramedic

## Procedure:

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

# Standard Procedure – Assessment: Adult

## Clinical Indications:

- Any patient greater than 15 years of age

F	First Responder
E	EMT/CT
P	Paramedic

## Procedure:

1. Scene Size-up, including universal precautions, scene safety, environmental hazards assessment, need for additional resources, by-stander safety, and patient/caregiver interaction.
2. Initial assessment includes a general impression as well as the status of the patient's airway, breathing, and circulation.
3. Assess mental status (AVPU).
4. Control major hemorrhage and assess overall priority of patient.
5. Select the appropriate assessment: Rapid trauma assessment, rapid medical assessment, or focused assessment based upon the following criteria:
  - Rapid assessments should be utilized for patients who are critical, unconscious, and/or due to a significant mechanism of injury.
  - Focused assessments are utilized for stable or critical patients in whom only one body system or an identifiable cause of the patient's condition can be isolated.
6. Assess the need for critical interventions. If appropriate, critical life saving interventions should be done immediately at the location of the patient, not delayed until transport.
7. Baseline vital signs and a SAMPLE history should be obtained. Baseline vital signs may include the following depending on the patient's chief complaint:
  - Always – Pulse, blood pressure, respirations
  - Depending on patient's presentation and/or chief complaint – SpO<sub>2</sub>, ECG monitoring, ETCO<sub>2</sub>, blood glucose analysis, body temperature, orthostatic changes, and pupillary responses.
8. Continued assessments en route include a detailed physical exam and an ongoing assessment. If the patient has an isolated chief complaint, or isolated injury location, the detailed physical exam would only need to be completed if a significant mechanism of injury is suspected.
  - Ongoing assessments should be performed every 5 minutes for a critical patient and every 15 minutes for a stable patient.
  - Ongoing assessments should include reassessment of interventions and patient responses, need for additional interventions, and assessment of evolving patient complaints/conditions.
9. Document all findings and information associated with the assessment, performed procedures, and any administration of medications on the patient care report (PCR)

# Standard Procedure – Assessment: Pediatric

## Clinical Indications:

- Any child who is less than 15 years of age.

F First Responder

E EMT/CT

P Paramedic

## Procedure:

1. Scene Size-up, including universal precautions, scene safety, environmental hazards assessment, need for additional resources, by-stander safety, and patient/caregiver interaction.
2. Assess patient using the pediatric triangle of ABCs:
  - Airway and appearance: speech/cry, muscle tone, inter-activeness, look/gaze, movement of extremities.
  - Work of breathing: absent or abnormal airway sounds, use of accessory muscles, nasal flaring, body positioning.
  - Circulation to skin: pallor, mottling, cyanosis.
3. Control major hemorrhage and assess overall priority of patient.
4. Select the appropriate assessment: Rapid trauma assessment, rapid medical assessment, or focused assessment based upon the following criteria:
  - Rapid assessments should be utilized for patients who are critical, unconscious, and/or due to a significant mechanism of injury.
  - Focused assessments are utilized for stable or critical patients in whom only one body system or an identifiable cause of the patient's condition can be isolated.
5. Assess the need for critical interventions. If appropriate, critical life saving interventions should be done immediately at the location of the patient, not delayed until transport.
6. Baseline vital signs and a SAMPLE history should be obtained. Baseline vital signs may include the following depending on the patient's chief complaint:
  - Always – Pulse, blood pressure (for patients greater than 3 years of age), respirations.
  - Depending on patient's presentation and/or chief complaint – SpO<sub>2</sub>, ECG monitoring, ETCO<sub>2</sub>, blood glucose analysis, body temperature, orthostatic changes, and pupillary responses.
7. Continued assessments en route include a detailed physical exam and an ongoing assessment. If the patient has an isolated chief complaint, or isolated injury location, the detailed physical exam would only need to be completed if a significant mechanism of injury is suspected.
  - Ongoing assessments should be performed every 5 minutes for a critical patient and every 15 minutes for a stable patient.
  - Ongoing assessments should include reassessment of interventions and patient responses, need for additional interventions, and assessment of evolving patient complaints/conditions.
8. Document all findings and information associated with the assessment, performed procedures, and any administration of medications on the patient care report (PCR).

# Standard Procedure – Blood Glucose Analysis

F	First Responder
E	EMT/CT
P	Paramedic

## Clinical Indications:

- Patients with suspected hypoglycemia (diabetic emergencies, change in mental status, bizarre behavior).
- Patients displaying an altered mental status.
- Patients in cardiac arrest.

## Procedure:

1. Gather and prepare equipment.
2. Blood samples for performing glucose analysis should be obtained through a finger-stick. Venous blood samples may produce artificially high blood glucose values and should be avoided.
3. Cleanse the site with aseptic technique.
4. Inform patient of procedure.
5. Perform finger-stick.
6. Apply appropriate amount of blood onto the testing strip.
7. Document the glucometer reading and treat the patient as indicated by analysis and treatment guideline.
8. Repeat glucose analysis as indicated for reassessment after treatment and as per treatment guideline.
9. Document finding on the patient care report (PCR).

# Standard Procedure – Cardiac: External Pacing

P Paramedic

## 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
  - Ventricular Ectopy

## Procedure:

1. Attach standard four-lead monitor.
2. Apply defibrillation/pacing pads to chest and back:
  - One pad to left mid chest next to sternum
  - One pad to mid left posterior chest next to spine
3. Rotate selector switch to pacing option.
4. Adjust heart rate to 60 BPM for an adult and 100 BPM for a child.
5. Note pacer spikes on ECG screen.
6. Slowly increase output and set current milliampere output to 2mA above dose at which consistent capture is observed.
7. If unable to capture while at maximum current output, stop pacing immediately.
8. If capture is observed on the monitor, check for corresponding pulse and assess vital signs.
9. Consider the use of sedation or analgesia if the patient is uncomfortable.
10. Document the dysrhythmia and the response to external pacing with ECG strips in the patient care report (PCR).

# Standard Procedure – Cardiac: Cardioversion

P Paramedic

## Clinical Indications:

- Unstable patient with a tachydysrhythmia (rapid atrial fibrillation, supraventricular tachycardia, ventricular tachycardia)
- Patient is not pulseless (the pulseless patient requires unsynchronized cardioversion, i.e., defibrillation)

## Procedure:

1. Ensure the patient is attached properly to a monitor/defibrillator capable of synchronized cardioversion.
2. Have all equipment prepared for unsynchronized cardioversion/defibrillation if the patient fails synchronized cardioversion and the condition worsens.
3. Consider the use of pain or sedating medications.
4. Set energy selection to the appropriate setting per treatment guideline being used.
5. Set monitor/defibrillator to synchronized cardioversion mode.
6. Make certain all personnel are clear of patient
7. Press and hold the shock button to cardiovert. Stay clear of the patient until you are certain the energy has been delivered. **NOTE: It may take the monitor/defibrillator several cardiac cycles to “synchronize”, so there may be a delay between activating the cardioversion and the actual delivery of energy.**
8. Note the patient’s response and perform immediate unsynchronized cardioversion/defibrillation if the patient’s rhythm has deteriorated into pulseless ventricular tachycardia/ventricular fibrillation, following the procedure for manual defibrillation.
9. If the patient’s condition is unchanged, repeat steps 2 through 8 above, using escalating energy settings per treatment guidelines.
10. Repeat until maximum setting or until efforts succeed. Consider discussion with medical control if cardioversion is unsuccessful after 2 attempts.
11. Note procedure, response, and time in the patient care report (PCR).

# Standard Procedure – Chest Decompression

P Paramedic

## Clinical Indications:

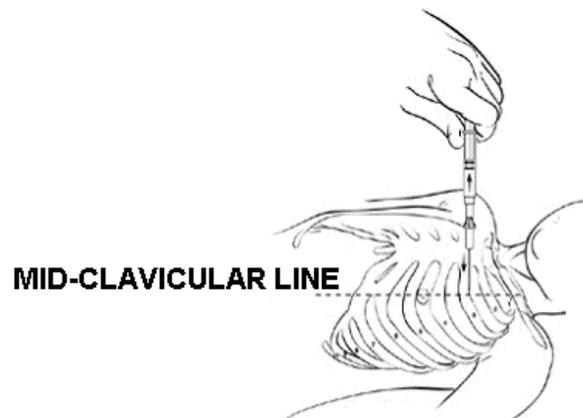
- Peri-arrest patients with hypotension (SBP less than 90mmHg), clinical signs of shock, and at least one of the following signs:
  - Jugular vein distention.
  - Tracheal deviation away from the side of the injury (often a late sign).
  - Absent or decreased breath sounds on the affected side.
  - Hyper-resonance 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.

## Contraindication:

- Bilateral decompression without positive pressure ventilations is contraindicated.

## Procedure:

1. Administer high flow oxygen.
2. Identify and prep the site:
  - Locate the second intercostals space at the mid-clavicular line on the same side as the pneumothorax.
  - As a last resort, lateral placement may be used at the fourth ICS mid-axillary line.
  - Prepare the site with a betadine swab.
3. Insert the catheter (12-14 gauge, 1 ½ inch ) into the skin over the third rib and direct it just over the top of the rib (superior border).
4. Advance the catheter through the parietal pleura until a “pop” is felt and air or blood exits under the pressure through the catheter.
5. Remove the needle, leaving the plastic catheter in place.
6. Advance the catheter to the chest wall.
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: Do not waste time preparing a flutter valve prior to chest decompression. If necessary control the air flow through the catheter hub with your gloved thumb.)



# Standard Procedure – Child Birth

## Clinical Indications:

- Imminent delivery with crowning

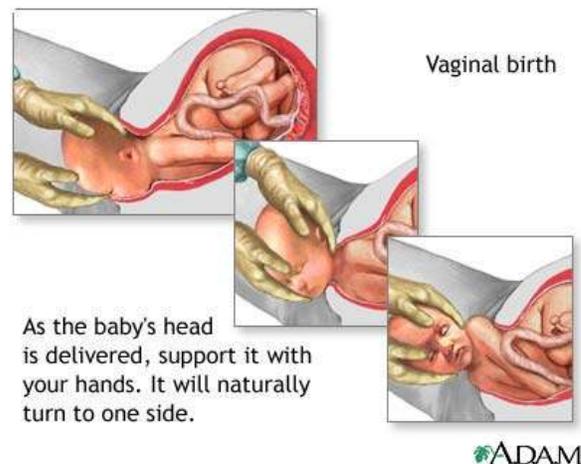
F First Responder

E EMT/CT

P Paramedic

## Procedure:

1. Delivery should be controlled to allow a slow, controlled birth of the infant. This will prevent injury to the mother and child.
2. Consider additional resources as there will be two potential patients.
3. Support the infant's head as needed.
4. If the umbilical cord is surrounding the neck, slip it over the head. If unable to free the cord from the neck, double clamp the cord and cut between the clamps.
5. Suction the airway with a bulb syringe.
6. Grasping the head with hands over the ears, gently pull down to allow delivery of the anterior shoulder.
1. Gently pull up on the head to allow delivery of the posterior shoulder. Slowly deliver the remainder of the infant. Keep the baby level with the mother's abdomen.
2. Clamp the cord 2 inches from the infant's abdomen and 4 inches away from the first clamp. Cut the cord between the clamps.
3. Record APGAR scores at 1 and 5 minutes.
4. Follow the **Newly Born Treatment guideline** for further treatment of the infant.
5. The placenta will deliver spontaneously, usually within 5 minutes of the infant. Do not force the placenta to deliver.
6. Massaging the uterus may facilitate uterine contractions if bleeding is excessive. In addition to massaging the uterus:
  - Place pads under the mother's buttocks and at the vaginal opening to control blood flow.
  - Never insert packing inside the vagina.
  - Follow **Shock Treatment guideline** if needed based upon patient's vital signs.



# Standard Procedure – CPR (Cardio-Pulmonary-Resuscitation)

## Clinical Indications:

- Patient in cardiac arrest.

F First Responder

E EMT/CT

P Paramedic

## Procedure:

1. Determine the patient is pulseless.
2. Immediately give 200 compressions at a rate of 110-120 beats per minute.
3. During the initial 200 compressions, additional providers should attempt the following:
  - Place the patient on the cardiac monitor/AED using defibrillation pads (DO NOT interrupt the initial 200 chest compressions to place pads).

E EMT/CT

P Paramedic

↖ Placement of a supraglottic airway device.

↗ IV/IO Access (IO access may be attempted if an IV can not be initiated).

4. Apply pads if not already done.
  - Limit pre-shock pauses to less than 10 seconds.
  - Analyze cardiac rhythm or push “Analyze” on the AED.
  - Defibrillate if indicated.
5. Continue chest compressions for 2 minutes.  
Chest compressions should only be stopped when absolutely necessary. Examples of necessary pauses would include:
  - Pausing every 2 minutes for rhythm analysis and possible defibrillation.
  - Pausing to load the patient onto a long back board and ambulance.
6. Ventilations: After the initial 200 chest compressions, ventilations should be superimposed over chest compressions at a rate of 2 breaths every 30 seconds. If an advanced airway device has not already been placed, ET/CO<sub>2</sub> can be monitored while ventilating utilizing the BVM. The provider may place an endotracheal tube following the ACLS treatment guidelines.  
Proper ET/CO<sub>2</sub> levels include:
  - 35-45 (38 ideal) mmHg for respiratory arrest, unconscious, or other patients utilizing capnography.
  - 12-15 mmHg for cardiac arrest patients initially, rising with adequate chest compressions.

### Chest compressions should not be stopped for:

- IV/IO insertion.
- Airway maneuvers unless absolutely necessary.
- Medication administrations.

Rescuers should swap after every 2 minutes of chest compressions.

P Paramedic

7. Initiate ACLS treatment guidelines.
8. Document the time and procedure in the patient care report (PCR).

# Standard Procedure – Defibrillation: Automated

## Clinical Indications:

- Patient in cardiac arrest (pulseless, non-breathing).
- If the age is less than 8 years, use Pediatric Pads when available.

F First Responder

E EMT/CT

P Paramedic

## Contraindications:

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

## Procedure:

1. **If multiple rescuers are available, one rescuer should provide uninterrupted chest compression while the AED is being prepared for use.**
2. Apply defibrillator pads.
  - a. The preferred location for pad placement is anterior/posterior.
  - b. 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. Apply the AED.
  - Ideally, the AED should be placed during the initial 200 compressions.
  - If the AED can not be placed without interrupting the first 200 initial compressions, the AED pads should be placed immediately after this first cycle of compressions is complete.
5. Activate the 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 “Joules” is preprogrammed in Zoll’s biphasic AED units.
8. Begin CPR (chest compressions and ventilations) immediately after the delivery of the defibrillation.
9. After 2 minutes of CPR, analyze the rhythm and defibrillate if indicated. Repeat this step every 2 minutes.
10. If “no shock advised” appears on the AED, perform CPR for 2 minutes and reanalyze.
11. Continue the above sequence until advanced providers arrive.
12. Follow the **CPR Treatment guideline** as it applies to your provider level.
13. Document the time and procedure in the patient care report (PCR).



# Standard Procedure – Defibrillation: Manual

P Paramedic

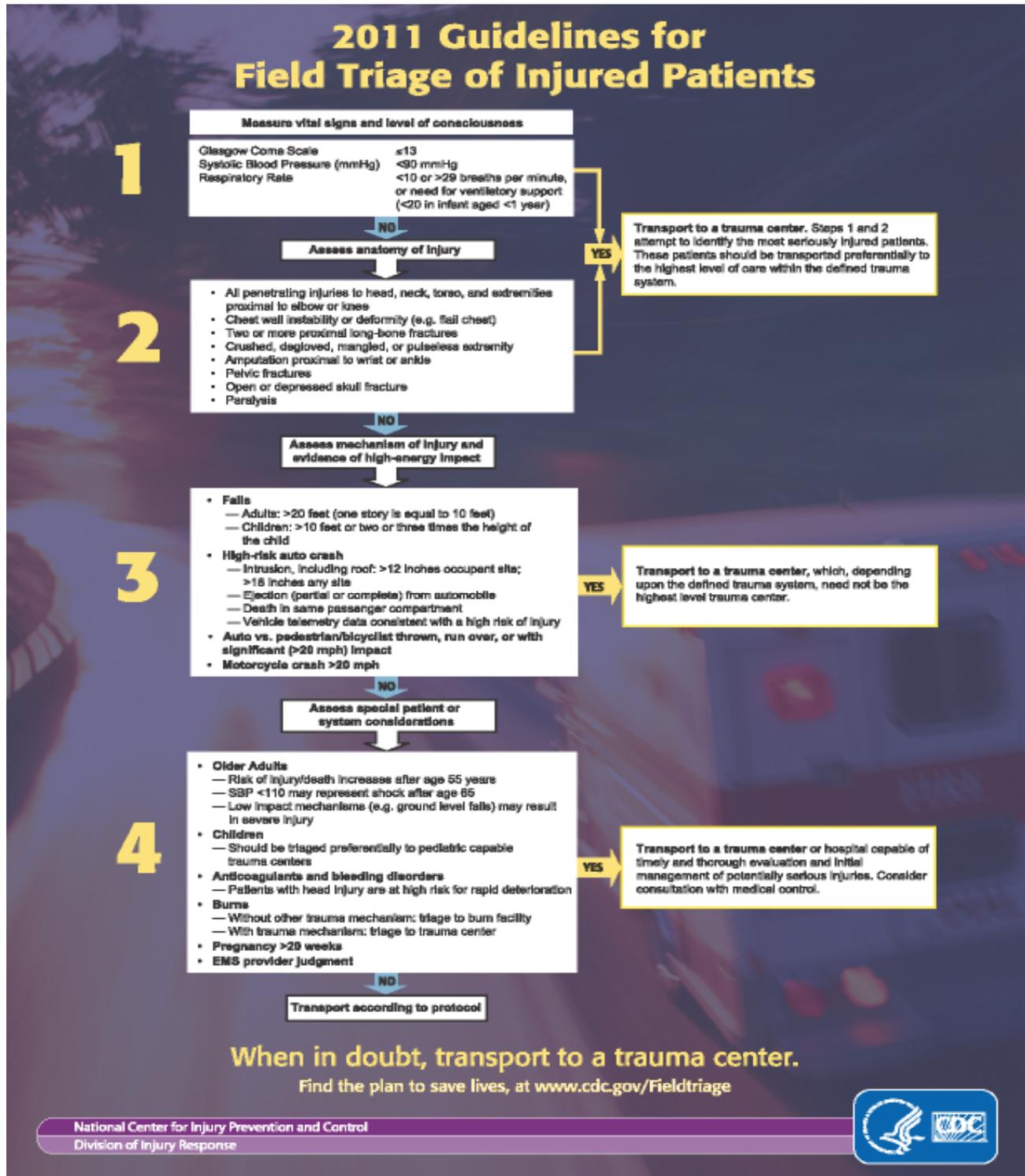
## Clinical Indications:

- Cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia.

## Procedure:

1. **Ensure that chest compressions are adequate and interrupted only when absolutely necessary.**
2. Clinically confirm the diagnosis of cardiac arrest and identify the need for defibrillation.
3. Apply hands-free therapy pads.
  - The preferred location for pad placement is anterior / posterior.
  - Alternatively, pads may be placed on the sternum and over the apex of the heart. Pads can not overlap and pacing requires the anterior/posterior pad placement.
4. Confirm energy level is appropriate for the patients condition.
5. Charge the defibrillator to the selected energy level. **Continue chest compressions while the defibrillator is charging.**
6. Hold compressions, assertively state, "CLEAR" and visualize that no one, including yourself is touching the patient.
7. Deliver the countershock by depressing the shock button for hands free operation.
8. Immediately resume chest compressions and ventilations for 2 minutes. After 2 minutes of CPR, analyze the rhythm and check for a pulse only if appropriate for the rhythm.
9. Repeat the procedure every two minutes as indicated by patient response and ECG rhythm.
10. Keep interruption of CPR compressions as brief as possible. Adequate CPR is a key to successful resuscitation.

# Standard Procedure – Field Triage Decision Scheme: The National Trauma Triage Protocol



# Standard Procedure – Fundal Massage

E	EMT/CT
P	Paramedic

## Clinical Indications:

- Noncontracted, boggy uterus postpartum with:
  - Excessive vaginal bleeding – usually dark with clots present
  - Signs of shock

Excessive bleeding would routinely be seen as postpartum bleeding greater than 500mL, or leading to signs of shock (narrowing pulse pressure, increased pulse rate and/or a decrease in blood pressure)

## Procedure:

1. Cup hand around the uterine fundus (at about the level of the umbilicus).
2. Place the other hand over the symphysis pubis to stabilize the uterus.
3. Rotate fundal hand gently.
4. Continue this massage until the uterus becomes a firm globe.
5. **Do not massage a contracted uterus.**
6. Observe for passage of large clots.

# Standard Procedure – Gastric Tube Insertion

P Paramedic

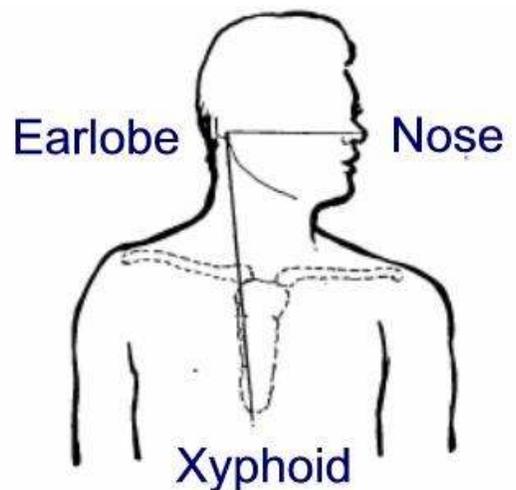
## Clinical Indications:

- Gastric decompression in pediatric cardiac and/or respiratory arrest patient.
- Gastric decompression for the adult patient in cardiac and/or respiratory arrest where gastric distention is impending chest rise with ventilations.

## Procedure:

1. Estimate insertion length by superimposing the tube over the body. Measure from the nose to the patient’s earlobe; and from the earlobe to the xiphoid process.
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. Alternatively, the tube may be passed through the gastric lumen of the KING LTS-D EMS airway for patients in whom this device is being utilized.
4. In the setting of an intubated patient with facial trauma or a suspected basilar skull fracture, oral insertion of the tube is preferred and may be facilitated with laryngoscopy.
5. Continue to advance the tube gently until the appropriate distance is reached.
6. Confirm placement by injecting 20 mL of air and auscultate to confirm proper placement.
7. Secure the tube.
8. Decompress the stomach of air and food either by connecting the tube to a suction unit or manually aspirating with a large catheter tip syringe.
9. Document the procedure, time, and result (success) on/with the patient care report (PCR).

Nasogastric Size Chart	
Small Infant 6-7kg	5-8
Infant 8-9 kg	5-8
Toddler 10-11 kg	8-10
Small Child 12-14 kg	10
Child 15-18 kg	10
Child 19-23 kg	12-14
Large Child 24-29 kg	14-18
Adult 30 + Kg	16-18



# Standard Procedure – Injections: Subcutaneous and Intramuscular

P Paramedic

## 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:

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

**SQ: 45-degree angle**  
**Skin pinched**

**IM: 90-degree angle**  
**skin flattened**

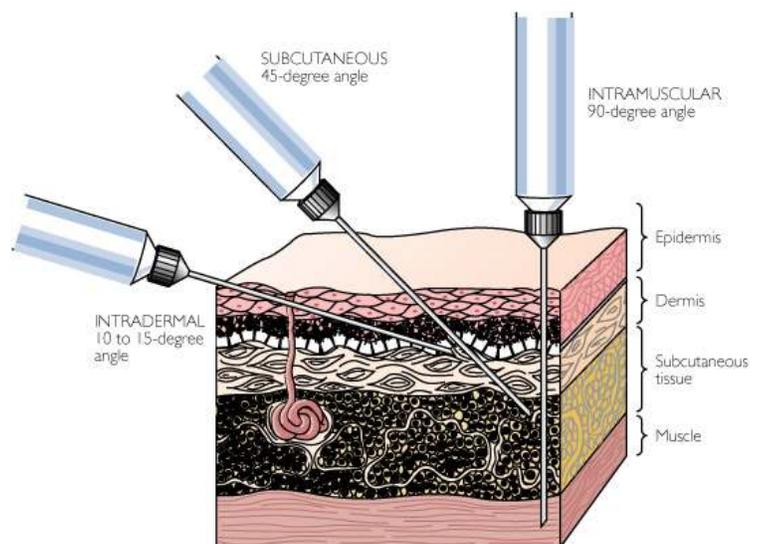
8. Aspirate for blood.
9. Inject the medication.
10. Withdraw the needle quickly, activate any needlestick prevention system, and dispose of properly without recapping.
11. Apply pressure to the site.
12. Monitor the patient for the desired therapeutic effect as well as any possible side effects.
13.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

**Needle size will vary dependant on patient size and the amount of adipose tissue.**

Typically:

SQ: 25-30g 1/2" – 5/8"

IM: 20-22g 1 – 1 1/2' long



# Standard Procedure – Orthostatic Blood Pressure Measurement

## Clinical Indications:

- Patient situations with suspected blood, fluid loss, or dehydration with no indication for spinal movement restriction.

## Procedure:

1. Gather and prepare standard sphygmomanometer and stethoscope.
2. With the patient supine or sitting, obtain a blood pressure and pulse.
3. Have the patient sit upright or stand.
4. After 30 seconds, obtain a blood pressure and pulse.
5. If the systolic blood pressure falls more than 20 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 standing, is obviously dehydrated based on history or physical exam, or if shock is suspected, formal orthostatic examination should be omitted and fluid resuscitation initiated.

F	First Responder
E	EMT/CT
P	Paramedic

# Standard Procedure – Nasal Atomization Device

P Paramedic

**Clinical Indications:** An alternative drug delivery adjunct for patients without IV access who require urgent medication administration for:

- Seizures
- Sedation
- Opiate Overdose
- Pain Management
- Behavioral Emergencies

## **Procedure:**

1. Remove and discard the green vial adapter cap.
2. Pierce the medication vial with syringe vial adapter.
3. Aspirate the proper volume of medication required to treat the patient (an extra 0.1 mL of medication should be drawn up to account for the dead space in the device).
4. Remove (twist off) the syringe from the vial adapter.
5. Attach the MAD device to the syringe via the luer-lock connector.
6. Using the free hand to hold the crown of the head stable, place the tip of the MAD snugly against the nostril aiming slightly up and outward (toward the top of the ear).
7. Briskly compress the syringe plunger to deliver half of the medication into the nostril.
8. Move the device over to the opposite nostril and administer the remaining medication into that nostril.

## **Key Concepts**

Maximize concentration:

- 1/3 mL per nostril is ideal, 1 mL is maximum
- Use the appropriately concentrated drug
- Atomize the drug (rather than drip it in) to cover broad surface area
- Use BOTH nostrils to double the absorptive surface area
- Aim slightly up and outwards to cover the turbinates and olfactory mucosa
- Beware of abnormal mucosal characteristics. Suction nostrils or consider alternate drug delivery method in these situations

Try to establish IV access as soon as the seizure resolves or if intranasal is not effective in controlling seizure activity.

## **CAUTION:**

Versed may cause hypoventilation and potential respiratory depression/arrest. Have equipment and help readily available to manage the airway when administering this medication.

## **Medications that can be administered IN:**

Naloxone  
Midazolam  
Fentanyl  
Glucagon

# Standard Procedure – Spinal Movement Restriction

## Clinical Indications:

- Need for spinal movement restriction is present.

F First Responder

E EMT/CT

P Paramedic

## Procedure:

1. Gather a backboard, straps, C-Collar appropriate for the 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 cervical spine. This stabilization, is to be provided by a second rescuer and should not involve traction or tension but rather simply maintain the head in a neutral, midline position while the first rescuer applies the cervical collar.
4. Once the cervical collar is secure, the second rescuer should still maintain their position to ensure stabilization (the collar is helpful, but will not maintain immobilization by itself).
5. For patients in a vehicle or otherwise unable to be placed prone or supine, place them on a backboard by the safest method available that maximizes maintenance of in-line stability. If the patient is already in a prone position, consider using the log roll technique.
  - For a stable patient with a potential isolated spinal injury, consider the use of a KED device to immobilize the patient prior to placing the patient on a long back board. The leg straps of the KED should be reduced once the patient is properly positioned on the long back board.
6. Stabilize the patient with straps and head roll/tape or other similar device. The patient's torso must be secured prior to the head. Once the patient is fully immobilized 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. Patients who are not eligible for standard immobilization techniques should be immobilized by a method that provides maximum spinal movement restriction. These techniques could include towel rolls instead of a cervical collar, the use of a pediatric papoose board, or any other method that prevents spinal movement.
8. Document the time of the procedure in the patient care report (PCR).

# Standard Procedure – Splinting

F	First Responder
E	EMT/CT
P	Paramedic

## 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 the suspected injury, or the area where the medical device has been placed.
  - Joint injuries should be immobilized at the long bones above and below the joint.
  - Long bone injuries should be immobilized to the joints above and below the long bone.
4. Do not secure the splint directly over the injury or the device.
5. Place the splint and secure with Velcro, straps, or bandage material (e.g., kling, cloth bandage, etc.) depending on the splint manufacturer and design.
  - Kling and other bandaging devices should never be placed circumferentially. Instead the bandaging supplies should be applied in a criss-crossed fashion.
6. Re-evaluate the patient's pulse, motor function, and sensation and document on the patient care report (PCR). If there has been a deterioration in the extremities pulse or sensation, consider loosening the splint, or remove completely and re-evaluate the extremity.
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 described above.
  - Apply manual traction and apply ankle device over the ankle.
  - Measure for proper length against the uninjured extremity, and secure length in place.
  - Gently slide the traction splint up the posterior of the patient's injured extremity until the device is properly seated.
  - While still holding manual traction, begin applying mechanical traction.
  - Secure the proximal ischial strap and distal strap.
  - Secure additional straps in such a manner that straps do not overlap the injured area.
  - Re-assess pulse, motor function, and sensation to the extremity and monitor the patient for pain.
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).

# Standard Procedure – Stroke Screen: Cincinnati and MEND

## Clinical Indications:

- Suspected Stroke Patient

F	First Responder
E	EMT/CT
P	Paramedic

## Procedure:

1. Assess and treat suspected stroke patients as per treatment guideline.
2. The Cincinnati Stroke Screen should be completed for all suspected stroke patients.
3. Establish the “Time Last Normal” for the patient. This will be the presumed time of onset.
4. Perform the Cincinnati Stroke Screen:
  - Look for facial droop by asking the patient to smile.
  - Assess for decreased hand grip strength.
  - Have the patient, while sitting upright, extend both arms parallel to the floor, close their eyes, and turn their palms upward. Assess for downward drift, with or without rotation of the arm.
5. Evaluate blood glucose level results.
6. **If the “Time Last Normal” is less than 24 hours, blood glucose is between 60 and 400, and at least one of the physical exam elements is positive, follow the DCFD Stroke treatment guideline.**
7. En route to the receiving facility, begin the MEND survey.
8. All sections of the Stroke Screening form must be completed.
9. The completed Stroke Screening procedure/form should be attached or documented in the patient care report (PCR).

Prehospital MEND Exam Pocket Card (Side 1)

ASLS Advanced Stroke Life Support

Center for Research in Medical Education

MILLER SCHOOL OF MEDICINE UNIVERSITY OF MIAMI

WWW.ASLS.NET  
WWW.CRME.MIAMI.EDU  
(305) 243-6491

MEND EXAMINATION - PREHOSPITAL  
Green Boxes Contain Basic Exam (CPSS)

**MENTAL STATUS**

- Level of Consciousness (AVPU)
- Speech: "You can't teach an old dog new tricks"
- Questions (age, month)
- Commands (close, open eyes)

**CRANIAL NERVES**

- Facial Droop (show teeth or smile)
- Visual Fields (four quadrants)
- Horizontal Gaze (side to side)

**LIMBS**

- Motor – Arm Drift (close eyes-hold out arms)
- Leg Drift (open eyes-lift each leg separately)
- Sensory – Arm, Leg (close eyes & touch, pinch)
- Coordination – Arm, Leg (finger-nose, heel-shin)

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# Standard Procedure – Venous Access: Existing Catheters

P Paramedic

## Clinical Indications:

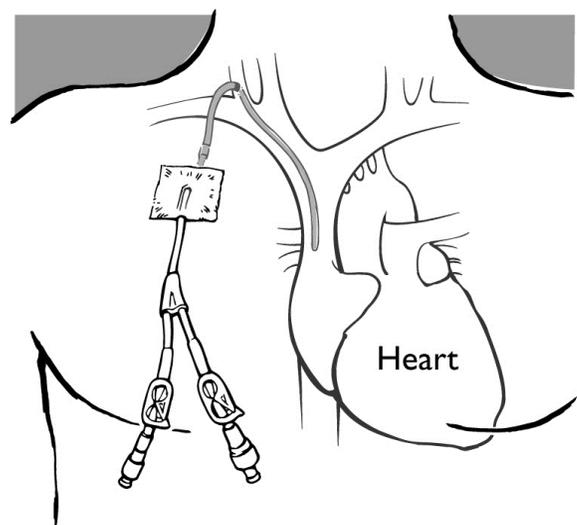
- Inability to obtain adequate peripheral venous or intraosseous access.
- Access of an existing venous catheter for medication or fluid administration.
- Central venous access in a patient in cardiac arrest.

**Accessing existing catheters should only be utilized in the presence of a critical patient in whom an IV/IO cannot be established.**

**This procedure DOES NOT apply to Huber Ports**

## Procedure:

1. **If the patient is not in cardiac arrest, consult Medical Control.**
2. If the patient is in cardiac arrest, or on Medical Control orders, clean the catheter port with betadine or an alcohol wipe.
3. Using sterile technique, withdraw 10-20 mL of blood and discard syringe in a sharps container.
4. Using 5 mL of normal saline, access the port with sterile technique and gently attempt to flush the saline.
5. If there is no resistance, and no evidence of infiltration (e.g., no subcutaneous collection of fluid), and no pain experienced by the patient, proceed to step 6. If there is resistance, evidence of infiltration or pain experienced by the patient, or any concern that the catheter may be clotted or dislodged, do not use the catheter.
6. Begin administration of medications or IV fluids slowly and observe for any signs of infiltration. If difficulties are encountered, stop the infusion and reassess.
7. Record procedure, any complications, and fluid/medications administered in the patient care report (PCR).



# Standard Procedure – Venous Access: External Jugular Access

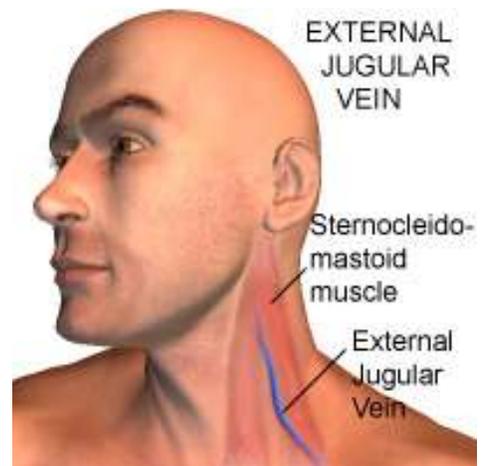
E	EMT/CT
P	Paramedic

## Clinical Indications:

- External jugular vein cannulation is indicated for patients requiring intravenous access for fluid or medication administration and in whom an extremity vein or intraosseous access is not obtainable.
- External jugular cannulation can be attempted initially in life threatening events where no obvious peripheral site is noted and intraosseous access is contraindicated or undesirable.

## 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 using aseptic technique with an alcohol swab.
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. Assess for complications and/or infiltration.
7. Attach the IV and secure the catheter avoiding circumferential dressing or taping.
8. Document the procedure, time, and result (success) on/with the patient care report (PCR).



# Standard Procedure – Venous Access: Extremity

## Clinical Indications:

- Any patient where intravenous access is indicated.

E	EMT/CT
P	Paramedic

## Procedure:

1. Saline locks (INT) may be used as an alternative to IV tubing and IV fluid in every protocol at the discretion of the EMS provider.
2. Use the largest catheter bore necessary based upon the patient condition and vein size.
3. Fluid and setup choice is preferably:
  - Normal Saline with a macro drip for trauma or hypovolemia.
  - Normal Saline with a macro drip for medical conditions.
  - Normal Saline with a micro drip for most medication infusions.
4. Inspect the IV solution for expiration date, cloudiness, discoloration, leaks, or the presence of particles.
5. Connect IV tubing to the solution in a sterile manner. Fill the drip chamber half full and flush the tubing, bleeding all air bubbles from the line.
6. Place a tourniquet around the patient's extremity to restrict venous flow only.
7. Select a vein and an appropriate gauge catheter for the vein and the patient's condition.
8. Prep the skin with an antiseptic solution.
9. Insert the needle with the bevel up into the skin in a steady, deliberate motion until the bloody flashback is visualized in the catheter.
10. Advance the catheter into the vein. **Never** reinsert the needle through the catheter. Dispose of the needle into the proper container without recapping.
11. Remove the tourniquet and connect the IV tubing or saline lock (INT).
12. Open the IV to assure free flow of the fluid and then adjust the flow rate as per protocol.
13. Cover the site with a sterile dressing and secure the IV and tubing.
14. Label the IV with the date and size of the catheter.
15. Document the procedure, time, and result (success) on the patient care report (PCR).

### **Infusions:**

Calcium Chloride: Mixed in 100mL bag using a 60gtt set. Run at a steady stream (Deliver over 3 minutes)

D10W – Deliver via 10 gtt set

Magnesium Sulfate: Mixed in 250mL bag using a 60 gtt set. Run at a steady stream (Deliver over 6-10 minutes)

Phenergan: Mixed in 100mL bag using a 60gtt set. Run at a steady stream (Deliver over 3 minutes)

# Standard Procedure – Venous Access: Intraosseous

## Clinical Indications:

E EMT/CT

P Paramedic

- As the initial means of circulatory access in cardiac arrest.
- Patient in need of IV fluids or medications and a peripheral IV cannot be established in 2 attempts or 90 seconds **and** the patient exhibits one or more of the following:
  - An altered mental status.
  - Respiratory compromise.
  - Hemodynamic instability.

## Contraindications:

- Fracture of the tibia or femur (consider alternative site).
- Previous orthopedic procedure (IO within 24 hours, knee replacement) (consider alternative site).
- Pre-existing medical condition involving the extremity.
- Infection at insertion site.
- Inability to locate landmark.
- Excessive tissue at insertion site.
- Infants less than 3 kilograms (6.6 lbs) in weight.

## Procedure:

1. Prepare equipment, including flushing the extension set and INT cap.
2. Identify one of the following landmarks:
  - Proximal Tibia:**  
Identify anteromedial aspect of the proximal tibia (bony prominence below the knee cap). The insertion location will be 1-2 cm (2 finger widths) below this location.
  - Humeral Head:**  
Place the patient's palm on the umbilicus and elbow on the ground or stretcher. Use your thumb to identify the humeral shaft, slide thumb towards humeral head with firm pressure. Locate the tubercle by prominent bulge. Use the opposite hand to pitch inferior and anterior humerus ensuring that you are midline on the humerus.
3. Prep the site with a betadine swab, or alcohol prep pad.
4. Select the EZ-IO device and appropriate needle set (Adult needle for patients greater than 40 kilograms, 88 lbs, or the pediatric needle for patient's between 3 and 39 kilograms, 6.6 to 87 lbs).
5. Hold the intraosseous needle at a 60 to 90 degree angle, aimed away from the nearby joint and epiphyseal plate, power the driver until a "pop" or "give" is felt, indicating a loss of resistance. Do not advance the needle further.
6. Remove the stylette and place in an approved sharps container.
7. Confirm placement, but **DO NOT ASPIRATE**.
8. Attach the flushed extension set.
9. If the **adult** patient is conscious, administer 40mg (2mls) 2% Lidocaine IO and wait 15 seconds.
10. Rapidly bolus the EZ-IO catheter with 10 mL of normal saline.
11. Connect IV tubing.
12. Place a pressure bag on the IV solution and begin infusion, adjust flow rate, and watch for signs of infiltration.
13. Place the EZ-IO arm band on the patient.
14. Document the procedure, time, and result (success) on the patient care report (PCR).

# Standard Procedure – Ventricular Assist Device (VAD)

**Purpose:** The purpose of this policy is to assist paramedics when evaluating a patient who has a Ventricular Assist Device (VAD) in place.

A ventricular assist device (VAD) is an implantable device used to artificially augment cardiac output and support circulation in patients with significant ventricular dysfunction. The mechanics of the VAD differ depending on manufacturer, however most devices support circulation via laminar flow, meaning that circulation may be present even though palpable pulses or a measureable blood pressure may be absent.

## 1. RESPONSIVE PATIENT:

P Paramedic

- a. Check the VAD for alarms:
- b. If alarms are activated, contact the VAD Coordinator or online medical control
- c. Check the VAD battery indicator:
  - i. Change batteries, if indicated
- d. Obtain the patient's Emergency Contact Card
- e. Obtain the patient's travel batteries, charger and travel pack
- f. Management per symptom-specific protocol
- g. Contact online medical control for transport destination decision

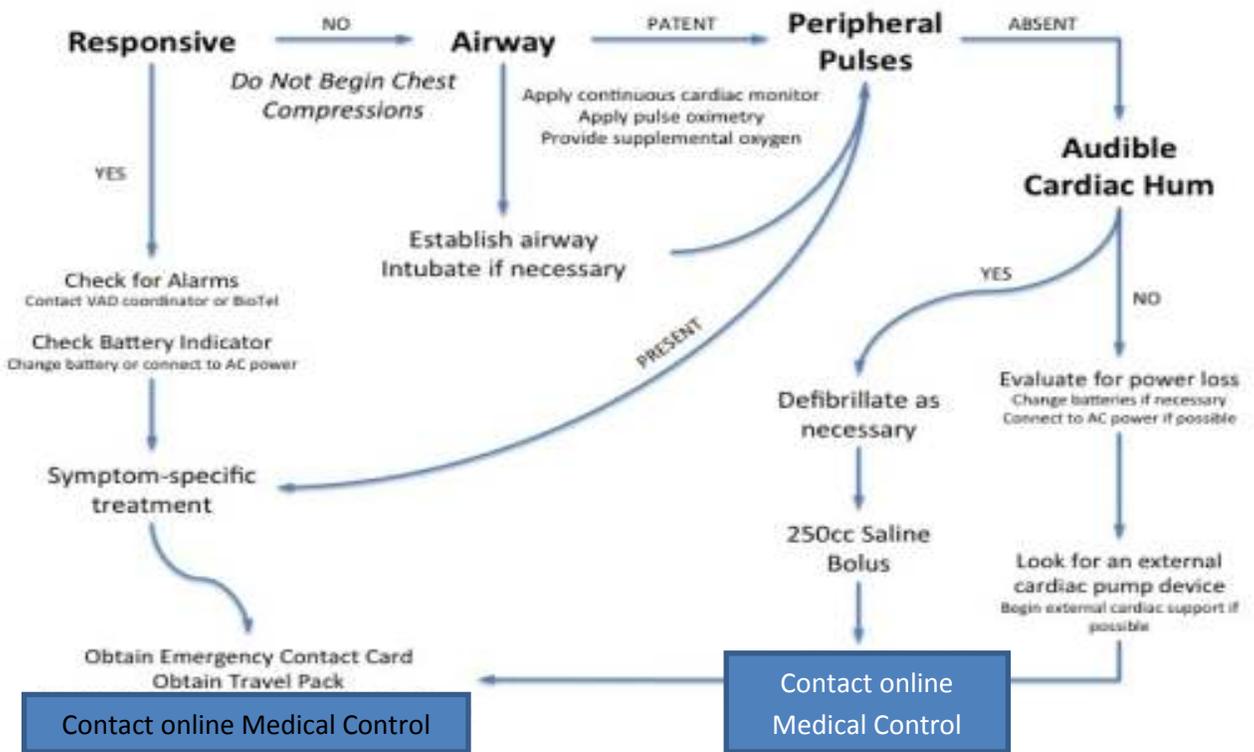
## 2. UNRESPONSIVE PATIENT:

- a. **Do not** begin chest compressions
  - b. Evaluate airway -- *If absent:*
    - i. Establish a patent airway
    - ii. Intubate if necessary
  - c. Apply SpO2 monitoring:
    - i. Administer supplemental oxygen to achieve a SpO2 at least 90%
  - d. If intubated, apply continuous ETCO2 monitoring
  - e. Apply continuous ECG monitoring using hands-free defibrillator pads in Paddles lead
  - f. Check peripheral pulses -- *If present:*
    - i. Treat according to symptom-specific Guidelines
    - ii. Contact online medical direction for transport destination
  - g. If peripheral pulses are absent, auscultate the sternal border. *If humming:*
    - i. Connect cardiac monitor
    - ii. Defibrillate if necessary, according to the Ventricular Fibrillation Guidelines
    - iii. Administer a 250cc Normal Saline bolus IV/IO
    - iv. Contact online medical control
  - h. If peripheral pulses are absent *and there is no indication of pump function:*
    - i. Do not begin chest compressions
    - ii. Evaluate the VAD for power loss:
      1. Change batteries, if necessary
      2. Connect to AC power
    - iii. Look for an external cardiac pump device:
      1. If present, begin external circulatory support
    - iv. Contact online medical control
3. Obtain the patient's travel batteries, charger and travel pack

4. Contact online medical control for transport destination decision

For additional patient care considerations not covered in this protocol, refer to the symptom-specific

Guidelines or contact online medical control.



# Standard Procedure – Wound Care

## Clinical Indications:

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

E	EMT/CT
P	Paramedic

## Contraindications:

- Wounds involving open thoracic or abdominal cavities.

## Procedure:

1. Apply approved non-heat-generating hemostatic dressing per manufacturer's instructions.
2. Supplement with direct pressure and standard hemorrhage control techniques, including tourniquet as necessary.
3. Apply further hemostatic or standard dressings as necessary.

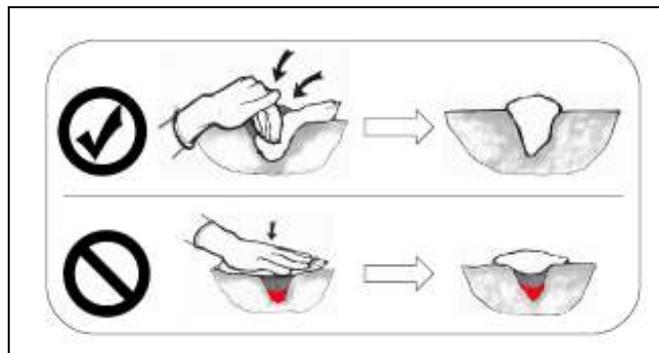
## PEARLS:

- Although DCFD does not stock hemostatic dressings, members of the Douglas County Swat Team may carry these on their persons. Douglas County Fire Department personnel are permitted to assist with or apply these dressing to members of the Sheriff's Office or city police department.
- Remember that bleeding may restart. Observe wound periodically to rule out bleeding.

**DIRECTIONS FOR USE**

	<b>1.</b> Open package and remove <b>Combat Gauze</b> . Keep the empty package.		<b>2.</b> Pack <b>Combat Gauze</b> into wound and use it to apply pressure directly over bleeding source. (More than one <b>Combat Gauze</b> may be required).
	<b>3.</b> Continue to apply pressure for 3 minutes or until bleeding stops.		<b>4.</b> Wrap and tie bandage to maintain pressure. Seek medical care immediately. Show <b>PRODUCT REMOVAL</b> directions on package to medical personnel.

**PRODUCT REMOVAL: 1. Gently remove gauze from wound. 2. Thoroughly irrigate wound.**



# General Treatment Guidelines – Airway: Adult

F First Responder

## Basic Airway Management

Bag-valve-mask (BVM) devices are often used prior to or in conjunction with endotracheal intubation. Ideally, usage of a BVM is a two (2) or three (3) person procedure.

E EMT/CT

Supraglottic Airway Devices can be considered a primary advanced airway device and is a suitable alternative to endotracheal intubation for many patients.

P Paramedic

Endotracheal tube insertion is appropriate for both respiratory failure and/or airway protection, especially in patients with altered mental status whose airway cannot be managed otherwise. Observations of respiratory rate, spontaneous respiratory effort, pulse oximetry, capnography, and aspiration risk will assist the provider in choosing the appropriate airway management technique. In clinical conditions where endotracheal intubation is warranted but the patient's level of consciousness precludes tube insertion, contact Medical Control for authorization for sedation of the patient. Refer to "Airway: Pharmacologically-Assisted Intubation guideline".

Assessment adjuncts must be used to aid in intubation decisions and in confirmation of advanced airway placement. These adjuncts are acceptable as long as the following caveats are observed:

1. Pulse oximetry - a valuable tool to detect occult hypoxia. A normal reading does not rule out respiratory distress or the need for airway management. Pulse oximetry has a limited role in confirming ET tube placement due to delayed change in pulse oximetry.
2. End-tidal CO<sub>2</sub> detectors (ETCO<sub>2</sub>) - **Will be** used and **documented** to confirm ET tube placement and for ET tube surveillance. Be aware that in certain conditions (e.g., prolonged cardiac arrest, massive pulmonary embolus, and inadequate chest compressions) carbon dioxide may not be produced in sufficient quantities for detection. Capnography with waveform analysis is to be considered the standard of care for verifying advanced airway position and function, and is not optional.

Every endotracheal tube placement should be managed in the following manner:

1. Visualize the tube passing between the vocal cords (for oral intubation).
2. Ensure no sounds are heard over the stomach when ventilating the patient through the ET tube.
3. Ensure good bilateral breath sounds when ventilating the patient through the ET tube.
4. Observe the chest rising and falling with each ventilation.
5. Confirm placement with waveform capnography (less sensitive in certain cardiac arrest situations).

**NEVER** perform intubation unless the vocal cords are visualized  
**AND** the ET tube is seen passing between the cords.

## CAPNOGRAPHY IS MANDATORY, NOT OPTIONAL

If there is ANY doubt as to the appropriate placement of an endotracheal tube, it is appropriate to remove the tube and assist ventilations using a BVM. The provider should not assume correct endotracheal tube placement based on any one of these steps in isolation. The provider should re-evaluate tube placement every three to four minutes, particularly after

F First Responder

E EMT/CT

P Paramedic

patient movement. Notification of Medical Control is mandatory for every advanced airway attempt.

### **Breathing via Advanced Airways**

The use of ETCO<sub>2</sub> waveform analysis is helpful in titrating the rate and volume of assisted ventilation in critically ill patients, both intubated and non-intubated.

Overzealous positive pressure breaths can impair venous return and cardiac output in certain patients, particularly those with hypovolemia, acute exacerbations of COPD or asthma, and other conditions that might already impair circulation (e.g., tamponade, tension pneumothorax, or severe hemorrhage). Excessive rates of assisted ventilation may be harmful. Once intubated with an ET tube, a tidal volume equal to a one-hand squeeze of the BVM should be used (enough ventilation for visible chest rise).

For cardiac arrest patients, refer to **CPR (Cardio-Pulmonary-Resuscitation) treatment guideline**. For non cardiac arrest patients, begin ventilation at a rate of 8 breaths per minute, using a one-hand squeeze adjusting ventilation rates in an effort to keep capnography levels within normal limits. In cases of suspected hypovolemia, or severe pulmonary expiratory obstruction (e.g., asthma, COPD), rates should be lowered to a rate of about 6 breaths per minute. Adjust ventilation rates as needed to maintain end-tidal CO<sub>2</sub> levels of 35 - 45 mmHg. For patients in ROSC, refer to **Post-Resuscitation Care – 2012 treatment guideline**.

### **Venturi Adapters**

The use of a venturi adapter should be considered for tracheotomy patients requiring supplemental oxygen without ventilatory support. This would be applicable for those patients who would typically receive a nasal cannula for indications such as AMI or stroke who are not exhibiting signs of respiratory distress. The use of a venturi adapter should also be considered for COPD patients with adequate SpO<sub>2</sub> percentages.

# General Treatment Guidelines – Airway: Pediatric

## F First Responder

### Basic Airway Management

Bag-valve-mask (BVM) devices are often used prior to or in conjunction with endotracheal intubation. Ideally, usage of a BVM is a two (2) or three (3) person procedure.

- For younger children, providers should ensure the patient is placed in a “sniffing” position.
- Consider the use of a sheet roll placed under the patient’s shoulders to maintain this position.
- Using a correctly sized bag-valve-mask, the provider should ensure enough tidal volume is administered to see visible chest rise.
- Prior to capnography, ventilation rates should be:
  - 30 – Neonates
  - 25 – Toddlers
  - 20 – School Age Children
  - 12-20 - Adolescents

## P Paramedic

### Advanced Airway Management

ET tube size can also be estimated by the size of the child's nostril (nare), the size of the child's little finger, or the formula  $(age + 16) \div 4$ . Children less than 1 year of age usually need a #1 straight laryngoscope blade, children 1-4 years usually need a #2 blade and children > 4 years usually need a #3 blade. **The Esophageal Detector Device should not be used in infants less than 1 year of age.**

**\*\* Use the pediatric Zoll Capnography adaptor for tube sizes <4.0 \*\***

Endotracheal tube insertion is appropriate for both respiratory failure and/or airway protection, especially in patients with altered mental status whose airway cannot be managed otherwise. Observations of respiratory rate, spontaneous respiratory effort, pulse oximetry, capnography, and aspiration risk will assist the provider in choosing the appropriate airway management technique. In clinical conditions where endotracheal intubation is warranted but the patient’s level of consciousness precludes tube insertion, contact Medical Control for authorization for sedation of the patient.

Assessment adjuncts must be used to aid in intubation decisions and in confirmation of advanced airway placement. These adjuncts are acceptable as long as the following caveats are observed:

1. Pulse oximetry - a valuable tool to detect occult hypoxia. A normal reading does not rule out respiratory distress or the need for airway management. Pulse oximetry has a limited role in confirming ET tube placement due to the fact problems with the airway may not be shown in pulse oximetry for as much as 90 seconds..
2. End-tidal CO<sub>2</sub> detectors (ETCO<sub>2</sub>) - **Will be** used and **documented** to confirm ET tube placement and for ET tube surveillance. Be aware that in certain conditions (e.g., prolonged cardiac arrest, massive pulmonary embolus, and inadequate chest compressions) carbon dioxide may not be produced in sufficient quantities for detection. Capnography with waveform analysis is to be considered the standard of care for verifying advanced airway position and function, and is not optional.

Every endotracheal tube placement should be managed in the following manner:

1. Visualize the tube passing between the vocal cords (for oral intubation).
2. Ensure no sounds are heard over the stomach when ventilating the patient through the ET tube.
3. Ensure good bilateral breath sounds when ventilating the patient through the ET tube.
4. Observe the chest rising and falling with each ventilation.
5. Confirm placement with waveform capnography (less sensitive in certain cardiac arrest situations).

**NEVER** perform intubation unless the vocal cords are visualized  
**AND** the ET tube is seen passing between the cords.

#### **CAPNOGRAPHY IS MANDATORY, NOT OPTIONAL**

If there is ANY doubt as to the appropriate placement of an endotracheal tube, it is appropriate to remove the tube and assist ventilations using a BVM. The provider should not assume correct endotracheal tube placement based on any one of these steps in isolation. Refer to the endotracheal tube verification checklist (Appendix A). The provider should re-evaluate tube placement every three to four minutes, particularly after patient movement. Notification of Medical Control is mandatory for every advanced airway attempt.

#### **Breathing via Advanced Airways**

The use of ETCO<sub>2</sub> waveform analysis is helpful in titrating the rate and volume of assisted ventilation in critically ill patients, both intubated and non-intubated.

Overzealous positive pressure breaths can impair venous return and cardiac output in certain patients, particularly those with hypovolemia, acute exacerbations of COPD or asthma, and other conditions that might already impair circulation (e.g., tamponade, tension pneumothorax, or severe hemorrhage). Excessive rates of assisted ventilation may be harmful. Once intubated with an ET tube, a tidal volume equal to a one-hand squeeze of the BVM should be used (enough ventilation for visible chest rise).

Begin ventilation at an age appropriate rate, using a one-hand squeeze adjusting ventilation rates in an effort to keep capnography levels within normal limits. Ventilation rates can be increased or decreased to maintain end-tidal CO<sub>2</sub> levels of 35 - 45 mmHg.

# General Treatment Guidelines – Back Pain

## Inclusion Criteria:

This treatment guideline gives pain management recommendations for patient's who have experienced a muscle "strain", not associated with recent motor vehicle trauma or falls. Furthermore, this guideline refers to patient's who **do not require** spinal movement restriction secondary to mechanism of injury.

### F First Responder

1. Assess and support ABCs.
2. Allow the patient to maintain a position of comfort.

### F First Responder

### E EMT/CT

### P Paramedic

### P Paramedic

3. Consider pain management prior to moving the patient.

Pain Management:	
<p style="text-align: center;">Adult</p> <ul style="list-style-type: none"> <li>Morphine 2-4mg administer slowly. May repeat every 10 minutes to a maximum of 10mg. Titrate to effect. IV/IO/IM</li> <li style="text-align: center;"><b>OR</b></li> <li>Fentanyl 25mcg administer slowly. May repeat every 10 minutes to a maximum of 100mcg. Titrate to effect. IV/IO</li> <li style="text-align: center;"><b>OR</b></li> <li>Fentanyl 2 mcg/Kg IN ½ in each nostril. May repeat every 10 minutes to a maximum of 100mcg. Titrate to effect.</li> </ul> <p><b>CONTACT MEDICAL CONTROL</b> before administering Morphine if the patient is older than 65 yr of age, debilitated, has altered mental status, or SBP less than 110mmHg.</p> <p style="text-align: center;"><b>Monitor carefully for evidence of sedation</b></p>	<p style="text-align: center;">Pediatric</p> <p style="text-align: center;">Contact Medical Control</p>
<p><b>Do not administer both a narcotic and a benzodiazepine without medical control approval</b></p>	
If Muscle Spasms are Present:	
<p style="text-align: center;">Adult</p> <p>Versed 2.5mg-5mg administer slowly. May repeat every 10 minutes to a maximum of 10mg. Titrate to effect. IV/IO/IM/IN</p> <p>(Valium 2mg-5mg if substituted may be repeated every 10 minutes to a maximum dose of 10mg. IV/IO/IM) Titrate to effect.</p>	<p style="text-align: center;">Pediatric</p> <p style="text-align: center;">Contact Medical Control</p>

### Medical Control Treatment Options:

#### Additional Morphine, beyond standing order dose:

<p style="text-align: center;">Adult</p> <ul style="list-style-type: none"> <li>Additional Morphine in 2-4mg increments. IV/IO/IM</li> <li>Additional Fentanyl in 25mcg increments. IV/IO</li> <li>Additional Fentanyl 2mcg/Kg increments IN</li> </ul> <p style="text-align: center;"><b>Observe carefully for evidence of over sedation</b></p>	<p style="text-align: center;">Pediatric</p> <p style="text-align: center;">Contact Medical Control</p>
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# General Treatment Guidelines – Behavioral

F	First Responder
E	EMT/CT
P	Paramedic

## Inclusion Criteria:

This guideline applies to patients exhibiting psychological disturbances that produce thoughts, feelings, and behaviors destructive to the patient or another person. **If EMS units are dispatched to the scene and patient contact is made, all** patients with suspected suicidal ideation must be reported to Medical Control before leaving the scene. These guidelines are not intended for patients who are suspected of taking an overdose (**Poisoned Patient and Overdose Guidelines**) or for patients who are unconscious (**Altered Level of Consciousness Guidelines**).

**NOTE:** Consider alternative explanations for seemingly psychiatric or behavioral symptoms. **(A-E-I-O-U-T-I-P-S; alcohol, epilepsy, insulin, overdose, under dose, trauma, infection, psychosis, sepsis.)**

### F First Responder

1. Assess and support ABCs.
2. Position of comfort.
3. Reduce stimuli by isolating the patient from people or events causing his or her agitation.
4. Administer oxygen, as needed to maintain an adequate SpO<sub>2</sub>.

### E EMT/CT

5. Check Blood Glucose level and treat accordingly - **Altered Level of Consciousness Guideline**
6. If the patient requires restraint, follow the **Restraint of Patient Guideline**.
7. If the patient exhibits any seizure activity, proceed to the **Seizure Guidelines**.

### P Paramedic

8. Consider ECG and monitor.
9. Consider establishing IV access at a KVO rate or use an INT.
10. Monitor vital signs during transport.

For extreme agitation	
<p style="text-align: center;">Adult</p> <ul style="list-style-type: none"> <li>• Versed 2.5mg-5mg administer slowly. May repeat every 10 minutes until agitation is relieved to a maximum of 10mg. Titrate to effect.</li> </ul> <p style="text-align: center;">IV/IO/IM/IN - OR -</p> <ul style="list-style-type: none"> <li>• Valium 2mg-5mg if substituted may be repeated every 10 minutes to a maximum dose of 10mg. Titrate to effect. IV/IO/OM</li> </ul>	<p>Pediatric Contact Medical Control</p>
<b>Medical Control Treatment Options:</b>	
For extreme agitation	
<p style="text-align: center;">Adult</p> <ul style="list-style-type: none"> <li>• Additional Versed in 2.5-5mg increments IV/IO/IM/IN</li> </ul>	<p>Pediatric Contact Medical Control</p>

# General Treatment Guidelines – Restraint of Patient

F	First Responder
E	EMT/CT
P	Paramedic

## Purpose:

To provide guidance for the use of physical or chemical restraint in the management and transport of patients who become violent, potentially violent, or who may harm themselves or others.

## F First Responder

### Guidelines

- The safety of the patient, community, and responding EMS provider is of paramount concern when following this policy.
- Restraints are to be used only when necessary in situations where the patient is potentially violent or exhibiting behavior deemed dangerous to self or others. Any restraint should be administered in a humane and professional manner.
- Medical Control should be contacted prior to the application of any restraining device by an EMS provider whenever possible. As crew safety comes first, restraints may be applied BEFORE consulting Medical Control if the patient represents an immediate threat to self or to the EMS provider(s).
- Prehospital providers must consider that aggressive or violent behavior may be a symptom of medical conditions such as head trauma, alcohol or drug related problems, and metabolic or psychiatric disorders.
- The method of restraint used shall allow for adequate monitoring of vital signs and shall not restrict the ability to protect the patient's airway or compromise neurologic, respiratory, or vascular status.

### Patients in Police Custody

- This policy is not intended to negate the need for law enforcement personnel to use appropriate restraint equipment approved by their respective agencies for arrest and control.
- The responsibility for patient health management rests with the highest medical authority on the scene.
- Regardless of the arrest status, the competent patient never loses the right to participate in the making of decisions regarding his/her medical care.
- In situations where handcuffs are applied by law enforcement officers:
  - The patient **will not** be cuffed to the ambulance stretcher. This includes by law enforcement.
  - The law enforcement officer **MUST** accompany the patient in the ambulance if the handcuffs are to remain applied. A law enforcement officer may elect to follow the ambulance in a patrol car to the receiving facility if the patient has been restrained on the ambulance stretcher by using the approved restraint technique described below.

### Policy

- Restraint devices applied by prehospital personnel must be either padded leather or soft restraints (e.g. Posey vest, Velcro, or seatbelt-type).
  - Suggested restraint technique is a six-point restraint system. Ideally, restraint devices should connect the patient to a backboard for ease of transfer at the receiving facility.
  - Both legs and arms should be restrained by a snug fitting device at the ankle and wrist, respectively. Both legs and arms should be fully extended and the restraint straps drawn taut.
  - The patient should be prevented from sitting up by an appropriate restraint device about the chest and knees. The restraint straps should be drawn taut.
- If a backboard is used, the patient must be restrained supine. If the patient condition calls for a lateral position, the backboard can be tilted to the appropriate angle and supported. In the lateral position, the patient must be facing EMS personnel and not the wall of the ambulance.

- Restrained extremities should be evaluated for pulse quality, capillary refill, color, temperature, and nerve and motor function immediately following application of the restraint device and every 10 minutes thereafter. Any abnormal findings require the restraint device of concern to be removed, re-evaluated, and reapplied, if indicated. It is recognized that the evaluation of nerve and motor status requires patient cooperation and thus may be difficult to monitor.
- The restraints must not be placed in such a way as to prevent evaluation of the patient's medical status (e.g., airway, breathing, circulation), to prevent necessary patient care activities, or in any way jeopardize the patient.
- A means of immediately releasing the restraints must be available.
- The use of restraint should be carefully documented with the following information:
  - Reasons for restraint;
  - Technique and materials used;
  - Assessment findings of the extremities, including periodic reevaluation;
  - Mental, respiratory, and circulatory status of the restrained patient, including periodic reevaluation;
  - Time of call to Medical Control for restraint order.
- All patients placed in restraints must be continuously monitored by pulse oximetry, capnography, and the ECG monitored by a paramedic as soon as they become available. ← P Paramedic

### Methods of Restraint Prohibited

Application of any of the following forms of restraint **shall not** be applied by any EMS provider within the Douglas County Fire/EMS Department.

- The "Sandwich Technique" where the patient is placed between two objects, such as a backboard and a scoop stretcher.
- Hobble (hogtie) restraint where wrists and ankles are bound or handcuffed behind the back.
- Any prone restraint position.
- Any restraint procedure that restricts the movement of the abdomen (diaphragm) or chest either by direct compression or hyperextension of the chest wall.
- Hard plastic ties or any restraint device requiring a key to remove.

P Paramedic

### Chemical Restraint

For patients who continue to struggle following the application of restraint as described above, including patients who may have ingested a stimulant or hallucinogen, follow the **Behavioral Treatment Guideline**.

# General Treatment Guidelines – Carbon Monoxide Exposure

F	First Responder
E	EMT/CT
P	Paramedic

**Purpose:** These guidelines will provide direction for EMS responders using transcutaneous carbon monoxide (CO) monitors (optional equipment) while treating patients, or while monitoring firefighter exposure at the fire ground.

**SPECIAL NOTE:** Some patients may exhibit low CO readings and yet may still be symptomatic to various degrees. Always treat according to the patient’s symptoms and refer to additional guidelines as necessary.

**Potential CO exposure patients should be transported to the closest facility unless otherwise directed by medical control.**

**INDICATIONS FOR MEASUREMENT OF CARBON MONOXIDE LEVELS:**

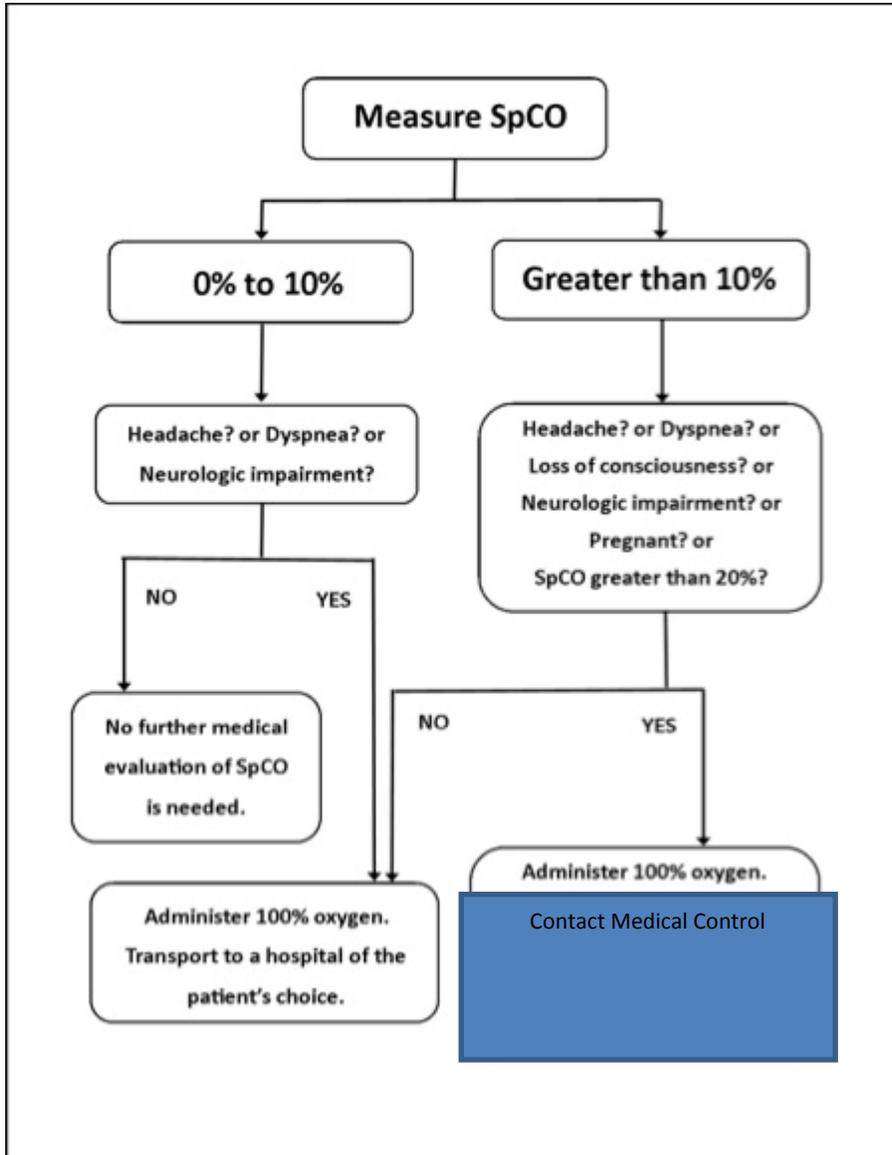
- Smoke inhalation
- Thermal burns
- Altered level of consciousness with no clearly identifiable cause
- Assessment of fire ground personnel (e.g. fires, hazardous materials incidents, hydrocarbon-powered equipment in a closed environment)

**CLINICAL PRESENTATION ACCORDING TO SpCO LEVEL:**

SpCO level	Clinical Manifestations
> 5%	Mild headache
10%	Mild headache, shortness of breath with exertion
10% - 20%	Moderate headache, shortness of breath
20% - 30%	Worsening headache, nausea, dizziness, fatigue
30% - 40%	Severe headache, vomiting, vertigo, altered judgment
40% - 50%	Confusion, syncope, tachycardia
50% - 60%	Seizures, shock, apnea, coma
<b>Fire Rehab Considerations:</b>	
Refer to your agency SOPs	

**SPECIAL NOTE:** Always confirm a high reading by measuring on more than one finger on each hand. If the values differ significantly, use an average reading.

**CONCURRENT USE OF PULSE OXIMETRY AND CAPNOGRAPHY:** Transcutaneous carbon monoxide monitoring devices (carbon monoxide co-oximetry) may be used concurrently with both pulse oximetry (SpO<sub>2</sub>) and capnography (ETCO<sub>2</sub>) monitoring. The pulse oximetry device cannot discriminate between oxygen and carbon monoxide. Therefore, a patient may exhibit a normal SpO<sub>2</sub> reading when serious carbon monoxide intoxication is present.



**Special Note:** In all cases of severe carbon monoxide intoxication, potential CO exposure patients should be transported to the closest facility unless otherwise directed by medical control..

# General Treatment Guidelines – Fever

E	EMT/CT
P	Paramedic

**Inclusion Criteria:** This guideline applies to pediatric patients (age greater than 6 weeks - 15 years of age) who present with an elevated body temperature, believed to be induced secondary to infection. This guideline IS NOT intended for patients with elevated body temperatures induced by medications/drug reactions, hyperthyroidism, environmental causes, or other unknown etiologies.

- Signs and Symptoms: Patient's with an elevated body temperature secondary to infection will commonly present with a recent history of illness (coughing, runny nose, chest congestion, stomach aches, headaches, general malaise, chills, sweaty/flushed skin and/or rash; as examples). Typically, patients will present "sick" with an increase in signs and symptoms over a several day history.
- Differentials to consider: Consider differential causes while completing a thorough history and physical exam. Differentials should include the following examples: Cancers, Tumors, Lymphomas, Medications or drug reactions, Connective tissue disease (arthritis, vasculitis), hyperthyroid, or heat stroke.
- History and Physical Exam: A thorough history and physical exam should include these additional considerations: Duration of the fever, if the patient is immunocompromised (Transplant, HIV, Diabetes, Cancer), environmental exposure, **and the patient's last tylenol or ibuprofen dose.** It is also pertinent to ask if the patient has a history of febrile seizures.

## E EMT/CT

1. Assess and support ABC's
2. Cool the patient using passive cooling techniques by removing blankets and clothing. It is important to remember shivering may occur in the attempt to cool the patient. Shivering increases body temperature. Therefore, cool the patient by removing clothes, but if shivering is noted, the patient may need to be covered slightly.
3. Administer oxygen as needed to maintain an adequate SpO<sub>2</sub>.
4. 

The administration of acetaminophen in the prehospital setting is geared towards prevention of febrile seizures for patients prone to this event, and providing comfort measures during transport. The administration of acetaminophen by prehospital personnel to patients who will remain at home should not be encouraged. **If the patient's parents are refusing transport to an emergency room facility, the EMT/Paramedic WILL NOT administer acetaminophen.** EMTs/Paramedics should instead encourage these parents to contact their child's physician office to determine the appropriate dose of acetaminophen and determine the appropriate course of action for their child.
5. 

If the patient has a tympanic temperature >100.4 F (38.0 C), is greater than 6 weeks of age, appears generally ill, and is not vomiting, **acetaminophen 15mg/Kg PO may be administered. Alternatively, the EMT/Paramedic may opt to follow the pediatric "Quick Reference" dosing chart provided in the supplemental section of this guideline. (The EMT/Paramedic MUST determine prior to administration when the last dose of acetaminophen or ibuprofen was administered to the patient. If either medication was administered in the past 4 hours, acetaminophen WILL NOT be administered.)**

## P Paramedic

6. For pediatric patients who are experiencing a febrile seizure, follow the **Pediatric Seizure Treatment Guideline**
7. 

Patients who have experienced a febrile seizure should be treated with external, passive cooling measures. In the rare instance this patient will be transported outside of Douglas County, and the patient remains febrile (greater than 100.4 F) after cooling measures have been attempted, **contact medical control to determine if acetaminophen 15mg/Kg or per the "Quick Reference" dosing chart can be administered. Be EXTREMELY cautious of giving PO medications to a patient who has just experienced a seizure episode.**

# General Treatment Guidelines – IV Access

E	EMT/CT
P	Paramedic

## IV Fluid Type

Practically speaking, only one type of fluid should be used for the small volumes and short transport times commonly encountered in urban/suburban EMS systems - Normal Saline (NS). An INT may be substituted for IV that would be kept (keep vein open) KVO.

## IV Fluid Rate

Generally, patients need IV access to keep the vascular site open (KVO) or to provide volume resuscitation. Certain hypotensive trauma patients, such as those suffering traumatic cardiac arrest, may respond to larger fluid boluses. Others requiring volume resuscitation are best treated with 250-1000mL boluses and frequent re-evaluation. Upon arrival at the hospital, the amount of fluid administered in the pre-hospital setting should be recorded in the patient care record.

Fluid administration should be titrated to regain a radial pulse in the setting of uncontrolled hemorrhage or to normal systolic in other causes of hypotension.

Adult – 250 mL fluid is considered a single fluid bolus

- 10mL/Kg is considered a single fluid bolus specifically for sickle cell crisis

Pediatric – 20mL/Kg is considered a single fluid bolus

10mL/Kg is considered a single fluid bolus specifically for sickle cell crisis

## IV Site

Antecubital veins and external jugular veins are the access sites of choice for adults in cardiac arrest.

## Pre-existing Central Venous Line Access

Pre-existing central venous lines may be accessed if the patient is in cardiac arrest without contacting medical control.

### Medical Control Treatment Options:

Medical control may authorize the use of pre-existing central venous lines utilized in critical cases, if the individual medic has the knowledge and equipment to do so.

# General Treatment Guidelines – Police Custody

## Inclusion Criteria:

Patients under police custody requiring evaluation and/or care.

F	First Responder
E	EMT/CT
P	Paramedic

## General Guidelines:

Whenever summoned by the police to evaluate a person, the crew should determine early whether or not the person is in police custody. If the patient is not in police custody, EMS personnel should use standard indicators as to competence and decision-making on the patient's part.

Persons in police custody are the responsibility of the arresting officer. Every attempt should be made on the provider's part to evaluate a person's condition and make a recommendation to the police officer regarding treatment and/or transport. Most police officers will rely on EMS to recommend if transportation to the emergency room is necessary.

If you have a patient who will not allow an adequate examination (uncooperative, violent, etc), every effort must be made to determine the circumstances that occurred up to your arrival. Providers should attempt to rule out other potential causes of the patient's behavior, such as head injury or diabetic emergencies as examples.

There is no expectation that providers will place themselves in a position where they may be injured attempting to evaluate a patient. Some patients will be so uncooperative that evaluation and care may be impossible. Your judgment and common sense must be applied in these circumstances. When a patient is so violent or uncooperative that no examination can be performed, the provider should recommend an evaluation be conducted at an emergency room facility. Transport shall depend on how violent and uncooperative a patient may be. Any patient in need of immediate medical care should be appropriately restrained and cared for by the health care provider. **See Restraints – Physical and Chemical Guideline.**

## Restraints:

In the event a patient in police custody is restrained, the police officer must accompany the patient in the back of the ambulance if this mode of transportation is necessary for patient care. Pulse, motor, and sensory checks should be completed on any restrained extremity every 10 minutes. Follow the **Restraint – Physical and Chemical Treatment Guideline**. Paramedic providers may follow the **Behavioral Emergency Treatment Guideline** for chemical restraints as necessary. At no time shall a patient be handcuffed to the stretcher.

## Pepper Spray:

Patients exposed to pepper spray should be evaluated for allergic reactions and signs of respiratory distress. Without other complaints, a "burning" feeling is to be expected and is not typically a valid medical complaint requiring transport to an emergency room facility. Eyes and exposed skin should be flushed with copious amounts of normal saline. If transporting a patient that has been sprayed, remember to field-decontaminate the patient prior to placing them in the transport unit. Typically, removal of contaminated clothing and rinsing the patient's skin with normal saline will prevent most of the product from permeating the patient compartment.

## Transportation:

How a patient is restrained and in what position they are restrained is a shared decision between police and EMS crews. Patients are never to be restrained in a prone position.

## Taser Wounds: P Paramedic

**EMS providers are NOT permitted to remove Taser Barbs from the skin.** Assess the patient for any potential excited delirium. Agitated patients should be permitted to walk with supervision.

**Any disagreement regarding the transportation of a patient should be referred to medical control, the division chief, and the police/sheriff shift supervisor.**

# General Treatment Guidelines – START / JumpSTART Triage

F	First Responder
E	EMT/CT
P	Paramedic

## Inclusion Criteria:

Any event requiring an emergency medical response involving multiple victims. Start / JumpSTART triage is designed to follow in line with standard incident command procedures.

The triage portion of START, relies on making a rapid assessment (taking less than a minute) of every patient, determining which of four categories patients should be in, and visibly identifying the categories for rescuers who will treat the patients.

## Triage

The concept of triage is simply a method of quickly identifying victims who have immediately life-threatening injuries AND who have the best chance of surviving so that when additional rescuers arrive on scene, they are directed first to those patients. The number of rescuers needing to be assigned to triage depends on how many patients you have. Keep in mind, it should take no longer than one minute to triage each patient, and probably less time. Met-tags should be utilized on all patients.

## The Movement of Patients

The next major consideration is how to move your patients to either ambulances, or if none are available, to treatment areas. This will require methods to carry them (flats, stretchers, backboards) and personnel assignment to teams to move these patients. The preferred number of personnel per team is four, however it can be done by three in most cases. Plan to assign many of your initial resources to this function. Be sure the equipment you use to carry patients arrives with the personnel.

## Transportation

Transportation will have to be organized early. An ambulance staging and loading area should be established and personnel assigned to keep it organized. Personnel must remain with their assigned units while in the staging areas.

## Patient Destination

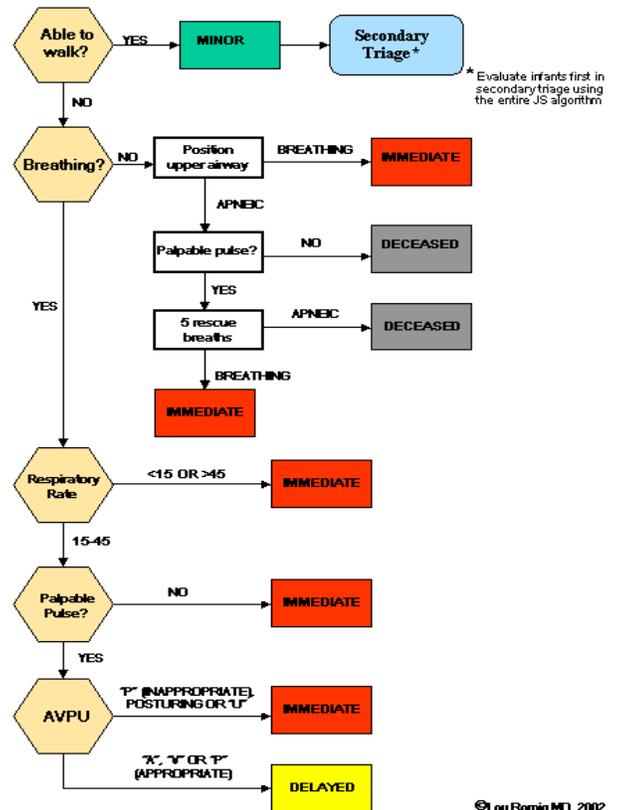
Coordinating patient destination is one of the more complicated functions. A system for the distribution of patients to area hospitals must be established in advanced and utilized properly by emergency personnel. The Incident Commander or designee performs this function. Since most systems of this nature take time to get organized, notification should be given as soon as possible so destinations are available when the first patient is ready for transport. Incident command should keep track of transportation destinations and Met-Tag “corners” should be kept to correspond with patient transport locations.

## In Summary

The first EMS providers on scene should utilize START/JumpSTART triage immediately and call for additional units. Incident command must be established and utilize START/JumpSTART triage on any event in which the number of patients taxes responding and available units.

START Triage		
Assess, Treat, (use bystanders)		
When you have a color STOP - TAG - MOVE ON		
M I N O R	-- <i>Move Walking Wounded</i>	
	D E C E A S E D	-- No RESPIRATIONS after <i>head tilt</i>
		-- <b>Breathing</b> but UNCONSCIOUS
		-- <b>Respirations</b> - over 30
		-- <b>Perfusion</b> Capillary refill > 2 or NO RADIAL PULSE
		-- <b>Mental Status</b> Unable to follow simple commands
I M M E D I A T E	D E L A Y E D	-- Otherwise
		<b>REMEMBER:</b>  Respirations - 30 Perfusion - 2 Mental Status - Can Do

### JumpSTART Pediatric MCI Triage®



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# General Treatment Guidelines – Universal Patient Care Guideline

The Universal Patient Care Guideline applies to all patients, and encompasses the basic foundation of initial treatment of any treatment guideline. Utilizing a universal patient care statement allows each guideline's content to focus on the main goals of patient treatment in each specific guideline.

F	First Responder
E	EMT/CT
P	Paramedic

- Providers should have the appropriate BSI applied prior to arrival on scene and add additional BSI precautions when necessary.
- Scene Size Up: Upon arrival on scene, providers should ensure the scene is safe, determine the number of patients, call for additional units if indicated, determine the mechanism of injury/nature of illness and bring all necessary equipment to the patient's side.
- Assessments: Providers must determine which type of assessments applies to each patient. All patients should receive an initial assessment. Additional assessments may include a detailed and/or focused assessment. Assessments should be age appropriate. All patients that are transported should receive ongoing assessments while en route to the emergency room.
- Spinal Movement Restriction (Spinal Immobilization) must be performed on all trauma patients complaining of neck and/or back pain. Spinal movement restriction must also be performed anytime a mechanism of injury carries an index of suspicion for spinal injuries.
- Oxygen shall be utilized on all patients with an SpO<sub>2</sub> level less than 94%. Oxygen shall also be applied for any medical/traumatic event in which the patient could benefit from oxygen administration. This includes, but is not limited to, patients who present with shock, altered mental status, and chest pain.
- Vital Signs shall be taken on all patients unless the patient refuses an assessment. Initial vital signs include: blood pressure, pulse, SpO<sub>2</sub> and respirations. Additional vital signs may be required depending on the patient's chief complaint. For example, patients complaining of a fever should have a tympanic temperature taken. Patients with an altered mental status or signs or history of diabetes should have their blood glucose level assessed.
- ETCO<sub>2</sub> when a Zoll monitor is present, providers must utilize capnography on any patient on CPAP or being ventilated. The ETCO<sub>2</sub> adapter can fit between the mask and bag section of the BVM and should be employed as soon as possible. Ventilation rates should be based off capnography results. ETCO<sub>2</sub> can also be considered while administering a breathing treatment.
- Cardiac Monitor: All patients complaining of chest pain shall have a 12 lead ECG performed. Additionally, any female patient, elderly patient or diabetic patient complaining of weakness, dizziness, abdominal pain, nausea or vomiting should have a 12 lead ECG performed as well. If the patient is refusing transport and/or 12 lead analysis, the provider must document this on the PCR.
- INT placement: Providers will sometimes attempt to initiate IV access as a courtesy to emergency room staff. If IV access is not necessary for EMS transport, providers shall only perform one (1) IV attempt. In pediatric patients, if IV access is not necessary, no IV attempt should be performed.
- When assessing for pain, use a 0-10 scale; 0=no pain; 10=worst pain ever experienced.
- Orthostatic vital signs should be taken on any patient where volume status is in question.
- Providers should strive to select the patient destination best suited for the patient's needs.
- It may be necessary to reference several treatment guidelines while treating a patient.
- Documentation: It is mandatory to document the reason why an intervention was not performed if it was indicated. Additionally, all transported ALS calls should have the narrative section of the patient care report documented by the paramedic providing care for the patient. An approved medical abbreviation list is supplied in the appendix section and only these approved abbreviations should be utilized.

# General Treatment Guidelines – Pain Management

## Inclusion Criteria:

This guideline applies to patients suffering from severe pain or discomfort, including isolated extremity injuries, musculoskeletal or soft tissue injuries, flank pain due to suspected kidney stone, sickle cell crisis, labor, and other causes.

F	First Responder
E	EMT/CT
P	Paramedic

### F First Responder

1. Assess and support ABCs. Offer comfort and reassurance.
2. **Do not give anything by mouth.**
3. Patient positioning:
  - a. Initiate patient positioning and spinal movement restrictions, as needed.
  - b. If no spinal injury is suspected, place the patient in a position of comfort.
  - c. If evidence of shock, place the patient supine and monitor airway closely. Treat shock according to the **Shock Guideline**.
4. Administer oxygen, as needed to maintain an adequate SpO<sub>2</sub>.
5. Splint injured extremities and apply cold packs.

### E EMT/CT

6. Consider establishing IV access at a KVO rate or use an INT.
7. Check for medication allergies
- 8.

If sickle cell crisis:	
Adult Bolus normal saline at 10 ml/Kg, then maintain KVO rate	Pediatric Bolus normal saline at 10 ml/Kg, then maintain KVO rate

### P Paramedic

8. For non-traumatic back and abdominal pain, refer to the **Back Pain Guideline** or **Abdominal Pain Guideline**.

9. If the pain is unrelieved;	
<p>Adult</p> <ul style="list-style-type: none"> <li>• Morphine 2-4mg administer slowly. May repeat every 10 minutes to a maximum of 10mg. Titrate to effect.</li> </ul> <p>IV/IO/IM</p> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>• Fentanyl 25mcg administer slowly. May repeat every 10 minutes to a maximum of 100mcg. Titrate to effect.</li> </ul> <p>IV/IO</p> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>• Fentanyl 2 mcg/Kg IN ½ in each nostril. May repeat every 10 minutes to a maximum of 100mcg. Titrate to effect.</li> </ul> <p><b>CONTACT MEDICAL CONTROL</b> before administering Morphine if the patient is older than 65 yr of age, debilitated, has altered mental status, or SBP less than 110mmHg.</p> <p><b>Monitor carefully for evidence of sedation</b></p>	<p>Pediatric</p> <p><b>No standing orders for Morphine</b></p> <ul style="list-style-type: none"> <li>• Fentanyl 1-2 mcg/Kg administer slowly. May repeat every 10 minutes to a maximum of 100mcg.</li> </ul> <p>IV/IO</p> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>• Fentanyl 1-2mcg/Kg IN ½ in each nostril. May repeat every 10 minutes to a maximum of 100mcg.</li> </ul> <p><b>Monitor carefully for evidence of sedation</b></p>

10.

**Medical Control Treatment Options:**

<b>Additional Morphine, beyond standing order dose</b>	
<p style="text-align: center;"><b>Adult</b></p> <ul style="list-style-type: none"><li>• Additional Morphine in 2-4mg increments. IV/IO/IM</li><li>• Additional Fentanyl in 25mcg increments. IV/IO</li><li>• Additional Fentanyl 2mcg/Kg increments IN</li></ul> <p><b>Observe carefully for evidence of over sedation</b></p>	<p style="text-align: center;"><b>Pediatric</b></p> <ul style="list-style-type: none"><li>• Morphine 0.1 mg/Kg administer slowly. May repeat every 10 minutes to a maximum of 10 mg. IV/IO/IM</li></ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"><li>• Additional Fentanyl in 1-2mcg/Kg increments. IV/IO</li><li>• Additional Fentanyl in 1-2mcg/Kg increments. IN</li></ul> <p><b>Observe carefully for evidence of over sedation</b></p>

# Medical Treatment Guidelines – Abdominal Pain

## Inclusion Criteria:

Patient's complaining of **non-traumatic** abdominal and/or pelvic pain.

F	First Responder
E	EMT/CT
P	Paramedic

## General Considerations:

It is important to remember that abdominal pain can be caused by a large number of different disease processes, some of which represent serious problems and some of which do not. The organ system that may be involved in abdominal pain includes: esophagus, stomach, intestines, liver, pancreas, spleen, kidneys, genital organs, bladder, as well as referred pain that can involve the heart, lungs, or pleura. Abdominal pain can also be caused by musculoskeletal problems.

There are a number of problems that present with abdominal pain that are immediately life-threatening or may progress to become life-threatening, such as: Myocardial infarction, perforated stomach, gallbladder or bowel, gastrointestinal bleeding from an ulcer, pancreatitis, appendicitis, diabetic ketoacidosis, ruptured esophagus, dissecting or ruptured abdominal aortic aneurysm, toxic ingestions, ectopic pregnancy, and ischemic bowel.

### F First Responder

1. Assess and support ABCs.
2. Place the patient in a position of comfort. If evidence of shock, place the patient supine.
3. Administer oxygen, as needed to maintain an adequate SpO<sub>2</sub>.

### E EMT/CT

4. Consider establishing IV access at a KVO rate or use an INT. If the patient is hypotensive, ADULT infuse a 250ml bolus, PEDIATRIC 20ml/kg bolus. Contact Medical Control for additional fluid.

### P Paramedic

5. Apply ECG (treat any dysrhythmias under its specific protocol) and evaluate for any signs of a myocardial Infarction.

### 6. For Stable Patients:

Adult:	Pediatric
<ul style="list-style-type: none"> <li>• Ondansetron HCL (Zofran) 2mg administered slowly over 1 minute to a maximum dose of 4mg. IV/IO</li> <li>- OR -</li> <li>• Phenergan 12.5mg mixed in 100mL normal saline administered slowly. Maximum dose of 25mg. IV/IO/IM</li> </ul>	<ul style="list-style-type: none"> <li>• Ondansetron HCL (Zofran) – 0.1mg/Kg administered slowly over one minute to a maximum dose of 4mg IV/IO</li> </ul> <p><b>(Do Not Administer Ondansetron to children under two years of age.)</b></p> <p><i>(Note) Promethazine (Phenergan) should not be given to the pediatric patient.</i></p>
<p><b>Do not administer morphine sulfate for abdominal pain management</b></p> <ul style="list-style-type: none"> <li>• Fentanyl 25mcg administer slowly. May repeat every 10 minutes to a maximum of 100mcg. Titrate to effect. IV/IO</li> <li>OR</li> <li>• Fentanyl 2 mcg/Kg IN ½ in each nostril. May repeat every 10 minutes to a maximum of 100mcg. Titrate to effect.</li> </ul>	<p><b>Contact medical control for pain management orders</b></p> <p><b>Do not administer morphine sulfate for abdominal pain management</b></p>

7. For Unstable Patients:

<p>Adult:  <b>Contact Medical Control</b>                  Do not administer morphine sulfate for abdominal pain management</p>	<p>Pediatric  <b>Contact medical control</b>                  Do not administer morphine sulfate for abdominal pain management</p>
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8. Treat for shock if indicated.

**PEARLS:**

- **Do not administer Fentanyl to women with a potential for pregnancy**
- Abdominal pain in women of childbearing age should be treated as an ectopic pregnancy until proven otherwise.
- Antacids should be avoided in patients with renal disease.
- The diagnosis of abdominal aneurysm should be considered with abdominal pain in patients over 50.
- Appendicitis often presents with vague, periumbilical pain which migrates to the RLQ over time.
- Consider a cardiac cause in all patients complaining of nausea / vomiting.
- If the patient's condition allows for the administration of pain medication, medication dosage should be geared towards "managing" the severity of the abdominal pain and not alleviating the pain entirely. The administration of pain medication may alter the physician's assessment and thus should be as minimal as possible.

# Medical Treatment Guidelines – Allergic Reaction

## Inclusion Criteria:

Patients presenting with rash, hives, shortness of breath, or other signs and symptoms, up to and including shock, apparently due to an allergic reaction.

F	First Responder
E	EMT/CT
P	Paramedic

### F First Responder

1. Assess and support ABCs.
2. Place the patient in a position of comfort. If evidence of shock, place the patient supine.
3. Isolate the patient from the source of the allergen, if possible.
4. Administer oxygen, as needed to maintain an adequate SpO<sub>2</sub>.

### E EMT/CT

5. Assess breath sounds. If wheezing is present and paramedics are not present at the scene, the EMT-I may administer Epinephrine via the patient's own autoinjector, if available.
6. Consider establishing IV access at a KVO rate or use an INT. If the patient is hypotensive, ADULT infuse a 250ml bolus, PEDIATRIC 20ml/kg bolus. Contact Medical Control for additional fluid.

### P Paramedic

7. Apply ECG (treat any dysrhythmias under its specific protocol) and ETCO<sub>2</sub> monitors (when applicable) if respiratory distress or shock is present or develops.

8. Conditions:

If localized reaction only (hives) administer:	
<p style="text-align: center;"><b>Adult</b></p> <p>Diphenhydramine 12.5mg to 25mg may repeat every ten minutes to a maximum dose of 50mg IV/IO/IM</p>	<p style="text-align: center;"><b>Pediatric</b></p> <p>Diphenhydramine 1-2mg/Kg to a maximum of 12.5mg for any single dose. Administrations should be given slowly and may be repeated every ten minutes to a maximum of 50mg. IV/IO/IM</p>
If dyspnea without shock, hypoperfusion, or critical airway, administer:	
<p style="text-align: center;"><b>Adult</b></p> <ul style="list-style-type: none"> <li>• 1:1,000 Epinephrine 0.3mg SQ. May repeat single dose every 20 minutes up to three times</li> <li>• 250 mL normal saline fluid boluses as needed (up to 1,000 mL) to maintain a systolic pressure of 90 mmHg</li> <li>• Diphenhydramine 12.5mg to 25mg may repeat every ten minutes to a maximum dose of 50mg IV/IO/IM</li> <li>• Albuterol 2.5mg via nebulizer for bronchospasm unresponsive to Epinephrine SQ and Diphenhydramine, after 5 minutes. May repeat for three (3) doses.</li> </ul> <p>Treatments Cont'd on next page.....</p>	<p style="text-align: center;"><b>Pediatric</b></p> <ul style="list-style-type: none"> <li>• 1:1,000 Epinephrine 0.01mg/kg SQ (max dose - 0.3mg)</li> <li>• 20 mL/kg normal saline fluid bolus</li> <li>• Diphenhydramine 1mg/kg - 2mg/kg IM, IV, IO</li> <li>• Albuterol 2.5mg via nebulizer for bronchospasm unresponsive to Epinephrine SQ and Diphenhydramine, after 5 minutes. May repeat for three (3) doses.</li> </ul> <p>Treatments Cont'd on next page.....</p>

**ONLY EPINEPHRINE 1:10,000 MAY BE GIVEN IV. THIS SHOULD ONLY BE IN EXTREME CIRCUMSTANCES IN WHICH THE PATIENT IS PROFOUNDLY SYMPTOMATIC.**

**If dyspnea without shock, hypoperfusion, or critical airway, administer:**

Adult	Pediatric
<ul style="list-style-type: none"> <li>If no response to subcutaneous Epinephrine and fluid bolus within 10 minutes, Administer <b>1:10,000 Epinephrine Drip</b>. (1mg in 1,000 normal saline. Run at 1mL/min. Titrate to improved respiratory status and/or blood pressure). <b><u>VERIFY DOSE WITH PARTNER</u></b>. IV/IO</li> <li>Solumedrol 125 mg IV/ IO</li> </ul>	<ul style="list-style-type: none"> <li>If no response to subcutaneous Epinephrine and fluid bolus within 10 minutes, Administer <b>1:10,000 Epinephrine Drip</b>. (1mg in 1,000 normal saline. Run at 1mL/min. Titrate to improved respiratory status and/or blood pressure). Maximum pediatric dose is .25mg (250mL). <b><u>VERIFY DOSE WITH PARTNER</u></b>. IV/IO</li> <li>Solumedrol 1-2 mg/Kg IV/IO</li> </ul>

**ONLY EPINEPHRINE 1:10,000 MAY BE GIVEN IV. THIS SHOULD ONLY BE IN EXTREME CIRCUMSTANCES IN WHICH THE PATIENT IS PROFOUNDLY SYMPTOMATIC.**

**If shock, severe hypoperfusion, critical airway or SBP less than 90 mmHg, administer Epinephrine 1:1,000 SQ as soon as possible. Do not delay Epinephrine administration while attempting IV/IO**

**Medical Control Treatment Options:**

Adult	Pediatric
<ul style="list-style-type: none"> <li>Additional 250 mL normal saline fluid boluses as needed to maintain a systolic pressure of 90 mmHg.</li> <li>Additional Epinephrine 1:1,000 0.3mg SC.</li> <li>Additional Epinephrine 1:10,000 IV/ IO. <b><u>VERIFY DOSE WITH PARTNER</u></b></li> </ul>	<ul style="list-style-type: none"> <li>Additional 20 mL/kg normal saline fluid boluses as needed</li> <li>Additional Epinephrine 1:1,000 0.01 mg/kg SQ (max dose - 0.3mg),</li> <li>Additional Epinephrine 1:10,000 IV/IO. <b><u>VERIFY DOSE WITH PARTNER</u></b></li> </ul>

**For bronchospasm unresponsive to subcutaneous Epinephrine**

Adult	Pediatric
Albuterol 2.5mg via nebulizer	Albuterol 2.5mg via nebulizer

**For moderate to severe allergic reactions when the patient is on beta-blockers and is unresponsive to standard measures**

Adult	Pediatric
Glucagon 1-2mg IV/IO/IM/IN every 5 minutes	1-12 y.o. - Glucagon 1mg IV/IO/IM/IN < 1 y.o. – Glucagon 0.5mg IV/IO/IM/IN

# Medical Treatment Guidelines – Altered Mental Status

## Inclusion Criteria:

Patients who are disoriented, weak, dizzy, confused, suffered a syncopal episode or are unconscious.

**Definition:** For the purposes of a patient with altered mental status, hypoglycemia is defined as a blood glucose analysis of:

Adults: less than 80mg/dL (non-diabetic), **OR** less than 110mg/dL (diabetic)

Pediatrics: less than 60 mg/dL (non-diabetic) **OR** less than 90mg/dL (diabetic)

F	First Responder
E	EMT/CT
P	Paramedic

**NOTE:** An Acronym for determining causes of altered mental status is: **A-E-I-O-U-T-I-P-S**; alcohol, epilepsy, insulin, overdose, under-dose, trauma, infection, psychosis, PEA, pulmonary, sepsis, shock.

## F First Responder

1. Assess and support ABCs. If trauma is suspected, immobilize the spine and refer to the **Trauma Guideline**.
2. Place the patient in a position of comfort or in the left lateral position. If evidence of shock, place the patient supine and monitor airway closely. Keep warm.
3. Administer oxygen as needed to maintain an adequate SpO<sub>2</sub>

## E EMT/CT

4. Perform finger stick blood glucose analysis (BGA). If the patient is hypoglycemic AND can protect his or her airway, administer 1 tube oral glucose via sublingual or buccal routes. If symptoms persist after 10 minutes, and the patient can still protect their own airway, administer a second tube of oral glucose.
5. Consider establishing IV access at a TKO rate or use a saline lock. If the patient is hypotensive, treat according to **Shock Guideline**.

## HYPOGLYCEMIA

If the patient is hypoglycemic AND . . .

**. . . the level of consciousness does not improve with oral glucose, or if oral glucose could not be given, administer:**

Over age 12 years	1 month to 12 years	Less than 1 month
10% Dextrose, 125mL (6.25grams) Slow IV push via a 60 gtts set <ul style="list-style-type: none"> <li>• If symptoms and/or hypoglycemia persist after 5 minutes, administer an additional 125mL (6.25) grams</li> </ul> Consider D50W administration for patients refractory to D10 Administration	5mL/kg of 10% Dextrose Slow IV push via a 60 gtts set <ul style="list-style-type: none"> <li>• Administer half of the above dose and monitor for improvement.</li> </ul> If symptoms and/or hypoglycemia persist after 10 minutes, administer the remaining dose	5mL/kg of 10% Dextrose Slow IV push via a 60 gtts set <ul style="list-style-type: none"> <li>• Administer half of the above dose and monitor for improvement.</li> </ul> If symptoms and/or hypoglycemia persist after 10 minutes, administer the remaining dose

**If altered mental status and stimulant or hallucinogen (cocaine, amphetamine, ecstasy, LSD, PCP, ketamine) toxicity suspected;**

Adult	Pediatric
If a stimulant was ingested and hyperthermia is suspected, monitor patient's temperature frequently. Be prepared to cool the patient if necessary.	If a stimulant was ingested and hyperthermia is suspected, monitor patient's temperature frequently. Be prepared to cool the patient if necessary.

**P Paramedic**

**... IV or IO access cannot be obtained, administer:**

<b>Over age 12 years</b> Glucagon 1mg IM.	<b>1 year to 12 years</b> Glucagon 1mg IM.	<b>Less than 1 Year</b> Glucagon 0.5mg IM.
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**SUSPECTED NARCOTIC OVERDOSE**

**If hypoglycemia has been ruled out and there is evidence of narcotic use, administer**

<p style="text-align: center;"><b>Adult</b></p> <ul style="list-style-type: none"> <li>Naloxone 0.4mg. May repeat every 5 minutes until respiratory rate improves. Maximum dose of 1.6mg IV/IO/IM/IN</li> </ul> <p style="text-align: center;"><b>FOLLOW TREATMENT GUIDELINE: OVERDOSE AND POISONING</b></p>	<p style="text-align: center;"><b>Pediatric</b></p> <ul style="list-style-type: none"> <li>Naloxone 0.1mg/Kg to a maximum single dose of 0.4mg every 5 minutes until respiratory rate improves. Maximum dose of 1.6mg IV/IO/IM/IN</li> </ul> <p style="text-align: center;"><b>FOLLOW TREATMENT GUIDELINE: OVERDOSE AND POISONING</b></p>
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- All patients treated under these guidelines must have continuous cardiac monitoring. If a dysrhythmia develops, treat under its specific guidelines.
- If the respiratory rate or oxygen saturation does not improve with a full Naloxone dose, secure and monitor the patient's airway with an advanced airway, discontinue Naloxone use, and proceed in the algorithm.
- Monitor vital signs and transport.

**Notes:**

- If patient becomes alert and oriented after glucose/Glucagon administration, **do NOT** give Naloxone.
- If patient does not respond to glucose/Glucagon and Naloxone, consider other possible causes of altered LOC.
- Do not attempt to restore full consciousness in patients with evidence of narcotic use. Titrate Naloxone use to adequacy of ventilatory status.
- Any patient who receives Glucagon should be transported to an appropriate facility. The depletion of stored glucose could prove detrimental to a patient if rebound hypoglycemia were to ensue. Glucagon's peak effect occurs within 30 minutes of administration and lasts approximately one hour.

**Medical Control Treatment Options:**

**If altered mental status, bradycardia, AND calcium-channel blocker or beta-blocker toxicity suspected;**

<p style="text-align: center;"><b>Adult</b></p> <ul style="list-style-type: none"> <li>Calcium Chloride, 10-15 mg/Kg of a 10% solution. Maximum of 1 gram. Administer over 3 minutes. IV/IO</li> <li>Glucagon 1mg-2mg over 2-5min if IV/IO/IM/IN</li> </ul>	<p style="text-align: center;"><b>Pediatric</b></p> <ul style="list-style-type: none"> <li>Calcium Chloride, 10-15 mg/Kg of a 10% solution. Maximum of 1 gram. Administer over 3 minutes IV/IO</li> <li>Glucagon: Administer over 2-5 minutes IV/IO/IM/IN                     <ul style="list-style-type: none"> <li>- Less than 1 year - 0.5mg</li> <li>- 1– 12 years - 1mg</li> </ul> </li> </ul>
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**If altered mental status, tachycardia, AND tricyclic antidepressant toxicity suspected;**

<p style="text-align: center;"><b>Adult</b></p> <p>If the tachycardia is wide complex, administer Sodium Bicarbonate 1 mEq/Kg. Administer slowly over 3 minutes.</p>	<p style="text-align: center;"><b>Pediatric</b></p> <p>If the tachycardia is wide complex, administer Sodium Bicarbonate 1 mEq/Kg. Administer slowly over 3 minutes.</p>
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Medical Control Treatment Options Cont'd:

**If altered mental status and stimulant or hallucinogen (cocaine, amphetamine, ecstasy, LSD, PCP, ketamine) toxicity suspected;**

**Adult**

- If a stimulant or hallucinogen (cocaine, amphetamine, ecstasy, LSD, PCP, ketamine, bath salts, synthetic marijuana) was ingested, administer:
  - Versed 2.5mg-5mg administer slowly. May repeat every 10 minutes until agitation is relieved to a maximum of 10mg. Titrate to effect. IV/IO/IM/IN
  - OR -
  - (Valium 2mg-5mg if substituted may be repeated every 10 minutes to a maximum dose of 10mg. Titrate to effect). IV/IO/IM

**Monitor for respiratory depression**

**Pediatric**

- If a stimulant or hallucinogen (cocaine, amphetamine, ecstasy, LSD, PCP, ketamine) was ingested, administer:
  - Versed 0.2mg/Kg administered slowly. May repeat every 10 minutes to a maximum of 10mg. Titrate to effect. IV/IO/IM/IN
  - Valium 0.1-0.2 mg/Kg may be repeated to a maximum dose of 10mg. Titrate to effect. IV/IO/IM

**Monitor for respiratory depression**

# Medical Treatment Guidelines – Asystole

## Inclusion Criteria:

Apneic, pulseless patients with minimal or no electrical activity. This guideline is not intended for any patient in which resuscitation should not be attempted (refer to **Resuscitation Guideline**). If the patient's rhythm changes at any time during resuscitation, refer to appropriate treatment guidelines.

### F First Responder

1. Assess and support ABCs, which includes providing consistent, high-quality CPR and AED placement. Follow cardiac arrest guideline.

### E EMT/CT

2. Continue BLS care. Provide vascular access.

### P Paramedic

3. Apply ECG and ETCO<sub>2</sub> monitors. Following five minutes of ventilation with a BVM, paramedics may attempt endotracheal intubation. However, insertion must not interrupt chest compressions. (Insertion of a SUPRAGLOTTIC AIRWAY DEVICE is a suitable alternative to endotracheal intubation).
4. Confirm asystole in two ECG leads but place the monitor/defibrillator back in PADS lead after confirmation.
5. Medication:

F First Responder

E EMT/CT

P Paramedic

### Epinephrine

Adult  
1:10,000 1mg may be repeated every 3-5 minutes. IV/IO

Pediatric  
1:10,000 0.01 mg/Kg (0.1mL/Kg) every 3-5 minutes  
IV/IO

- 6 If any of the following possible causes of asystole are suspected, the following treatment guidelines should be initiated as soon as possible:
  - a. **Hypoxia** - Ventilate with 100% oxygen; confirm ETT or SUPRAGLOTTIC AIRWAY DEVICE position with capnography; ventilate with tidal volume equal to a one-hand squeeze of the BVM every 6-8 seconds.
  - b. **Hypothermia** - Protect the patient from further cooling; do not actively rewarm; administer only 1 round of drugs.
  - c. **Overzealous ventilation** – Provide 1 breath every 8 seconds. Low ETCO<sub>2</sub> levels may indicate either overzealous ventilation and/or ineffective chest compressions.

### Hypovolemia

Adult  
250 mL boluses as needed (up to 1,000 mL)

Pediatric  
20 mL/kg bolus. Medical Control must order additional fluid.

### Hyperkalemia (renal failure or dialysis) or pre-existing acidosis (renal failure, dialysis, methanol ingestion, Aspirin overdose) or tricyclic antidepressant overdose

Adult  
Sodium Bicarbonate 1 mEq/Kg administered slowly over 3 minutes.

\*\* Continuous nebulized Albuterol for renal failure patients suspected of hyperkalemia \*\*

Pediatric  
Sodium Bicarbonate 1 mEq/Kg  
Administered slowly over 3 minutes.

Narcotic overdose	
<p>Adult Naloxone 0.4mg. May repeat every 5 minutes. Maximum dose of 1.6mg IV/IO/IM/IN</p>	<p>Pediatric Naloxone 0.1mg/Kg to a maximum single dose of 0.4mg every 5 minutes. Maximum dose of 1.6mg IV/IO/IM/IN</p>
Tension pneumothorax	
<p>Adult Perform needle decompression on affected side of chest</p>	<p>Pediatric Contact Medical Control</p>

6. If Return of Spontaneous Circulation occurs, follow the **Post-Resuscitation Care treatment guideline**.



# Medical Treatment Guidelines – Bradycardia: 2010 Guideline

F	First Responder
E	EMT/CT
P	Paramedic

## Inclusion Criteria:

Patients with a heart rate less than 60 beats per minute. This guideline is not intended for patients with bradycardia secondary to increased intracranial pressure (refer to **Stroke or Trauma Guidelines**.)

### F First Responder

1. Assess and support ABCs.
2. Place patient in a position of comfort. If evidence of shock, place the patient supine.
3. Administer oxygen as needed to maintain an adequate SpO<sub>2</sub>.
4. If chest pain is present or develops, treat the pain under the **Chest Pain guideline** while continuing these guidelines.

### E EMT/CT

5. Establish IV access at a TKO rate or use an INT. (IV initiation **MUST NOT** delay care of the unstable patient)
6. Once advanced level care arrives on scene, give report and transfer care.
7. Establish an IO if attempts to establish an IV have failed.

### P Paramedic

8. Provide continuous cardiac monitoring. Obtain a 12-Lead ECG and transmit to Medical Control. (12-lead acquisition **MUST NOT** delay care of the unstable patient.)

FOR STABLE PATIENTS: Stable is defined as alert and with a systolic BP  $\geq$  90 systolic.

9. Initiate transport and monitor closely:

## FOR UNSTABLE PATIENTS

If signs or symptoms of hypoperfusion are present or develop:	
<p style="text-align: center;"><b>Adult</b></p> <ul style="list-style-type: none"> <li>• Correct any underlying causes of hypoxia</li> <li>• <b>Sinus Bradycardia/1<sup>o</sup> Heart Block/Mobitz I:</b> <ul style="list-style-type: none"> <li>○ Atropine 0.5mg</li> <li>○ Initiate TCP if refractory to Atropine</li> </ul> </li> <li>• <b>Mobitz type II/Third degree heart block:</b> <ul style="list-style-type: none"> <li>○ Atropine 0.5mg may be attempted</li> <li>○ Initiate TCP early</li> </ul> </li> </ul> <p>Versed 2.5mg-5mg may be administered prior to pacing. Administer slowly. May repeat every 10 minutes to a maximum of 10mg. IV/IO/IM/IN</p> <p>(Valium 2mg-5mg if substituted may be repeated every 10 minutes to a maximum dose of 10mg. IV/IO/IM)</p>	<p style="text-align: center;"><b>Pediatric</b></p> <ul style="list-style-type: none"> <li>• Ventilate with 100% oxygen for one full minute. Avoid overventilation.</li> <li>• If the pulse rate is still less than 60 after one minute of adequate ventilations, perform chest compressions and administer:           <ul style="list-style-type: none"> <li>○ Epinephrine - Administer <b>1:10,000 Epinephrine Drip</b>. (1mg in 1,000 normal saline. Run at 1mL/min. Titrate to improved respiratory status and/or blood pressure). Maximum pediatric dose is .25mg (250mL). <b>VERIFY DOSE WITH PARTNER.</b> IV/IO</li> <li>○ Atropine <b>Minimum 0.1mg per dose</b> 0.02mg/Kg. Repeat in 3-5 minutes up to 1.0mg. IV/IO</li> </ul> </li> </ul>

**ONLY EPINEPHRINE 1:10,000 MAY BE GIVEN IV. THIS SHOULD ONLY BE IN EXTREME CIRCUMSTANCES IN WHICH THE PATIENT IS PROFOUNDLY SYMPTOMATIC.**

**Transcutaneous Pacemaker Guidelines - ADULTS ONLY**

1. Set TCP rate at 60 beats per minute.
2. Set TCP milliamps . Begin at Zero (default setting) and slowly increase output and set current milliampere output to 2mA above the dose at which consistent capture is observed. If TCP is unsuccessful, turn off TCP and continue this treatment guideline.

**Medical Control Treatment Options:**

**Ongoing Serious Signs and Symptoms:**

If Atropine and TCP have failed to increase the rate, Dopamine's beta properties can be used in an attempt to increase the heart rate. Contact Medical Control prior to Dopamine administration.

Adult	Pediatric
<ul style="list-style-type: none"> <li>• Additional Atropine 0.5 mg (max dose = 0.04 mg/kg)</li> </ul> <p style="text-align: center;"><b>Refractory Bradycardia:</b></p> <ul style="list-style-type: none"> <li>• Dopamine 2-10mcg/kg/min – Titrate to patient's response</li> <li style="text-align: center;">- OR -</li> <li>• Epinephrine - Administer <b>1:10,000 Epinephrine Drip</b>. (1mg in 1,000 normal saline. Run at 1mL/min. Titrate to improved respiratory status and/or blood pressure). <b>VERIFY DOSE WITH PARTNER.</b> IV/IO</li> </ul>	<p style="text-align: center;">Consider Pacing at a rate of 100.</p> <p style="text-align: center;">Evaluate for mechanical capture. If achieved, increase milliamp setting by 2 milliamps.</p>

**ONLY EPINEPHRINE 1:10,000 MAY BE GIVEN IV. THIS SHOULD ONLY BE IN EXTREME CIRCUMSTANCES IN WHICH THE PATIENT IS PROFOUNDLY SYMPTOMATIC.**

# Medical Treatment Guidelines – Cardiac Arrest: 2010 Guidelines

F	First Responder
E	EMT/CT
P	Paramedic

During cardiac arrest, perfusion of the heart muscle itself falls dramatically once chest compressions have stopped. **Compressions must be continuous in order to ensure maximum perfusion of the heart.**

Therapy for medical CPR cases should be performed where the patient is found. Conditions, which prohibit this, such as a hazardous environment or inadequate workspace, should be indicated on the run report. Moving medical CPR patients early in the resuscitation phase interrupts CPR and diminishes the chances of recovery. In addition, the earlier the restoration of stable pulses occurs, the better the chance of full recovery. Attempts to move these patients can delay therapy and interfere with proper monitoring and care delivery.

**Endotracheal intubation should not be attempted in the first five minutes of cardiac arrest.**

**SUPRAGLOTTIC AIRWAY DEVICES (Blind insertion airway devices) can be considered a primary airway device and is a suitable advanced airway for early placement in cardiac arrest victims.**

Perform chest compressions without interruption at a rate of 110-120 compressions/minute. If defibrillation is required, all rescue personnel EXCEPT for the chest compressor should clear the patient while the defibrillator is charging. When the defibrillator is ready, shock immediately after the chest compressor clears. **EXTREME CAUTION MUST BE USED.**

**During transport, it is recommended at least two rescuers are present in the back of the ambulance regardless of whether or not the patient has regained spontaneous circulation.**

**Return of Spontaneous Circulation (ROSC)** means the return of a palpable pulse following resuscitation efforts. If this occurs, follow the **Post-Resuscitation Care Treatment Guideline and/or Induced Hypothermia Treatment Guideline** .

## F First Responder

1. Determine pulselessness.
2. Immediately initiate 2 minutes of chest compressions. Allow the chest to recoil between each compression.
3. Prepare to ventilate the patient using a BVM after two minutes of compressions.
4. Apply AED pads and prepare to shock if advanced providers are not immediately available. (Pauses in chest compressions must be kept as brief as possible) If a shock is advised, ensure no one is touching the patient, and deliver one shock. Resume two minute of chest compressions.
5. Ventilations should be administered interposing two breaths every 30 seconds using the BVM. These breaths should not interrupt chest compressions .
6. Allow the AED to reanalyze the cardiac rhythm once every 2 minutes.

## E EMT/CT

7. If possible, providers should attempt to apply defibrillation pads, insert an advanced airway device, and insert a patent IV/IO during the initial 2 minutes of compressions. These procedures **CANNOT** interfere with chest compressions.

8. Ventilation rates should be determined based upon the patient's  $\text{ETCO}_2$  as soon as possible. Slow the ventilatory rate to ensure a minimum  $\text{ETCO}_2$  level of 12-15mmHg. During the arrest,  $\text{ETCO}_2$  levels may rise and high levels should be permitted. If levels are high, ventilate at a rate of 1 breath every 8 seconds. (These breaths should not interrupt chest compressions)
9. Ensure compressions are adequate throughout patient care. If  $\text{ETCO}_2$  levels drop below 10mmHg, verify the ventilatory rate as well as compression depth.
10. Attempt to determine potential causes of the cardiac arrest.

**P Paramedic**

11. Ensure the adequacy of basic procedures, including chest compressions.
12. Move to ACLS algorithms and procedures.
13. Treat potential causes of the cardiac arrest.
14. Maintain patient care for a minimum of 10 minutes before attempting to move the patient to the ambulance for transport.

# Medical Treatment Guidelines – Chest Pain / STEMI

## Inclusion Criteria:

Ischemic chest pain even when caused by stimulant toxicity. This may include classic presentations or angina equivalents. Acute coronary syndrome in diabetics, elderly and female patients may present atypically. Ischemic chest pain is unusual in pediatric patients. Therefore, contact medical control on all pediatric ischemic chest pain patients.

**CAUTION:** Do NOT administer Nitroglycerin to any patient who has taken Viagra or similar drugs in the previous 36 hours.

F	First Responder
E	EMT/CT
P	Paramedic

### F First Responder

1. Assess and Support ABC's.
2. Minimize patient exertion. If hypotension develops, place patient in supine position and treat according to **Shock Guidelines**.
3. Administer oxygen as needed to maintain an SpO2 of 94%.

### E EMT/CT

4. Place the patient on cardiac monitor.
5. Establish IV access at a KVO rate or INT.
6. Check for allergies. If **NOT** allergic to aspirin, administer 325mg aspirin (4 baby aspirin) by mouth, making sure patient chews aspirin before swallowing. This dose can be given even if the patient has taken aspirin before the arrival of EMS.
7. If the patient has flat neck veins and systolic blood pressure is greater than 110mmHg, providers may administer the patient's own Nitroglycerin, 0.4mg SL every 5 minutes to a total of 3 doses, if available.

### P Paramedic

8. Continuous ECG monitoring must be maintained until arrival at the hospital or cath lab. Treat any underlying arrhythmias under the appropriate guidelines.
9. Obtain a 12-Lead ECG as soon as possible.

## 12-Lead ECG INTERPRETATION AND TREATMENT

Inferior Wall Infarction (ST Elevation – Leads II, III, AVF):

<p><b>Systolic Blood Pressure greater than 110mmHg:</b></p> <ul style="list-style-type: none"> <li>• Administer Nitroglycerin 0.4mg SL; may repeat every 5 minutes for a total of 3 doses. Beware of hypotension. <b>An IV must be established before the administration of Nitroglycerin.</b></li> <li>• Fentanyl 25mcg administer slowly. May repeat every 10 minutes to a maximum of 100mcg. IV/IO</li> <li>- OR -</li> <li>• Morphine 2-4mg administer slowly for pain unrelieved by 3 Nitroglycerin. May repeat every 10 minutes to a maximum of 10mg. IV/IO/IM. Do not administer if SBP falls below 110mmHg.</li> </ul>	<p><b>Systolic Blood Pressure less than 110 mmHg:</b></p> <ul style="list-style-type: none"> <li>• Position the patient flat</li> <li>• Administer 250mL fluid bolus IV; repeat up to a total of 1L if no pulmonary edema present. Titrate to keep SBP greater than 110mmHg.</li> <li>• Medical control may authorize the administration of Morphine or Fentanyl.</li> </ul>
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## Normal ECG, Anterior or Lateral Infarctions:

- IV initiation must not delay Nitroglycerin administration
  - Administer Nitroglycerin 0.4mg SL; may repeat every 5 minutes for up to 3 doses as long as SBP remains above 110 mmHg
  - Fentanyl 25mcg administer slowly. May repeat every 10 minutes to a maximum of 100mcg. IV/IO
- OR -
- Morphine 2-4mg administer slowly for pain unrelieved by 3 Nitroglycerin. May repeat every 10 minutes to a maximum of 10mg. IV/IO/IM. Do not administer if SBP falls below 110mmHg.

- **STEMI TREATMENT GUIDELINE**

Douglas County Fire Department will transport STEMI patients to Wellstar Douglas Hospital Cardiac Cath Lab (WDH CCL). In the event of unavoidable circumstances STEMI patients may be transported to Wellstar Cobb Hospital Cardiac Cath Lab (WCH CCL) or Tanner Carrollton Medical Center (TCMC).

### When transporting to Wellstar Douglas Hospital:

- Transmit the 12-lead ECG to Wellstar Douglas Hospital prior to giving the radio report. Advise 911 of the ECG time for time stamp. When giving the radio report, state this case is a “STEMI ALERT”.
- The CCL will be activated by WDH personnel
- Two patient identifiers must be phoned into Wellstar Douglas through a 911 patch thru to 678-715-6794 (911 will have this phone number available).
- All CCL transports will go directly to the Emergency Department where the CCL team will meet the patient, unless the CCL team will have a delayed response. If the CCL team will have a delayed response or is performing a procedure, the patient will be attended to in the emergency department until the CCL team is available.
- If there are NO CONTRAINDICATIONS TO ASPIRIN you MUST contact 911 and give them an Aspirin dosing time when you give your patient aspirin.

### When transporting to Wellstar Cobb hospital, utilize Wellstar Douglas as medical control:

- Transmit the 12-lead ECG to Wellstar Douglas Hospital prior to giving your radio report. When giving the radio report state this case is a “STEMI ALERT”.
- The medical control physician at WDH will make a destination decision based on the 12-lead ECG, patient report and key questions.
- If the destination is the cardiac cath lab at Wellstar Douglas or Wellstar Cobb;
  - Notify 911 of the destination to allow “time stamping”. This time must be documented on the PCR.
  - The resource nurse at WDH will activate the CCL team.
  - All CCL transports will go directly to the CCL unless the CCL team will have a delayed response. If there is a CCL delayed response the patient will be transported to the ER.
  - Acquire and transmit a second 12-lead ECG and fax directly to the CCL. Any other subsequent 12-lead ECG’s must be faxed directly to the CCL.
  - If the patient’s condition deteriorates, treat immediate life threats, acquire a 12-lead ECG and transmit to medical control to receive further care instructions.
  - To expedite patient information in the Wellstar system, notify WDH through a recorded 911 line of the patient’s name, DOB, and SSN. **DO NOT provide patient information via radio.**
  - WDH will remain as medical control until the patient arrives at the CCL or otherwise notified.

- A STEMI check sheet must be completed. A copy of this check sheet and a copy of the completed PCR must be left with the CCL team or the ER staff (if the patient was taken to the ER due to delayed CCL team response).

**When transporting to Tanner Carrollton Medical Center, utilize Tanner Carrollton as medical control:**

- Transmit the 12-lead ECG to TCMC prior to giving your radio report. When giving the radio report state this case is a **“STEMI ALERT”**.
  - Notify 911 of the destination to allow “time stamping”. This time must be documented on the PCR.
  - The resource nurse at TCMC will activate the TCMC team at TCMC.
  - All TCMC transports will be transported to the ER and from the ER go directly to the Cath Lab.
  - Any other subsequent 12-lead ECG’s must be faxed directly to the TCMC ER.
  - If the patient’s condition deteriorates, treat immediate life threats, acquire a 12-lead ECG and transmit to TCMC ER for further care instructions.
  - To expedite patient information in the Tanner system, notify TCMC ER through a recorded 911 line of the patient’s name, DOB, and SSN. **DO NOT provide patient information via radio.**
  - A STEMI check sheet must be completed. A copy of this check sheet and a copy of the completed PCR must be left with the TCMC team or the ER staff (if the patient was taken to the ER due to delayed CCL team response).

**UNDER MEDICAL CONTROL AUTHORIZATION ONLY**

Beta blockade with intravenous metoprolol initial dose 5mg SLOW IVP; repeat twice at 5 minute intervals for a total dose of 15mg.

- Hold or discontinue for SBP < 110, MAP < 50, AV block > 1<sup>st</sup> degree, evidence of pulmonary edema, or if the patient may have been using narcotic stimulants.
- Online medical control has the option to order Metoprolol to be given with a heart rate lower than 70, however DO NOT ADMINISTER METOPROLOL TO A PATIENT WITH A HEART RATE BELOW 60 OR A SBP < 110.

**\*\*Transportation to other facilities should be strongly discouraged. Rationale for transporting to the closest PCI facility must be explained to the patient and medical control must be contacted. If the patient refuses to be transported to WCH or TCMC in spite of medical advice, a 12-lead must be faxed to the receiving facility. The requested facility will serve as medical control.\*\***

**SPECIAL CIRCUMSTANCES:**

If at any time the SBP falls below 110mmHg in response to therapeutic drug therapy:

- Position the patient flat.
- Discontinue the administration of additional nitroglycerin, Fentanyl or Morphine.
- Administer 250mL fluid bolus IV. Repeat a fluid bolus up to a total of 1L if no pulmonary edema is present. Titrate fluid administration to maintain a SBP of 110mmHg.
- Notify Medical Control.

### Stimulant Induced Chest Pain:

If chest pain is suspected to be stimulant induced. Medical control may authorize the administration of Versed 2.5mg-5mg administer slowly. May repeat every 10 minutes to a maximum of 10mg. IV/IO/IM/IN Monitor the patient's body temperature frequently. Aggressively cool the patient if necessary. If shivering occurs stop cooling the patient. (Valium 2mg-5mg may be repeated every 10 minutes to a maximum dose of 10mg. IV/IO/IM)

### Cardiogenic Shock:

- Assure rate and rhythm have been treated.

#### Medical Control Treatment Options:

- If the SBP is below 90mmHg begin a dopamine drip at 2 – 10mcg/kg/minute, titrating to a SBP of 110mmHg.

### Air Transport for STEMI patients:

If dispatched to a potential AMI and any of the following two criteria are met, utilize air transport:

- During times of severe traffic delays
- Any other extenuating circumstances that may warrant the use of air transport

An air transport unit may be placed on ground alert. You must acquire a 12-lead ECG and determine if the patient has evidence of a STEMI before calling the air transport unit to the scene. A 12-lead must be immediately faxed to WDH with a STEMI ALERT and medical control must be advised of the intent to use air transport.

# Medical Treatment Guidelines – Dental Problems

## Inclusion Criteria:

Patients presenting with a missing or fractured tooth.

F	First Responder
E	EMT/CT
P	Paramedic

### F First Responder

1. Assess and support ABCs.
2. Assess for additional injuries.
3. Provide spinal movement restriction if indicated.
4. If spinal movement restriction is not indicated, place the patient in a position of comfort. If bleeding is present, place the patient in a sitting position and allow them to lean forward.
5. If the tooth is completely avulsed, place the tooth in milk or normal saline. If the tooth is still attached within the socket, position the tooth in the normal position, and transport the patient leaning forward to help prevent aspiration of the tooth if the tooth were to become dislodged.
6. Control bleeding using gauze and direct pressure.

### P Paramedic

7. Consider pain management. **Follow the Pain Management Guideline.**

# Medical Treatment Guidelines – Epistaxis

F	First Responder
E	EMT/CT
P	Paramedic

## Inclusion Criteria:

Patients presenting with a nosebleed.

Providers should attempt to determine the cause of the nose bleed. Common causes include trauma, infection, allergic rhinitis, hypertension and digital trauma. In addition to controlling the bleeding, provider should check for and treat when appropriate, any underlying causes.

### F First Responder

1. Assess and support ABCs.
2. Assess for additional injuries.
3. Provide spinal movement restriction if indicated. Once the patient is properly secured to the device, tilt the backboard to the patient's left to allow for drainage to occur out of the nose instead of down the oropharynx.
4. Have suction available. Patients who have swallowed a moderate amount of blood are likely to become nauseated and vomit.
5. If spinal movement restriction is not indicated, place the patient in a sitting position, leaning forward. Pinch the nose gently just below the bridge of the nose to control bleeding and use gauze pads to collect the blood flow.
6. **Do not pack the nostril.**
7. If bleeding continues, apply ice packs to the bridge of the nose, over the upper lip, or to the back of the neck.

### E EMT/CT

8. Assess for orthostatic changes.
9. Consider establishing IV access at a KVO rate or use an INT. Administer 250 mL boluses as needed to maintain adequate perfusion. Do not exceed 1 liter of IV fluids unless authorized by Medical Control. If needed, refer to **Shock Guidelines**.

### P Paramedic

10. Patients who are on blood thinners may experience significant bleeding. Treat for shock if indicated.

**If continuous bleeding continues despite the above treatment and the patient IS NOT hypertensive:**

<p style="text-align: center;">Adult</p> <p style="text-align: center;">If available: two puffs of Afrin nasal spray in the affected nostril.</p>	<p style="text-align: center;">Pediatric</p> <p style="text-align: center;">Consider medical control for administration of nasal spray</p>
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# Medical Treatment Guidelines – Hyperthermia

F	First Responder
E	EMT/CT
P	Paramedic

## Inclusion Criteria:

Patients presenting with an elevated body temperature.

Although typically caused by environmental exposure, hyperthermia can be induced by medical causes and drug interactions. Providers should attempt to determine the cause of the patient's hyperthermia. Treatment is usually geared towards supportive care and decreasing body temperature.

### F First Responder

1. Assess and support ABCs.
2. Assess for level of consciousness, skin condition, hypotension, seizure history and/or nausea.
3. Remove the patient from heat source.
4. Determine body temperature. (Do not delay treatment)
5. Remove excessive clothing.
6. Apply room temperature water to the skin and increase air flow around the patient.
7. If the patient shows signs of heat stroke (Tympanic temp greater than 104, altered level of consciousness, and/or flushed, hot skin) apply cold packs to pulse points including the neck, axilla and groin.
8. If the patient is conscious and mildly hyperthermic, consider allowing the patient to drink tepid to cool fluid. (Extremely cold fluid may cause nausea).

### E EMT/CT

9. Assess for orthostatic changes.
10. Consider establishing IV access at a KVO rate or use an INT. Administer 250 mL boluses as needed to maintain adequate perfusion. Do not exceed 1 liter of IV fluids unless authorized by Medical Control. If needed, refer to **Shock Guidelines**.

### P Paramedic

11. Apply ECG monitor and evaluate cardiac rhythm.
12. If hyperthermia is believed to be induced by medication overdose, contact poison control and follow the **Overdose and Poisoning Treatment Guideline**. Common drug overdoses that can induce hyperthermia include: antidepressants, phenothiazines, anticholinergic medications, cocaine, amphetamines and salicylates.

# Medical Treatment Guidelines – Hypothermia

## Inclusion Criteria:

Patients presenting with a decreased body temperature.

Hypothermia, a decrease in body temperature has three severity levels: (Caroline, 2008)

- Mild: 93- 95 degrees F (34 – 35 C)
- Moderate: 86 – 93 degrees F (30-34 C)
- Severe: < 86 degrees F (< 30 C)

F	First Responder
E	EMT/CT
P	Paramedic

For unresponsive or pulseless patients, confirm pulselessness for 30-45 seconds. If pulselessness is confirmed, start CPR and attach the AED. Only one shock (via AED or the Cardiac Monitor) is advised.

### F First Responder

1. Assess and support ABCs.
2. Remove any wet clothing and keep the patient dry. Avoid rough handling in patients with altered mental status.
3. **In mild hypothermia** – keep the patient covered and the passenger compartment of the ambulance well heated.  
**In moderate hypothermia** – Apply heat packs to the neck, armpits, and groin only.  
**In severe hypothermia** – DO NOT ACTIVELY REWARM. Keep the patient covered to prevent further heat loss.
4. Keep frozen extremities covered and protect from injury or further heat loss.

### E EMT/CT

5. Consider establishing IV access at a KVO rate or use an INT. Administer 250 mL boluses as needed to maintain adequate perfusion. Do not exceed 1 liter of IV fluids unless authorized by Medical Control. If needed, refer to **Shock Guidelines**
6. Perform blood glucose monitoring. Follow the **Altered Mental Status Treatment Guideline** if blood glucose levels are low.

### P Paramedic

7. Provide ECG and 12 lead monitoring and evaluate the cardiac rhythm.
8. Consider pain management for conscious patients with frostbitten extremities. Follow the **Pain Management Treatment Guideline**.
9. In the hypothermic cardiac arrest patient, limit medication administration to one round of medications, and only one defibrillation should be attempted.

## Key Points / Considerations:

- Shivering stops around 90 degrees (F) core body temperature.
- Ventricular Fibrillation is common below 88 degrees (F) and may not respond to defibrillation. Prolonged CPR may be necessary.
- Atrial fibrillation is also common in hypothermia while rewarming.
- Bradycardias during hypothermia should not be treated as they are physiologic.
- Do not assume altered mental status is due to hypothermia. Look for other causes.
- ALS drugs should be used sparingly, since peripheral vasoconstriction may prevent entry into central circulation until temperature is restored.

# Medical Treatment Guidelines – Overdose and Poisoning

F	First Responder
E	EMT/CT
P	Paramedic

## Inclusion Criteria:

Patients with an acute overdose or intoxication. All patients with suspected suicide attempt must be reported to Medical Control before leaving the scene. These guidelines are not intended for patients who are unconscious (**Altered Level of Consciousness Guideline**).

**Special Note:** EMS personnel may contact **911** via radio or cell phone to speak with Poison Control directly for advice on patient management. (Personnel must make all contact to Poison Control through 911 to have record of the conversation). EMS personnel are directed to follow the advice offered by the Poison Control Center as if it came directly from Medical Control.

## F First Responder

1. Assess and support ABCs.
2. Place the patient in position of comfort. Place the patient supine if hypotensive and treat according to **Shock Guidelines**.
3. If the patient requires restraint, follow the **Restraint of Patient Guideline**.
4. Administer oxygen as needed to maintain an adequate SpO<sub>2</sub>.
5. Begin transport as soon as possible. In general, patients exposed to carbon monoxide should be transported to the closest medical facility. If diverted to a facility equipped with a hyperbaric chamber, consider Crawford Long Medical Center).

## E EMT/CT

6. Consider establishing IV access at a KVO rate or use an INT. Administer 250 mL boluses as needed to maintain adequate perfusion. Do not exceed 1 liter of IV fluids unless authorized by Medical Control. If needed, refer to **Shock Guidelines**.

## P Paramedic

7. Apply ECG and ETCO<sub>2</sub> monitors if respiratory distress or shock is present or develops.

## Medical Control Treatment Options:

For bradycardia and/or hypotension - Follow the Bradycardia Guideline and consider the following special circumstances:

Adult	Pediatric
If calcium-channel blocker or beta-blocker was ingested: <ul style="list-style-type: none"> <li>• CaCl<sub>2</sub>, 10-15 mg/Kg of a 10% solution. Maximum of 1 gram. Administer over 3 minutes IV/IO</li> <li>• Glucagon 1mg-2mg over 2-5min if IV/IO/IM/IN</li> </ul>	If calcium-channel blocker or beta-blocker was ingested: <ul style="list-style-type: none"> <li>• CaCl<sub>2</sub>, 10-15 mg/Kg of a 10% solution. Maximum of 1 gram. Administer over 3 minutes IV/IO</li> <li>• Glucagon: Administer over 2-5 minutes IV/IO/IM/IN                             <ul style="list-style-type: none"> <li>- Less than 1 year - 0.5mg</li> <li>- 1– 12 years - 1mg</li> </ul> </li> </ul>

**For Tachycardia - Follow the Tachycardia Guideline and consider the following special circumstances:**

Adult	Pediatric
<ul style="list-style-type: none"> <li>• If tricyclic antidepressants were ingested and the tachycardia is wide complex, administer Sodium Bicarbonate 1mEq/kg. Administer slowly over 3 minutes.</li> <li>• If a stimulant or hallucinogen (cocaine, amphetamine, ecstasy, LSD, PCP, ketamine) was ingested, administer                             <ul style="list-style-type: none"> <li>○ Versed 2.5mg-5mg administer slowly. May repeat every 10 minutes to a maximum of 10mg. Titrate to effect. IV/IO/IM/IN</li> <li style="text-align: center;">- OR -</li> <li>○ (Valium 2mg-5mg if substituted may be repeated every 10 minutes to a maximum dose of 10mg. Titrate to effect). IV/IO/IM</li> </ul> </li> </ul> <p style="text-align: center;"><b>Monitor for respiratory depression</b></p> <ul style="list-style-type: none"> <li>• If a stimulant was ingested and hyperthermia is suspected, monitor the patient's temperature frequently. Be prepared to cool patient aggressively but do not allow shivering.</li> </ul>	<ul style="list-style-type: none"> <li>• If tricyclic antidepressants were ingested and the tachycardia is wide complex, administer Sodium Bicarbonate 1 mEq/Kg. Administer slowly over 3 minutes.</li> <li>• If a stimulant or hallucinogen (cocaine, amphetamine, ecstasy, LSD, PCP, ketamine) was ingested, administer:                             <ul style="list-style-type: none"> <li>○ Versed 0.2mg/Kg administered slowly. May repeat every 10 minutes to a maximum of 10mg. Titrate to effect. IV/IO/IM/IN</li> <li>○ Valium 0.1-0.2 mg/Kg may be repeated to a maximum dose of 10mg. IV/IO/IM</li> </ul> </li> </ul> <p style="text-align: center;"><b>Monitor for respiratory depression.</b></p> <ul style="list-style-type: none"> <li>• If stimulant was ingested and hyperthermia is suspected, monitor the patient's temperature frequently. Be prepared to cool patient aggressively but do not allow shivering.</li> </ul>

**For Hypoglycemia - Follow Altered Level of Consciousness Guideline**

**For Chest pain - Follow Chest Pain Guideline**

**For Suspected Narcotic Overdose - Follow Altered Level of Consciousness Guideline**

# Medical Treatment Guidelines – Post-Resuscitation Care: 2010 Guidelines

## Inclusion Criteria:

Patients who have regained a pulse after experiencing cardiac arrest

F	First Responder
E	EMT/CT
P	Paramedic

### F First Responder

1. Maintain adequate airway and ventilatory support.

### E EMT/CT

2. Titrate oxygen administration to maintain an SpO<sub>2</sub> of 94%. \
3. ETCO<sub>2</sub> levels may rise during ROSC and increased ETCO<sub>2</sub> should be permitted during this time period.
  - o During ROSC – If the patient is spontaneously breathing, allow the patient to adjust their own ETCO<sub>2</sub>
  - o During ROSC – If the patient is not spontaneously breathing, the target ETCO<sub>2</sub> is 50mmHg.

### P Paramedic

4. Monitor for recurrent arrhythmias.
5. Consider treatable causes: Hypovolemia, Hypoxia, Acidosis, Hypo/Hyperkalemia, Hypothermia, Tension Pneumothorax, Cardiac Tamponade, Toxins, PE, AMI.
- 6.

Treat hypotension (SBP < 90 mmHg)	
<p style="text-align: center;">Adult</p> <ul style="list-style-type: none"> <li>• IV/IO 1 liter normal saline</li> <li>• Consider treatable causes</li> <li>• 12 lead ECG</li> </ul>	<p>Pediatric Contact Medical Control</p>
<p style="background-color: #f44336; color: white; padding: 2px;"><b>Medical Control Treatment Options:</b></p> <ul style="list-style-type: none"> <li>• Dopamine 2-10 mcg/kg/min</li> </ul>	

7. Contact medical control for treatment guidance if STEMI is suspected. Authorization may be given to transport directly to a facility with PCI. Refer to **Chest Pain / STEMI Treatment Guideline**.

8..Consider following the **Therapeutic Hypothermia Treatment Guideline** if appropriate for patient's condition.

# Medical Treatment Guidelines – Pulseless Electrical Activity: 2010 Guidelines

## Inclusion Criteria:

This guideline applies to patients who are apneic and pulseless with any organized electrical activity on the monitor except for ventricular tachycardia. If patient's rhythm changes at any time during resuscitation, refer to appropriate guideline.

### F First Responder

1. Assess and support ABCs, which includes providing consistent, high-quality CPR and AED placement. Follow cardiac arrest guideline.

### E EMT/CT

2. Continue BLS care. Provide vascular access.

### P Paramedic

3. Apply ECG and ET<sub>CO</sub><sub>2</sub> monitors. Following five minutes of ventilation with a BVM, paramedics may attempt endotracheal intubation. However, insertion must not interrupt chest compressions. Insertion of a SUPRAGLOTTIC AIRWAY DEVICE is a suitable alternative to endotracheal intubation.
4. Confirm PEA in two ECG leads but place the monitor/defibrillator back in PADS lead after confirmation.
5. Medication:

#### Epinephrine

Adult	Pediatric
1:10,000 1mg may be repeated every 3-5 minutes. IV/IO	1:10,000 0.01 mg/Kg (0.1mL/Kg) every 3-5 minutes. IV/IO

6. If any of the following possible causes of PEA are suspected, the following treatment guidelines should be initiated as soon as possible:
  - a. **Hypoxia** - Ventilate with 100% oxygen; confirm ETT or SUPRAGLOTTIC AIRWAY DEVICE position with capnography; ventilate with tidal volume equal to a one-hand squeeze of the BVM every 6-8 seconds.
  - b. **Hypothermia** - Protect from further cooling; do not actively rewarm; administer only 1 round of drugs.
  - c. **Overzealous ventilation** - 1 breath every 8 seconds; low ET<sub>CO</sub><sub>2</sub> may indicate both overzealous ventilation and/or ineffective chest compressions.

#### Hypovolemia

Adult	Pediatric
250 mL boluses as needed (up to 1,000 mL)	20 mL/kg bolus. Medical Control must order additional fluid.

#### Hyperkalemia (renal failure or dialysis) or pre-existing acidosis (renal failure, dialysis, methanol ingestion, Aspirin overdose) or tricyclic antidepressant overdose

Adult	Pediatric
Sodium Bicarbonate 1 mEq/Kg administered slowly over 3 minutes. ** Continuous nebulized Albuterol for renal failure	Sodium Bicarbonate 1 mEq/Kg Administered slowly over 3 minutes.

<b>Narcotic overdose</b>	
<p style="text-align: center;">Adult</p> <p style="text-align: center;">Naloxone 0.4mg. May repeat every 5 minutes. Maximum dose of 1.6mg IV/IO/IM/IN</p>	<p style="text-align: center;">Pediatric</p> <p style="text-align: center;">Naloxone 0.1mg/Kg to a maximum single dose of 0.4mg every 5 minutes. Maximum dose of 1.6mg IV/IO/IM/IN</p>
<b>Tension pneumothorax</b>	
<p style="text-align: center;">Adult</p> <p style="text-align: center;">Perform needle decompression on affected side of chest</p>	<p style="text-align: center;">Pediatric</p> <p style="text-align: center;">Contact Medical Control</p>

7. If Return of Spontaneous Circulation occurs, follow the **Post-Resuscitation Care Treatment Guideline**.

# Medical Treatment Guidelines – Respiratory Distress

F	First Responder
E	EMT/CT
P	Paramedic

## Inclusion Criteria:

Patients complaining of shortness of breath, or those who have labored respirations, dyspnea, wheezes, or rales. This guideline is not intended for patients whose dyspnea is caused by trauma (**Trauma Guideline**) or allergic reactions (**Allergic Reaction Guideline**)

**Special Note:** If fever is present with any respiratory signs or symptoms, or if the patient is coughing, sneezing, or possibly generating airborne droplets, a HEPA mask should be worn by EMS personnel to avoid transmission of infection.

## F First Responder

1. Assess and support ABCs.
2. Position of comfort.
3. Administer oxygen as needed to maintain an adequate SpO<sub>2</sub>.
  - a. For COPD with chronic hypoxia (home O<sub>2</sub>), titrate oxygen flow to maintain SpO<sub>2</sub> of 88%-92%.
  - b. Observe for depressed ventilation.
4. Assess breath sounds.

## E EMT/CT

5. Establish IV access at a TKO rate or use a saline lock.
6. If a paramedic is not on scene, an EMT/CT may assist a patient in taking their prescribed metered dose inhaler if wheezing is present.

## P Paramedic

7. All patients treated under this guideline must have continuous cardiac monitoring. If a dysrhythmia develops, treat under its specific guideline.
8. When possible, patients treated under this guideline should have ETCO<sub>2</sub> monitoring. Watch for increasing levels of CO<sub>2</sub>.
9. For patients with a suspected allergic reaction, follow the **Allergic Reaction Guideline**.

### If the patient is wheezing without signs of CHF:

Adult	Pediatric
<ul style="list-style-type: none"> <li>• Albuterol 2.5 mg via nebulizer                             <ul style="list-style-type: none"> <li>○ If wheezing persists, but improving, two additional doses may be given.</li> <li>○ If wheezing persists but not improving with the first Albuterol dose, combine 2<sup>nd</sup> and 3<sup>rd</sup> Albuterol doses with Ipratropium (<i>Atrovent</i>) 0.5 mg</li> </ul> </li> <li>• <b>Maximum Albuterol dose is 3 doses</b></li> <li>• If no significant improvement, apply CPAP at 5 cm H<sub>2</sub>O pressure (oxygen 15 lpm).</li> <li>• Solumedrol 125 mg administered slowly IV/IO</li> <li>• Epinephrine 1:1,000 {0.3mg} SC, <u>ONLY</u> if no response to Albuterol and Ipratropium and NO history of heart disease.</li> </ul>	<ul style="list-style-type: none"> <li>• Albuterol 2.5 mg via nebulizer                             <ul style="list-style-type: none"> <li>○ If wheezing persists but improving after first Albuterol dose, two additional doses may be given.</li> <li>○ If wheezing persists but not improving with the first Albuterol dose, combine 2<sup>nd</sup> and 3<sup>rd</sup> Albuterol doses with Ipratropium (<i>Atrovent</i>) 0.5 mg</li> </ul> </li> <li>• Ipratropium (<i>Atrovent</i>) 0.5 mg                             <ul style="list-style-type: none"> <li>○ (infant less than one year - Ipratropium dose is 0.25 mg)</li> </ul> </li> <li>• Solumedrol 1-2 mg/Kg administered slowly IV/IO</li> </ul>
<p><b>If Stridor/Barking Cough or Children less than 2 years old With suspected Bronchiolitis:</b></p> <ul style="list-style-type: none"> <li>• Epinephrine Neb 5mL (0.5mg) of 1:10,000</li> <li>• Normal Saline 20mL/kg</li> </ul>	

**Signs of CHF present (rales, peripheral edema, JVD, CHF history, end-stage renal disease)**

Adult	Pediatric
<p><b>CPAP should be used soon after Nitro administration</b></p> <ul style="list-style-type: none"> <li>Nitroglycerin 0.4mg SL (may be administered without an IV if SBP greater than 110mmHg)                             <ul style="list-style-type: none"> <li>May repeat twice if SBP remains above 110mmHg</li> </ul> </li> <li>Apply CPAP at 5 cm H<sub>2</sub>O pressure (15 lpm oxygen)                             <ul style="list-style-type: none"> <li>May increase CPAP pressure up to flush if patient tolerates CPAP but isn't improving</li> </ul> </li> <li>Albuterol 2.5 mg via nebulizer if wheezing present                             <ul style="list-style-type: none"> <li>If wheezing persists, but improving, two additional doses may be given.</li> <li>If wheezing persists but not improving with the first Albuterol dose, combine 2<sup>nd</sup> and 3<sup>rd</sup> Albuterol doses with Ipratropium (<i>Atrovent</i>) 0.5 mg</li> </ul> </li> </ul> <p><b>Maximum Albuterol dose is 3 doses</b></p> <p>Obtain 12-Lead ECG and transmit to Medical Control (when fax capabilities available)</p>	<p>Contact Medical Control</p>

**Medical Control Treatment Options:**

**If wheezing continues despite above treatments, Medical Control options may include:**

Adult	Pediatric
<ul style="list-style-type: none"> <li>Additional doses of Albuterol 2.5mg via nebulizer with or without Ipratropium (<i>Atrovent</i>) 0.5 mg</li> <li>Epinephrine (1:1,000) 0.3mg SC if not contraindicated (Avoid in CHF exacerbation)</li> <li>Magnesium Sulfate: 2 grams mixed in 250mL given slowly over 6-10 minutes. Maximum dose is 4 grams. Monitor BP closely IV/IO</li> </ul>	<ul style="list-style-type: none"> <li>Additional doses of Albuterol 2.5mg via nebulizer with or without Ipratropium (<i>Atrovent</i>) 0.5 mg</li> <li>Epinephrine (1:1,000) 0.01mg/kg SC (max dose - 0.3mg) if not contraindicated</li> <li>Magnesium Sulfate 25-50mg/kg mixed in 250mL given slowly over 6-10 minutes. Maximum dose is 2 Grams.</li> </ul>

**Signs of CHF**

Adult	Pediatric
<ul style="list-style-type: none"> <li>Additional doses of Nitroglycerin 0.4mg SL, repeat every five minutes as long as SBP remains above 110mmHg</li> <li>Additional doses of Albuterol 2.5mg via nebulizer if wheezing is present</li> </ul>	<p>Contact Medical Control</p>

# Medical Treatment Guidelines – Seizure

## Inclusion Criteria:

All patients actively seizing or who have a history of seizure prior to EMS arrival.

F	First Responder
E	EMT/CT
P	Paramedic

**NOTE:** Consider alternative explanations for seizures. (A-E-I-O-U-T-I-P-S; alcohol, epilepsy, insulin, overdose, underdose, trauma, infection, psychosis, sepsis).

### F First Responder

1. Assess and support ABCs.
2. Place the patient in a position of comfort or in left lateral recumbent position facing the rescuers. If evidence of shock, place the patient supine and monitor airway closely. Treat shock according to the **Shock Guidelines**.
3. Administer oxygen as needed to maintain an adequate SpO<sub>2</sub>.

### E EMT/CT

4. Perform finger stick blood glucose analysis (BGA).  
If the patient is hypoglycemic, follow **Altered Level of Consciousness Guideline** for hypoglycemia.
5. Consider establishing IV access at a KVO rate or use an INT. If the patient is hypotensive, treat according to the **Shock Guideline**.

### P Paramedic

#### If Actively Seizing, administer:

Adult	Pediatric
Versed 2.5mg-5mg administer slowly. May repeat every 10 minutes to a maximum of 10mg. IV/IO/IM/IN (Valium if substituted 2mg-5mg may be repeated every 10 minutes to a maximum dose of 10mg).	Versed 0.2mg/Kg administered slowly. May repeat every 10 minutes to a maximum of 10mg. IV/IO/IM/IN (Valium if substituted 0.1-0.2 mg/Kg may be repeated to a maximum dose of 10mg).

All patients under this guideline must have continuous cardiac monitoring and pulse oximetry.

#### Medical Control Treatment Options:

##### Seizures

Adult	Pediatric
<ul style="list-style-type: none"> <li>• Additional Versed in 2.5-5mg increments. IV/IO/IM/IN</li> <li>• Additional Valium in 2-5mg increments IV/IO/IM</li> </ul>	<ul style="list-style-type: none"> <li>• Additional Versed in 0.2mg/Kg increments. IV/IO/IM/IN</li> <li>• Additional Valium in 0.1-0.2mg/Kg increments IV/IO/IM</li> </ul>

##### Seizure secondary to Narcotic overdose (rare)

Adult	Pediatric
<ul style="list-style-type: none"> <li>• Naloxone 0.4mg. May repeat every 5 minutes until respiratory rate improves. Maximum dose of 1.6mg IV/IO/IM/IN</li> </ul>	<ul style="list-style-type: none"> <li>• Naloxone 0.1 mg/kg <b>SLOW</b> IV push or IO (max single dose 0.4 mg)</li> </ul>

Use age based table to determine proper volume of **Midazolam (Versed)** for atomization

Patient age (yr)	Weight (kg)	IN Midazolam volume in ml* 5mg/ml concentration Midazolam volume dose (mg)	
Neonate	3	0.3ml	0.6mg
<1	6	0.4ml	1.2mg
1	10	0.5ml	2.0mg
2	14	0.7ml	2.8mg
3	16	0.8ml	3.2mg
4	18	0.9ml	3.6mg
5	20	1.0ml	4.0mg
6	22	1.0ml	4.4mg
7	24	1.1ml	4.8mg
8	26	1.2ml	5.2mg
9	28	1.3ml	5.6mg
10	30	1.4ml	6.0mg
11	32	1.4ml	6.4mg
12	34	1.5ml	6.8mg
Small teenager	40	1.8ml	8.0mg
Adult or full grown teenager	50 or more	2.0ml	10.0mg

\*This volume is based on the calculated dose PLUS 0.12ml dead space and rounded off to the next highest 0.1ml. Slightly higher doses may be appropriate at the lower range of volume due to measurement difficulties and possible under dosing which may not stop the seizure.

#### Dose Calculations

- Calculate appropriate dose of Midazolam using the following formula:
  - Children: Total kg wt X 0.2mg = total mg dose of Midazolam, (Maximum of 10mg)
  - Adults over 50kg: 10mg (2ml) of Midazolam
- Load Syringe with appropriate milliliter volume of Midazolam (use only 5mg/ml concentration) and attach MAD nasal atomizer.
- Place atomizer within the nostril.
- Briskly compress syringe to administer ½ of the volume as atomized spray.
- Remove and repeat in other nostril, so all the medication is administered.
- Continue ventilating patient as needed
- If seizures persist 5 minutes after treating, consider repeating ½ dose of Midazolam either intranasal, intramuscularly or intravenously. **Contact Medical Control for orders.**
- Secure airway if necessary.

**Try to establish IV access as soon as the seizure resolves or if intranasal is not effective in controlling seizure activity**

#### CAUTION:

Versed may cause hypoventilation and potential respiratory depression/arrest. Have equipment and help readily available to manage the airway when administering this medication.

If hypotension develops after the administration of Versed, administer a 20ml/kg bolus of Normal Saline.

# Medical Treatment Guidelines – Shock

## Inclusion Criteria:

Any patient experiencing signs and symptoms consistent with shock. Refer also to **Trauma, specific arrhythmia guidelines and Allergic Reaction Guidelines.**

F First Responder

E EMT/CT

P Paramedic

### F First Responder

1. Assess and support ABCs.
2. Do Not Give Anything by Mouth.
  - Initiate spinal movement restrictions, if needed. Place patient.
3. Control any obvious external bleeding.
4. Cover the patient to avoid heat loss. Do not over bundle.
5. Administer oxygen via non-rebreather mask at 10-15 lpm or via BVM.
6. Begin transport at the earliest possible moment.

### E EMT/CT

7. Establish IV access using normal saline with the following guidelines.
8. If unable to establish IV access, insert an IO.

Hypovolemic Shock	
<p style="text-align: center;">Adult</p> <ul style="list-style-type: none"> <li>• Establish one large bore IV line. (may establish INT as second access)</li> <li>• Infuse 250 mL boluses as needed, titrating to a systolic B/P of 90mmHg if shock is due to uncontrolled hemorrhage. In controlled hemorrhage or other causes of hypotension, target BP is 120 mmHg.</li> <li>• <b>Do not exceed 1,000 mL under standing orders.</b></li> </ul>	<p style="text-align: center;">Pediatric</p> <ul style="list-style-type: none"> <li>• Establish one IV line, largest bore possible. (May establish INT as second access)</li> <li>• Infuse bolus of 20 mL/kg, titrating to regain a radial pulse in the setting of uncontrolled hemorrhage or to normal systolic in other causes of hypotension.</li> <li>• Repeat once if systolic pressure not above 70 mm Hg.</li> <li>• If the patient is unconscious, consider the use of an intraosseous infusion early.</li> </ul>

### P Paramedic

9. Apply ECG, and SpO<sub>2</sub> monitors.
10. Monitor vital signs and neurological status during transport.

## Specific Guidelines per Type of Shock:

Cardiogenic Shock - Assure heart rate and rhythm are adequate, then;	
<p style="text-align: center;">Adult</p> <ul style="list-style-type: none"> <li>• Infuse a single 250 mL bolus unless pulmonary edema is present.</li> <li>• Contact Medical Control for vasopressor order.</li> </ul>	<p style="text-align: center;">Pediatric</p> <ul style="list-style-type: none"> <li>• Run fluid at TKO rate.</li> <li>• Contact Medical Control for vasopressor order.</li> </ul>

All Other Forms of Shock	
<p style="text-align: center;">Adult</p> <ul style="list-style-type: none"> <li>• One large bore line.</li> <li>• Infuse 250 mL boluses as needed titrating to a systolic B/P of 90 mmHg.</li> <li>• Do not exceed 1,000 mL under standing orders.</li> <li>• Epinephrine and Solumedrol for anaphylactic shock (see <b>allergic reaction guideline</b>)</li> </ul>	<p style="text-align: center;">Pediatric</p> <ul style="list-style-type: none"> <li>• One large bore line.</li> <li>• Infuse bolus of 20 cc/kg.</li> <li>• Repeat once if systolic pressure not above 70 mm Hg.</li> <li>• If the patient is unconscious, consider the use of an intraosseous infusion early.</li> <li>• Epinephrine and Solumedrol for anaphylactic shock (see <b>allergic reaction guideline</b>)</li> </ul>

**Monitor vital signs and neurological status during transport.**

**Medical Control Treatment Options:**

Hypovolemic Shock	
<p style="text-align: center;">Adult</p> <ul style="list-style-type: none"> <li>• Infuse 250 mL boluses as needed, titrating to a systolic B/P of 90mmHg if shock is due to uncontrolled hemorrhage. In controlled hemorrhage or other causes of hypotension, target BP is 120 mmHg.</li> </ul>	<p style="text-align: center;">Pediatric</p> <ul style="list-style-type: none"> <li>• Infuse bolus of 20 mL/kg, titrating to regain a radial pulse in the setting of uncontrolled hemorrhage or to normal systolic in other causes of hypotension.</li> </ul>

Cardiogenic Shock	
<p style="text-align: center;">Adult</p> <ul style="list-style-type: none"> <li>• If the mechanism of injury, symptoms and physical exam suggest a tension pneumothorax, needle decompression of the affected side may be indicated.</li> <li>• Assure rate and rhythm have been treated.</li> <li>• If the systolic B/P is between 70 mmHg and 90 mmHg, begin a Dopamine drip at 2 -10 mcg/kg/minute</li> <li>• Titrate all systolic B/P to at least 90 mmHg</li> </ul>	<p style="text-align: center;">Pediatric</p> <ul style="list-style-type: none"> <li>• If the mechanism of injury, symptoms and physical exam suggest a tension pneumothorax, needle decompression of the affected side may be indicated.</li> <li>• Assure rate and rhythm have been treated.</li> <li>• If the systolic B/P is below 70 mmHg, begin a Dopamine drip at 2 -10 mcg/kg/minute</li> </ul>

All Other Forms of Shock	
<p style="text-align: center;">Adult</p> <ul style="list-style-type: none"> <li>• Additional 250 mL boluses as needed to maintain a systolic B/P of 90 mmHg</li> <li>• Glucagon for Beta-Blocker and Calcium Channel Blocker OD <b>See Overdose and Poisoning Guideline</b></li> <li>• Pressure for Sepsis (Dopamine)</li> </ul>	<p style="text-align: center;">Pediatric</p> <ul style="list-style-type: none"> <li>• Additional bolus of 20 cc/kg to maintain a systolic B/P of 70 mmHg.</li> </ul>

# Medical Treatment Guidelines – Tachycardia: Narrow Complex: 2010 Guidelines

## Inclusion Criteria:

This guideline applies to patients who present with a narrow complex tachycardia.

F First Responder

E EMT/CT

P Paramedic

### F First Responder

1. Assess and support ABCs.
2. Place patient in a position of comfort. If evidence of shock, place the patient supine.
3. Administer oxygen as needed to maintain an adequate SpO<sub>2</sub>.

### E EMT/CT

4. If chest pain is present or develops, treat the pain under the **Chest Pain Guidelines** while continuing these guidelines.
5. Establish IV access at a TKO rate or use an INT (IV initiation MUST NOT delay care of the unstable patient).
6. Once advanced level care arrives on scene, give report and transfer care.
7. Establish an IO if attempts to establish an IV have failed.

### P Paramedic

8. Continuous cardiac monitoring. Obtain 12-Lead ECG and transmit to Medical Control (12-lead acquisition MUST NOT delay care of the unstable patient.)
9. **Always attempt to rule out sinus tachycardia as a potential cause of the symptoms.** (220 minus the patient's age [in years] is the upper limit of sinus tachycardia.)

## FOR STABLE PATIENTS WITH A TACHYDYSRHYTHMIA (SINUS TACHYCARDIA NOT SUSPECTED) If NO signs or symptoms of hypoperfusion are present or develop:

### Adult

- Attempt Valsalva maneuver, if the narrow-complex tachycardia is regular in appearance. (NOTE: ECG monitor must be continuously running during Valsalva maneuver.) Approved Valsalva maneuvers include having the patient blow into a syringe or bare down. **Carotid sinus massages are not permitted.**
- If SVT is suspected, administer Adenosine:
  - 6mg rapid IV push followed immediately by 20 mL saline rapid IVP push
  - If no conversion in 1 or 2 minutes, administer 12 mg rapid IV push followed immediately by 20 mL saline rapid IVP push.

### Pediatric

**Medical Control Treatment Options:**  
Medical control should always be contacted for any symptomatic pediatric tachycardia patient. Begin preparing for the following treatment guidelines while waiting on approval from medical control

- Consider Vagal Maneuvers
- Consider adenosine rapid IV/IO (Follow medical control dosing orders or Broselow Tape)

**FOR UNSTABLE PATIENTS WITH A TACHYDYSRHYTHMIA (SINUS TACHYCARDIA NOT SUSPECTED)  
If signs or symptoms of hypoperfusion are present or develop:**

<p style="text-align: center;">Adult – Unconscious</p> <ul style="list-style-type: none"> <li>• Immediate <u>synchronized</u> cardioversion @ 75J, 120J, 150J, 200J.</li> </ul>	<p style="text-align: center;">Pediatric</p> <div style="background-color: #ff0000; color: #fff; padding: 5px; margin-bottom: 10px;"> <p><b>Medical Control Treatment Options:</b> Medical control should always be contacted for any symptomatic pediatric tachycardia patient. Begin preparing for the following treatment guidelines while waiting on approval from medical control</p> </div> <ul style="list-style-type: none"> <li>• Consider Versed for sedation 0.2mg/Kg administered slowly. May repeat every 10 minutes to a maximum of 10mg. IV/IO/IM/IN                             <ul style="list-style-type: none"> <li>• (Valium if substituted 0.1-0.2 mg/Kg may be repeated to a maximum dose of 10mg)</li> </ul> </li> <li>• Synchronized cardioversion @ 0.5 J/kg, 1.0 J/kg, 2.0 J/kg.</li> </ul>
<p style="text-align: center;">Adult – Conscious</p> <ul style="list-style-type: none"> <li>• Contact medical control prior to cardioversion of atrial fibrillation</li> <li>• Administer Versed for sedation if appropriate. 2.5mg-5mg administer slowly. May repeat every 10 minutes to a maximum of 10mg. IV/IO/IM/IN.</li> <li>• Synchronized cardioversion @ 75J, 120J, 150J, 200J.</li> </ul>	

10. Initiate transport and monitor closely.

**Medical Control Treatment Options:**

Continued Sedation and Cardioversion for Ongoing Unstable Narrow-Complex Tachycardia	
<p style="text-align: center;">Adult</p> <ul style="list-style-type: none"> <li>• Additional Versed in 2.5mg-5mg increments.</li> <li>• Continued synchronized cardioversion</li> </ul>	<p style="text-align: center;">Pediatric</p> <ul style="list-style-type: none"> <li>• If heart rate greater than 220 BPM, contact medical control who may advise immediate synchronized cardioversion @ 0.5 J/kg, 1.0 J/kg, 2.0 J/kg.</li> </ul>

# Medical Treatment Guidelines – Ventricular Fibrillation / Pulseless Ventricular Tachycardia: 2010 Guidelines

## Inclusion Criteria:

Apneic, pulseless patients with ventricular fibrillation or pulseless ventricular tachycardia.

F	First Responder
E	EMT/CT
P	Paramedic

### NOTE:

First shock energy settings are listed below. Subsequent defibrillation attempts may be at either the same energy setting or the next higher setting, based upon clinical judgment at the time.

Adult 120 J	Pediatric 2 Joules/kg (subsequent shocks @ 4 Joules/kg, if required)
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Following any counter shock, even if the rhythm converts, immediately resume CPR and provide continuous chest compressions at a rate of at least 110-120 per minute (Push Hard and Push Fast) for two minutes before attempting to defibrillate again or proceeding with further assessment. Ensure full chest recoil and minimize interruptions in chest compressions.

## F First Responder

**2** Assess and support ABCs, which includes providing CPR until the defibrillator is ready. Apply hands-free defibrillation pads while performing CPR. Avoid overzealous ventilation! Perform all resuscitation maneuvers while in the PADS mode.

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R

If the Arrest is Witnessed	If the Arrest is NOT Witnessed
<ul style="list-style-type: none"> <li>Deliver a <b>SINGLE</b> counter shock before CAB(circulation, airway, breathing) interventions (unless there is a delay in getting to the defibrillator, during which time CPR should be initiated)</li> <li>Following countershock delivery, immediately begin/resume chest compressions for two minutes without rhythm or pulse checks.</li> </ul>	<ul style="list-style-type: none"> <li>Provide continuous chest compressions for two minutes with minimal interruptions</li> <li>Deliver a <b>SINGLE</b> countershock</li> <li>Immediately resume chest compressions without rhythm or pulse checks.</li> </ul>

## P Paramedic

**2** Continue CPR, apply ETCO<sub>2</sub> monitors and establish vascular access.

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Adult	Pediatric
Administer 1:10,000 Epinephrine 1mg may be repeated every 3-5 minutes. IV/IO	Administer 1:10,000 Epinephrine 0.01 mg/Kg (0.1mL/Kg) every 3-5 minutes IV/IO

Following five minutes of ventilation with a BVM, paramedics may attempt endotracheal intubation however; insertion **MUST NOT** interrupt chest compressions. Insertion of a SUPRAGLOTTIC AIRWAY DEVICE is a suitable alternative to endotracheal intubation.

2 Continue CPR, administer an antiarrhythmic:

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Adult
<ul style="list-style-type: none"> <li>Lidocaine 1-1.5 mg/kg IV/IO</li> <li>If Torsade de Pointes, administer Magnesium Sulfate 2 grams mixed in 250mL given slowly over 6-10 minutes. Maximum dose is 4 grams. IV/IO</li> <li>If the etiology of the arrest is trauma, administer Lidocaine 1-1.5 mg/kg IV/IO</li> </ul>

Pediatric
<ul style="list-style-type: none"> <li>Lidocaine 1mg/Kg up to 3mg/Kg</li> <li><b>Contact Medical Control</b> If Torsade de Pointes (polymorphic V-Tach) Magnesium Sulfate 25-50mg/Kg mixed in 250mL given slowly over 6-10 minutes. Maximum dose is 2 grams. IV/IO</li> </ul>

1. At the end of this period of CPR, check ECG rhythm for changes. If changes present, check the pulse.
  - a. If asystole or PEA has developed, resume CPR and refer to the appropriate treatment guideline.
  - b. If the patient remains in fibrillation, attempt defibrillation again with a **SINGLE** countershock and immediately resume CPR for two minutes.

If any of the following possible causes of ventricular fibrillation are suspected, initiate the appropriate treatment as soon as possible

**Hyperkalemia** (renal failure or dialysis) or **pre-existing acidosis** (renal failure, dialysis, methanol ingestion, Aspirin overdose) or **tricyclic antidepressant overdose**

Adult
Sodium Bicarbonate 1 mEq/Kg administered slowly over 3 minutes.  ** Continuous nebulized Albuterol for renal failure patients suspected of hyperkalemia **

Pediatric
Sodium Bicarbonate 1 mEq/Kg Administered slowly over 3 minutes.

If mechanism of injury AND symptoms AND physical exam suggest a **tension pneumothorax**

Adult
Perform needle decompression on affected side of chest.

Pediatric
<b>Contact Medical Control</b>

If Return of Spontaneous Circulation occurs, follow the **Post-Resuscitation treatment guideline**.

# Medical Treatment Guidelines – Tachycardia: Wide Complex: 2010 Guidelines

## Inclusion Criteria:

Heart rate greater than 150 bpm with sustained or non-sustained wide complex tachycardia or PVCs that may require treatment.

### F First Responder

1. Assess and support ABCs.
2. Place patient in a position of comfort. If evidence of shock, place the patient supine.
3. Administer oxygen as needed to maintain an adequate SpO<sub>2</sub>.

F First Responder

E EMT/CT

P Paramedic

### E EMT/CT

4. If chest pain is present or develops, consider following the **Chest Pain Guidelines** while continuing these guidelines.
5. Establish IV access at a TKO rate or use a saline lock. (IV initiation MUST NOT delay care of the unstable patient.)
6. Once advanced level care arrives on scene, give report and transfer care.
7. Establish an IO if attempts to establish an IV have failed.

### P Paramedic

8. Continuous cardiac monitoring. Obtain 12-Lead ECG and transmit to Medical Control. (12-lead acquisition MUST NOT delay care of the unstable patient.)

#### FOR STABLE PATIENTS WITH A NON-SUSTAINED WIDE COMPLEX TACHYCARDIA If NO signs or symptoms of hypoperfusion are present or develop:

<b>Adult</b> Initiate transport and monitor closely	<b>Pediatric</b> Initiate transport and monitor closely
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#### FOR STABLE PATIENTS WITH A SUSTAINED WIDE-COMPLEX TACHYCARDIA If NO signs or symptoms of hypoperfusion are present or develop:

<b>Adult</b> <ul style="list-style-type: none"> <li>• Lidocaine 0.5mg-1mg/Kg IV/IO</li> </ul> If conversion occurs, contact medical control for Lidocaine drip.	<b>Pediatric</b> Contact Medical Control
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**If signs or symptoms of hypoperfusion are present or develop:  
FOR UNSTABLE PATIENTS WITH A WIDE-COMPLEX TACHYCARDIA**

<p>Adult - Unconscious</p> <ul style="list-style-type: none"> <li>• Immediate <u>synchronized</u> cardioversion @ 75, 120J, 150J, 200J</li> <li>• Lidocaine 1-1.5mg/Kg IV/IO</li> </ul>	<p>Pediatric - Unconscious Contact Medical Control</p>
<p>Adult - Conscious</p> <ul style="list-style-type: none"> <li>• Consider administering 2.5 mg - 5 mg Versed slow IV/IO or Rapid IN for sedation. May get orders to repeat up to 10 mg (Valium 2-10mg IVP if substituted)</li> <li>• Synchronized cardioversion @ 75J, 120J, 150J, 200J</li> </ul>	<p>Pediatric - Conscious Contact Medical Control</p>

**Medical Control Treatment Options:**

<p><b>Non-sustained or PVCs</b></p>	
<p>Adult</p> <ul style="list-style-type: none"> <li>• Lidocaine 0.5-1mg/Kg IV/IO</li> </ul>	<p>Pediatric</p> <ul style="list-style-type: none"> <li>• Lidocaine 1mg/kg IV/IO</li> </ul>
<p><b>For stable patients with sustained wide-complex tachycardia <u>THAT IS NOT A SINUS TACHYCARDIA WITH ABERRANCY.</u></b></p>	
<p>Adult</p> <ul style="list-style-type: none"> <li>• Synchronized cardioversion @ 75J, 120J, 150J, 200J</li> <li>• For Torsade de Pointes                             <ul style="list-style-type: none"> <li>○ Magnesium Sulfate - 2 grams mixed in 250mL given slowly over 6-10 minutes. Maximum dose is 4 grams. IV/IO</li> </ul> </li> </ul>	<p>Pediatric</p> <ul style="list-style-type: none"> <li>• Lidocaine 1mg/kg IV/IO</li> </ul>
<p><b>FOR UNSTABLE PATIENTS WITH A WIDE-COMPLEX TACHYCARDIA <u>THAT IS NOT A SINUS TACHYCARDIA WITH ABERRANCY</u></b></p>	
<p>Adult</p> <ul style="list-style-type: none"> <li>• Synchronized cardioversion @ 75J, 120J, 150J, 200J.</li> <li>• Lidocaine 1-1.5mg/Kg IV/IO</li> <li>• For Torsade de Pointes                             <ul style="list-style-type: none"> <li>○ Magnesium Sulfate - 2 grams mixed in 250mL given slowly over 6-10 minutes. Maximum dose is 4 grams. IV/IO</li> </ul> </li> </ul>	<p>Pediatric</p> <ul style="list-style-type: none"> <li>• Immediate synchronized cardioversion @ 0.5 J/kg, 1.0 J/kg, 2.0 J/kg</li> <li>• Lidocaine 1mg/kg IV/IO</li> </ul>

# Medical Treatment Guidelines – Vomiting

## Inclusion Criteria:

Prolonged vomiting, or those actively vomiting after EMS arrival with no other symptoms or complaints.

F	First Responder
E	EMT/CT
P	Paramedic

### F First Responder

1. Assess and support ABCs.
2. Place the patient in a position of comfort or in left lateral position. If evidence of shock, place the patient supine and monitor airway closely. Treat shock according to the **Shock Guidelines**.
3. DO NOT GIVE ANYTHING BY MOUTH
4. Administer oxygen, as needed to maintain an adequate SpO<sub>2</sub>.

### E EMT/CT

5. Perform a blood glucose analysis and treat hypoglycemia per **Altered Level of Consciousness Guidelines**.

Consider establishing IV access at a KVO rate or use an INT. If fluid resuscitation is needed:	
<p style="text-align: center;">Adult</p> <ul style="list-style-type: none"> <li>• 250 mL boluses as needed (up to 1,000 mL)</li> </ul>	<p style="text-align: center;">Pediatric</p> <ul style="list-style-type: none"> <li>• 20 mL/kg bolus.</li> </ul>

6. Administer oxygen, as needed to maintain an adequate SpO<sub>2</sub>
7. Orthostatic Vital Signs (B/P and Pulse)

### P Paramedic

8. Apply ECG and ETCO<sub>2</sub> monitors if respiratory distress or shock is present or develops.

For Nausea and/or Vomiting	
<p style="text-align: center;">Adult</p> <ul style="list-style-type: none"> <li>• Ondansetron HCL (Zofran) 2mg administered slowly over 1 minute to a maximum dose of 4mg IV/IO</li> <li>- OR -</li> <li>• Promethazine (Phenergan) 12.5mg mixed in 100mL normal saline administered slowly. Maximum dose of 25mg. IV/IO/IM</li> </ul>	<p style="text-align: center;">Pediatric</p> <ul style="list-style-type: none"> <li>• Ondansetron HCL (Zofran) – <b>Do not administer to children under 2 years of age</b> 0.1mg/Kg administered slowly over one minute to a maximum dose of 4mg</li> </ul> <p style="text-align: center;"><b>Promethazine (Phenergan) should not be given to the pediatric patient.</b></p>

### Medical Control Treatment Options:

For Nausea and/or Vomiting	
<p style="text-align: center;">Adult</p> <ul style="list-style-type: none"> <li>• Additional Promethazine (Phenergan) in 12.5mg increments</li> </ul>	<p style="text-align: center;">Pediatric</p> <p style="text-align: center;"><b>Promethazine (Phenergan) should not be given to the pediatric patient.</b></p>

# Medical Treatment Guidelines – Resuscitation Guideline Principles

## DEFINITION:

This guideline applies to patients in cardiac arrest, or when the potential for imminent cardiac arrest is present.

## INITIATION OF CARDIOPULMONARY RESUSCITATION

Cardiopulmonary Resuscitation must be initiated on all patients unless an “obvious death” is present, or a valid Do Not Resuscitate Order is presented.

F	First Responder
E	EMT/CT
P	Paramedic

Cardiopulmonary Resuscitation **should NOT be initiated:**

1. When one or more criteria of “obvious death” are present.

Criteria of “Obvious Death” includes:

- a. Decapitation
- b. Decomposition
- c. Rigor Mortis
- d. Dependent Lividity
- e. Incineration
- f. Visual massive trauma to the brain or heart conclusively incompatible with life
- g. Advanced Level Providers may discontinue resuscitation attempts in victims of blunt traumatic cardiac arrests if no signs of life are present AND the patient is asystolic.

P Paramedic

2. When a Do Not Resuscitate Order is presented. (**Refer to Do Not Resuscitate Treatment Guideline**)

## DURING CARDIOPULMONARY RESUSCITATION

- The paramedic should be cognizant of the following facts during resuscitative efforts:
  - Persons in VFib, PEA, and asystole can potentially be resuscitated.
  - Reported “Down Times” are commonly inaccurate as a parameter of resuscitation potential.
  - Pupil size and response to light can be inaccurate since medications taken orally or directly in the eye can affect them.
  - Children and hypothermic patients may have fixed and dilated pupils from anoxia and yet be resuscitated without a neurological deficit.

## TERMINATION OF CARDIOPULMONARY RESUSCITATION

Studies have shown that rapid transport for in-hospital resuscitation after unsuccessful prehospital advanced cardiac life support rarely if ever results in survival to hospital discharge. Additionally, the risks associated with high-speed transport may outweigh the extremely small likelihood of benefit. As a result, the Medical Director has established the following set of guidelines that prehospital providers can use to terminate a resuscitation effort in the field.

- Field deaths not covered in this policy require assessment by a transporting paramedic and consultation with the Online Medical Control physician for determination of death.
- During the resuscitation effort, EMS personnel or appropriate fire/rescue personnel will inform the family of the progress of the resuscitative efforts and possible implementation of this policy. If any family member or responsible party indicates their objection to the termination of resuscitation efforts in the field, the resuscitation will continue and the patient will be transported.
- With the exception of blunt traumatic arrest, EMS personnel are not required to obtain an ECG strip for any patient who meets any of the “obvious death” criteria.
- Once cardiopulmonary resuscitation has been initiated, the paramedic **may terminate** all resuscitation efforts when **ALL** of the following criteria are met:
  1. Patient is an adult (greater than or equal to 18 years of age)
  2. Patient must have a presumed primary cardiac arrest or asystolic blunt traumatic arrest
  3. Patient must have the airway properly managed and adequate ventilations confirmed by methods discussed in the Airway Management Treatment Guidelines.

4. Patient must have a patent venous access and advanced life support measures applied throughout the initial resuscitation effort.
5. Patient must be in a sustained asystolic rhythm or PEA with a rate of less than 40 (see parameters below for time), and all causes of asystole and PEA have been considered and or treated if possible.
6. On scene resuscitation efforts by the paramedic will be sustained for a minimum of 20 minutes regardless of the previous CPR time and the arrest interval. Time begins with paramedic initiation of ALS care.
7. In the event the patient arrests in the presence of EMS personnel, the time of on scene advanced resuscitation efforts by the paramedic will be extended to 30 minutes.
8. On line medical control must be contacted for permission to terminate resuscitation efforts.

NOTE: EMS personnel are not obligated to continue resuscitation efforts initiated by other persons on the scene when the patient meets the above criteria.

The paramedic **should not terminate** a field resuscitation effort if any of the following are present:

1. The patient is less than 18 years of age.
2. The patient is visibly pregnant.
3. The patient whose cardiac arrest MAY BE associated with hypothermia, hyperthermia, drug overdose, toxicological exposures, airway obstruction or electrocution.
4. Patient is a victim at a crime scene or is in police custody.
5. In the setting where the family will not accept the termination of resuscitative efforts in the field.
6. Inability to communicate with the family present at scene or in telephone contact due to a language or cultural barrier.
7. The patient has persistent pulseless VF, VT, any narrow QRS complex, or any organized QRS complex at a rate of greater than or equal to 40.
8. The patient demonstrates any neurological signs consistent with life.
9. If the patient has a return of spontaneous circulation (pulse) for even a brief period.
10. A patient that has any return of spontaneous circulation must be transported even if cardiac arrest reoccurs.

### ONCE DEATH HAS BEEN DETERMINED

EMS personnel do not pronounce death but rather determine death based on predetermined criteria.

Pronouncement of death is made by a physician or the Coroner/medical examiner.

- Immediately notify the appropriate law enforcement agency or county coroner and remain on scene until they arrive.
- Cover the body with a sheet or other suitable item.
- Do not remove any property from the body or the scene for any purpose.
- If a resuscitation attempt was terminated in the field, leave all medical devices applied to the body in place (i.e., endotracheal tube, IV/IO, ECG pads, etc.)
- The body is to be left at the scene in the care of the appropriate law enforcement agency or county coroner.
- If a physician is present and has pronounced the patient dead, the physicians name and time of death should be documented on the ePCR.

### Dealing with the Family/Loved Ones

- Remember: The moment you stop resuscitative efforts on a person, you acquire a new set of patients – the family and loved ones.
- Briefly describe the circumstances leading to the death. Go over the sequence of events that transpired. Avoid euphemisms such as “he’s passed on” or “she is no longer with us”, instead, use the words “death”, “dying”, or “dead”.
- Allow time for the shock to be absorbed. Make eye contact. Consider touching family members and sharing your feelings. Convey your feelings with a phrase such as “you have our sincere sympathy” rather than “I am sorry”.
- Allow as much time as necessary for questions and discussion. Go over the events several times to make sure everything is understood and to facilitate further questions.
- Allow the family the opportunity to see their relative. If equipment is still connected, let the family know in advance.

### Resuscitation Guideline Principles (pg 3 of 3)

- Know in advance what happens next and who will sign the death certificate. One of the survivors will surely ask, “what do we do next”. Be prepared with a proper answer.

# Medical Treatment Guidelines – Do Not Resuscitate

## Inclusion Criteria:

This guideline addresses prehospital withholding and withdrawing of resuscitation

P Paramedic

## General Comments

1. Emergency medical services provide rapid evaluation and treatment of potentially life-threatening illnesses and injuries in the out of hospital environment. The first obligation is to the patient(s) in distress. The receipt of a 911 call establishes an implied contract to perform a patient assessment and give appropriate treatment.
2. Patient assessment should always occur promptly and without delay. NEVER withhold or put off patient assessment to take time to read a document. Vital moments in a patient's life may be spent in such an effort. In the absence of a valid DNR, requests by family members to withhold assessment and lifesaving treatment should be set aside initially except in the setting of a patient who is obviously dead.
3. EMS personnel are not trained in making legal opinions and should not attempt to decide if DNR orders or living wills are valid or not while on the scene of a patient in distress. Instead, verbal communication from (1) the patient, (2) the immediate family (authorized person), or (3) medical personnel specifically assigned to and familiar with the patient should be used to make the decision.
4. CPR can be stopped in the field in the proper settings. (OCGA 31-39-4). Patients experiencing asystole in the field almost always die. Even if they respond initially, almost no studies show survival of any of these patients to hospital discharge.
  - REMEMBER: Patients experiencing hypothermia may present in asystole. Patients must be warm (95°) before they are pronounced dead. The exception is in the obviously dead patient.
  - REMEMBER: Patients NEVER resuscitate beyond the point they were when they arrested. The terminally ill cancer patient will still have terminal cancer when resuscitated.
  - REMEMBER: Patients with chronic terminal illnesses that have been doing well will OFTEN have many more years of quality life when resuscitated.
5. Patients that have died or for whom it is later determined did NOT want intubation (or the individuals who legally may substitute their judgment for them did NOT want intubation) can be extubated in the emergency department. Endotracheal extubation should not be performed in the field.
6. Since each DNR situation must be dealt with on an individual basis and appropriate care and decision-making determined accordingly, professional judgment is mandatory in determining treatment modalities within the parameters of this protocol.
7. Emergency medical providers must always remember the primary goal of this profession: Render aid and comfort to the suffering. The application of this protocol in no way diminishes this responsibility. All patients whether they are dying, are near death, or have some other clinical problem deserve the provider's utmost compassion and concern.

## Withholding of Resuscitation

1. It is proper that resuscitation should not be attempted on certain patients. Any victim meeting one or more of the criteria of "obvious death" should have resuscitative attempts withheld. You must be familiar with the signs of obvious death. A patient, who is in rigor mortis, has dependent lividity (pooling of blood due to gravity), has decomposition, or has experienced decapitation or obviously fatal trauma should have resuscitation withheld. If there is EVER any doubt, attempt resuscitation.

2. "Down time," is fraught with too many variables to permit a specific period of time being used to determine whether or not to withhold resuscitation. The paramedic must exercise professional judgment in determining if "down time," in a particular set of circumstances, would clearly indicate withholding resuscitation. If there is any doubt, the medic should initiate a resuscitative attempt and proceed to URGENT HISTORY.
3. Living Will - In recognition of the dignity and privacy which patients have a right to expect, the Georgia General Assembly allows a competent adult person to make a written directive, known as a living will, instructing his physician and others to withhold or withdraw life-sustaining procedures in the event of a terminal condition, a persistent coma, or persistent vegetative state (SEE OCGA 31 -32). Each medic should be familiar with this statute, which includes a sample living will and goes into the execution and revocation of a living will, including the immunity of participants from liability.
  - REMEMBER: If you elect to ignore a living will and resuscitate the patient, you are protected from liability.
  - REMEMBER: If you elect to follow a living will's instructions, you are protected from liability.
4. DNR Order - This is an order in writing by the attending physician using the term "do not resuscitate," "DNR", "order not to resuscitate," "no code," or substantially similar language in the patient's chart. This constitutes a legally sufficient order and authorizes a physician, health care professional, emergency medical technician, cardiac technician, or paramedic to withhold or withdraw cardiopulmonary resuscitation whether or not the patient is receiving treatment from or is a resident of a health care facility (SEE OCGA 31 -39). Each medic should be familiar with this statute.

### Urgent History

1. Obtain the urgent history only after the appropriate medical measures have been initiated. The resuscitation measures should not be interrupted while the urgent history is obtained.
2. Determine the most legitimate person present from whom the history should be taken, for example the spouse, next of kin, and so on. This is the "authorized person."
3. Determine the following:
  - a. Is there a terminal illness involved?
  - b. Is there an advance treatment directive such as a living will or DNR order?
  - c. Did the patient express to an authorized person any desires regarding resuscitative measures, e.g. proxy directive through durable power of attorney for health care? If so, what?
4. REMEMBER: Just because a living will exists, does NOT mean that the patient wants NO resuscitative effort. Even a terminal cancer patient would likely want to have an airway suctioned, oxygen given, and proper aid and comfort administered.

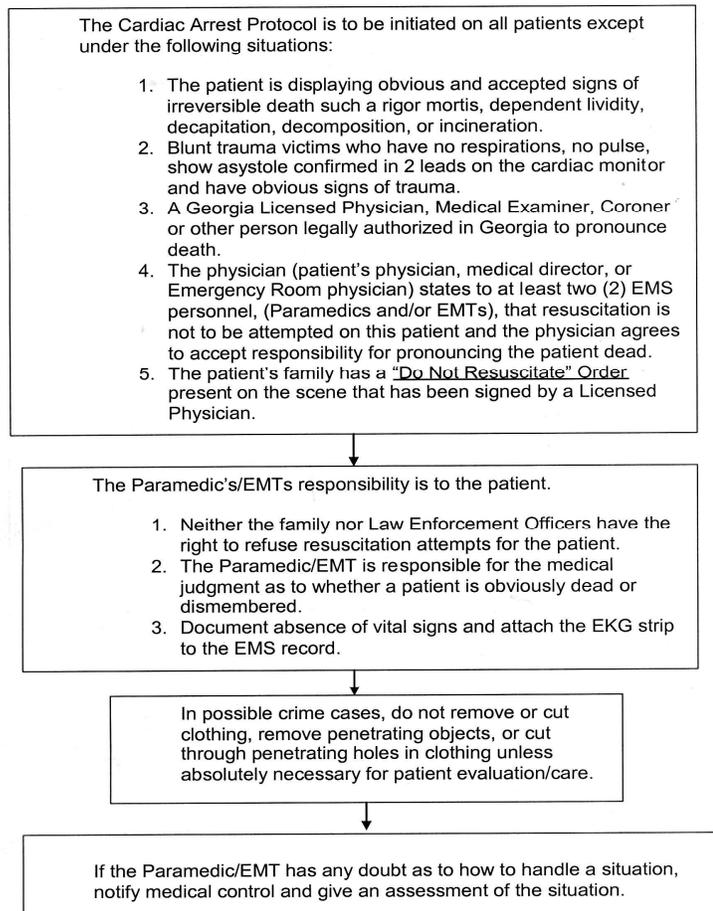
### Endotracheal Intubation

1. The field patient who is experiencing an arrest state should be evaluated when possible to determine if the patient may or may not have wanted to be intubated. This should not delay the medic's efforts to do so if, in the judgment of the medic, that intubation is the proper course to follow.
2. The unresponsive field patient in asystole, PEA, or in ventricular fibrillation or unstable tachycardia refractory to initial care may need an advanced airway placed. If the patient's family or authorized medical agent states that they and/or the patient did not wish to have this procedure performed even for a short period, this wish should be followed. When in doubt, provide advanced airway management as needed (The provider may be able to maintain a patient's airway with simple BVM technique).

### Medical Control Treatment Options:

Medical control should always be contacted prior to withholding or withdrawing resuscitative efforts.

#### PREHOSPITAL WITHHOLDING and WITHDRAWING RESUSCITATION DEATH SCENE



# Pediatric Treatment Guidelines – Childbirth (Imminent Delivery)

## Inclusion Criteria

Immediate delivery with crowning

Determining imminent birth may include: regular contractions lasting 45-60 seconds at 1-2 minute intervals; crowning occurs; patient feels the urge to bear down or feels she needs to have a bowel movement.

F First Responder

E EMT/CT

P Paramedic

## Emphasis on patient care should include:

- A. Pre-delivery: Treat the child by treating the mother.
- B. Post-delivery: Maintain warmth and adequate ventilations for the baby.

## F First Responder

1. Initial Management – Assess airway, breathing and circulation and manage as indicated.
2. Focused H&P – History, physical exam, vital signs.
3. If birth is imminent and the following conditions present, contact a physician (preferably one familiar with obstetrics) for delivery instructions:
  - Multiple births
  - Excessive bleeding
  - Breach presentation
  - Meconium
4. Reassure the mother – encourage her to not bear down between contractions, but to “pant”.
5. Place slight pressure over the child’s head with a hand to prevent rapid deliver, but do not attempt to delay delivery.
6. Once the head delivers, instruct the mother to stop pushing.
7. Suction the mouth then the nose with a bulb syringe as soon as the face is visible.
8. Support the body as it delivers. The baby will be extremely slippery. DO NOT pull on the baby. Keep the baby level with the mother’s abdomen.
9. Suction the mouth and nose again (also serves as stimulation).
10. Using clamps, clamp the cord 2 inches from the child’s abdomen and 4 inches away from the first clamp. Cut the cord between the clamps.
11. Dry and wrap the newborn and cover the head.
12. **Move to the Newly Born Treatment Guideline for care of the newborn.**
13. If bleeding occurs post delivery and the uterus is not contracting, perform a fundal massage.
14. If both patients are stable, wait for the placenta to be delivered. If the placenta is not delivered in 15 minutes, then begin transport. Do not pull on the umbilical cord. (Deliver birth products to the emergency department).
15. Place sterile pad over the vaginal opening.
16. Cover the mother with clean, dry bedding.
17. Record the time of birth.
18. Reassess the mother. Reassessment of the newborn should follow the **Newly Born Treatment Guidelines**
19. Treat any complication as indicated. **Refer to the Obstetrical Emergency Treatment Guideline.**

# Pediatric Treatment Guidelines – Newly Born

## Inclusion Criteria:

Term and pre-term newborn patients who fail to respond to initial stimulation and are in need of resuscitation efforts. This guideline also applies to all newborns and infants in the first few weeks of life.

F	First Responder
E	EMT/CT
P	Paramedic

### F First Responder

1. Within the first thirty seconds of birth:
  - a. Provide warmth (drying skin, increasing ambient temperature, cover with blanket).
  - b. Position the baby to facilitate drainage of airway secretions.
  - c. Suction fluid and secretions, which might be present.

### P Paramedic

- If meconium staining is observed AND the newborn is not vigorous (weak or absent respiratory efforts, weak or absent muscle tone, heart rate less than 100 beats per minute), deep tracheal suctioning should be performed before other resuscitative steps are taken.
- d. Stimulate breathing (gently slapping or flicking the soles of the baby’s feet or rubbing the baby’s back).
2. Assess respirations.
    - a. If the respirations are inadequate or gasping is present, assist ventilation at a rate of 40 to 60 breaths per minute using a bag-valve-mask with 100% oxygen.
    - b. If the respirations are shallow or slow, a 1-minute period of stimulation may be attempted while 100% oxygen is administered via blow-by. If respirations do not increase, assist ventilation at a rate of 40 to 60 breaths per minute using a neonatal bag-valve-mask with 100% oxygen.
  3. Assess heart rate
    - a. If the heart rate remains less than 60 after respiratory management, begin chest compressions.
      - Utilize 2 thumb-encircling hands technique.
      - Compression-to-ventilation ratio of 3:1 in neonatal resuscitation.
    - b. If the heart rate is between 60-100 beats per minute, assist ventilation with 100% oxygen.
  4. Assess color
    - a. Oxygen administration is not indicated for infants with peripheral cyanosis (acrocyanosis), a condition common during the first few minutes of life and not indicative of hypoxemia.
    - b. If central cyanosis is present in a newborn with spontaneous respirations and an adequate heart rate, administer 100% oxygen while the cause of the cyanosis is being determined.
  5. Calculate APGAR score at 1 and 5 minutes postpartum.

### E EMT/CT

6. If the patient is not responding to CPR, obtain IV or IO access with normal saline. If the patient is less than 3 kg (6.6 lb.) a Jamshidi needle should be utilized.
7. Once advanced level care arrives on scene, give report and transfer care.

### P Paramedic

8. Apply ECG and monitor heart rate continuously until arrival at the hospital.

For pulse rates less than 60 bpm while CPR is in progress:

Pediatric

- Administer **1:10,000 Epinephrine Drip**. (1mg in 1,000 normal saline. Run at 1mL/min. Titrate to improved respiratory status and/or blood pressure). Maximum pediatric dose is .25mg (250mL). **VERIFY DOSE WITH PARTNER.** IV/IO

**ONLY EPINEPHRINE 1:10,000 MAY BE GIVEN IV. THIS SHOULD ONLY BE IN EXTREME CIRCUMSTANCES IN WHICH THE PATIENT IS PROFOUNDLY SYMPTOMATIC.**

If narcotic toxicity is suspected, administer:

Pediatric

- Naloxone 0.01mg/Kg to a maximum single dose of 0.4mg every 5 minutes until respiratory rate improves.  
Maximum dose of 1.6mg IV/IO/IM/IN

**(Administration of Naloxone is not recommended as part of initial resuscitative efforts for newborns with respiratory depression. It also should be avoided in babies whose mothers are suspected of having had long-term exposure to opioids.)**

If hypoglycemia is suspected, administer:

Pediatric (Less than 1 month old)

5mL/kg of 10% Dextrose Slow IV push via a 60 gtts set. Administer half of the above dose and monitor for improvement. If symptoms and/or hypoglycemia persist after 10 minutes, administer the remaining dose

9. Transport as soon as possible.

\* APGAR SCORE – Calculate at 1 and 5 minutes postpartum

Sign	0 points	1 points	2 points
Appearance (skin color)	Blue, pale	Body Pink, extremities blue	Completely pink
Pulse rate (heart rate)	absent	less than 100 per minute	greater than 100 per minute
Grimace (irritability)	No response	Grimaces	Cough, sneeze, cry
Activity (muscle tone)	Limp	Some flexion	Active motion
Respirations (respiratory effort)	Absent	Slow, irregular	Good, crying

# Pediatric Treatment Guidelines – Obstetrical Emergency

F	First Responder
E	EMT/CT
P	Paramedic

## Inclusion Criteria:

Women of childbearing age whose chief complaint is related to pregnancy, impending delivery, or 1st month postpartum, or whose chief complaint is gynecological. If a patient is unstable, initial resuscitation and stabilization must precede any action specified in this guideline. Resuscitation of the mother is the key to survival of both mother and fetus.

**Special Note:** High-risk pregnancy/delivery is defined as pre-term delivery, breech presentation, multiple deliveries in the past, meconium staining, placenta previa, abruptio placenta, and prolapsed cord.

### F First Responder

1. Assess and support ABC's. Monitor the pregnant patient closely for vomiting and risk of pulmonary aspiration.
2. Place the pregnant patient in position of comfort, EXCEPT for a third trimester patient, who should be transported at an angle of 45 degrees to her left side. For trauma, immobilize the third trimester pregnant patient supine on a long spine board, but transport with the board at a 10-15° angle to the left. The provider should consider tilting ANY pregnant patient to the left if hypotension develops.
3. Administer oxygen, as needed to maintain an adequate SpO<sub>2</sub>. If high-risk pregnancy/delivery, administer 100% oxygen by non-rebreather mask.
4. If delivery is imminent, prepare for immediate childbirth. Follow **Childbirth (Imminent Delivery) Guideline.**

### E EMT/CT

5. If bleeding or seizure is present, labor is premature, or high-risk pregnancy/delivery, contact Medical Control as early as possible. Begin transport as soon as possible to a facility capable of handling a complicated obstetrical emergency.
6. Consider establishing IV access at a KVO rate or use a saline lock. Administer 250 mL boluses as needed to maintain adequate perfusion. Do not exceed 1 liter of IV fluids unless authorized by Medical Control. If needed, refer to **Shock Guideline.**

### P Paramedic

7. Apply ECG and monitor if high-risk pregnancy/delivery.

#### For Seizures related to eclampsia

Versed 2.5mg-5mg administer slowly. May repeat every 10 minutes to a maximum of 10mg. IV/IO/IM/IN (Valium 2mg-5mg if substituted may be repeated every 10 minutes to a maximum dose of 10mg. IV/IO/IM)

#### Medical Control Treatment Options:

<b>Fluid Resuscitation</b>
Additional fluid bolus(es) (beyond the original 1 liter): 250mL IV. reassess between each bolus.
<b>Seizure</b>
Additional Versed in 2.5mg-5mg increments (Additional Valium in 2-5mg increments if substituted)
<b>Seizure</b>
Magnesium Sulfate 2 grams mixed in 250mL given slowly over 6-10 minutes. Maximum dose is 4 grams. IV/IO

# Pediatric Treatment Guidelines – Pediatric Bradycardia

F	First Responder
E	EMT/CT
P	Paramedic

## Inclusion Criteria:

Pediatric patient with a heart rate below the lowest normal values set for age.

- Bradycardia, in pediatric patients, typically is the result of some form of respiratory depression and initial treatment should be directed to ensuring that the patient is breathing adequately and providing supplemental oxygenation and ventilation as needed.
- Clinically significant bradycardia is defined as a heart rate less than 60 bpm with signs of instability or a rapidly dropping heart rate associated with poor systemic circulation despite adequate oxygenation or ventilation.

## F First Responder

1. Assess and support ABCs.
2. Place patient in a position of comfort. If evidence of shock, place the patient supine.
3. Administer oxygen as needed to maintain an adequate SpO<sub>2</sub>.

## E EMT/CT

3. Establish IV access at a TKO rate or use an INT. (IV initiation MUST NOT delay care of the unstable patient)
4. Once advanced level care arrives on scene, give report and transfer care.
5. Establish an IO if attempts to establish an IV have failed.

## P Paramedic

6. Provide continuous cardiac monitoring. Obtain a 12-Lead ECG and transmit to Medical Control. (12-lead acquisition MUST NOT delay care of the unstable patient.)

**FOR STABLE PATIENTS:** Stable is defined as alert and with a systolic BP ≥ 90 systolic (or high enough to maintain a radial pulse).

- Initiate transport and monitor closely

## FOR UNSTABLE PATIENTS

**If signs or symptoms of hypoperfusion are present or develop:**

### Pediatric

- Ventilate with 100% oxygen for one full minute. Avoid overventilation.
- If the pulse rate is still less than 60 after one minute of adequate ventilations, perform chest compressions and administer:
  - Epinephrine Administer **1:10,000 Epinephrine Drip**. (1mg in 1,000 normal saline. Run at 1mL/min. Titrate to improved respiratory status and/or blood pressure). Maximum pediatric dose is .25mg (250mL). **VERIFY DOSE WITH PARTNER**. IV/IO
  - Atropine (**Minimum 0.1mg per dose**) 0.02mg/Kg . Repeat in 3-5 minutes up to 1.0mg.

**ONLY EPINEPHRINE 1:10,000 MAY BE GIVEN IV. THIS SHOULD ONLY BE IN EXTREME CIRCUMSTANCES IN WHICH THE PATIENT IS PROFOUNDLY SYMPTOMATIC.**

**Medical Control Treatment Options:**

**Ongoing Serious Signs and Symptoms:**

If Atropine and TCP have failed to increase the rate, Dopamine's beta properties can be used in an attempt to increase the heart rate. Contact Medical Control prior to Dopamine administration.

Pediatric  
Consider Pacing at a rate of 100.

Evaluate for mechanical capture. If achieved, increase milliamp setting by 2 milliamps.

8. Identify and treat (as appropriate) any of the following possible causes following the appropriate treatment guidelines:

- Hydrogen Ion (Acidosis)
- Hypoglycemia
- Hypoxemia
- Hypothermia
- Hyper/Hypokalemia
- Tamponade
- Tension Pneumothorax
- Toxins/Poisonings/drugs
- Trauma

**PEARLS:**

- Utilize the Broselow Tape for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules, and appropriate equipment sizes.
- Bradycardia in infants less than 6 months of age is more likely to cause symptoms as cardiac output is more dependent on heart rate in this age group.
- A Buretrol (Burette set) should be used for all pediatric fluid challenges of 140mL or less.

# Pediatric Treatment Guidelines – Pediatric Pulseless Arrest

## Inclusion Criteria:

Pediatric patient who is pulseless. For the purpose of cardiac arrest, a pediatric patient is defined as a patient before the signs of puberty.

F	First Responder
E	EMT/CT
P	Paramedic

### F First Responder

1. Assess presence of a carotid pulse.
2. If no pulse, immediately provide 200 chest compressions.
3. Apply the AED or cardiac monitor pads:
  - If shock is advised defibrillate with the AED. **(If pediatric pads are not available, adult pads may be utilized)**
  - If no shock is advised, give the patient two breathes and begin a compression to ventilation ratio of 15:2.

### E EMT/CT

4. Establish IO / IV access at a TKO rate or administer controlled fluid boluses of 100mL and reassess. IV initiation MUST NOT interrupt chest compressions. Consider attempting IO access first.
5. Once advanced level care arrives on scene, give report and transfer care.

### P Paramedic

**Utilize the Broselow Tape for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules, and appropriate equipment sizes.**

VF / VT without a pulse	Aystole / PEA
<ul style="list-style-type: none"> <li>• Minimize chest compression interruptions</li> <li>• After the initial 200 chest compressions, maintain a ratio of compressions / ventilations to 15:2.</li> <li>• Establish an advanced airway only if not able to ventilate otherwise</li> <li>• Medications:                             <ul style="list-style-type: none"> <li>○ Epinephrine 1:10,000 0.01 mg/Kg (0.1mL/Kg) every 3-5 minutes IV/IO</li> <li>○ Lidocaine 1mg/Kg up to 3mg/Kg</li> <li>○ <b>Contact Medical Control</b> - Magnesium Sulfate 25-50mg/Kg mixed in 250mL given slowly over 6-10 minutes. Maximum dose is 2 grams. IV/IO for torsades de pointes</li> </ul> </li> <li>• Reassess cardiac rhythm everv 2 minutes</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize chest compression interruptions</li> <li>• After the initial 200 chest compressions, maintain a ratio of compressions / ventilations to 15:2.</li> <li>• Establish an advanced airway only if not able to ventilate otherwise</li> <li>• Medications:                             <ul style="list-style-type: none"> <li>○ Epinephrine IO/IV 0.01mg/Kg every 3-5 minutes (1:10,000)</li> </ul> </li> <li>• Reassess cardiac rhythm every 2 minutes</li> </ul>
<p><b>During CPR</b></p>	
<ul style="list-style-type: none"> <li>• Push Hard and Fast (110 to 120/min)</li> <li>• Ensure full chest recoil</li> <li>• Minimize interruptions in compressions</li> <li>• One cycle of CPR – 15:2</li> <li>• Avoid hyperventilation (Use Capnography)</li> <li>• Rotate compressors every 2 minutes with rhythm checks</li> </ul>	<ul style="list-style-type: none"> <li>• After advanced airway is placed, chest compressions should be continuous and ventilate every 6-8 seconds until capnography is applied</li> </ul> <p><b>Search for and treat possible contributing factors:</b></p> <ul style="list-style-type: none"> <li>- Hypovolemia, Hypoxia, Hydrogen Ions (acidosis), Hypo/Hyperkalemia, Hypoglycemia, Hypothermia, Toxins, Tamponade, Tension Pneumothorax, Thrombosis, Trauma</li> </ul>

# Pediatric Treatment Guidelines – Pediatric Respiratory Distress

## Inclusion Criteria:

Patients complaining of shortness of breath, or those who have labored respirations, dyspnea, wheezes, or rales. This guideline is not intended for patients whose dyspnea is caused by trauma (Trauma Guideline) or allergic reactions (Allergic Reaction Guideline)

**Special Note:** If fever is present with any respiratory signs or symptoms, or if the patient is coughing, sneezing, or possibly generating airborne droplets, a HEPA mask should be worn by EMS personnel to avoid transmission of infection.

### F First Responder

1. Assess and support ABCs.
2. Position of comfort.
3. Administer oxygen as needed to maintain an adequate SpO<sub>2</sub>.
4. Assess breath sounds

### F First Responder

### E EMT/CT

### E EMT/CT

5. Establish IV access at a TKO rate or use a saline lock.
6. If a paramedic is not on scene, an EMT/CT may assist a patient in taking their prescribed metered dose inhaler if wheezing is present.

### P Paramedic

### P Paramedic

#### If the patient is wheezing, administer

- Albuterol 2.5 mg via nebulizer
  - If wheezing persists but improving after first Albuterol dose, two additional doses may be given.
  - If wheezing persists but not improving with the first Albuterol dose, combine 2<sup>nd</sup> and 3<sup>rd</sup> Albuterol doses with Ipratropium (Atrovent) 0.5 mg
- Ipratropium (Atrovent) 0.5 mg
  - (infant less than one year - Ipratropium dose is 0.25 mg)
- Solumedrol 1-2 mg/Kg administered slowly IV/IO

#### If Stridor/Barking Cough or Children less than 2 years old with suspected Bronchiolitis:

- Epinephrine Neb 5mL (0.5mg) of 1:10,000
- Normal Saline 20mL/kg

7. All patients treated under this guideline must have continuous cardiac monitoring. If a dysrhythmia develops, treat under its specific guideline.
8. When possible, patients treated under this guideline should have ETCO<sub>2</sub> monitoring. Watch for increasing levels of CO<sub>2</sub>.

#### Signs of CHF present (rales, peripheral edema, JVD, CHF history, end-stage renal disease)

Contact Medical Control

#### Medical Control Treatment Options:

#### If wheezing continues despite above treatments, or if albuterol or epinephrine are contraindicated:

- Additional doses of Albuterol 2.5mg via nebulizer with or without Ipratropium (Atrovent) 0.5 mg
- Epinephrine (1:1,000) 0.01mg/kg SC (max dose - 0.3mg) if not contraindicated
- Magnesium Sulfate 25-50mg/kg mixed in 250mL given slowly over 6-10 minutes. Max dose is 2 Grams.

# Pediatric Treatment Guidelines – Pediatric Seizure

## Inclusion Criteria:

All patients actively seizing or who have a history of seizure prior to EMS arrival.

F	First Responder
E	EMT/CT
P	Paramedic

**NOTE:** Consider alternative explanations for seizures. (A-E-I-O-U-T-I-P-S: alcohol, epile underdose, trauma, infection, psychosis, sepsis).

### F First Responder

1. Assess and support ABCs.
2. If postictal, place the patient in a position of comfort or in left lateral recumbent position facing the rescuers. If evidence of shock is present, place the patient supine and monitor airway closely. Treat shock according to the **Shock Guidelines**.
3. Administer oxygen as needed to maintain an adequate SpO<sub>2</sub>.

### E EMT/CT

4. Perform finger stick blood glucose analysis (BGA).  
If the patient is hypoglycemic, follow **Altered Level of Consciousness guideline** for hypoglycemia.
5. Consider establishing IV access at a KVO rate or use an INT. If the patient is hypotensive, treat according to the **Shock Guideline**.

### P Paramedic

#### If actively seizing, administer

- Versed 0.2mg/Kg administered slowly. May repeat every 10 minutes to a maximum of 10mg. IV/IO/IM/IN
  - (Valium if substituted 0.1-0.2 mg/Kg may be repeated to a maximum dose of 10mg.

All patients under this guideline must have continuous cardiac monitoring and pulse oximetry.

#### Medical Control Treatment Options:

##### Seizures

- Additional Versed in 0.2mg/Kg increments. IV/IO/IM/IN
  - Additional Valium in 0.1-0.2mg/Kg increments

##### Seizure secondary to Narcotic overdose (rare)

- Naloxone 0.1 mg/kg SLOW IV push or IO (max single dose 0.4 mg)

Use age based table to determine proper volume of Midazolam (Versed) for atomization

Patient age (yr)	Weight (kg)	IN Midazolam volume in ml* 5mg/ml concentration Midazolam volume dose (mg)	
Neonate	3	0.3ml	0.6mg
<1	6	0.4ml	1.2mg
1	10	0.5ml	2.0mg
2	14	0.7ml	2.8mg
3	16	0.8ml	3.2mg
4	18	0.9ml	3.6mg
5	20	1.0ml	4.0mg
6	22	1.0ml	4.4mg
7	24	1.1ml	4.8mg
8	26	1.2ml	5.2mg
9	28	1.3ml	5.6mg
10	30	1.4ml	6.0mg
11	32	1.4ml	6.4mg
12	34	1.5ml	6.8mg
Small teenager	40	1.8ml	8.0mg
Adult or full grown teenager	50 or more	2.0ml	10.0mg

\*This volume is based on the calculated dose PLUS 0.12ml dead space and rounded off to the next highest 0.1ml. Slightly higher doses may be appropriate at the lower range of volume due to measurement difficulties and possible under dosing which may not stop the seizure.

### Dose Calculations

- Calculate appropriate dose of Midazolam using the following formula:
  - Children: Total kg wt X 0.2mg=total mg dose of Midazolam, (Maximum of 10mg)
  - Adults over 50kg: 10mg (2ml) of Midazolam
- Load Syringe with appropriate milliliter volume of Midazolam (use only 5mg/ml concentration) and attach MAD nasal atomizer
- Place atomizer within the nostril
- Briskly compress syringe to administer ½ of the volume as atomized spray.
- Remove and repeat in other nostril, so all the medication is administered.
- Continue ventilating patient as needed
- If seizures persist 5 minutes after treating, consider repeating ½ dose of Midazolam either intranasal, intramuscularly or intravenously. **Contact Medical Control for orders.**
- Secure airway if necessary.

Try to establish IV access as soon as the seizure resolves or if intranasal is not effective in controlling seizure activity

### CAUTION:

Versed may cause hypoventilation and potential respiratory depression/arrest. Have equipment and help readily available to manage the airway when administering this medication.

If hypotension develops after the administration of Versed, administer a 20ml/kg bolus of Normal Saline.

# Pediatric Treatment Guidelines – Pediatric Supraventricular Tachycardia

## Inclusion Criteria:

This guideline applies to patients who present with a palpable pulse rate greater than normal for their age.

### F First Responder

1. Assess and support ABCs.
2. Place patient in a position of comfort. If evidence of shock, place the patient supine.
3. Administer oxygen as needed to maintain an adequate SpO<sub>2</sub>.

F First Responder

E EMT/CT

P Paramedic

### E EMT/CT

4. Establish IV/IO access at a TKO rate or use an INT (IV initiation MUST NOT delay care of the unstable patient).
5. Once advanced level care arrives on scene, give report and transfer care.

### P Paramedic

5. Continuous cardiac monitoring. Obtain 12-Lead ECG and transmit to Medical Control (12-lead acquisition MUST NOT delay care of the unstable patient).
6. Always attempt to rule out sinus tachycardia as a potential cause of the symptoms. (220 minus the patient's age [in years] is the upper limit of sinus tachycardia).

## FOR STABLE PATIENTS WITH A TACHYDYSRHYTHMIA (SINUS TACHYCARDIA NOT SUSPECTED) If NO signs or symptoms of hypoperfusion are present or develop:

- Contact Medical Control
- Continuous monitoring and transport
  - Continue supportive care

## Medical Control Treatment Options:

Medical control should always be contacted for any symptomatic pediatric tachycardia patient. Begin preparing for the following treatment guidelines while waiting on approval from medical control

- Consider Vagal Maneuvers
- Consider adenosine rapid IV/IO (Follow medical control dosing orders or Broselow Tape)

## FOR UNSTABLE PATIENTS WITH A TACHYDYSRHYTHMIA (SINUS TACHYCARDIA NOT SUSPECTED) If signs or symptoms of hypoperfusion are present or develop:

- Consider Versed for sedation 0.2mg/Kg administered slowly. May repeat every 10 minutes to a maximum of 10mg. IV/IO/IM/IN
  - (Valium if substituted 0.1-0.2 mg/Kg may be repeated to a maximum dose of 10mg)
    - Synchronized cardioversion @ 0.5 J/kg, 1.0 J/kg, 2.0 J/kg.

# Pediatric Treatment Guidelines – Pediatric Treatment Guideline: General

DEFINITION: Pediatric means anyone who has not reached their 15TH birthday. For legal considerations, such as the right to give consent or to refuse treatment, a pediatric patient is anyone who has not reached his/her 18th birthday. In general, treatment guidelines and standing orders apply to both adults and children.

F	First Responder
E	EMT/CT
P	Paramedic

## Pediatric Assessment

1. Normal vital signs vary with age. Note that the younger the child, the faster the normal heart rate and the lower the normal blood pressure. After about 12 years of age, normal vital signs approach adult levels. Hypotension, especially with bradycardia, signals impending arrest.

Age	Weight (kg)	Heart Rate (bpm)	Respiratory Rate (bpm)	Systolic BP (mmHg)
Premature	<3	100-190	40-60	Difficult to measure
Neonate	3-4	90-190	30-60	50-70
6 months	5-7	80-180	25-40	60-110
1 year	10	80-150	20-40	70-110
3-4 years	15	80-140	20-30	80-115
5-6 years	20	70-120	20-25	80-115
7-8 years	25	70-110	20-25	85-120
11-12 years	35	60-110	15-20	95-135

Source: American Heart Association

For age groups not represented in this table, normal vital signs should fall between the values for the group above and the group below.

Mean systolic BP can also be estimated by  $80 + (2 \times \text{Age})$  in years.

Lower limits of systolic BP can also be estimated by  $70 + (2 \times \text{Age})$  in years.

Weight can be approximated from the Broselow™ tape or:  $(\text{Age (yr)} \times 2) + 8 = \text{Wt(kg)}$

Pounds/kilogram conversion:  $\text{Wt. (lb)} \div 2.2 = \text{Wt. (kg.)}$

2. Pediatric respiratory distress may look just like respiratory distress in adults, but may also present as:
  - slow respirations
  - nasal flaring
  - retractions
  - accessory muscle use
  - pale appearance
  - decreased breath sounds
  - mottling
  - grunting
  - tachypnea
  - stridor
  - cyanosis
  - bradycardia
  
3. Signs of shock or other serious illness may mimic those in adults, but may also include:
  - tachycardia/bradycardia
  - narrowing pulse pressure
  - change in level of consciousness (LOC)—especially failure to recognize/respond to parents
  - pale/cool/mottled skin
  - tachypnea
  - capillary refill > 2 seconds
  - relative flaccidity

## Pediatric Treatment (pg 2 of 3)

Hypotension, a late and ominous sign of shock, means that cardiorespiratory arrest is imminent. A child may lose 25% or more of his/her circulating blood volume before becoming hypotensive. The signs and symptoms of shock listed above are much more sensitive than blood pressure.

4. A Broselow™ Pediatric Emergency tape is highly recommended as an aid to determining the patient's weight and proper drug doses and equipment sizes. There is a Broselow tape in every Douglas County ambulance pediatric box.
5. ET tube size can also be estimated by the size of the child's nostril (nare), the size of the child's little finger, or the formula  $(\text{age} + 16) \div 4$ . Children less than 1 year of age usually need a #1 straight laryngoscope blade, children 1-4 years usually need a #2 blade and children > 4 years usually need a #3 blade. **The Esophageal Detector Device should not be used in infants less than 1 year of age.**

**\*\* Use the pediatric Zoll Capnography adaptor for tube sizes <4.0**

### Pediatric Cardiac Arrest

1. Cardiac arrests in pediatric patients are most commonly the result of respiratory failure. However, it is important to place all sick infants and children on the ECG monitor because heart rate is an indicator of distress or improvement.
2. Hypotension and bradycardia are both indicators of impending cardiac arrest.
3. Start CPR if the pediatric patient is unresponsive and:
  - a. has no spontaneous pulse.
  - b. has a pulse rate < 60/minute with signs of hypoperfusion despite 60 seconds of ventilation with supplemental oxygen.
4. Apply the AED.

### P Paramedic

1. Although VF is unusual in the pediatric patient, when present, attempt defibrillation at 2 joules/kg initially and repeat at 4 joules/kg.
6. Transcutaneous pacing (TCP) requires medical control orders for the pediatric patient and is not usually necessary in treating a pediatric bradycardiac patient. When necessary in the treatment of bradycardia, place the pads anterior/posterior and contact Medical Control for settings, utilizing pediatric pads.

### Pediatric Trauma

1. Minimal on-scene time is critical for the injured pediatric patient.
2. The mechanism of injury must be taken into account even if the child appears stable on initial assessment. Identifying the mechanism of injury is critical for triaging the pediatric trauma patient and transporting to the correct facility.
3. When necessary, normal saline for initial pre-hospital fluid resuscitation is given rapidly at 20mL/kg. Do not run IVs wide open in children. If necessary you may repeat the 20mL/kg infusion after contacting Medical Control.

### Pediatric Fluid Therapy

1. Use a microdrip set for patients < 20 lbs (10 kg) for IVs; regular set if >20 lb (10 kg).
2. Use a regular tubing set for intraosseous (IO), regardless of the age of the patient. If piggybacking medications into intraosseous, use **microdrip** on the piggybacked set.
3. Intraosseous (IO) infusion **by EZ-IO or Jamshidi needle on pediatric patients.**

**Pediatric Standing Orders**

Standing orders for pediatric patients are the same as those for adults for the majority of protocols (Pay attention to items listed above and below the “medical control treatment options” sections). Exceptions to standing orders for pediatric patients include heart failure and vomiting. Contact Medical Control for assistance anytime there are questions - even if the situation is covered by standing orders.

**Pediatric Doses**

Pediatric doses are given as mL or mg per kg. The maximum dose for all drugs is always the adult dose. Other means of selecting the correct dosage include contacting Medical Control and use of the Broselow™ Pediatric Emergency Tape.

# Trauma Treatment Guidelines - Amputation

F	First Responder
E	EMT/CT
P	Paramedic

## Inclusion Criteria:

Patients with isolated amputation of any extremity. EMS personnel may also need to refer to **Shock**

## Guidelines.

### F First Responder

1. Assess and support the ABCs. If the initial assessment is abnormal, minimize scene time. Continue treatment guidelines enroute.
2. Initiate spinal movement restrictions, as needed. If no spinal injury is suspected, place the patient in a position of comfort. If evidence of shock, place the patient supine and monitor airway closely. Treat shock according to the **Shock Treatment Guidelines**.
3. Administer oxygen as needed to maintain an adequate SpO<sub>2</sub>.
4. Control any obvious external bleeding with direct pressure. A tourniquet may be applied if bleeding is not controlled with direct pressure.
5. Care of the amputated part:
  - a. Remove gross contaminants by rinsing with saline.
  - b. Wrap in moistened saline gauze and place in plastic bag or container (sterile, if available).
  - c. Seal the container tightly and place in solution of ice water, if available.
  - d. All parts should be brought to the hospital, regardless of the condition of the part.
  - e. If the part cannot be located immediately, transport the patient and instruct other field providers to search for and transport the part as soon as possible.
6. Begin transport as soon as possible.

### E EMT/CT

7. Consider establishing IV access at a KVO rate or use an INT.

### P Paramedic

8. Consider ECG and ETCO<sub>2</sub> monitor.
9. Follow **Pain Management Guidelines**.

# Trauma Treatment Guidelines - Burns

F	First Responder
E	EMT/CT
P	Paramedic

## Inclusion Criteria:

Patients who have thermal, chemical or electrical burns and/or those who have sustained inhalation injuries. Hypotension is not normally seen with burn patients and suggests other trauma. Refer to the **Trauma Guidelines** as needed.

### F First Responder

1. Assess and support ABCs.
2. Initiate spinal movement restrictions as needed. If no spinal injury is suspected, place the patient in a position of comfort. If evidence of shock, place the patient supine and monitor airway closely. Treat shock according to the **Shock Guideline**.
3. Administer oxygen as needed to maintain an adequate SpO<sub>2</sub>.
4. Stop the burning process. If 1<sup>st</sup> or 2<sup>nd</sup> degree burns are present, consider cooling the burn with water for 1 minute. For 3<sup>rd</sup> degree burns only cool if you suspect the burning process is still occurring (smoldering).
5. Remove and secure any jewelry, belts, shoes, etc. from burned areas. Remove burned or singed clothing not stuck to the skin.
6. Control any obvious external bleeding. Prevent hypothermia and initiate care for burn wounds.
  - a. Chemical injury - Brush off dry chemicals, flush with water to remove any residual chemical. Wash off liquid chemicals with water.
  - b. Thermal injury (If unsure check with burn center).
    - Major or moderate burns - dry sterile sheets.
    - Minor burns - sterile saline-soaked dressing.
7. Begin transport as soon as possible. Major and moderate burns require transport to a Burn Center.

### E EMT/CT

8. IV fluid resuscitation as needed to maintain adequate perfusion. Do not exceed 1 liter of IV fluids unless authorized by Medical Control. Contact Medical Control for fluid orders in patients with CHF, cardiac disease or more than 65 years of age.

### P Paramedic

9. Apply ECG and ETCO<sub>2</sub> monitors if respiratory distress or shock is present or develops.
10. ECG monitoring is mandatory if electrical injury is present.
11. Follow **Pain Management Guidelines**.

## Medical Control Treatment Options:

Medical Control may advise specific treatments for some chemical injuries.

### Additional Morphine, beyond standing order dose outlined in the Pain Management Guidelines

Adult	Pediatric
<ul style="list-style-type: none"> <li>• Additional Morphine in 2-4mg increments. IV/IO/IM</li> <li>• Additional Fentanyl in 25mcg increments. IV/IO</li> <li>• Additional Fentanyl 2mcg/Kg increments IN</li> </ul> <p><b>Observe carefully for evidence of over sedation</b></p>	<ul style="list-style-type: none"> <li>• Morphine 0.1 mg/Kg administer slowly. May repeat every 10 minutes to a maximum of 10 mg. IV/IO/IM</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>• Additional Fentanyl in 1-2mcg/Kg increments. IV/IO</li> <li>• Additional Fentanyl in 1-2mcg/Kg increments. IN</li> </ul> <p><b>Observe carefully for evidence of over sedation</b></p>

**Patients Requiring Transport to a Burn Center**

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• Second- and third-degree burns, 10% of body surface area, if age &lt;10 or &gt;50.</li><li>• Second- and third-degree burns, 20% BSA any age</li><li>• Burns of face, hands, feet, genitalia, perineum, and skin overlying major joints</li><li>• Third-degree burns, &gt;5% BSA</li></ul> | <ul style="list-style-type: none"><li>• Specialized burns types including<ul style="list-style-type: none"><li>- Electrical, including lightning</li><li>- Chemical</li><li>- Inhalation injury</li></ul></li><li>• Burns associated with other injuries (e.g., fractures)</li><li>• Burns in patients with preexisting medical conditions (elderly, diabetic cardiac history, etc.)</li></ul> |
|--|--|

# Trauma Treatment Guidelines - Drowning

F	First Responder
E	EMT/CT
P	Paramedic

## Inclusion Criteria:

This guideline applies to patients who have experienced a near drowning event. Refer to the **Trauma Guidelines** as needed.

**\*\* Only trained rescuers should attempt to remove near drowning/drowning victims from the water. \*\***

### F First Responder

1. Assess and support the ABCs.
2. Provide spinal movement restriction, if possible, before the patient is removed from the water.
3. Administer oxygen as needed to maintain an adequate SpO<sub>2</sub>.
4. If traumatic injuries are discovered, refer to **Trauma Guidelines**.
5. Wet clothing should be removed. Refer to **Hypothermia Guidelines** as needed.

### E EMT/CT

6. Establish IV access at a TKO rate or use an INT.
7. Establish an IO if attempts to establish an IV have failed.

### P Paramedic

8. Provide cardiac monitoring and obtain a 12 lead ECG.
9. Consider CPAP if pulmonary edema is present.
10. Consider advanced airway interventions.
11. If the patient is hypothermic and in cardiac arrest, follow the appropriate **Cardiac Arrest guidelines** using the hypothermic subsections for the cardiac rhythm identified.
12. If decompression illness is suspected, consider transportation to a facility with hyperbaric chamber capabilities.

# Trauma Treatment Guidelines – Extremity Trauma

**Inclusion Criteria:** Patients with traumatic injuries involving the arms and/or legs.

F	First Responder
E	EMT/CT
P	Paramedic

**\*\* Providers should ensure all other life threatening injuries have been addressed prior to treating non-life threatening extremity injuries. \*\***

## F First Responder

1. Assess and support ABCs.
2. Identify and treat all life threatening injuries.
3. If bleeding is present, follow **Hemorrhage Guideline**.
4. Stabilize the injured extremity.
5. Assess pulse, movement, and sensation of the injured extremity.
6. Follow specific treatment options listed below for your provider level.

## E EMT/CT

7. Establish an IV at a TKO rate or an INT.
8. Establish an IO if attempts to establish an IV have failed.

## P Paramedic

9. Consider pain control following **Pain Management Guidelines**.

### Medical Control Treatment Options:

**Medical Control may advise gentle extremity manipulation in order to regain an extremity pulse if absent.**

Provider Level	Long Bone Injury	Joint Injury	Femur Fracture
First Responder	Immobilize Injury above and below the proximal and distal joints. Utilize board splints or frak pacs. <b>Reassess PMS</b>	Immobilize Injury above and below the proximal and distal bones. Utilize board splints or frak pacs. <b>Reassess PMS</b>	Provide manual stabilization of the affect area. <b>Reassess PMS</b>
EMT / CT	Immobilize Injury above and below the proximal and distal joints. Utilize board splints or frak pacs. <b>Reassess PMS</b>	Immobilize Injury above and below the proximal and distal bones. Utilize board splints or frak pacs. <b>Reassess PMS</b>	Provide manual stabilization, manual traction, and placement of a traction splint if indicated. <b>Reassess PMS</b>
Paramedic	Immobilize Injury above and below the proximal and distal joints. Utilize board splints or frak pacs. <b>Reassess PMS</b>	Immobilize Injury above and below the proximal and distal bones. Utilize board splints or frak pacs. <b>Reassess PMS</b>	Provide manual stabilization, manual traction, and placement of a traction splint if indicated. <b>Reassess PMS</b>

# Trauma Treatment Guidelines – Eye Injury

F	First Responder
E	EMT/CT
P	Paramedic

## Inclusion Criteria:

Patients with blunt or penetrating trauma to the eye or who have chemical substances in the eye. Refer also to **Trauma Guidelines**, as needed. Adult and pediatric patients will be treated the same under this guideline.

### F First Responder

1. Assess and support ABCs.
2. Initiate spinal movement restrictions, as needed. If no spinal injury suspected, place the patient in a position of comfort. If evidence of shock, place the patient supine and monitor airway closely. Treat shock according to the **Shock Guidelines**.
3. Conditions:
  - a. If the eye has been avulsed or if the globe has been ruptured:
    - i. Do not administer anesthetic drops.
    - ii. Carefully cover the affected eye to protect it from further damage.
    - iii. Cover the other eye to decrease eye movement.
  - b. If a foreign body is embedded in the eye:
    - i. Do not administer anesthetic drops.
    - ii. Do not remove the object.
    - iii. If the foreign body is large and protruding from the eye, attempt to stabilize the object.
  - c. If a corneal burn or corneal abrasion has occurred:
    - i. Instruct the patient not to rub the eyes.
  - d. For eyes injured by chemical exposure, pepper spray or mace:
    - i. Irrigate with normal saline while en route.
4. Transport patient with head slightly elevated and BOTH eyes closed or loosely patched (unless specific treatment indicated).

### E EMT/CT

5. Consider establishing IV access at a KVO rate or use an INT.

### P Paramedic

6. Consider appropriate pain management. Follow **Pain Management Guideline**.

# Trauma Treatment Guidelines – Head Trauma

F	First Responder
E	EMT/CT
P	Paramedic

## Inclusion Criteria:

Patients with blunt or penetrating trauma to the head. Refer also to **Trauma Guideline** as needed. Adult and pediatric patients will be treated the same under this guideline.

### F First Responder

1. Assess and support ABCs.
2. Provide oxygen to maintain an SpO<sub>2</sub> of at least 94%.
3. Provide spinal movement restriction.
4. If hypotension is present, suspect and assess for hemorrhage. Follow **Hemorrhage Guideline**.

### E EMT/CT

5. Initiate an IV at a TKO rate.
6. Establish an IO if IV attempts are not successful.

### P Paramedic

7. Provide continuous cardiac monitoring and a 12 lead ECG.
8. Provide advanced airway interventions if needed.
9. Maintain an ETCO<sub>2</sub> between 35-45 mmHg

**If actively seizing refer to Seizure Guideline.**

**If the patient is hypoglycemic, with a blood glucose level less than 60 refer to Altered Level of Consciousness Guideline.**

## Medical Control Treatment Options:

**If there is evidence of impending brain stem herniation (decerebrate posturing is present), hyperventilate the patient to maintain an ETCO<sub>2</sub> of 35mmHg until signs of herniation have improved.**

# Trauma Treatment Guidelines - Hemorrhage

## Inclusion Criteria:

Patients with uncontrolled bleeding. Refer also to **Shock Guidelines** as needed. Adult and pediatric patients will be treated the same under this guideline.

1. Assess and support the ABCs.

F	First Responder
E	EMT/CT
P	Paramedic

## Extremities:

Providers should advance through each step in an effort to control bleeding.

- Using gauze, apply direct pressure to the bleeding area. Large wounds may require gauze pads to be compressed into the injured site. Use caution if fractures are also suspected.
- Apply a tourniquet above the injured area. The tourniquet should be applied above the injury site, as close as possible, yet 2 inches above or below a joint. Document the time of tourniquet application. Providers may utilize pressure points while preparing to apply the tourniquet.
- When bleeding is controlled, bandage and splint the area. Consider the use of ice packs over the injured area.

## Large Neck Wounds:

Providers should advance through each step until bleeding is controlled.

- Immediately cover the area with your gloved hand
- Apply an occlusive dressing over the wound, allowing the dressing to expand beyond the wound in 2 inches on all directions.
- Using gauze pads, continue to apply direct pressure.
- If spinal movement restriction is not indicated, transport the patient in a sitting position.
- Once bleeding is controlled, bandage the wound using Kling. Do Not Apply the bandage circumferentially around the neck. Consider the use of ice packs over the injured area.

## Chest:

Follow the **Chest Trauma Guideline**.

## Rectal, Vaginal, and Bleeding from the Ear:

- Do not pack any orifice.
- If bleeding appears to be caused internally, apply gauze pads to the area to collect blood flow. **Do Not apply direct pressure to the area.**
- If bleeding appears to be caused by superficial/external injury, use gauze pads and apply direct pressure to the area.
- If excessive bleeding is occurring following childbirth, perform a fundal massage.

## Nose:

- Do not pack the nares.
- Instruct the patient to lean forward.
- Pinch the nose gently just below the bridge of the nose to control bleeding.
- Apply gauze pads to the area to collect blood flow.
- Ice packs applied to the bridge of the nose, above the upper lip, and the back of the neck may be helpful.

# Trauma Treatment Guidelines – Traumatic Arrest

F	First Responder
E	EMT/CT
P	Paramedic

## Inclusion Criteria:

Trauma patients with absent vital signs. (Patients with injuries incompatible with life are covered under the **Resuscitation Guideline**). Providers may also need to refer to the **Asystole, PEA, Trauma, and Ventricular Fibrillation and Pulseless Ventricular Tachycardia Guidelines**.

**NOTE:** Medical Control should be notified as soon as possible when critical trauma patients are encountered. Medical Control can then notify the receiving Trauma Center who can then begin preparation for the patient's arrival.

## F First Responder

1. Assess and support ABCs while controlling C-spine. Continue consistent, high-quality CPR. Ventilate with 100% oxygen until the chest rises, at a rate of 1 breath every 8 seconds (Do not over ventilate).
2. Initiate spinal movement restrictions.
3. Minimize scene time. Continue treatment guidelines enroute. Move as rapidly as possible toward an appropriate facility.
  - a. Blunt Trauma - Transport to the closest hospital.
  - b. Penetrating Trauma
    - i. SIGNS OF LIFE: If the patient has EMS-witnessed signs of life (movement, vocalization, respiratory effort, swallowing, reactive pupils, reflexes, measurable vital signs) prior to cardiac arrest, transport to the closest Trauma Center.
    - ii. NO SIGNS OF LIFE: If the patient is in cardiac arrest upon EMS arrival, transport to the Closest Hospital.

## E EMT/CT

4. Establish IV access using normal saline wide open until pulse restored. (Establish an IO if attempts to establish an IV have failed.)

## P Paramedic

5. Apply ECG and ETCO<sub>2</sub> monitors and perform all resuscitation maneuvers while in the PADS mode. If a dysrhythmia is present or develops, treat under its specific guideline, while following this protocol. **Advanced level units may discontinue resuscitation attempts in victims of blunt traumatic cardiac arrest if no signs of life are present AND the patient is asystolic.**
6. Following five minutes of ventilation with a BVM, paramedics may attempt endotracheal intubation. However, insertion must not interrupt chest compressions. Insertion of a supraglottic airway device is a suitable alternative to endotracheal intubation in most cases.

**If mechanism of injury AND symptoms AND physical exam suggest a tension pneumothorax**

<p>Adult</p> <p>Perform needle decompression on affected side of chest.</p>	<p>Pediatric</p> <p>Contact Medical Control</p>
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# Trauma Treatment Guidelines – Chest Trauma

## Inclusion Criteria:

Patients who have sustained thoracic trauma. Refer also to **Shock Guidelines** as needed.

1. Assess and support the ABCs.

F	First Responder
E	EMT/CT
P	Paramedic

### Flail Chest:

- Positive pressure ventilations if indicated will assist in “internal splinting” of the affected area.
- Splint the injured area using a trauma dressing taped on four sides.

### Rib Fracture:

- Splint the injured area using a trauma dressing taped on four sides.
- Consider the use of a sling and swathe, securing the arm over the injured area.
- Coach the patient to occasionally take depth breaths to prevent atelectasis.
- Patients may prefer to “self” splint the area. This is an acceptable practice.

### Open Chest Wound:

- Look for signs of an open pneumothorax. If froth or bubbles are noted at the injured site:
  - Immediately cover the area with a gloved hand.
  - Apply an occlusive dressing taped on three sides.
  - Monitor the patient for signs of the development of a tension pneumothorax.

### Tension Pneumothorax:

- Limit ventilation force and depth. Attempt to keep chest rise to one inch of chest excursion during ventilations.

E EMT/CT

2. Establish IV access TKO.
3. Establish an IO if IV attempts are unsuccessful.

P Paramedic

### Tension Pneumothorax:

Adult	Pediatric
Perform needle decompression on affected side of the chest.	Contact Medical Control

4. For all chest trauma, patient’s should receive continuous cardiac monitoring.
5. Obtain a 12 lead ECG.

Trauma Treatment Guideline

# Trauma Treatment Guidelines – Trauma General

## Inclusion Criteria:

Patients with traumatic injuries.

Refer also to the **Traumatic Circulatory Arrest Guidelines, Chest Trauma, Shock, Burn Injury, Extremity Injury and Pain Management Guidelines** as needed.

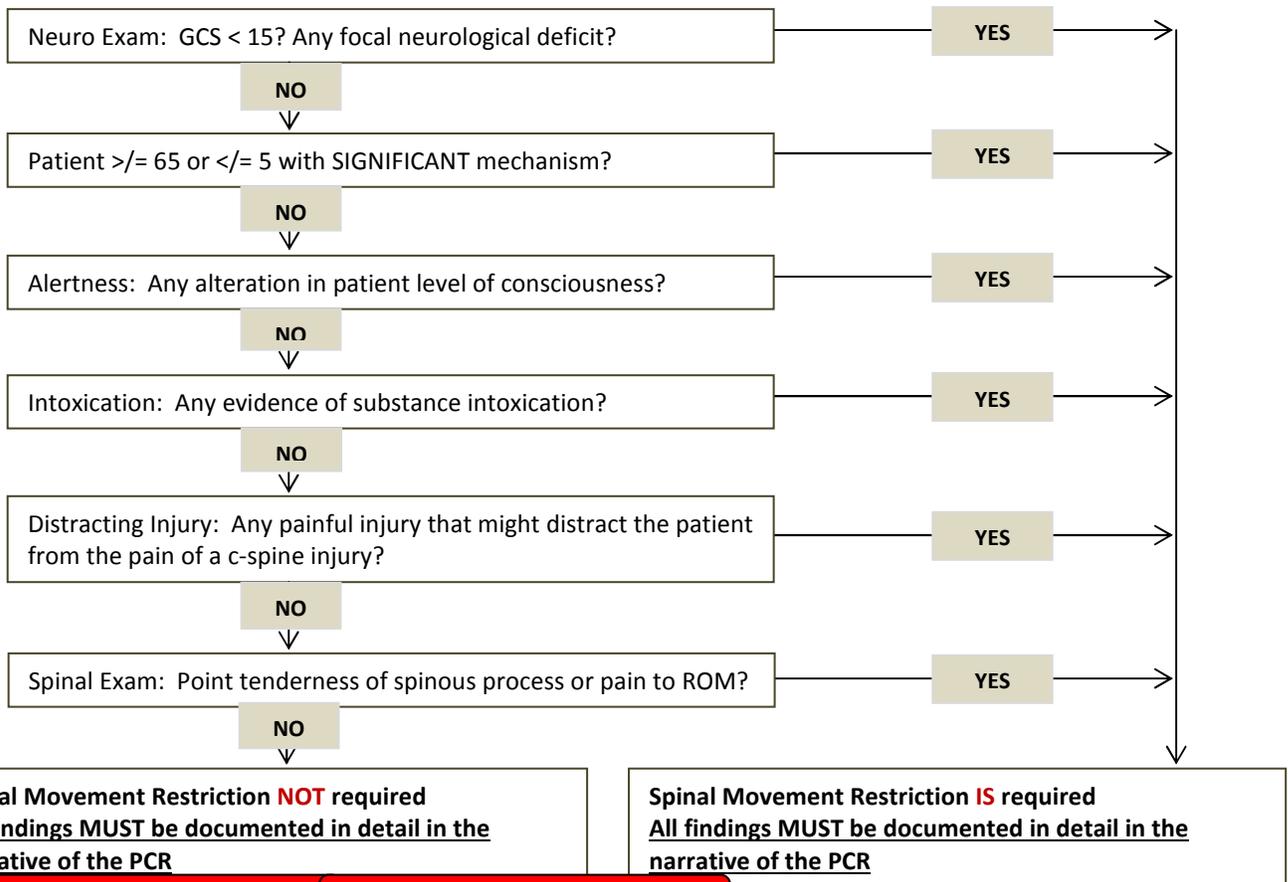
F	First Responder
E	EMT/CT
P	Paramedic

NOTE: Medical Control should be notified as soon as possible when serious or critical trauma patients are encountered. Medical Control can then notify the receiving Trauma Center which can then begin preparation for the patient's arrival.

## F First Responder

1. Assess and support ABCs while controlling C-spine. If the initial survey is abnormal, minimize scene time.
2. Do not administer anything by mouth.
3. **Consider Spinal Movement Restriction:**  
Immobilization on a long spine board (LSB) presents risks to patients and has not been shown to improve outcome. The best use of the LSB may be for extricating the unconscious patient, or providing a firm surface for chest compressions. However, several devices may be appropriate for patient extrication and movement, including the scoop stretcher and soft body splints. Providers must consider the individual patient's risk versus benefit.

### Flow Chart:



**Considerations for Spinal Movement Restriction Decisions:**

- Consider immobilization in any patient with arthritis, cancer, dialysis or other underlying spinal or bone disease.
  - In the very old and very young, a normal exam may not be sufficient to rule out spinal injury.
  - Significant mechanism includes high-energy events such as ejection, high falls, and abrupt deceleration crashes and may indicate the need for spinal immobilization.
  - Range of motion must NOT be assessed if the patient has any spinal pain while at rest.
  - Assessing range of motion: If the patient is having no cervical spine pain, ask the patient to touch his/her chin to the chest, extend the neck (look up), turn the head from side to side (shoulder to shoulder), and move the ears toward the shoulder. If neck pain occurs during ANY of these maneuvers, then assessment should be stopped and spinal movement restriction initiated. You must instruct the patient in ROM. Providers can not perform the ROM test on the patient.
  - Patients with penetrating trauma and no evidence of spinal injury do not require spinal immobilization. Patients who are ambulatory at the scene of blunt traumatic events usually do not require full spinal immobilization, but may require cervical collar and spinal precautions.
  - Whether or not a LSB is utilized, spinal precautions are STILL VERY IMPORTANT in patients at risk for spinal injury. Adequate spinal precautions may be achieved by placement of a hard cervical collar and ensuring that the patient is secured to the stretcher, ensuring minimal movement during patient transfers and manual in-line stabilization during any transfers.
4. If no spinal injury suspected, place the patient in an appropriate position for condition, treatment, and transport.
  5. If evidence of shock is present, place the patient supine and monitor airway closely. **Treat shock according to the Shock Guidelines.**
  6. Administer oxygen as needed to maintain an adequate SpO<sub>2</sub>.
  7. Control any obvious external bleeding. Initiate basic care for specific injuries (ALL PATIENTS):
    - Open abdominal wound – Apply a saline soaked dressing, cover with waterproof material, taped on four sides. Maintain body heat.
    - Impaled objects - Use bulky dressings to stabilize and secure object. Contact medical control prior to removing any impaled objects.

**E EMT/CT**

8. Establish IV access at a KVO rate. If the patient is hypotensive, refer to **Shock Guidelines**.
9. Limit on scene time in critically ill patients.

**P Paramedic**

10. Apply ECG monitor, and initiate ETCO<sub>2</sub> monitoring if respiratory distress or shock is present or develops.

If mechanism of injury AND symptoms AND physical exam suggest a tension pneumothorax:	
<p>Adult Perform needle decompression of the affected side.</p>	<p>Pediatric Contact Medical Control</p>

## Supplemental – Approved Medications for Administration by Provider Level

Ems personnel at any level who administer medications must do so within an EMS system that provides medical oversight. Personnel must follow written treatment guidelines and must complete appropriate medical education. The following list only includes medications currently carried by Douglas County Fire Department and may be updated periodically.

Medications	First Responder	EMT I / CT	EMT-P
Acetaminophen		X	X
Adenosine			X
Albuterol		X	X
Aspirin	X <sup>1</sup>	X <sup>3</sup>	X
Atropine			X
Atrovent		X	X
Beta Blocker (Lopressor)			X
Calcium Channel Blocker			X
Crystalloid Solutions		X	X
Cyanide Poisoning Antidote Kit	X	X	X
Diphenhydramine (Benedryl)			X
Dopamine			X
Epinephrine		X <sup>2</sup>	X
Glucagon			X
D10W		X	X
D50W		X	X
Oral Glucose	X	X	X
Immunizations			X
Lidocaine			X
Magnesium Sulfate			X
Narcotic Analgesics			X
Narcotic Antagonists			X
Nasal Spray Decongestants			X
Nitroglycerin	X <sup>1</sup>	X <sup>1</sup>	X
Oxygen	X	X	X
Phenergan		X	X
Procainamide			X
Sodium Bicarbonate			X
Solumedrol			X
Valium			X
Versed			X
Zofran			X

X<sup>1</sup> – Provider may assist a patient in taking his/her medications if medically necessary.

X<sup>2</sup> – Provider may administer epinephrine in the setting of anaphylactic shock-administration by parenteral routes.

X<sup>3</sup> – Provider may administer in the setting of ischemic chest pain.

## Supplemental – Approved Procedures by Provider Level

EMS personnel performing these skills must do so within an EMS system. Personnel must follow written treatment guidelines and must complete appropriate medical education.

Procedure	First Responder	EMT I / CT	EMT-P
12-Lead ECG Placement and Transmission	X	X	X
12-Lead ECG Interpretation			X
Airway – Bag-Valve-Mask Ventilations	X	X	X
Airway – Blind Insertion Device		X	X
Airway – CPAP		X	X
Airway – Cricothyrotomy - Needle			X
Airway – Intubation			X
Airway – Oropharyngeal and Nasal Suction	X	X	X
Airway – Oropharyngeal and Nasal Airway Insertion	X	X	X
Airway – Tracheostomy Suction			X
Capnography (Waveform)	X	X	X
Carbon Monoxide Measurement (non-invasive)	X	X	X
Cardiac Pacing – External			X
Cardiopulmonary Resuscitation	X	X	X
Cardioversion			X
Carotid Massage			X
Chest Decompression – Needle			X
Childbirth	X	X	X
Defibrillation – Automated	X	X	X
Defibrillation – Manual			X
Eye Irrigation	X	X	X
Gastric Decompression			X
Glucose Measurement	X	X	X
Intubation Confirmation			X
MAD Device Drug Administration			X
Orthostatic Blood Pressure	X	X	X
Patient Assessment	X	X	X
Patient Assessment – Advanced			X
Pulse Oximetry	X	X	X
Restraints	X	X	X
Soft Tissue Injury Management	X	X	X
Spinal Movement Restriction	X	X	X
Splinting	X	X	X
Splinting – Traction Splint	X	X	X
Stroke Screen	X	X	X
Thermometer (Oral and Tympanic)	X	X	X
Venous Access – Blood Draw		X	X
Venous Access – Existing Catheters			X
Venous Access – Intraosseous		X	X
Venous Access - Peripheral		X	X
Ventilator Operation			X
Vital Signs	X	X	X

# Supplemental – Approved Medical Abbreviations

The following is a list of approved medical abbreviations. In general, the use of abbreviations should be limited to this list.

A&O x 3 (4)	alerted and oriented to person/place/time (and event)	ECG	Electrocardiogram
AFib	Atrial Fibrillation	ET	Endotracheal
AAA	Abdominal Aortic Aneurysm	ETCO <sub>2</sub>	End Tidal Carbon Dioxide
ABCs	Airway, Breathing, Circulation	ETOH	Ethanol (Alcohol)
ABD	Abdomen	ET	Endotracheal Intubation
ACLS	Advanced Cardiac Life Support	FB	Foreign Body
ALS	Advanced Life Support	Fx	Fracture
AMA	Against Medical Advice	G	Grams
AMI	Acute Myocardial Infarction	GI	Gastrointestinal
AMS	Altered Mental Status	GSW	Gun Shot Wound
ALT	Altered	gtts	Drops
AMT	Amount	GU	Gastrourinary
APPROX	Approximately	GYN	Gynecological
ASA	Aspirin	H/A	Headache
ATF	Arrived To Find	HEENT	Head, Eyes, Ears, Nose, Throat
BG	Blood Glucose	HR	Heart Rate
Bilat	Bilateral	HTN	Hypertension
BLS	Basic Life Support	Hx	History
BM	Bowel Movement	ICP	Intracranial Pressure
BP	Blood Pressure	ICU	Intensive Care Unit
BS	Breath Sounds	IM	Intramuscular
BVM	Bag-Valve-Mask	IV/INT	Intravenous
C-SECTION	Caesarean Section	JVD	Jugular Vein Distention
C-Spine	Cervical Spine	Kg	Kilogram
C/O	Complaining Of	KVO	Keep Vein Open
C/C	Chief Complaint	L&D	Labor and Delivery
CABG	Coronary Artery Bypass Graft	LAT	Lateral
CAD	Coronary Artery Disease	Lb	Pound
CATH	Catheter	LLQ	Left Lateral Recumbent
CHF	Congestive Heart Failure	LMP	Last Menstrual Period
CLR	Clear	LOC	Level Of Consciousness - or- Loss Of Consciousness
CNS	Central Nervous System	LS	Lung Sounds
COPD	Chronic Obstructive Pulmonary Disease	LUQ	Left Upper Quadrant
CP	Chest Pain	Mcg	Microgram(s)
CPR	Cardiopulmonary Resuscitation	MED	Medication(s)
CSF	Cerebrospinal Fluid	Mg	Milligram(s)
CVA	Cerebrovascular Accident	MI	Myocardial Infarction
D5/10/50W	Dextrose 5,10, 50%	Min	Minimum / Minute
DKA	Diabetic Ketoacidosis	MS	Mental Status or
DNR	Do Not Resuscitate	M.S.	Morphine Sulfate
DOA	Dead On Arrival		
DT	Delirium Tremens		
Dx	Diagnosis		

## Medical Abbreviations (Pg 2 of 2)

MVC	Motor Vehicle Collision	WAP	Wondering Pacemaker
		W/O	Without
		WNL	Within Normal Limits
N/V	Nausea/Vomiting	YO (YOA)	Years Old (Years Of Age)
N/V/D	Nausea/Vomiting/Diarrhea		
NAD	No Apparent Distress		
NC	Nasal Cannula	M	Male
NEB	Nebulizer	F	Female
NK(D)A	No Known (Drug) Allergies	+	Positive
NRB	Non Rebreather	-	Negative
NS	Normal Saline	=	Equal
NSR	Normal Sinus Rhythm	?	Questionable
		>	Greater Than
OB/GYN	Obstetrics/Gynecology	<	Less Than
		L	Left
PALP	Palpation	R	Right
PAC	Premature Atrial Contraction	1 <sup>st</sup>	Primary
PE	Pulmonary Embolus	2 <sup>nd</sup>	Secondary
PEARL	Pupils Equal and Reactive To Light		
PPMHx	Past Pertinent Medical History		
PO	Orally		
PRN	As Needed		
PT	Patient		
PVC	Premature Ventricular Contraction		
RLQ	Right Lower Quadrant		
ROM	Range Of Motion		
RUQ	Right Upper Quadrant		
Rx	Medication		
RXN	Reaction		
S/P	Status Post		
SOB	Shortness Of Breath		
SpO2	Pulse Ox Saturation		
SQ	Subcutaneous		
ST	Sinus Tachycardia		
SVT	Supraventricular Tachycardia		
Sx	Symptom		
Sz	Seizure		
T	Temperature		
TIA	Transient Ischemic Attack		
TKO	To Keep Open		
TOT	Turned Over To		
Tx	Treatment		
UOA	Upon Our Arrival		
URI	Upper Respiratory Infection		
UTI	Urinary Tract Infection		
VF	Ventricular Fibrillation		
VS	Vital Signs		
VT	Ventricular Tachycardia		

# Supplemental – Difficult Airway Evaluation

## Evaluating For The Difficult Airway

Between 1-3% of patients who require endotracheal intubation have airways that make intubation difficult. Recognizing those patients who may have a difficult airway allows the paramedic to proceed with caution and to keep as many options open as possible. It also allows the paramedic to prepare additional equipment (such as a cricothyrotomy kit) that may not ordinarily be part of a standard airway kit. The mnemonic LEMON is useful in evaluating patients for signs that may be consistent with a difficult airway and should raise the paramedic's index of suspicion.

### Look Externally

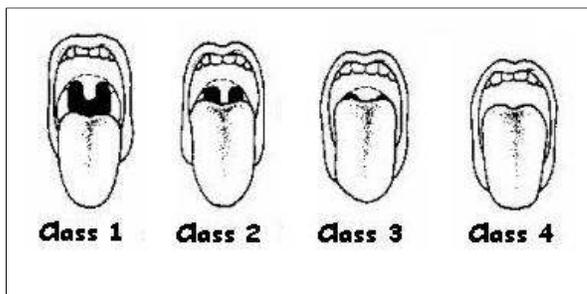
External indicators of either difficult intubation or difficult ventilation include: presence of a beard or moustache, abnormal facial shape, facial trauma, obesity, large front teeth or "buck teeth", high arching palate, receding mandible, short bull neck.

### Evaluate 3-3-2 Rule

- 3 fingers between the patient's teeth (patient's mouth should be open adequately to permit three fingers to be placed between the upper and lower teeth)
- 3 fingers between the tip of the jaw and the beginning of the neck (under the chin)
- 2 fingers between the thyroid notch and the floor of the mandible (top of the neck)

### Mallampati

This scoring system takes into account the anatomy of the mouth and the view of various anatomical structures when the conscious patient opens his/her mouth as wide as possible. This test is performed with the patient in a sitting position, the head held in a neutral position, the mouth wide open, and the tongue protruding to the maximum. Inappropriate scoring may occur if the patient is in the supine position, if the patient phonates or if the patient arches his/her tongue.



Class I (Easy) = Visualization of the soft palate, fauces, uvula, anterior and posterior pillars.

Class II = Visualization of the soft palate, fauces and uvula.

Class III = Visualization of the soft palate and the base of the uvula.

Class III (Difficult) = Soft palate is not visible at all.

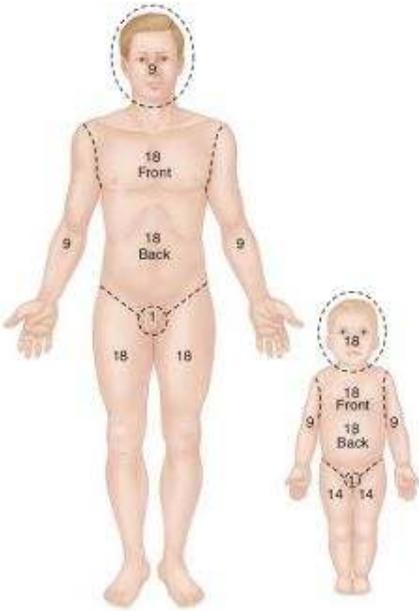
### Obstruction?

Besides the obvious difficulty if the airway is obstructed with a foreign body, the paramedic should also consider other obstructors such as tumor, abscess, epiglottitis, or expanding hematoma.

### Neck Mobility

Ask the patient to place their chin on their chest and to tilt their head backward as far as possible. Obviously, this will not be possible in the immobilized trauma patient.

# Supplemental – Burn Resources



Parklands resuscitation formula for adults

% Burn Body Wt (kg)	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95
40	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950
	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475
45	113	169	225	281	338	394	450	506	563	619	675	731	788	844	900	956	1013	1069
	56	84	113	141	169	197	225	253	281	309	338	365	394	422	450	478	506	534
50	125	188	250	313	375	438	500	563	625	688	750	813	875	938	1000	1063	1125	1188
	63	94	125	156	188	219	250	281	313	344	375	406	438	469	500	531	563	594
55	138	206	275	344	413	481	550	619	688	756	825	894	963	1031	1100	1169	1238	1306
	69	103	138	172	206	241	275	309	344	378	413	447	481	516	550	584	619	653
60	150	225	300	375	450	525	600	675	750	825	900	975	1050	1125	1200	1275	1350	1425
	75	113	150	188	225	263	300	338	375	413	450	488	525	563	600	638	675	713
65	163	244	325	406	488	569	650	731	813	894	975	1056	1138	1219	1300	1381	1463	1544
	81	122	163	203	244	284	325	366	406	447	488	528	569	609	650	691	731	772
70	175	263	350	438	525	613	700	788	875	963	1050	1138	1225	1313	1400	1488	1575	1663
	88	131	175	219	263	306	350	394	438	481	525	569	613	656	700	744	788	831
75	188	281	375	469	563	656	750	844	938	1031	1125	1219	1313	1406	1500	1594	1688	1781
	94	141	188	234	281	328	375	422	469	516	563	609	656	703	750	797	844	891
80	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900
	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950
85	213	319	425	531	638	744	850	956	1063	1169	1275	1381	1488	1594	1700	1806	1913	2019
	106	159	213	266	319	372	425	478	531	584	638	691	744	797	850	903	956	1009
90	225	338	450	563	675	788	900	1013	1125	1238	1350	1463	1575	1688	1800	1913	2025	2138
	113	169	225	281	338	394	450	506	563	619	675	731	788	844	900	956	1013	1069
100	250	375	500	625	750	875	1000	1125	1250	1375	1500	1625	1750	1875	2000	2125	2250	2375
	125	188	250	313	375	438	500	563	625	688	750	813	875	938	1000	1063	1125	1188
105	263	394	525	656	788	919	1050	1181	1313	1444	1575	1706	1838	1969	2100	2231	2363	2494
	131	197	263	328	394	459	525	591	656	722	788	853	919	984	1050	1116	1181	1247
110	275	413	550	688	825	963	1100	1238	1375	1513	1650	1788	1925	2063	2200	2338	2475	2613
	138	206	275	344	413	481	550	619	688	756	825	894	963	1031	1100	1169	1238	1306
115	288	431	575	719	863	1006	1150	1294	1438	1581	1725	1869	2013	2156	2300	2444	2588	2731
	144	216	288	359	431	503	575	647	719	791	863	934	1006	1078	1150	1222	1294	1366
120	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850
	150	225	300	375	450	525	600	675	750	825	900	975	1050	1125	1200	1275	1350	1425

x ml/hr over 1st 8 hours  
x ml/hr over next 16 hours

**Critical (RED)**

15% TBSA 2<sup>nd</sup>/3<sup>rd</sup> Degree Burn  
 Burns with Multiple Trauma  
 Burns with definitive airway compromise  
 Transport to a Burn Facility

**Serious (YELLOW)**

5-15% TBSA 2<sup>nd</sup>/3<sup>rd</sup> Degree Burn  
 Suspected Inhalation Injury or requiring intubation  
 Hypotension  
 GCS < 14  
 Transport to either a Burn Facility of Trauma Facility

**Minor (GREEN)**

< 5% TBSA 2<sup>nd</sup>/3<sup>rd</sup> Degree Burn  
 No Inhalation Injury, Not intubated,  
 Normotensive  
 GCS > 14  
 Transport to Local Hospital

## Supplemental – Medication Dosing Chart

Most of the medications listed below when given as an infusion (drip) will be as a secondary or piggyback administration. This means you will have an IV line already established. The secondary line will plug into needless adapter on the primary line. Turn the main line off and set the rate on the secondary line. When using a 60gtts drop set to piggyback a medication you can use a primary or secondary 60gtts set.

**Lidocaine** – Comes premixed in 2 grams/500 ml bag, Spike the bag with a 60gtts drop set (microdrip) and run the line 15 drops/min for 1 mg, 30 drops/min for 2mg, 45 drops/min for 3mg, and 60 drops/min for 4mg.

Lidocaine Infusion				
	1 mg	2 mg	3 mg	4 mg
gtts/min	<b>15 gtt</b>	<b>30 gtt</b>	<b>45 gtt</b>	<b>60 gtt</b>
gtts/second	1 gtt/every 4 seconds	1 gtt/ every 2 seconds	1gtt/ every 1.35 seconds	1 gtt/second

**Dopamine** – Comes in premixed solution, 800mg/500ml for a concentration of 1600mcg/ml.

Dopamine Infusion for 1600 mcg/ml (Pre-Mixed 800mg in 500ml)												
mcg/Kg/m in	Patient Weight in Kg											
	2.5	5	10	20	30	40	50	60	70	80	90	100
2 mcg	*	*	1	2	2	3	4	5	5	6	7	8
5 mcg	*	1	2	4	5	8	6	11	13	15	17	19
10 mcg	1	2	4	8	11	15	19	23	26	30	34	38
15 mcg	1.5	3	6	11	17	23	28	34	39	45	51	56
20 mcg	2	4	8	15	23	30	38	45	53	60	68	75
<b>With a 60 drop per ml drip set this is the number of drops/minute (or ml/hr)</b> <b>OBSERVE FOR EXTRAVASATION – Swelling, pallor, pain, etc. at IV site</b>												

**Epinephrine** – Mix 1mg of Epinephrine 1:10,000 into 1 liter of normal saline and **administer via a 60 drop set only**. Piggy-back your epinephrine drip into your primary IV line. Begin your epinephrine drip at 1mL/min by administering 60 drops per min using your 60 drop set. Titrate to improved respiratory status and/or blood pressure.

Epinephrine Infusion – Based on Use of a 60 Drop Set					
mcg/min	1	2	3	4	5
	mcg/min	mcg/min	mcg/min	mcg/min	mcg/min
gtts/min	<b>60</b>	<b>120</b>	<b>180</b>	<b>240</b>	<b>300</b>
gtts/sec	1 drop every second	2 drops per second	3 drops per second	4 drops per second	5 drops per second

**Epinephrine- Inhalation** – Place 5ml of 1:10,000 epinephrine into a nebulizer to administer 0.5mg inhaled epinephrine

**Magnesium Sulfate** – Comes in 5gram/10ml vials and DCFD drug boxes carry 2 vials. Mix 2 grams (4ml of the 10ml vial) into 250ml bag of normal saline. Spike the bag with 60gtts drop set. You want to give the 250ml over 6-10 min. If you set your rate almost wide open, where you can still see drops and just not quite a stream, this will get you the rate you want.

**Pheneran** – Comes in 25mg/ml ampoule or vial. Add the dosage you want to give (usually 12.5mg if given IV) to a 100ml bag of normal saline. Use a 10gtts drop set and run the line at an almost wide open rate, and give the bag over approximately 1-2 minutes.

## Supplemental – Tylenol “Quick Reference” Dose Chart

**\*\* Fever Protocol Dose – Indicates administration of 15mg/kg. The following dosing chart is a guideline to verify medication administration is within the normal range for a child’s weight. (Age should only be a factor if weight is unknown) On this quick reference chart, you will find the medication dosage for the lower weight range is approximately 14 mg/kg, with the medication dosage for the higher weight range being approximately 10 mg/kg. You may find the appropriate dose slightly higher than what’s indicated for the child on this chart. \*\***

**WEIGHT LISTED BELOW IS IN POUNDS.... BE SURE TO CONVERT TO KG FOR MEDICATION ADMINISTRATION WHEN CALCULATING SPECIFIC DOSE OF 15mg/Kg**

Child’s Weight / Age	Milligram Dosage	Children’s Liquid 160mg/5ml
< 6 weeks – Contraindicated		
<b>6-11 lbs</b> (2-3 months)	<b>40 mg</b>	<b>¼ tsp (1.25 ml)</b>
<b>12-17 lbs</b> (6-11 months)	<b>80 mg</b>	<b>½ tsp (2.5 ml)</b>
<b>18-23 lbs</b> (12-23 months)	<b>120 mg</b>	<b>¾ tsp (3.75 ml)</b>
<b>24-35 lbs</b> (2-3 years)	<b>160 mg</b>	<b>1 tsp (5 ml)</b>
<b>36-47 lbs</b> (4-5 years)	<b>240 mg</b>	<b>1 ½ tsp (7.5 ml)</b>
<b>48-59 lbs</b> (6-8 years)	<b>320 mg</b>	<b>2 tsp (10 ml)</b>
<b>60-71 lbs</b> (9-10 years)	<b>400 mg</b>	<b>2 ½ tsp (12.5 ml)</b>
<b>72-95 lbs</b> (11 years)	<b>480 mg</b>	<b>3 tsp (15 ml)</b>
<b>96 + lbs</b> (12 years or more)	<b>640 mg</b>	<b>4 tsp (20 ml)</b>

Chart information obtained from Tylenol.com

# Supplemental – Versed “Quick Reference” Dosing Chart

## Midazolam (VERSED) for IV Administration

Patient age (yr)	Weight (Kg)	IV Midazolam volume in ml* 5mg/ml concentration Midazolam volume dose (mg)		IV Midazolam volume in ml* 1mg/ml concentration Midazolam volume dose (mg)	
		Neonate	3	0.6mg	0.12ml
<1	6	1.2mg	0.3ml	1.2mg	1.2ml
1	10	2.0mg	0.4ml	2.0mg	2.0ml
Pediatric dosing is 0.2mg/Kg with a maximum single dose of 2.5mg					
2	14	2.5mg	0.5ml	2.5mg	2.5ml
3	16	2.5mg	0.5ml	2.5mg	2.5ml
4	18	2.5mg	0.5ml	2.5mg	2.5ml
5	20	2.5mg	0.5ml	2.5mg	2.5ml
6	22	2.5mg	0.5ml	2.5mg	2.5ml
7	24	2.5mg	0.5ml	2.5mg	2.5ml
8	26	2.5mg	0.5ml	2.5mg	2.5ml
9	28	2.5mg	0.5ml	2.5mg	2.5ml
10	30	2.5mg	0.5ml	2.5mg	2.5ml
11	32	2.5mg	0.5ml	2.5mg	2.5ml
12	34	2.5mg	0.5ml	2.5mg	2.5ml
small teenager	40	2.5mg	0.5ml	2.5mg	2.5ml
Adult or full grown teenager	50 or more	2.5mg	0.5ml	2.5mg	2.5ml
		5.0mg	1.0ml	5.0mg	5.0ml
		10.0mg	2.0ml	10.0mg	10.0ml

## Midazolam (Versed) for ATOMIZATION (NAD) Administration

Patient age (yr)	Weight (kg)	IN Midazolam volume in ml* 5mg/ml concentration Midazolam volume dose (mg)	
		Neonate	3
<1	6	0.4ml	1.2mg
1	10	0.5ml	2.0mg
2	14	0.7ml	2.8mg
3	16	0.8ml	3.2mg
4	18	0.9ml	3.6mg
5	20	1.0ml	4.0mg
6	22	1.0ml	4.4mg
7	24	1.1ml	4.8mg
8	26	1.2ml	5.2mg
9	28	1.3ml	5.6mg
10	30	1.4ml	6.0mg
11	32	1.4ml	6.4mg
12	34	1.5ml	6.8mg
Small teenager	40	1.8ml	8.0mg
Adult or full grown teenager	50 or more	2.0ml	10.0mg

- Calculate appropriate dose of Midazolam using the following formula:
  - Children: Total kg wt X 0.2mg=total mg dose of Midazolam, (Maximum of 10mg)
  - Adults over 50kg: 10mg (2ml) of Midazolam
- Load Syringe with appropriate milliliter volume of Midazolam (use only 5mg/ml concentration) and attach MAD nasal atomizer
- Place atomizer within the nostril
- Briskly compress syringe to administer ½ of the volume as atomized spray.
- Remove and repeat in other nostril, so all the medication is administered.
- Continue ventilating patient as needed
- If seizures persist 5 minutes after treating, consider repeating ½ dose of Midazolam either intranasal, intramuscularly or intravenously. **Contact Medical Control for orders.**
- Secure airway if necessary.

\*This volume is based on the calculated dose PLUS 0.12ml dead space and rounded off to the next highest 0.1ml. Slightly higher doses may be appropriate at the lower range of volume due to measurement difficulties and possible under dosing which may not stop the seizure.

# Supplemental – Morphine “Quick Reference” Dosing Chart

## Morphine for Adult Administration

Desired Dose:	Concentration: <b>0.5mg/ml</b>	Concentration: <b>1mg/ml</b>	Concentration: <b>5mg/ml</b>	Concentration: <b>8mg/ml</b>	Concentration: <b>10mg/ml</b>
2mg	4ml	2ml	0.4ml	0.25ml	0.2ml
4mg	8ml	4ml	0.8ml	0.5ml	0.4ml

## Morphine for Pediatric Administration (0.1mg/kg to a maximum dose of 10mg)

**There are no standing orders for morphine administration in the pediatric patient.**

Patient age (yr.)	Weight (Kg)	Desired Dose	Concentration <b>0.5mg/ml</b>	Concentration <b>1mg/ml</b>	Concentration <b>5mg/ml</b>	Concentration <b>8mg/ml</b>	Concentration <b>10mg/ml</b>
Neonate	3	0.3mg	0.6ml	0.3ml	0.06ml	0.04ml	0.03ml
<1	6	0.6mg	1.2ml	0.6ml	0.12ml	0.08ml	0.04ml
1	10	1.0mg	2.0ml	1.0ml	0.2ml	0.13ml	0.1ml
2	14	1.4mg	2.8ml	1.4ml	0.28ml	0.18ml	0.14ml
3	16	1.6mg	3.2ml	1.6ml	0.32ml	0.2ml	0.16ml
4	18	1.8mg	3.6ml	1.8ml	0.36ml	0.23ml	0.18ml
Pediatric dosing is 0.1mg/Kg with a single maximum dose of 2mg							
5	20	2.0mg	4.0ml	2.0ml	0.4ml	0.25ml	0.2ml
6	22	2.0mg	4.0ml	2.0ml	0.4ml	0.25ml	0.2ml
7	24	2.0mg	4.0ml	2.0ml	0.4ml	0.25ml	0.2ml
8	26	2.0mg	4.0ml	2.0ml	0.4ml	0.25ml	0.2ml
9	28	2.0mg	4.0ml	2.0ml	0.4ml	0.25ml	0.2ml
10	30	2.0mg	4.0ml	2.0ml	0.4ml	0.25ml	0.2ml
11	32	2.0mg	4.0ml	2.0ml	0.4ml	0.25ml	0.2ml
12	34	2.0mg	4.0ml	2.0ml	0.4ml	0.25ml	0.2ml
Small teenager	40	2.0mg	4.0ml	2.0ml	0.4ml	0.25ml	0.2ml
Adult or full grown teenager	50 or more	2.0mg	4.0ml	2.0ml	0.4ml	0.25ml	0.2ml
		4.0mg	8.0ml	4.0ml	0.8ml	0.5ml	0.4ml

# Supplemental – Fentanyl “Quick Reference” Dosing Chart

## Fentanyl for Adult Administration

Desired Dose:	Concentration 50mcg/ml
25 mcg	0.5ml
50 mcg	1ml

## Fentanyl for Pediatric Administration (1-2 mcg/kg to a maximum dose of 100mcg)

Patient age (yr.)	Weight (Kg)	Concentration of <b>50mcg/ml</b> Desired Dose of <b>1mcg/Kg</b>		Concentration of <b>50mcg/ml</b> Desired Dose of <b>2mcg/Kg</b>	
		ml to administer for 1mcg/Kg	ml to administer for 2mcg/Kg	ml to administer for 1mcg/Kg	ml to administer for 2mcg/Kg
Neonate	3	3mcg	0.06ml	6mcg	0.12ml
<1	6	6mcg	0.12ml	12mcg	0.24ml
1	10	10mcg	0.2ml	20mcg	0.4ml
2	14	14mcg	0.28ml	25mcg	0.5ml
3	16	16mcg	0.32ml		
4	18	18mcg	0.36ml		
5	20	20mcg	0.4ml		
6	22	22mcg	0.44ml		
7	24	24mcg	0.48ml		
Pediatric dosing is 1-2mcg/kg with a maximum single dose of 25mcg					
8	26	25mcg	0.5ml		
9	28	25mcg	0.5ml		
10	30	25mcg	0.5ml		
11	32	25mcg	0.5ml		
12	34	25mcg	0.5ml		
Small Teenager	40	25mcg	0.5ml		
Adult or full grown teenager	50 or more	25mcg	0.5ml		
		50mcg	1.0ml		

# Supplemental – Valium “Quick Reference” Dosing Chart

Valium can be administered IV, or IO.

The following dose chart lists the low and high dose for valium when administered from a concentration of 5mg/mL

Patient age (yr.)	Weight (Kg)	IV Valium in 5mg/ml Concentration Desired Dose		IV Valium in 5mg/ml Concentration Desired Dose	
		0.1mg/Kg	mL to administer	0.2mg/Kg	mL to administer
Neonate	3	0.3mg	0.06ml	0.6mg	0.12ml
<1	6	0.6mg	0.12ml	1.2mg	0.24ml
1	10	1.0mg	0.2ml	2.0mg	0.4ml
2	14	1.4mg	0.28ml	2.0mg	0.4ml
3	16	1.6mg	0.32ml	2.0mg	0.4ml
4	18	1.8mg	0.36ml	2.0mg	0.4ml
5	20	2.0mg	0.4ml	2.0mg	0.4ml
6	22	2.0mg	0.4ml	2.0mg	0.4ml
7	24	2.0mg	0.4ml	2.0mg	0.4ml
Pediatric dosing is 0.1-0.2mg/Kg with a maximum single dose of 2mg					
8	26	2.0mg	0.4ml	2.0mg	0.4ml
9	28	2.0mg	0.4ml	2.0mg	0.4ml
10	30	2.0mg	0.4ml	2.0mg	0.4ml
11	32	2.0mg	0.4ml	2.0mg	0.4ml
12	34	2.0mg	0.4ml	2.0mg	0.4ml
Small Teenager	40	2.0mg	0.4ml	2.0mg	0.4ml
Adult or full grown teenager	50 or more	2.0mg	0.4ml	5.0mg	1.0ml

## Supplemental – Drug List

Medication	Adult	Pediatric
<p>Acetaminophen (Tylenol) Antipyretic <u>Drug Information:</u> Fever reducer, used in the prehospital setting for patients with a fever and predisposed to febrile seizures <a href="#">Fever Treatment Guideline</a></p>	<p>1000 mg PO</p>	<p>15 mg/Kg PO (Dosing chart provided in appendix)</p>
<p>Adenosine (Adenocard) Antiarrhythmic <u>Drug Information:</u> Specifically for treatment or diagnosis of Supraventricular Tachycardia. Contraindicated in patients with 2<sup>nd</sup> / 3<sup>rd</sup> degree heart blocks, sick sinus syndrome. <a href="#">Tachycardia – Narrow Complex Guideline</a></p>	<p>6mg; 12mg IV/IO</p>	<p>0.1mg/Kg (Maximum of 6 mg) Repeat with 0.2mg/Kg (Maximum of 12mg) IV/IO (Requires Med Control Authorization)</p>
<p>Albuterol (Proventil, Ventolin) Beta-Agonist <u>Drug Information:</u> Use in treatment of respiratory distress with bronchospasm. Use caution with elderly patients or those with a cardiac history. Side effects include palpitations, hypertension, arrhythmias and chest pain. <a href="#">Airway-Nebulizer Guideline</a> <a href="#">Allergic Reaction Guideline</a> <a href="#">Asystole - 2010 Guideline</a> <a href="#">Carbon Monoxide Exposure Guideline</a> <a href="#">Pediatric Respiratory Distress Guideline</a> <a href="#">Pulseless Electrical Activity – 2010 Guideline</a> <a href="#">Respiratory Distress Guideline</a> <a href="#">Ventricular Fibrillation/Pulseless Ventricular Tachycardia</a></p>	<p>2.5mg/3mL Nebulized</p>	<p>2.5mg/3mL Nebulized</p>
<p>Aspirin (acetylsalicylic acid) Platelet aggregator inhibitor/Anti-Inflammatory <u>Drug Information:</u> Antiplatelet drug for use in cardiac chest pain. Relative contraindications include recent GI bleeding and bleeding disorders. Use caution in patients with asthma. Some attacks can be aspirin induced. <a href="#">Chest Pain/STEMI Guideline</a></p>	<p>81mg tablets X 4 to a total dose of 324mg PO</p>	<p>∅</p>
<p>Atropine (atropine sulfate) Parasympatholytic; Anticholinergic <u>Drug Interactions:</u> Used in bradycardia. Contraindicated in hypothermic bradycardia. If given too slowly or in smaller than recommended doses, a paradoxical slowing can occur. Use caution in acute AMI. Side effects include tachycardia, dilated pupils, and blurred vision.</p>	<p><b>Bradycardia</b> 0.5mg. Repeat every 3-5 minutes up to 0.04mg/Kg (Total 3mg). <b>Organophosphate</b> 1-2 mg or per medical control.</p>	<p><b>Bradycardia</b> <b>Minimum 0.1mg per dose</b> 0.02mg/Kg . Repeat in 3-5 minutes up to 1.0mg. <b>Organophosphate</b> 0.02mg/Kg IM or IV or</p>

<p><a href="#">Bradycardia Guideline</a>  <a href="#">Overdose and Poisoning Guideline</a>  <a href="#">Pediatric Bradycardia</a></p>	<p>IV/IO</p>	<p>per medical control.  IV/IO</p>
<p>Atrovent  (ipratropium)  Anticholinergic  <u>Drug Information:</u> Use in patients with bronchospasm not responsive to albuterol, and not allergy induced. Should not be used in patients allergic to soybeans or peanuts, and should not be used to correct bronchospasm associated with allergic reaction. Use with caution in patients with narrow angle glaucoma. Side effects include tachycardia, palpitations, blurred vision and cough.</p> <p><a href="#">Respiratory Distress Guideline</a>  <a href="#">Pediatric Respiratory Distress Guideline</a></p>	<p>0.5 mg  Can be mixed with  2.5mg of Albuterol  Nebulized</p>	<p>Use in pediatrics as a combined therapy with Albuterol 0.5 mg</p> <p>If child is less than 1 year of age, give 0.25mg – also mixed with Albuterol Nebulized</p>
<p>Calcium Chloride  Electrolyte  <u>Drug Information:</u> Use in known or suspected hyperkalemic cardiac arrest, calcium channel blocker toxicity, beta blocker toxicity, or magnesium sulfate toxicity. There is no absolute contraindication in the emergency setting. Can cause digitalis toxicity if administered to a patient on digitalis. Do not mix with sodium bicarbonate, and flush the IV line well between drug administrations. Side effects include bradycardia, hypotension, and asystole, especially if given with rapid infusion. Tissue necrosis can occur with infiltration.</p> <p><a href="#">Altered Mental Status Guideline</a>  <a href="#">Overdose and Poisoning Guideline</a></p>	<p>10-15 mg/Kg of a 10% solution. Maximum of 1 gram. Administer over 3 minutes  IV/IO</p>	<p>10-15 mg/Kg of a 10% solution. Maximum of 1 gram. Administer over 3 minutes  IV/IO</p>
<p>Cyanide Poisoning Antidote Kit (MARK 1 KIT)  <u>Drug Information:</u> Mark 1 kits are to be used when personnel are exposed to nerve agents (Sarin, Suman, Tabun, Vx) and have signs and symptoms of nerve agent exposure.  See Atropine  See Pralidoxime Chloride</p>		
<p>D10W  Carbohydrate  <u>Drug Information:</u> Use in the treatment of hypoglycemia. Use caution with administration to a potential head injury patient. Side effects can include tissue necrosis and phlebitis at the injection site. Select a large vein if possible.</p> <p><a href="#">Altered Mental Status Guideline</a></p>	<p>125mL (6.25grams)   Additional dose:  125 mL(6.25grams)  IV/IO</p>	<p>5mL/Kg  IV/IO</p>
<p>D50W  Carbohydrate  <u>Drug Information:</u> Use in the treatment of hypoglycemia. Use caution with administration to a potential head injury patient. Side effects can include tissue necrosis and phlebitis at the injection site. Select a large vein if possible.</p>	<p>25 grams (50mL of a 50% solution)  IV/IO</p>	<p>0.5-1.0gm/Kg = 2-4mL by slow IV/IO of D25W (mix 1:1 D50W with normal saline to obtain the 25% solution)</p>

<p><a href="#">Altered Mental Status Guideline</a></p> <p>Diazepam (Valium) <u>Drug Information:</u> Used to relieve anxiety, muscle spasms, and seizures and to control agitation. Extreme care must be used in administering Diazepam Injection, particularly by the I.V. route, to the elderly, to very ill patients and to those with limited pulmonary reserve because of the possibility that apnea and/or cardiac arrest may occur. Concomitant use of barbiturates, alcohol or other central nervous system depressants increases depression with increased risk of apnea.</p> <p><a href="#">Altered Mental Status Guideline</a> <a href="#">Back Pain Guideline</a> <a href="#">Behavioral</a> <a href="#">Bradycardia</a> <a href="#">Chest Pain/STEMI</a> <a href="#">Head Trauma Guideline</a> <a href="#">Induced Hypothermia</a> <a href="#">Obstetrical Guideline</a> <a href="#">Overdose and Poisoning</a> <a href="#">Pediatric Seizure Guideline</a> <a href="#">Pediatric Supraventricular Tachycardia Guideline</a> <a href="#">Seizure Guideline</a> <a href="#">Tachycardia – Wide Complex Guideline</a> <a href="#">Tachycardia- Narrow Complex Guideline</a></p>	<p>2mg-5mg may be repeated every 10 minutes to a maximum dose of 10mg. IV/IO/IM</p>	<p>IV/IO</p> <p>0.1-0.2 mg/Kg may be repeated to a maximum dose of 10mg. IV/IO/IM</p>
<p>Diphenhydramine (Benedryl) Antihistamine <u>Drug Information:</u> Use in the treatment of anaphylaxis, allergic reaction, and extrapyramidal reactions. Benedryl should not be used in the management of lower respiratory diseases such as asthma. Side effects include hypotension, palpitations, tachycardia, and drowsiness. Can interact and increase undesired effects when CNS depressants, other antihistamines, narcotics or alcohol are present.</p> <p><a href="#">Allergic Reaction Guideline</a></p>	<p>12.5mg to 25mg may repeat every ten minutes to a maximum dose of 50mg IV/IO/IM</p>	<p>1-2mg/Kg to a maximum of 12.5mg for any single dose. Administrations should be given slowly and may be repeated every ten minutes to a maximum of 50mg IV/IO/IM</p>
<p>Dopamine (Intropin) Sympathomimetic <u>Drug Information:</u> Use in cardiogenic shock, significant hypotension, and bradycardia refractory to other treatments. Produces direct action via alpha and beta adrenergic receptors. Side effects include tachycardia, dysrhythmias, palpitations, and hypertension. Can be deactivated by sodium bicarbonate, do not mix in the same IV line.</p> <p><a href="#">Bradycardia Guideline</a> <a href="#">Pediatric Bradycardia Guideline</a></p>	<p>2-10 mcg/Kg/min IV/IO</p>	<p>2-10 mcg/Kg/min IV/IO</p>

Post-Resuscitation Care – 2010 Guideline		
<p>Epinephrine 1:1,000 Sympathomimetic Use in moderate allergic reactions, anaphylaxis, severe asthma and exacerbation of some forms of COPD. Contraindicated in patients with underlying heart disease, hypertension, and tachyarrhythmias. Use caution in patients over 40. Blood pressure, pulse and ECG should be monitored. Side effects include palpitations, hypertension, tachycardia and anxiousness.</p> <p><a href="#">Allergic Reaction Guideline</a> <a href="#">Carbon Dioxide Exposure Guideline</a> <a href="#">Respiratory Distress Guideline</a> <a href="#">Pediatric Respiratory Distress Guideline</a></p>	<p>0.3mg SQ <b>Epi 1:1,000 is administered via subcutaneous route only</b></p>	<p>0.01 mg/Kg SQ (0.3 mg max dose) <b>Epi 1:1,000 is administered via subcutaneous route only</b></p>
<p>Epinephrine 1:10,000 Sympathomimetic <u>Drug Information:</u> Use in cardiac arrest, severe anaphylaxis, and pediatric bradycardia. Do not mix with sodium bicarbonate. Flush the line between drug administrations. Side effects include tachycardia, and ventricular arrhythmias.</p> <p><a href="#">Allergic Reaction Guideline</a> <a href="#">Pediatric Pulseless Arrest Guideline</a> <a href="#">Pediatric Bradycardia Guideline</a> <a href="#">Carbon Dioxide Exposure Guideline</a> <a href="#">Asystole Guideline</a> <a href="#">Ventricular Fibrillation/Pulseless Ventricular Tachycardia Guideline</a> <a href="#">Respiratory Distress Guideline</a> <a href="#">Pediatric Respiratory Distress Guideline</a> <a href="#">Bradycardia Guideline</a></p>	<p>Cardiac Arrest: 1mg may be repeated every 3-5 minutes. IV/IO</p> <p>Drip: Mix 1 mg of 1:10,000 Epi in 1 liter of Normal Saline. Run at 1mL/min. Titrate to improved respiratory status and/or blood pressure.</p>	<p>Cardiac Arrest: 0.01 mg/Kg (0.1mL/Kg) every 3-5 minutes IV/IO</p> <p>Drip: Mix 1 mg of 1:10,000 Epi in 1 liter of Normal Saline. Run at 1mL/min. Maximum dose is .25mg (250mL) Titrate to improved respiratory status and/or blood pressure.</p>
<p>Fentanyl (Sublimaze) Narcotic Analgesic <u>Drug Information:</u> Use for pain management, and as an adjunct for rapid sequence intubation. Contraindications include severe hemorrhage and shock. Use with caution as Fentanyl can cause bradycardia. Side effects include respiratory depression, apnea, muscle rigidity and bradycardia. May interact with other CNS depressants and can have unpredictable potentiation of MAO inhibitors.</p> <p><a href="#">Abdominal Pain Guideline</a> <a href="#">Back Pain Guideline</a> <a href="#">Burn Guideline</a> <a href="#">Chest Pain / STEMI</a> <a href="#">Pain Management Guideline</a></p>	<p>25mcg administer slowly. May repeat every 10 minutes to a maximum of 100mcg. IV/IO</p> <p>-or- 2 mcg/Kg IN ½ in each nostril. May repeat every 10 minutes to a maximum of 100mcg.</p> <p>Additional doses over 100mcg must have medical control approval.</p>	<p>1-2 mcg/Kg administer slowly. May repeat every 10 minutes to a maximum of 100mcg. IV/IO</p> <p><b>Only 1 mcg/KG for PAI</b></p> <p>-or- 1-2mcg/Kg IN ½ in each nostril. May repeat every 10 minutes to a maximum of 100mcg. <i>Additional doses over 100mcg must have medical control approval.</i></p>
<p>Glucagon Pancreatic Hormone/Insulin Antagonist</p>	<p>Hypoglycemia 1 mg</p>	<p>Hypoglycemia: 1-12 y.o. – 1mg</p>

<p><u>Drug Information:</u> Use in the treatment of hypoglycemia when an IV is unobtainable and a gag reflex is absent. Also useful in beta blocker or calcium channel blocker toxicity. Side effects include hypotension, N/V, and tachycardia. May increase the effects of anticoagulants.</p> <p><a href="#">Allergic Reaction Guideline</a>  <a href="#">Overdose and Poisoning Guideline</a>  <a href="#">Altered Mental Status Guideline</a>  <a href="#">Shock Guideline</a></p>	<p>IM/IN</p> <p>Calcium Channel/Beta Blocker Toxicity  1-2mg over 2-5 minutes  IV/IO/IM/IN</p>	<p>&lt; 1y.o. – 0.5 mg  IM/IN</p> <p>Calcium/Beta Blocker Toxicity:  1-12 y.o. – 1mg  &lt; 1 y.o. – 0.5 mg  IV/IO/IM/IN</p>
<p>Oral Glucose  (Insta-glucose)</p> <p><u>Drug Information:</u> Used in the treatment of hypoglycemia in the conscious patient, able to follow commands with an intact gag reflex.</p> <p><a href="#">Altered Mental Status Guideline</a></p>	<p>30 Grams (1 tube)  PO</p>	<p>15 Grams (1/2 tube) and repeat x1 for complete dose of 30 Grams  PO</p>
<p>Immunizations  Varies depending on particular immunization</p> <p><a href="#">No treatment guidelines regarding immunizations</a></p>	<p>Varies</p>	<p>Varies</p>
<p>Lidocaine Bolus  (Xylocaine)  Antiarrhythmic</p> <p><u>Drug Information:</u> Use in pulseless VTach, and VFib. Dosage should be reduced by 50% in patients older than 70 or who have a history of liver disease. Side effects include drowsiness, blurred vision, hypotension, seizures and bradycardia.</p> <p><a href="#">Ventricular Fibrillation/Pulseless Ventricular Tachycardia Guideline</a>  <a href="#">Pediatric Pulseless Arrest Guideline</a></p>	<p>1.0 – 1.5mg/Kg</p> <p>Additional boluses-  0.5-0.75mg/Kg  Can be repeated every 3-5 minutes up to 3.0mg/Kg</p> <p>0.5mg-1mg/Kg for perfusing VT, wide complex.  IV/IO</p>	<p>1mg/Kg up to 3mg/Kg</p> <p>Additional boluses-  0.5-0.75mg/Kg  Can be repeated every 3-5 minutes up to 3.0mg/Kg</p> <p>0.5mg-1mg/Kg for perfusing VT, wide complex.  IV/IO</p>
<p>Lopressor  (metoprolol)  Beta Blocker</p> <p><u>Drug Information:</u> Used in the management of ischemic chest pain (AMI/STEMI).</p> <p><a href="#">Chest Pain/STEMI Guideline</a></p>	<p>5mg administered slowly; repeat twice at 5 minute intervals to a total of 15mg. Hold or discontinue  HR &lt; 70  SBP&lt;110  MAP&lt;50  AV block &gt; 1<sup>st</sup> degree  Pulmonary edema  IV/IO</p>	<p>Ø</p>
<p>Magnesium Sulfate  Electrolyte</p> <p><u>Drug Information:</u> Use in VFib or VTach due to magnesium deficiency, including torsades de points, bronchospasm unresponsive to other treatments, and seizures caused by eclampsia. Contraindicated in patients in shock, heart blocks, or patients on dialysis or may have hypocalcemia. Side effects are</p>	<p>2 grams (4mL of 5gram/10mL concentration)mixed into a 250mL bag given slowly over 6-10 minutes.  Rate should be wide</p>	<p><b>Medical Control Approval Required</b>  25-50mg/Kg mixed in 250mL given slowly over 6-10 minutes. Maximum dose is 2 grams.</p>

<p>more likely if given rapidly and include flushing, bradycardia, decreased reflexes, paralysis, respiratory depression, hypotension, hypothermia and dysrhythmias. If signs of overdose occur, the antidote is calcium chloride.</p> <p><a href="#">Obstetrical Emergency</a>  <a href="#">Pediatric Pulseless Arrest Guideline</a>  <a href="#">Respiratory Distress Guideline</a>  <a href="#">Ventricular Tachycardia Guideline</a>  <a href="#">Ventricular Fibrillation/Pulseless Ventricular Tachycardia Guideline</a></p>	<p>open, were you can see the drops and just not quite a stream.</p>	<p>IV/IO</p>
<p>Morphine Sulfate  Narcotic Analgesic  <u>Drug Information:</u> Use for pain management, chest pain associated with ischemia, and acute pulmonary edema. Should not be given to patients who are volume depleted or in shock. Avoid in patients with possible head injury or abdominal pain. Can cause respiratory depression. Side effects include N/V, blurred vision, constricted pupils and respiratory depression.</p> <p><a href="#">Amputation Guideline</a>  <a href="#">Back Pain Guideline</a>  <a href="#">Burn Guideline</a>  <a href="#">Chest Pain/STEMI Guideline</a>  <a href="#">Pain Management Guideline</a></p>	<p>2-4mg administer slowly. May repeat every 10 minutes to a maximum of 10mg.  IV/IO/IM</p>	<p>0.1 mg/Kg administer slowly. May repeat every 10 minutes to a maximum of 10 mg.  IV/IO/IM</p>
<p>Narcan  (Naloxone)  Narcotic Antagonist  <u>Drug Information:</u> Use in known or suspected narcotic or opiate overdose. The following drug reactions may be reversed with Narcan: Morphine, Demerol, dilaudid, codeine, heroin, Fentanyl, methadone, percodan, lortab, nubain, stadol, darvon and talwin. Narcan can wear off before the narcotic and additional doses may be necessary. Sudden reversal of narcotic intoxication in chronic users can cause severe withdrawal syndrome. Should be given slow IV, IM or IN. Side effects include N/V, hypertension, tremors, tachycardia and arrhythmias.</p> <p><a href="#">Altered Mental Status Guideline</a>  <a href="#">Pediatric Seizure Guideline</a>  <a href="#">Pulseless Electrical Activity Guideline</a>  <a href="#">Seizure Guideline</a>  <a href="#">Asystole Guideline</a></p>	<p>0.4mg. May repeat every 5 minutes until respiratory rate improves. Maximum dose of 1.6mg  IV/IO/IM/IN</p>	<p>0.1mg/Kg to a maximum single dose of 0.4mg every 5 minutes until respiratory rate improves. Maximum dose of 1.6mg  IV/IO/IM/IN</p>
<p>Nasal Spray Decongestants  <u>Drug Information:</u> Used to treat severe epistaxis in which conservative measures are ineffective. Contraindicated in patients with high blood pressure and/or significant cardiovascular disease. Nasal spray decongestants are not carried on any DCFD unit, rather the paramedic may opt to utilize the patient's OTC medication if warranted.</p> <p><a href="#">Epistaxis</a></p>	<p>2 sprays in affected nostril</p>	<p>1-2 sprays in affected nostril</p>

<p>Nitroglycerin Nitrate</p> <p><u>Drug Information:</u> Use in the treatment of ischemic chest pain and acute pulmonary edema. Contraindicated if Viagra, Cialis, or Levitra taken within the last 48 hours, hypotensive, hypovolemic, or if intracranial pressure is present. Side effects include hypotension, headache, tachycardia, bradycardia, palpitations and syncope. Hypotension can be worse if the patient is taking a beta blocker.</p> <p><a href="#">Chest Pain/STEMI Guideline</a> <a href="#">Respiratory Distress Guideline</a></p>	<p>0.4 mg given SL every 5 minutes to a total of 3 doses.</p>	<p>Ø</p>
<p>Normal Saline</p> <p><u>Drug Information:</u> Used to replace volume in a patient with hypotension and as a medium in which to administer IV medications.</p>	<p>Fluid Bolus: 250mL boluses to a maximum of 1 liter. (Medical control approval needed for additional mLs) IV/IO Sickle Cell: 10mL/Kg</p>	<p>Fluid Bolus: 20mL/Kg Sickle Cell: 10mL/Kg IV/IO</p>
<p>Oxygen</p> <p><u>Drug Information:</u> Used to treat hypoxia or anticipated hypoxia, or in any medical or trauma patient to improve respiratory efficiency. Use with caution in patients with COPD and prolonged administration of high concentrations in newborns</p> <p><a href="#">All Treatment Guidelines</a></p>	<p>NC – 1-6LPM NRB – 10-15 LPM BVM – 15LPM</p>	<p>NC – 1-6LPM NRB – 10-15 LPM BVM – 15LPM</p>
<p>Phenergan (promethazine) Antiemetic/Antihistamine</p> <p><u>Drug Information:</u> Use for persistent vomiting and to potentiate analgesics and prevent associated nausea. Contraindicated in patients with an altered level of consciousness, children less than 2 years of age. Side effects can include drowsiness, sedation, dysrhythmias, hyperexcitability, dystonic reactions. Potentiation can occur when given with narcotics and sedatives.</p> <p><a href="#">Abdominal Guideline</a> <a href="#">Vomiting Guideline</a></p>	<p>12.5mg mixed in 100mL normal saline administered slowly. Maximum dose of 25mg. IV/IO/IM</p>	<p>Ø</p>
<p>Pralidoxime Chloride</p> <p><u>Drug Information:</u> Part of the Mark 1 kit. Used when personnel are exposed to nerve agents (Sarin, Suman, Tabun, Vx) and have signs and symptoms of nerve agent exposure. Side effects include tachycardia, increased salivation, headache, altered mental status, dizziness, and blurred vision.</p>	<p>600mg</p>	<p>50mg/Kg</p>
<p>Procainamide</p> <p><u>Drug Information:</u> Used to treat symptomatic arrhythmias, ventricular arrhythmias. Contraindicated in patients with heart blocks, hypotension, myasthenia gravis, and digoxin toxicity. Drug can cause ventricular fibrillation and asystole with rapid administration.</p> <p><a href="#">No treatment guidelines regarding immunizations</a></p>	<p>20-50 mg/min until arrhythmia suppressed, hypotension, QRS duration increasing, or to a maximum dose of 17 mg/Kg. IV/IO</p>	<p>15 mg/kg over 30-60 minutes. until arrhythmia suppressed, hypotension, QRS duration increasing, or to a maximum dose of 17 mg/Kg.</p>

		IV/IO
<p>Sodium Bicarbonate Electrolyte</p> <p><u>Drug Information:</u> Use to treat tricyclic antidepressant overdose, Phenobarbital overdose, known hyperkalemia, crush syndrome and severe acidosis. Can cause severe alkalosis.</p> <p><a href="#">Altered Mental Status Guideline</a> <a href="#">Asystole Guideline</a> <a href="#">Overdose and Poisoning Guideline</a> <a href="#">Pulseless Electrical Activity Guideline</a> <a href="#">Ventricular Fibrillation / Pulseless Ventricular Tachycardia</a></p>	<p>1 mEq/Kg administered slowly over 3 minutes.</p> <p>Subsequent doses: 0.5mEq/Kg IV/IO</p>	<p>1 mEq/Kg Administered slowly over 3 minutes.</p> <p>Subsequent doses: 0.5mEq/Kg IV/IO</p>
<p>Solumedrol (methylprednisolone) Glucocorticoid, Steroid</p> <p><u>Drug Information:</u> Use to treat anaphylactic reactions, and bronchodilator-unresponsive asthma. Use caution in patients with GI bleeding and diabetes. Side effects include GI bleeding, headache, hypertension, hypokalemia and alkalosis. Hypoglycemic responses to insulin and oral hypoglycemic agents may be blunted.</p> <p><a href="#">Allergic Reaction Guideline</a> <a href="#">Pediatric Respiratory Distress</a> <a href="#">Respiratory Distress</a></p>	<p>125 mg administered slowly IV/IO</p>	<p>1-2 mg/Kg administered slowly IV/IO</p>
<p>Versed (midazolam)</p> <p><u>Drug Information:</u> Use as premedication before cardioversion or other painful procedures, treatment of seizures, sedation in the behavioral patient, relieve of muscle spasms. Should not be administered to patient with narrow angle glaucoma, patients in a coma, shock, or in acute alcohol intoxication. Can cause respiratory depression, hypotension, respiratory arrest and bronchospasm. Can increase the effects of other CNS depressants, narcotics and alcohol.</p> <p><a href="#">Altered Mental Status Guideline</a> <a href="#">Airway – Adult, Pediatric, PAI</a> <a href="#">Atrial Fibrillation Guideline</a> <a href="#">Back Pain Guideline</a> <a href="#">Behavioral</a> <a href="#">Bradycardia</a> <a href="#">Chest Pain/STEMI</a> <a href="#">Head Trauma Guideline</a> <a href="#">Induced Hypothermia</a> <a href="#">Obstetrical Guideline</a> <a href="#">Overdose and Poisoning</a> <a href="#">Pediatric Seizure Guideline</a> <a href="#">Pediatric Supraventricular Tachycardia Guideline</a> <a href="#">Seizure Guideline</a> <a href="#">Tachycardia – Wide Complex Guideline</a> <a href="#">Tachycardia- Narrow Complex Guideline</a></p>	<p>2.5mg-5mg administer slowly. May repeat every 10 minutes to a maximum of 10mg. IV/IO/IM/IN</p>	<p>0.2mg/Kg administered slowly. May repeat every 10 minutes to a maximum of 10mg. IV/IO/IM/IN</p> <p><b>0.1mg/Kg administered slowly for pharmacologically assisted intubation (PAI)</b></p>

<p>Zofran (ondanesetron HCL) Antiemetic <u>Drug Informaiton</u>: Use to treat nausea and vomiting. May not be effective in every patient. Side effects include headache, dizziness, sedation and a burning sensation at the injection site.</p> <p><a href="#">Vomiting Guideline</a> <a href="#">Abdominal Pain Guideline</a></p>	<p>2mg administered slowly over 1 minute to a maximum dose of 4mg IV/IO</p>	<p><b>Do not administer to children under 2 years of age</b> 0.1mg/Kg administered slowly over one minute to a maximum dose of 4mg IV/IO</p>
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# ACLS Defibrillation Protocols

## With the ZOLL® Rectilinear Biphasic Waveform

### AHA/ERC Guidelines 2005

**Introduction:**

The purpose of this document is to outline the equivalent biphasic protocols specific to the ZOLL Rectilinear Biphasic waveform.

Monophasic					ZOLL Biphasic				
<b>Defibrillation</b>	200J	300J	360J	360J	120J	150J	200J	200J	
<b>Synchronized Cardioversion</b>	100J	200J	300J	360J	75J** 70J*	120J	150J	200J	
<b>Pediatric Defibrillation</b>	2J/kg				2J/kg				
<b>Internal Defibrillation</b>	Maximum of 50J				5J	10J	20J	30J	50J

**\*\* M Series, CCT, R Series**

**\* E Series**

The recommendations for synchronized cardioversion and defibrillation protocols are based upon evidence presented in two prospective randomized clinical trials and the American Heart Association Guidelines 2005.

**Defibrillation**

Historically, defibrillator shocks evolved to a monophasic protocol of 200-300-360J to balance the need for increased ‘strength’ to convert a rhythm from ventricular fibrillation against the potential to damage cardiac tissue with too much current. ZOLL’s Rectilinear Biphasic waveform (RBW) was designed with internal resistors to *control* impedance so that low impedance patients are not ‘overdosed’ (i.e. more equipment resistors are engaged and the amount of current delivered to a low impedance patient is reduced) and high impedance patients get the maximum possible current. The initial biphasic protocol of 120J-150J-200J for the Rectilinear Biphasic waveform was chosen based on data from a prospective, randomized, clinical trial (Mittal et al JACC 1999 24:1595-1601) which showed 99% first shock

**ZOLL Medical Corporation**

**0269**

Mill Road Chelmsford, MA 01824 978-421-9655