Pre-hospital Emergency Medical Services Protocols for the Bozeman, Belgrade, and Big Sky Montana Areas

These are complementary to the Montana Board of Medical Examiners Montana Pre-hospital Treatment Protocols Version 1.8 Dated 5/2016

Effective: May 2017 (Version 2.2)
## Contents

“Per Local Protocols” Explanations ................................................................. 3  
Air Medical Activation Guidelines ................................................................. 4  
Air Medical “Flyover” Criteria ........................................................................ 6  
Airway Management – Basic ........................................................................ 7  
Airway Management – Advanced .................................................................. 8  
Big Sky Area Cardiac Triage ......................................................................... 10  
Big Sky Area Trauma Triage ......................................................................... 11  
Cardiac Arrest and High Performance CPR Guidelines .................................. 13  
Cervical Spine Immobilization Protocol ......................................................... 18  
CPAP (Continuous Positive Airway Pressure) .................................................. 21  
Death in the Field ......................................................................................... 23  
Destination Hospital Choice .......................................................................... 25  
Ketamine for Pain (sub-dissociative, low-dose) ............................................. 26  
Legal Blood Draws .......................................................................................... 28  
LUCAS Chest Compression Device ................................................................. 29  
Nausea / Vomiting: Antiemetic Protocol ......................................................... 31  
Nitroglycerin Drip (for inter-facility transfers) .................................................. 33  
Norepinephrine ............................................................................................... 34  
POLST/Comfort One Protocol ....................................................................... 36  
Refusal Policy and Definition of a Patient ....................................................... 40  
Stroke Alert Criteria: ...................................................................................... 43  
Trauma Alert Criteria: ................................................................................... 44  
Tranexamic Acid Protocol ............................................................................. 46  
Tourniquet Use ............................................................................................... 47
“Per Local Protocols” Explanations

Abdominal Pain:
See the Addendum titled *Nausea / Vomiting: Antiemetic Protocol*.

Adrenal Insufficiency:
Hydrocortisone, methylprednisolone, and dexamethasone are not currently carried by any ground EMS service covered by these protocols.

Altered Mental Status:
Thiamine use is not recommended. For hypoglycemia give glucose per protocol.

Anaphylaxis:
**EMT with medication endorsement and AEMT:** IM epinephrine may be repeated x1 if required but consult with medical control is recommended if available.

Cardiac Arrest:
Fibrinolytics, enoxaparin, and heparin are not currently approved for use. See the Addendum titled *Continuous Chest Compression Guidelines* for further recommendations on Continuous CPR.

Chest Pain:
IV Nitroglycerin drip is not currently approved for use. Fibrinolytics, enoxaparin, and heparin are not currently approved for use.

Drug Overdose:
Thiamine use is not recommended. For hypoglycemia give glucose per protocol.

Dyspnea-Adult:
Furosemide and ACE inhibitors are not currently approved for use. IV nitroglycerin drip is currently authorized only for interfacility transport. Paramedic: Repeat albuterol nebulizer as needed based on clinical picture.

Multiple Trauma:
See the Addendum titled *Tranexamic Acid Protocol*. See the Addendum titled *Trauma Alert Criteria* for Bozeman Deaconess Hospital’s trauma team activation criteria.

Pain Management:
See the Addendum titled *Nausea / Vomiting: Antiemetic Protocol*. If your agency is approved for ketamine use, please refer to separate guidelines specific to its use. Nitrous Oxide is not currently approved for use.

Seizures:
Thiamine use is not recommended. For hypoglycemia give glucose per protocol.
Air Medical Activation Guidelines

Montana Air Medical Activation Guidelines: 
Criteria for Consideration of Air Medical Transport (AMT)

The decision for mode of transport for both field and inter-facility transfer patients is based on the premise that the time to definitive care and quality of care are critical to achieving optimal outcomes.

Factors of distance, injury severity, road conditions, weather and traffic patterns must be considered when choosing between air or ground transport. The skill level of the transport team must also be considered.

*The potential benefit to the patient should outweigh the risks associated with air transport*

The following patients need to go by air or ground to the closest appropriate facility capable of resuscitation

General Criteria

- Unable to maintain patent airway
- Need for advanced airway
- Respiratory Failure with inability to control breathing and/or intubated
- Unable to control bleeding
- BP < 90 systolic at any time in adult patient or age-specific for children
- Paralysis
- Major burns to any area of body
- Patients in remote locations inaccessible in a timely manner by ground EMS
- Mass/Multiple Casualty incidents with potential to overwhelm current resource capabilities.
- Depletion of EMS coverage to area if ground transport was to be utilized
- Request by trained Emergency responders

Head/Face/Neck

- GCS < 9
- Unresponsive on AVPU scale
- Pediatrics; unresponsive to Voice on AVPU
- Penetrating or crush injury to head or face
- Neurologic deficit with numbness, tingling, or loss of function to one side of body
- Penetrating or crush injury to neck

Chest

- Respiratory Distress
- Apnea; any patient
- Cyanosis
- RR < 10 or > 35
  - Infants (less than 1 year old) - RR < 20
  - Pediatrics - RR < 10 or > 60
- Hypoxia with oxygen saturations < 88 percent with oxygen therapy
  - Chest Pain and/or ST Elevation on EKG

Gallatin County Pre-hospital Protocols
Dr. Eric Lowe, Medical Director
Effective Date: January 2016
• Penetrating or crush injury to chest
  o Sucking chest wound
  o Signs of Tension Pneumothorax
  o Hypotension
  o One sided decrease in breath sounds
  o Distended neck veins
  o Subcutaneous emphysema

• Signs of Flail Chest
  o Paradoxical movements of chest wall
  o Extreme pain on inspiration

• Pediatric specific
  o Bradycardia
  o Respiratory Distress
  o Agitation
  o Decreased Level of Consciousness
  o GFR – Grunting – Flaring – Retracting

**Abdomen/Pelvis**

• Penetrating or crush injury to abdomen/pelvis
• Rigid abdomen
• Pediatrics; bruising of abdomen
• Increasing abdominal girth
• Unstable pelvic fracture
• Major burns to groin

**Extremities**

• Amputations/near amputations above wrist/ankle
• De-gloving injuries
• Any penetrating injury or open wound with signs of vascular compromise distal to injury
• Decreased or absent pulse/movement/sensation

Consideration for cancelling Air Medical Transport should be made by EMS professionals on scene able to evaluate the situation and patient needs.

1. Trained EMS with full report. Discretion will still go to the AMT team as to whether they will continue to the scene
2. If canceled, initial/requesting agency/entity will be contacted for information
3. Depending on circumstances, AMT may choose to cancel for medical reasons or lack of on-scene resources OR may continue on to scene for patient evaluation

*Optimal communications will enhance the decision process*
Air Medical “Flyover” Criteria

During both the January 2013 Emergency Medicine and Trauma Committee meetings at Bozeman Health Deaconess Hospital (BHDH), the topic of bypassing BHDH (“flyover”) for trauma patients requiring higher levels of care was discussed. The consensus was that patients most likely to benefit are those possibly requiring urgent neurosurgical intervention.

It was determined best practice was to establish guidelines that direct air medical crews in the decision of when to fly patients directly to a level II trauma facility with neurosurgery capabilities, from a pre-hospital setting (i.e.: scene call) rather than stopping at a closer level III trauma facility without neurosurgical capability.

The following guidelines were proposed for transfer direct to a level II facility:

- For patients with mechanism and findings consistent with severe head injury with \( \text{GCS} \leq 12 \), consideration should be made for direct transfer to a hospital with neurosurgical capability.

Even if above the criteria is met, the patient should still be taken to the closest appropriate medical center if the patient meets any of the below criteria:

- Sustained BP < 90 systolic
- Aggressive fluid resuscitation needed
- Concern for the possible need of acute chest/abdominal life-saving procedures
- Unstable airway or any airway maintenance concerns

These criteria were jointly assembled by the Emergency Medicine and Trauma committees of BHDH.
Airway Management – Basic

EMS personnel often use bag-valve-mask (BVM) devices prior to or in conjunction with advanced airway insertion. Ideally, usage of a BVM is a two (2) or three (3) person procedure. Proper BVM usage should follow this mnemonic scheme:

C - Cervical-spine control, where indicated
O - Oral airway (and/or 1-2 Nasal airways) 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)

Monitoring of on-going BVM ventilation rates and volumes using end-tidal CO2 monitoring is encouraged when this expertise and equipment are available.

If an effective airway is being maintained by BVM with continuous pulse oximetry readings >90%, it is acceptable for basic and advanced level providers to continue with these measures instead of using a supraglottic airway or endotracheal intubation, especially if a difficult airway is anticipated.
Airway Management – Advanced

Supraglottic Airways:

Any approved supraglottic airway is a suitable alternative to endotracheal intubation for all patients where laryngeal swelling (e.g. anaphylaxis, or airway burns) is not a concern, and is preferable in many circumstances (e.g. to minimize disruptions in chest compressions during cardiac arrest).

EMT-Basics may insert an approved supraglottic airway provided:

- Their agency is approved for this procedure by the Medical Director.
- The individual carries an appropriate and current endorsement at this level.

The use of continuous waveform capnography is mandatory for monitoring ongoing placement and ventilation with use of supraglottic airways, when the equipment and expertise is available and the provider’s level of licensure permits its use.

Endotracheal Intubation:

Indications:

- Apnea: No spontaneous respiratory effort
- Inadequate spontaneous respiratory effort and lack of a gag reflex
- Inability to protect or maintain airway with other less invasive means

EMS personnel must use assessment adjuncts to aid in intubation decisions and for confirmation of advanced airway placement, with the following caveats:

A. End-tidal CO2 detectors (EtCO2) - The use of End-tidal CO2 detectors is mandatory (when approved for your licensure level) for verifying initial advanced airway placement. Use of continuous waveform capnography for ongoing airway and ventilation surveillance is mandatory if available. Be aware that certain conditions (e.g., prolonged cardiac arrest, massive pulmonary embolus, and poor chest compressions) may not produce detectible quantities of carbon dioxide.

   1. Option 1: assess initial placement with qualitative colorimetric CO2 detector then transfer to continuous waveform capnography for ongoing surveillance.

   2. Option 2: assess both initial and ongoing tube placement with continuous waveform capnography.

B. Pulse oximetry - a valuable tool to detect occult hypoxia; a normal reading does not rule out respiratory distress or the need for airway management. Has no role in confirming endotracheal tube placement.
Proper **assessment and documentation** of endotracheal intubation requires the medic to:

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 **initial** and **ongoing** placement with waveform capnography (less sensitive in certain cardiac arrest situations) unless unavailable, and **document results**. If waveform capnography is unavailable, colorimetric end-tidal capnometry is mandatory.

Do not assume either a tube is in the correct or the incorrect position based on any one of these steps in isolation. Continue to re-evaluate every few minutes (preferably with each set of vital signs) and particularly after patient movement.

If there is ANY doubt as to the appropriate placement of an endotracheal tube, REMOVE the tube and ventilate the patient using a BVM.

Providers may make only two endotracheal intubation attempts per patient. If the attempts are unsuccessful, medics should insert an approved supraglottic airway or provide effective ventilation with a BVM. Any attempt made by a paramedic student counts as a single attempt.

An endotracheal intubation attempt is defined as the passage of an endotracheal tube past the teeth.

In a patient who has been successfully intubated (with appropriate confirmation as above), sedation with the following may be considered for patient agitation, gagging against the tube or other activity likely to displace the airway or interfere with appropriate ventilation:

- Midazolam (Versed) 2-5 mg, may repeat once to max of 10 mg. Call Medical Control for further dosing or combination opiate/benzodiazepine dosing.

**Cricothyrotomy**

Cricothyrotomy (with a device approved by medical direction) is a LAST option to be used only in a circumstance where you cannot oxygenate and/or ventilate the patient by ANY other means (BVM, endotracheal intubation, or supraglottic airway).

Proper assessment and documentation of surgical airway placement should be identical to endotracheal intubation as above, aside from visualizing the tube pass the vocal cords and documenting failure of all other available airway management techniques.

**Adjects**

Intubation adjuncts such as a gum elastic bougie or video laryngoscope may be considered on a case by case basis by each service’s medical director as long as appropriate plans for education and QA are in place.
Big Sky Area Cardiac Triage

Field Triage of Cardiac Patients in the Big Sky area:

The following guidelines were developed with the support of the Bozeman Health Deaconess Hospital (BHDH) Cardiology, BHDH Emergency Medicine Committee, the Bozeman Health Big Sky Medical Center (BSMC), local Pre-hospital Medical Direction, and the Big Sky Fire Department.

1) Cardiac patients with suspected STEMI:

   a) **When air transport is available:** Patients meeting STEMI criteria should be taken to the closest PCI center (BHDH), using air transport if it is expected to significantly reduce transport time.

      i) While awaiting air medical arrival, plans for transport to the closest medical facility by ground should be continued in case air medical resources are unable to complete the transfer.

      ii) If ground transport to BSMC is estimated to be shorter than the arrival time for air resources, the hospital helipad should be considered as a rendezvous point.

   b) **When air transport is NOT available:** Patients meeting STEMI criteria should be taken to BHDH as the closest PCI center by ground unless:

      i) Transport to BHDH is estimated to be greater than 90 minutes.

      ii) Transport to BSMC is expected to be shorter and provider discretion determines that the closest available center is required. (The following are for example only. This is not an exhaustive list.):

         1) There is airway instability requiring emergent intervention beyond that which is available in the field.

         2) There is active CPR.

         3) Road conditions are prohibitive of expeditious transport to BHDH.

2) Cardiac patients not meeting STEMI criteria should be taken by ground to the closest facility.

*Provider discretion can overrule the above criteria if extenuating circumstances exist. In those cases, contact with on-line medical control should be attempted, but difficulty with pre-hospital communication (lack of cell service, lack of radio coverage, etc.) in the Big Sky area is recognized to at times be prohibitive of contact with online medical control.*
Big Sky Area Trauma Triage

Field Triage of Trauma Patients in the Big Sky area:

The following guidelines were developed with the support of the Bozeman Health Deaconess Hospital (BHDH) Trauma Committee, BHDH Emergency Medicine Committee, the Bozeman Health Big Sky Medical Center (BSMC), local Pre-hospital Medical Direction, and the Big Sky Fire Department.

1) Isolated head trauma: These patients require neurosurgical expertise, and there is little that BHDH can add beyond BSMC capabilities. Ideally, these patients can benefit from air transport directly to Billings per the air transport overfly criteria in use in Gallatin County already. If no air support is available, these patients should go to the closest facility for basic stabilization, CT scan, and transport planning unless other Trauma Activation Criteria are present.

2) Trauma patients with injuries not isolated to head trauma should be assessed using the BHDH Trauma Activation criteria. These criteria are the pre-hospital standard for trauma activation in Gallatin County.

   a) **When air transport is available:** Patients meeting Trauma Activation criteria should be taken to the closest trauma center (BHDH) via air transport if it is expected to significantly reduce transport time.

      i) While awaiting air medical arrival, plans for transport to the closest medical facility by ground should be continued in case air medical resources are unable to complete the transfer.

      ii) If ground transport to BSMC is estimated to be shorter than the arrival time for air resources, the hospital helipad should be considered as a rendezvous point.

   b) **When air transport is NOT available:** Patients meeting Trauma Activation criteria should be taken to BHDH as the closest trauma center by ground unless:

      i) Transport to BSMC is expected to be significantly shorter.

         (1) i.e., cases happening west or south of the intersection of 191 and the Big Sky Spur Road should default to transport to BSMC.

      ii) Transport to BSMC is expected to be shorter and provider discretion determines that the closest available center is required. (The following are for example only. This is not an exhaustive list.):

         (1) There is airway instability requiring emergent intervention beyond that which is available in the field.

         (2) The case has involved any periods of CPR.
(3) Road conditions are prohibitive of expeditious transport to BHDH.

(4) Life saving interventions including chest tube, advanced airway or blood transfusion.

c) Injured patients not meeting the Trauma Activation criteria should be taken by ground to the closest facility with the exception of the following that should default to transfer to BHDH:

i) Obvious isolated open fractures with controllable pain and hemodynamic stability.

*Provider discretion can overrule the above criteria if extenuating circumstances exist. In those cases, contact with on-line medical control should be attempted, but difficulty with pre-hospital communication (lack of cell service, lack of radio coverage, etc.) in the Big Sky area is recognized to at times be prohibitive of contact with online medical control.

Guidelines were adapted with input from:
Cardiac Arrest and High Performance CPR Guidelines

Continuous Chest Compression (CCC) CPR Note: The science of CPR/Resuscitation is constantly being updated and improved. The AHA standards for CPR and Resuscitation have been revised several times in the past to reflect the newest advances. CCC-CPR is a new CPR protocol that strives to eliminate any pause in chest compressions. There is compelling data currently available that indicates any unnecessary pause in chest compressions, including during patient ventilations or establishing an advanced airway, is detrimental to patient outcome. Hi-Performance CPR (HP CPR) is identical to CCC-CPR but also stresses the importance of CPR quality, specifically maintaining the proper minimum CPR rate, as well as adequate depth and recoil during chest compressions. This is alternatively referred to loosely as “Pit Crew CPR.” Gallatin County Medical Direction believes that Hi-Performance CPR provides potential benefit to cardiac arrest patients and prefers that this protocol be followed during the resuscitation of cardiac arrest patients. EMS providers that have not been trained or are not comfortable with Hi-Performance CPR may default to the current AHA standards.

Research indicates that HP CPR can save lives. In order to create an environment of sustained HP CPR, everyone must be on board. EMTs or first responders who are first on scene must take responsibility or “OWN” the CPR portion of the resuscitation. When paramedics arrive, they will perform the advanced life support measures of the resuscitation and work in coordination with ongoing CPR. For systems in which an EMT/paramedic team arrives first at the scene the EMT must assume responsibility for CPR while the paramedic assumes responsibilities for ALS. The goal is for additional resuscitation care such as defibrillation, medication therapies, or airway management to compliment CPR. CPR should be the default action at all times. The paramedic should integrate ALS care in a way that enables the EMT to achieve consistent CPR. This partnership between EMTs and paramedics will provide the basis to achieve HP CPR and in turn improve the chances of successful resuscitation.

Note: This section is meant to be a supplement to the Montana State Protocol for Cardiac Arrest as well as the current AHA cardiac arrest treatment guidelines. The purpose of these standing orders is to enable a properly qualified Emergency Medical Responder to provide prompt CPR and cardiac defibrillation using an AED for patients 15 years of age or older who have confirmed circulatory arrest from non-traumatic causes. These protocols are for the adult only. Follow AHA/PALS standards to your level of licensure and training for neonates, infants and children with close attention to good quality chest compressions with minimal interruptions.

10 principles of HP CPR

1. EMTs own CPR

2. Minimize interruptions in CPR at all times.

3. Ensure proper depth of compressions (>2 inches).

4. Ensure full chest recoil/decompression.
5. Ensure proper chest compression rate (100-120/min).
   a. Use of a metronome set at 110 beats/min is strongly recommended.

6. Rotate compressors every 2 minutes.

7. Hover hands over chest during shock administration and be ready to compress as soon as patient is cleared.
   a. If using an AED, use the analysis time to change compressors and rotate crew members.
   b. If using a manual defibrillator, precharge the device 15 seconds before the pause for pulse and rhythm check.

8. Intubate or place advanced airway with ongoing CPR.

9. Place IV or IO with ongoing CPR.
   a. IO is preferred as it interferes less with ongoing CPR.

10. Coordination and teamwork between EMTs and paramedics.

Other Expectations:

• If there is no CPR happening at the time of the first EMS provider arrival at a cardiac arrest, 2 minutes of CPR should be performed before the first attempt at defibrillation. This allows a period of blood flow to the heart, and allows the heart to better “accept” the shock making it more likely to be successful. If any CPR is ongoing at the time of defibrillator arrival, defibrillation can be attempted before doing further cycles of CPR, as the desired blood flow is already happening.

• CPR should not be stopped to allow airway placement. BVM ventilations or a supraglottic airway such as a King airway should be used if intubation cannot be completed on the first attempt without stopping chest compressions.

• Pay strict attention to ventilation rates. When an advanced airway is in place the patient should be ventilated every 10 chest compressions.

• CPR data from the monitor that was used during the cardiac arrest must be uploaded for data analysis and quality assurance. The ALS unit on scene is responsible for notifying a supervisor and the medical director of a cardiac arrest case and the presence of a data set to upload for quality review purposes.
Cardiac Arrest Before Arrival of EMS:

1. IMMEDIATELY UPON ARRIVAL verify circulatory arrest by the absence of
   - consciousness
   - carotid pulse
   - normal/regular respiration (ignore agonal respirations)

2. The Designated Compression Person will immediately begin continuous chest compressions for 2 minutes at a rate of 100 compressions/minute.
   - Do NOT interrupt chest compressions.

3. The Designated AED Person will TURN ON the AED as soon as cardiac arrest has been verified.
   - Cut clothing as necessary and place the AED electrodes on the patient in the appropriate locations:
     - one patch under the right clavicle
     - one patch just below the left nipple line on the chest wall
   - Do NOT interrupt chest compressions.
   - If there is no Designated Ventilation Person available, immediately assume the responsibilities of the Designated Ventilation Person after the AED is operational.

4. The Designated Ventilation Person will begin ventilations.
   - Ventilate the patient at a rate of 30 compression to 2 breaths unless an advanced airway is in place
   - Prepare suction equipment
   - Do NOT interrupt chest compressions.

5. If ALS personnel or BLS personnel with an IV endorsement are available, the Designated IV Person will prepare the patient for IV placement and begin to assemble the IV set.
   - Consider IO access as this has less risk of interfering with chest compressions.

6. At the completion of 2 minutes of chest compressions push the "ANALYZE" button. DO NOT TOUCH PATIENT DURING ANALYSIS.
   - Change the designated compression person during the AED analysis.

7. If “SHOCK ADVISED”:

Gallatin County Pre-hospital Protocols
Dr. Eric Lowe, Medical Director
Effective Date: January 2016
• AED will charge.
• Deliver Shock and immediately begin 2 minutes of CPR.
• Do NOT Check for Pulse after Shock.

If “NO SHOCK ADVISED”:
• Check for Pulse. (no longer than 10 seconds)
• If no pulse, immediately begin 2 minutes of CPR.

8. After each 2 minutes of CPR, repeat steps 6 and 7 until ALS personnel arrive.

9. Upon arrival of ALS continue the current 2 minute CPR Cycle.
• Paramedics will pre-charge the defibrillator and analyze / shock at the end of 2 minutes of CPR.
• After each 2 minute CPR cycle paramedics should analyze or treat in 10 seconds or less.
• Continue cycles of 2 minutes CPR with breaks of 10 seconds or less for analysis and/or treatment by paramedics.

If the cardiac arrest is witnessed by EMS providers:

1. Begin immediate chest compressions while attaching the defibrillator.

2. Once the defibrillator is connected STOP CPR and push the “ANALYZE” button.

3. Continue steps 6 and 7.

After Return of Spontaneous Circulation (ROSC):

• Be alert for re-arrest and loss of pulses. Up to 25% of patients with ROSC will have another period of cardiac arrest during transport. Consider dedicating one person to keep a finger on a pulse, while packaging and during transport, when crew size and circumstances allow.

• Obtain a 12 lead ECG before transport.

• Ensure two IV or IO access sites before transport.

• Alert the receiving facility of a cardiac arrest patient with ROSC and whether or not there is ST elevation findings on the ECG.

• Pay strict attention to ventilation rates, as rates faster than ~10 breaths/min can be detrimental to survival.
• Titrate O2 levels to an O2 sat of 94-99%. Too much oxygen has been shown to be harmful in patients who survive cardiac arrest.

• If not already done during the resuscitation, give a bolus of 1 L saline for an adult and 20 ml/kg for a pediatric patient.

• Prepare dopamine or other authorized vasopressor agent for infusion, per Montana state protocols, in case it is required.

• Provide comfort and supportive information to family. Prepare them for the possibility of re-arrest.

*The ideas and some of the information in this section were developed and graciously shared by the Medic One Foundation of Seattle, King County, Washington.

For reference:
Cervical Spine Immobilization Protocol

Spinal immobilization using backboards is a deeply ingrained aspect of pre-hospital care. Although spinal precautions are still very important, there is increasing concern that we may be doing more harm than good with backboard use. This protocol aims to continue safe care of the injured spine while minimizing harm from backboard use. In the right patient (see below), it is safe to protect and care for the injured spine without using a backboard.

Substantial evidence now exists to show that long backboards may cause harm to patients, and although backboard use intuitively makes sense, there is no literature proving benefit from their use. Backboards do an imperfect job of immobilizing the spine, and movement is often worse on the backboard than on a soft surface that conforms to the patient, such as a stretcher mattress.

Specifically:

- Spinal precautions can be followed without the use of a backboard.
- Patients who are alert enough to follow commands can typically maintain stabilization of their own spine without assistance.
- Backboards have not been shown to prevent neurological complications from spinal injury.
- Backboards increase mortality in certain trauma patients, i.e. penetrating trauma.
- Backboards restrict respiration, which has potential to directly harm patients.
- Backboards rapidly lead to skin breakdown and pressure ulcers, even after a short period of time, and they can be particularly harmful to elderly patients.
- Backboards increase patient anxiety and discomfort, as well as increase EMS scene times.
- Backboard use has been correlated with increased use of imaging studies and other resources in the Emergency Department.

The goals of this protocol are:

- To continue safe care of the injured patient
- To reduce patient harm through decreasing pain, suffering, and complications
- To decrease EMS scene times by eliminating unnecessary interventions
- To reduce injuries to crews who are attempting to carry immobilized patients
- To reduce unnecessary imaging costs and radiation exposure
Criteria to Consider Spinal Immobilization (note-only one of the following need be present to consider immobilization):

1. Mechanism consistent with potential for spinal injury
   - Significant falls (greater than 20 feet)
   - Motor vehicle collisions with significant mechanism of injury
   - Direct trauma to head, neck, or back

2. Neck/Back pain or tenderness

3. Abnormal neurological exam or complaint of symptoms
   - Sensory/motor abnormalities
   - History of LOC with current injury
   - Altered mental status

4. Multi-system trauma (potential for distracting injury)

Apply spinal precautions to patients at risk for spinal injury, based on the criteria above or other clinical suspicions of spinal injury. Use either method below, and use spinal precautions with all patient movements (i.e., log-roll technique with in-line stabilization of the head and c-spine).

- Full immobilization using a cervical collar, backboard, and head blocks
- Spinal precautions using a cervical collar and securing the patient directly to the stretcher mattress

Spinal stabilization omission criteria (note- all of the following must be met to allow for full clearance):

1. Normal neurological exam in cooperative patient
   - Fully alert and oriented patient
   - Normal sensory/motor exam

2. Absence of intoxication
3. Absence of neck/back pain or tenderness
4. Absence of distracting injuries
5. No communication barriers, i.e. due to language, intellect, intoxication, emotional condition, etc.

Patients without any of the above findings may be transported without a cervical collar. The above findings MUST be documented in the patient care record.
Other considerations:

Backboards are primarily for EXTRICATION:

1. Use the long spine board, scoop stretcher, vacuum mattress, short board, and/or Kendrick Extrication Device (KED) to minimize movement of the patient when moving them from the point of injury to the stretcher.

2. Once the patient is moved to the stretcher, based on provider discretion, you may use log roll or lift-and-slide technique to lay the patient flat on the stretcher off the board and leave the c-collar in place. Elevate the back of the stretcher as needed for patient comfort and secure the patient using the stretcher belts.

3. Do not routinely transport patients to the hospital on a backboard, short board, KED, or vacuum mattress unless it is necessary for patient safety or for their level of injury.

4. Patients who are markedly agitated and/or confused from head injury may not be able to follow commands with regard to minimizing spinal movement, and combativeness may also be a factor. Patients may remain on a backboard if the crew deems it safer for the patient, and this will be at the discretion of the crew.

5. Crews may also leave the patient on the board if transport time is expected to be 15 mins or less or there are other extenuating circumstances.

A multi system blunt trauma patient, such as from a high velocity crash or significant fall, or one who is unable to follow commands due to combativeness, intoxication, or decreased mental status, should remain on the backboard, scoop, or vacuum mattress until handoff to the ED. For example, all patients requiring trauma activations should be considered high risk and should be maintained on the backboard unless other circumstances apply.

6. A combative or seizing patient should not be forcefully strapped to a backboard, beyond what is required for their safety, as this can create higher forces and cause increased injury.

7. Do not routinely immobilize a patient with penetrating trauma such as gunshot or stab wounds.

8. Unless there is an obvious neurologic deficit, emphasis should be on airway and breathing management, treatment of shock, and rapid transport to the closest trauma facility.

9. Eliminate the "standing take-down" for patients who are ambulatory after an injury.

   a. Place a collar and allow the patient to sit on the cot, and then lie flat. Patients who are ambulatory and able to follow commands do a better job of preventing movement of an injured spine than are rescuers.

10. All efforts should be made to secure the airway while maintaining in-line spinal immobilization. However, in the inability to secure the airway, priority should be given to airway stabilization, and c-spine motion should be allowed as required to stabilize the airway.
CPAP (Continuous Positive Airway Pressure)

INDICATIONS
1. Any patient who is in respiratory distress with signs and symptoms consistent with asthma, COPD, Pulmonary Edema, CHF, or pneumonia AND who:
   a. Is awake and able to follow commands
   b. Is over 12 years old and is able to fit the CPAP mask
   c. Has the ability to maintain an open airway
2. AND who exhibits two or more of the following:
   a. A respiratory rate greater than 25 breaths per minute
   b. Pulse Oximetry of less than 90% at any time
   c. Use of accessory muscles during respirations

CONTRAINDICATIONS
1. Patient does not have adequate spontaneous respiratory effort.
2. Patient unable to follow commands.
3. Patient unable to protect airway or active vomiting.
4. Systolic blood pressure < 90 mmHg
5. Respiratory distress secondary to trauma or suspected pneumothorax.

PROTOCOL
1. CPAP is a standing order, at the EMT level or above, for providers who have received device specific training.
2. Utilize CPAP where indicated in the Dyspnea - Adult protocol
   a. Note that CPAP does not take the place of pharmacology
   b. Note that although CPAP is listed in the protocol in a linear list, it need not be interpreted that all interventions must be completed in the written order. Providers should use good clinical judgment to determine at what point in the course of the various therapies CPAP should be initiated.
3. CPAP settings
   a. 5 cm H2O for moderate distress
   b. 5 cm H2O for moderate or severe distress when systolic BP 90-100 (observe closely for BP change)
   c. 10 cm H2O for severe distress
4. Continue constant aggressive airway evaluation and control.
   a. Not all patients will improve
   b. Providers must be prepared to discontinue CPAP and initiate more aggressive steps in
decompensating patients.

**BE ALERT** for circumstances in which the patient continues to deteriorate despite CPAP
and/or medication therapy, terminate CPAP administration and perform BVM ventilation and/or
endotracheal intubation if necessary.

5. Claustrophobia is a common complaint with CPAP masks
   a. It is recommended that in the case of a claustrophobic patient, they be allowed to hold
the mask and remove it if necessary. It is common that as the benefits are felt, patients
will be inclined to keep the mask on their face. Straps can then be attached as the
patient becomes more comfortable
   b. Note that some patients will not tolerate the mask and should not be forced.

6. Reassess, Reassess, Reassess
   a. Slowing respirations do not necessarily indicate improvement
   b. Be cognizant of hypotension.
   c. Be aware for need for more aggressive airway interventions if the patient shows signs of
further respiratory decompensation.

7. Contact medical control to alert them of CPAP use and to ensure receiving facility
preparedness to continue treatment.

**POTENTIAL COMPLICATIONS**

1. Continued decompensation in respiratory status.

2. Decrease in blood pressure.

3. Panic or anxiety from claustrophobia.

4. Gastric distension

5. Pneumothorax

Death in the Field

Refer to the “Resuscitation Triage” section of the Montana State EMS Protocols. The below information is for added detail in response to specific questions that have arisen.

In addition to those factors discussed in the Montana State Protocols, determination of death in the field *without initiating resuscitative efforts* should be considered under the following conditions:

1. Patient qualifies as a “Comfort One”/POLST patient. (Follow directions on the appropriate document for the appropriate level of resuscitation).

2. Any situation that puts the rescuers at risk.

3. The patient has suffered blunt trauma cardiac arrest, is pulseless and apneic, and has had verification of a patent airway.

4. In an avalanche rescue or snow burial situation, resuscitation should NOT be attempted if:
   a. The victim was buried greater than 30 mins with no air pocket, airspace, or breathing device.
   b. The victim’s airway is occluded with ice/snow and time of burial has been 30 minutes or more.

In addition to the above, after 30 minutes of CPR and resuscitation efforts for cardiac arrest in a backcountry situation (ie: any situation where CPR cannot be adequately performed during extrication/transport and medical control contact is not available) consideration should be given to stopping resuscitation efforts even if medical control cannot be contacted and a defibrillator is unavailable.

In non-traumatic deaths, all non-resuscitation or stopped resuscitation cases will have an ECG strip attached to the field report that shows:

- The patient’s rhythm/cardiac activity
- Confirmation of the absence of cardiac activity in two leads.

Patient care documentation will include procedures performed and time performed. Conversations with medical control will include physician’s name, time, and instructions.

**Note:**

All victims of electrocution, lightning strikes, and cold-water drowning should have resuscitative efforts begun with transport to the hospital. Any decision to determine death in the field in these cases should be made only after consultation with the medical control physician.

All unattended deaths in the field are coroner’s cases per Montana law. Care must be exercised to not unnecessarily disturb the scene. Do not remove ECG patches; pick up material, etc. that could potentially alter the scene.
Prior to leaving the scene where resuscitation is not performed, make sure an officer (either fire or police) is in charge of the scene, or the coroner is on scene.

Documentation must include the patient’s name, age, date of birth at a minimum. If the EMS provider is unable to acquire a name, a police report number must be documented.
**Destination Hospital Choice**

Gallatin County EMS Guidelines for Destination Hospital Choice:

**Patients should be transported to the closest appropriate receiving hospital unless:**

1. The base hospital determines that a more distant hospital is more appropriate to meet the needs of the patient; OR

2. The patient meets criteria or published EMS guidelines for transport to a specialty care center (i.e., Trauma, STEMI); OR

3. The patient requests a specific hospital,
   a. AND The patient's condition is considered stable to tolerate additional transport time without need for more urgent stabilization before more lengthy transport;
   b. AND The EMS transport service has determined that such a transport would not unreasonably remove the unit from its primary area of response causing a decrease of 911 coverage to the local area;
   c. AND The patient has been informed that the transport to a more distant location will be more expensive and may not be covered by insurance if the added transport is not felt to be medically necessary by the insurance company.
Ketamine for Pain (sub-dissociative, low-dose)

Ketamine

Generic Name: Ketamine Hydrochloride
Trade Name: Ketalar
Classification: NMDA antagonist

Action: Ketamine is a rapid-acting, general anesthetic producing an anesthetic state characterized by profound analgesia, amnesia, normal pharyngeal-laryngeal reflexes, normal or slightly enhanced skeletal muscle tone, cardiovascular and respiratory stimulation, and occasionally, a transient and minimal respiratory depression. Ketamine bronchodilation relaxes bronchiolar musculature and prevents bronchoconstriction induced by histamine.

Indications:

1. Adult and pediatric patients (>5 years old) with pain of traumatic origin
2. Opioid-tolerant patients (>5 years old) with an acute exacerbation of pain
3. Adult and pediatric patients (>5 years old) with pain that is refractory to opioids

Contraindications:

1. Hypersensitivity to ketamine
2. Chest pain of suspected cardiac origin
3. Hypertensive crisis, amphetamine abuse, acute pulmonary edema and any condition in which hypertension could lead to complications
4. Pregnancy
5. History of psychiatric disorders (relative contraindication)

Dosing:

For Analgesia: 0.2 mg/kg (MAX 20 mg) IV, given slow IV push over 60 seconds. May repeat once after 15 mins. Further doses require online medical control.

Kinetics:  
Onset: 30-60 seconds (IV)  
Duration: 15 minutes (IV)

Monitoring:

1. Blood pressure and heart rate
2. ETCO₂ is required if the patient also receives a narcotic pain medication.
3. Mental status
4. Pain rating  
   a. Obtain a pain score before administration, after administration, and upon ED admission

Adverse Effects: Psychological effects may include pleasant, dream-like states, hallucinations, disorientation, delirium and agitation. Other adverse effects include dizziness, diplopia, dysphoria, nystagmus, nausea, vomiting, elevated blood pressure, elevated heart rate, laryngospasm, bronchodilation, hypersalivation and hypersensitivity.

Mediating Adverse Effects:

1. Agitation, aggression, and negative psychological reactions requiring intervention:  
   a. ≥12 years old: Administer midazolam 1 mg IV  
   b. 5-12 years old: Administer midazolam 0.5 mg IV  
   c. If needed, repeat doses intermittently and titrate to effect

2. Laryngospasm:  

Gallatin County Pre-hospital Protocols  
Dr. Eric Lowe, Medical Director  
Effective Date: January 2016
a. Bag-valve-mask assembly  
b. Airway maneuvers

3. Hypersalivation:
   a. Atropine 0.5 mg IV

Advantages:

- Rapid onset
- May be used in hypotensive patients although state protocols require SBP > 100 for administration of ketamine.
- Accidental overdose (10-100x) not associated with long-term morbidity
- Useful in combination with opioids
  - Produces synergistic analgesia, even in opioid-tolerant patients
  - Decreases opioid consumption
  - Results in quicker pain control

Miscellaneous:

- Dissociative state produces unique sedation conditions
  - Eyes remain open with a blank stare or nystagmus
  - Nystagmus occurs as the dose-related effect shifts from subdissociative to dissociative
  - Random movements unrelated to painful stimuli (ex. grasping nonexistent objects)
- In Montana, prehospital ketamine is approved only for the treatment of pain at low, sub-dissociative doses and via intravenous route. Use of higher dose ketamine for behavioral control or other reasons is outside of paramedic scope of practice.

### Dosing card for use in the field:

<table>
<thead>
<tr>
<th>Ketamine (Using 10 mg/ml concentration)</th>
</tr>
</thead>
</table>

**Indications:** Patients >5 years old with pain of traumatic origin or opioid-refractory pain; Opioid-tolerant patients >5 years old with an acute exacerbation of pain

**Contraindications:** Ketamine hypersensitivity, **chest pain of suspected cardiac origin**, condition in which hypertension could lead to complications (ex. hypertensive crisis, amphetamine abuse), psychiatric problems (relative contraindication), SBP ≤100

**Ketamine Dosing Chart** (0.2 mg/kg, MAX 20 mg)

<table>
<thead>
<tr>
<th>Weight (kg)</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>≥100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dose (mg)</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>Dose (mL)</td>
<td>0.4</td>
<td>0.6</td>
<td>0.8</td>
<td>1</td>
<td>1.2</td>
<td>1.4</td>
<td>1.6</td>
<td>1.8</td>
<td>2</td>
</tr>
</tbody>
</table>

**Administration:** Give slow IV push **over 60 seconds**. May repeat x1 after 15 mins. Further doses may be given only with online medical control

**Monitoring:** Blood pressure, SpO2, ETCO2, mental status, pain rating (before & after ketamine, upon ED admission), ECG

**Mediating Adverse Effects:** Agitation or aggression: ≥12 years old: Midazolam 1mg IV, <12 years old: Midazolam 0.5mg IV, repeat doses PRN; Laryngospasm: Bag-valve-mask assembly and airway maneuvers; Hypersalivation: Atropine 0.5 mg IV
Legal Blood Draws

Steps for Legal Blood Draws:

1. Ascertain patient ID:
   a. Ask their full name and DOB

2. Use the kit Law Enforcement provides

3. Prepare the site with a non-alcohol prep

4. Draw grey topped tube from the kit
   a. Label it
   b. Hand the tube to the officer
   c. Fill out the paperwork from the kit and hand the paperwork to the officer

5. Document in your own records. (See below for an example template):
   a. “On May 7th at 1800 I drew blood from Tom Smith, DOB 1/2/99, into a grey topped vacutainer which I subsequently labeled with the name Tom Smith and my initials (EL). Tube and associated paperwork were handed to officer John Doe of the Bozeman PD, Badge number 123.”
LUCAS Chest Compression Device

The LUCAS is a non-invasive mechanical CPR device. It has a role in providing uninterrupted chest compressions at an appropriate rate and depth, but it has not been shown to be superior to well performed “high performance” manual chest compressions. Manual chest compressions are still considered the standard of care by the AHA. Consider the device a tool to use in non-traumatic cardiac arrest, but use of the device should not distract from beginning high quality manual chest compressions as soon as possible, nor should use of the device cause unneeded interruptions in chest compressions at any point.

Use of a LUCAS device can make chest compressions during transport more effective and safer for the transporting crew. However, availability of a LUCAS should not prompt transport when it would not have otherwise been considered. Cardiac arrests are still best managed in place unless there are extenuating circumstances mandating transport such as V-fib resistant to multiple shocks.

Indications

• Non-traumatic cardiac arrest, to include PEA requiring CPR.

Contraindications

• Too small patient: The suction cup is not being completely compressed when it is lowered as far as possible.
• Too large patient: The support legs of LUCAS cannot be locked to the back plate without compressing the patient’s chest.
• Patient is a child.
• Traumatic injury.
• Confirmed Comfort One or DNR order.
• Pregnancy.

Usage Guidelines

• Refer to manufacturer’s instructions for details of use. All providers must be appropriately trained to use the device with both initial and ongoing training per agency and state requirements.

• The LUCAS shall be used in accordance with the manufacturer’s recommendations.
  
  o The claw locks on the support legs must lock WITHOUT compressing the patient’s chest.
  
  o The suction cup must completely compress when lowered against patient’s chest.
  
  o Do NOT attempt to lift the patient or the device by the arm straps.
• LUCAS should not be used until after two full cycles of manual compressions.

  1. A defibrillator should be applied before LUCAS. Starting manual chest compressions and initial defibrillation should take precedence over placement of the LUCAS.

  2. Use a two-step application and minimize pauses. The machine is a tool but not a priority.

  3. Placement of the device should be done to take opportunity of inevitable pauses and to minimize no flow states.

• The LUCAS should NOT be paused for intubations

• If there is a device malfunction, immediately remove the device and resume HP CPR. The device may be reapplied only after the problem has been addressed.

• Change battery and recharge after every use and per manufacturer recommendations.

A member of the agency that placed the device and has been trained on the LUCAS must remain with the patient at all times until the LUCAS is removed. That person shall be responsible for the safe operation of the device. One agency’s hood may be exchanged for another but keep the initial back plate in place and minimize any interruptions.
Gallatin County Specific  
Pre-hospital Emergency Medical Services Protocols  

Nausea / Vomiting: Antiemetic Protocol

Vomitus is the most commonly aspirated material. Those most at risk are patients with an altered or decreased mental status. In addition to obstructing the airway, vomit can lead to significant damage to bronchiolar tissue and alveoli. Nausea and vomiting can be due to any number of causes and care should be directed to address the underlying pathology (i.e. cardiac event, head injury, etc.) along with the symptoms. Also, it is important to determine if blood is present in emesis.

A. AEMT or EMT with IV endorsement:
   1. Initial Medical Care.
   2. 500-1000 ml IV fluid bolus if patient presents with dehydration/hypotension.
   3. Consider ALS resources.
   4. **Contact Medical Control.**

B. Paramedic:
   1. Initial Medical Care.
   2. 500-1000 ml IV fluid bolus if patient presents with dehydration/hypotension.
   3. Consider Ondansetron 4 mg IV or 4-8 mg PO (Oral Dissolving Tablet)
      a. May repeat 4mg IV dose to total of 8 mg if no improvement in 15 mins.
      b. May be considered for prophylactic use for long-distance transports, prolonged spinal immobilization, and concurrent with narcotic administration for pain.

4. Pediatric dose
   a. Oral route (preferred)
      i. 8-15 kg: 2 mg PO x1
      ii. 15-30 kg: 4 mg PO x1
      iii. >30kg: 4 mg PO and may repeat x1
   b. IV
      i. ≥3 year old: 0.1 - 0.15 mg/kg IV
      ii. Maximum initial dose 4 mg, may repeat x1
5. **When IV ondansetron (Zofran) is unavailable:**
   
a. Consider Phenergan 12.5mg - 25 mg deep IM for adults age 18-65 without significant comorbidities (such as underlying neurologic or cardiac disease).

6. **Contact Medical Control for the following:**
   
a. Phenergan IM for:
      
      i. Use of Phenergan when ondansetron IV is available
      
      ii. Patients <18 years old or >65 years old or with significant comorbidities when no ondansetron available

b. Phenergan IV dosing.

c. Ondansetron IV dosing for <3 year old
Nitroglycerin Drip (for inter-facility transfers)

Montana state EMS protocols authorize use of a nitroglycerin drip per “local protocol” at the paramedic level for chest pain patients. This protocol is intended to be used by paramedics who have been authorized by their agency to transport patients on a nitroglycerin drip. It is intended to be used for inter-facility transports when the nitroglycerin drip has been started by the sending facility. This protocol is not meant to be used for starting nitroglycerin drips in the field during scene calls. Use of this protocol assumes the provider has had appropriate training on and familiarity with the IV pump that will be used during the transport.

Nitroglycerin (50mg/250ml D5: 200 mcg/ml)

1. Maintain cardiac monitoring during transport.
2. Assess and record vital signs, to include temperature, prior to transfer and every 5 to 10 minutes en route.
3. Reassess patient frequently during transport and document findings.
4. Collect all transfer documentation: transfer sheet, EKG’s, lab, and any other pertinent information.
5. Contact the online medical director (medical control), document indication and order for drug during transport.
7. Drip rate changes during transport:
   1. If chest pain present: increase the nitroglycerine drip 5 mcg/min (1.5 ml/hr) or 3.3 mcg/min (1.0 ml/hr) depending on your pump, every five minutes until the chest pain resolves or systolic blood pressure drops below 100. If more than an additional 10 mcg/min required, contact the online medical director (medical control).
   2. If systolic blood pressure drops below 100, decrease the nitroglycerine by 5 mcg/min (1.5 ml/hr) or 3.3 mcg/min (1.0 ml/hr) depending on your pump and contact the online medical director (medical control).
   3. If systolic blood pressure drops below 90, stop the nitroglycerine drip, place patient in trendelenberg, consider a fluid bolus and contact the online medical director (medical control).

Note on heparin and Lovenox (enoxaparin) for chest pain or potential cardiac patients: paramedics may transfer patients who have been administered heparin or enoxaparin at the sending facility. However, they may not administer heparin or enoxaparin or continue a heparin drip en route without a valid critical care endorsement approved by medical direction. These patients should be considered at risk for and monitored for bleeding complications similar to any other patient on anticoagulants.
Norepinephrine

Dosing:

1. DOSE: Start at initial dose 2 mcg/minute. Titrate to effect. Max dose for refractory shock 20 mcg/min.
2. Guidelines based on 4mg norepinephrine in 250cc D5W or NS for 16mcg/cc concentration
3. Use 60 gtts/cc tubing
4. Frequent checks of IV patency and blood pressure are required
5. Contact medical control for pediatric/neonatal dosing.
6. These are only guidelines. Cater individual dosing to patient's clinical presentation

<table>
<thead>
<tr>
<th>Dose</th>
<th>Drip Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 mcg/min</td>
<td>~ 7.5 gtts/min</td>
</tr>
<tr>
<td>5 mcg/min</td>
<td>~ 20 gtts/min</td>
</tr>
<tr>
<td>10 mcg/min</td>
<td>~ 35 gtts/min</td>
</tr>
<tr>
<td>15 mcg/min</td>
<td>~ 60 gtts/min</td>
</tr>
<tr>
<td>20 mcg/min</td>
<td>~ 75 gtts/min</td>
</tr>
</tbody>
</table>

Precautions:

- Norepinephrine is preferentially given through a central line but in the field and in emergent situations it can be given peripherally through good IV access.
  - Norepinephrine should not be given through a wrist or hand IV
  - Watch closely for any signs of extravasation. The site should be checked at least every 5 minutes during peripheral infusion of norepinephrine.
  - If there are any signs of extravasation of norepinephrine:
    - Switch the infusion to another peripheral site or switch to IO access
    - Leave the IV cannula in place at the site of the extravasation. Aspirate as much fluid as possible through the cannula.
    - Document findings at the site and monitor for change during transport.
    - Alert the destination facility of the extravasation. Phentolamine may be considered with administration through the IV at the site of the extravasation and/or subcutaneous administration.

Special Note: UNSTABLE BRADYCARDIA

- When norepinephrine was added and dopamine was removed from the stock carried, concern was raised about the ACLS algorithm for unstable bradycardia as norepinephrine does not primarily increase heart rate and is not indicated for bradycardia.
- For unstable or symptomatic bradycardia with a pulse:
  - Trans-cutaneous pacing should be used along with dosing of epinephrine as needed.
- Dosing for epinephrine in this situation is as follows
o **Adult** - consider EPINEPHRINE (1:10,000=1mg/10ml) (IV) 1 to 2 ml (0.1-0.2mg), repeat every 3-5 minutes to a minimum B/P 90 systolic and improvement of symptoms

o **Pediatric** - consider EPINEPHRINE (1:10,000=1mg/10ml) (IV) 0.1ml/kg to a max of 2 ml (0.2mg), repeat every 3 TO 5 minutes to a minimum B/P 90 systolic and improvement of symptoms

o This dosing is from the anaphylaxis protocol in the MT state protocols, although recommended dosing is lower than what is recommended in the anaphylaxis protocols.
POLST/Comfort One Protocol

POLST forms have replaced the previous program of Comfort One in Montana. However, Comfort One forms are still valid and still present in the community. They should be honored if one is presented to you in the course of patient care.

POLST:

Out-of-Hospital Protocol when presented with POLST Documentation:

- POLST documentation, if presented to the out-of-hospital provider, MUST be followed.
- POLST Documentation MUST accompany the patient and be presented to other healthcare providers who subsequently attend the patient.
- The out-of-hospital patient care documentation must include the POLST documentation and care provided based on the POLST documentation.
- Never delay patient care to determine if the patient has POLST documentation. COMFORT One bracelet identifies a patient who has a POLST document and a DNR (section A).
- A verbal DNR order from a physician must be honored.
- A POLST document can be disregarded if the patient requests or if the terminal condition no longer exists.
- If there is a question regarding POLST, contact Medical Control.

For more information:


Comfort One:

Montana legislation adopted in 1989 and 1991 require EMS personnel to follow this approved state-wide protocol for COMFORT ONE patients and provides them legal immunity.

Definition:

COMFORT ONE protocol is a set of standardized, statewide patient care orders to be followed by emergency medical services personnel when encountering a COMFORT ONE patient. They emphasize the patient will receive palliative, supportive care but NO resuscitative measures.
Application:

COMFORT ONE protocol is applicable to emergency medical services personnel acting in the non-hospital setting, including inter-facility transfers.

Activation/Identification:

The COMFORT ONE status of a patient is confirmed and this protocol is activated when pre-hospital personnel have been presented with:

1. A COMFORT ONE card or form for the patient, provided the patient’s identity is verified by one of the following:
   a. The patient communicates their name
   b. Personal knowledge of the individual by rescuer
   c. Driver’s license/credit card, etc.
   d. Another individual present confirms patient’s identity

2. A COMFORT ONE bracelet on the patient (no further identification is necessary).

This COMFORT ONE protocol is also activated when EMS personnel receive an oral do-not-resuscitate order issued directly by a physician.

EMS Provider Actions:

1. Proceed with usual patient assessment and care INCLUDING resuscitative measures UNTIL COMFORT ONE status is confirmed or until an oral do-not-resuscitate order is received directly from a physician.

2. Upon verification of COMFORT ONE status or direct oral physicians DNR order:

DO NOT:

- Initiate CPR
- Administer chest compressions
- ET/King Airway
- Initiate cardiac monitoring
- Administer cardiac resuscitation drugs
- Defibrillate
- Provide ventilatory assistance

DO: (as indicated by the patient’s condition):

- Suction airway
- Administer oxygen
- Position for comfort
Gallatin County Specific
Pre-hospital Emergency Medical Services Protocols

- Splint
- Control bleeding
- Provide pain medication (ALS only)
- Provide emotional support
- Contact hospice or home health agency if either has been involved in patient care, or the patient’s attending physician
- Treat pain as appropriate

If efforts are begun prior to confirmation of COMFORT ONE status or a direct oral physician’s DNR order, discontinue the resuscitative measures upon verification of COMFORT ONE status, including stopping:

- CPR
- Ventilatory assistance
- Cardiac medications
- (IV line or ET tube are to be left in place)

Revocation:

1. The patient may revoke his/her COMFORT ONE status by direct communication with the pre-hospital care provider or other licensed health care provider.

2. A physician may revoke COMFORT ONE status or DNR order at any time either in writing or by direct verbal communication with EMS personnel.

3. A revocation communicated by family or other non-licensed person is NOT VALID in the emergency or transport setting.

4. It is the responsibility of EMS personnel or other licensed health care providers, upon witnessing a revocation, to communicate that revocation directly, or in writing, to the patient’s attending physician.

Documentation:

The minimum COMFORT ONE trip report information shall include:

- Patient’s name, gender, estimated age
- Attending physician
- COMFORT ONE identification seen
- Date and physician’s name giving the direct oral DNR order
- Time, date, location of event
- Description of event
- Assessment findings
- Care provided
- Any revocation directly witnessed by EMS personnel

Attach copy of COMFORT ONE identification to PCR if possible.
Interaction with family/bystander:

1. If family/bystanders request resuscitative efforts for a patient with COMFORT ONE status or with a direct oral physician’s DNR order:
   a. Do not initiate CPR
   b. Provide palliative care and comfort to patient
   c. Provide explanation, reassurance and support to family/bystanders

2. Should family/bystanders INSIST on resuscitative efforts:
   a. Avoid emotional confrontation
   b. If necessary for avoiding physical confrontation CPR may be initiated, pending transport and/or contact with medical control.
   c. If resuscitative efforts are initiated at the scene for the sole purpose of avoiding emotional confrontation with family, such efforts may be discontinued en route only after consultation with medical control.
Refusal Policy and Definition of a Patient

Guideline on defining a patient:

1. All **first party** calls (the patient calls to summon assistance for themselves) and **second party** calls (someone who knows the patient or who is involved in the situation summons EMS) should generate a refusal of care (including lift assists). If the patient refuses vitals / assessment / etc. then that should be documented.

   a. A family member calls for a choking relative who is better by arrival (second party)
   b. A motorist calls for someone they have hit in a MVC (second party)
   c. Law enforcement calls for someone involved in a MVC (second party)

2. If it is a **third party** call (someone who doesn’t know the patient or the situation) and the parties refuse EMS and state there is no medical problem (as in the guy sleeping in the park, or multiple parties involved in an MVC), and they do not appear obviously injured, ill, or impaired, then it is "no patient found." (Providers are encouraged to document that they made a visual assessment of the scene and the person(s) involved on the paperwork to demonstrate due diligence.)

   a. Someone driving down the road calls for someone unknown to them who was lying in the grass (third party).
   b. Someone passes an accident on the road and calls 911 without knowledge of the individuals involved (third party).

Refusal Policy:

Purpose: To define who is considered to be a patient and how to decide when to allow a patient to decline treatment and/or transportation to the hospital based on the patient having the capacity to refuse.

Policy:

1. Any patient (See definition of patient) refusing treatment must be informed of the risk of potential worsening of their condition, and the possibility it could possibly lead to death or permanent disability.

   IF patient has capacity (see below)

   AND has no signs of being under the influence of an intoxicating substance,
   AND is alert and oriented to person, place and time,
   AND is not a minor,
   AND is not homicidal or suicidal,
   AND still refuses,

   THEN he/she must sign a refusal form indicating they understand and are accepting the risk of refusal and cannot hold anyone responsible for any bad outcome as a result of their refusal. If there are any questions or concerns about a patient’s state of mind (capacity,
intoxication or altered mental status) that is refusing care or transport, involve medical
direction, enlist the help of family members, and/or notify law enforcement as appropriate.

2. Multiple services do not have to obtain refusals from the same patient, and the responsibility
to obtain a refusal should fall to the agency with jurisdiction for the call, the agency holding
Incident Command or the transporting EMS agency. Refusals should be obtained by ALS
level providers when available.

3. A BLS level provider may obtain a refusal:

   a. If there is no ALS provider on scene, including before ALS has arrived to the scene, if en
      route.
   
   b. If the ALS provider is occupied with care of a more seriously ill or injured patient on
      scene.
   
   c. If there are multiple patient refusals within the same scene or call.

4. For the purpose of EMS, a patient with CAPACITY is defined as:

   a) At least 18 years old (unless emancipated minor)
   
   b) AND is alert, responsive, oriented to person, place, time and situation
   
   c) AND has no signs of injury or illness which may impair the ability to make an informed
decision
   
   d) AND displays no signs of the patient’s judgment being impaired by an intoxicating/mind
altering substance (including carbon monoxide)
   
   e) AND is not suicidal or homicidal and does not want to hurt themselves
   
   f) AND the patient must demonstrate an understanding of:

      i) Diagnosis, possible diagnosis, or current medical problem; does the patient
understand the condition/medical problem for which the specific treatment/transport
is being offered?

      ii) Nature and purpose of treatment; is the person able to explain the nature of the
      treatment and understand relevant information?

      iii) Risk and benefits of proposed treatment/transport; is the person aware of the
possible outcomes of treatment, alternatives or lack of treatment (and is able to
verbalize the potential danger/risk to their health and well-being by refusing
transport/care)?

      iv) Is the person able to make a decision and communicate a choice, and or the
      expectations realistic?

      v) Is the person able to manipulate the information rationally?
5. Documentation of the refusal requires a patient care report with as much information regarding the patient's evaluation as possible, including but not limited to:

   a. Any history obtained

   b. Any physical exam performed
      
      i) This may include visual descriptions if the patient deferred any ‘hands on’ exam.

   c. Documentation describing the discussions about risks of refusal and options presented to the patient.
Stroke Alert Criteria:

For patients meeting certain criteria, treatment of stroke can be very time dependent. Treatment with thrombolytic medications (medications to dissolve clots) for ischemic strokes requires early and rapid diagnosis with a time limit on the use of this therapy.

When transporting a potential stroke patient to Bozeman Deaconess Hospital, the following criteria should trigger a call to alert the hospital of a “Code Stroke Patient.” If a patient is suspected to have had a stroke, but does NOT meet the following criteria, a standard report should be given to convey this information.

“Code Stroke” should be activated if a patient meets both of the following two criteria (A and B).

A. The patient has new symptoms with a positive Cincinnati Stoke Scale.
   1. If any one of the three categories below is abnormal, that is a positive test.
      a. Facial droop: Have the person smile or show his or her teeth. If one side doesn't move as well as the other so it seems to droop, that could be sign of a stroke.
         i. Normal: Both sides of face move equally
         ii. Abnormal: One side of face does not move as well as the other (or at all)
      b. Arm drift: Have the person close his or her eyes and hold his or her arms straight out in front for about 10 seconds. If one arm does not move, or one arm winds up drifting down more than the other, that could be a sign of a stroke.
         i. Normal: Both arms move equally or not at all
         ii. Abnormal: One arm does not move, or one arm drifts down compared with the other side
      c. Speech: Have the person say, "You can't teach an old dog new tricks," or some other simple, familiar saying. If the person slurs the words, gets some words wrong, or is unable to speak, that could be sign of stroke.
         i. Normal: Patient uses correct words with no slurring
         ii. Abnormal: Slurred or inappropriate words or mute
   2. Patients with 1 of these 3 findings as a new event have a 72% probability of an ischemic stroke. If all 3 findings are present the probability of an acute stroke is more than 85%

B. The patient will arrive at the hospital in less than 4.5 hours from the time of onset of the suspected stroke symptoms.
   1. Patients who wake up with symptoms from sleep should have the time they went to sleep used as the time of onset.
Trauma Alert Criteria:

Mechanism of injury alone is not reason enough to activate the Trauma Team, although it should heighten the awareness of the EMT to the potential for serious injury. Physiological findings with or without one of the listed mechanisms of injury should be enough to activate the Trauma Team. Due to time constraints, it is preferable to advise ED of Mechanism of Injury and Physiologic Findings in a brief radio report. Lengthy radio reports are not helpful and can distract the EMT from other more important patient treatment modalities. The following criteria are from the Bozeman Deaconess Hospital Trauma Team Activation Policy (Updated 6/16).

One way to think of the two levels of activation is as follows:
- **Level 1 trauma patients** have signs showing they are significantly injured, and they may need early surgery. This level of activation will get a surgical team as part of the response.
- **Level 2 trauma patients** do not have signs or symptoms of injury, but they have a mechanism or other comorbidities that make you feel they need rapid evaluation. They will not get a surgical team as part of the response but they will get everyone else to ensure rapid and thorough evaluation.

Bozeman Health Deaconess Hospital Trauma Activation Criteria:

Activate a **Level 1 Trauma Activation for**:

Any of the following **physiologic criteria**:

- Glasgow Coma Scale <14
- Systolic Blood Pressure <90mmHg in adults and age-specific hypotension in children
- Respiratory Rate <10 or >29
- Transfer patients from other hospitals receiving blood to maintain vital signs
- Intubated patients transferred from the scene, or with respiratory compromise or obstruction

Any of the following **anatomic criteria**:

- Significant penetrating injuries to the head, neck, torso, and extremities proximal to elbow and knee
- Gunshot wounds to the head, neck, chest or abdomen
- Evidence or suspicion of significant blunt chest or abdominal trauma
- Burns associated with major trauma
- Burns ≥ 15% BSA
- Two or more proximal long bone fractures
- Open or depressed skull fractures
- Significant or unstable pelvic fracture
• Crushed, degloved, mangled or pulseless extremity
• Paralysis
• Potential for inhalation injury, thermal or chemical

Level 2 activation takes into account mechanism and patient co-morbidities in the absence of meeting anatomic or physiologic criteria

Activate a Level 2 Trauma Activation for:

Any of the following Mechanism criteria:
• Ejection from automobile, partial or complete
• Death in the same passenger compartment
• Intrusion > 12 inches at occupant site or > 18 inches at any site.
• Auto versus pedestrian/bicycle thrown, run over, or with > 20 MPH impact
• Motorcycle crash > 20 MPH
• Falls > 20 feet for adults; Children >10 feet, or 2-3 times the height of the child
• Horse/ large animal /ATV roll-over or ejection

Any of the following Co-morbidities:

• Age < 10 or > 55
• Pregnancy > 20 weeks
• Anticoagulation and bleeding disorders
• Acute renal/heart failure, or pulmonary disease

Level 1 or 2 trauma activation can also be utilized solely on EMS or ED provider judgment and patients entering the system as a Level 2 activation can be upgraded to a Level 1 activation if their condition changes at any time.
Tranexamic Acid Protocol

Pharmacology and Actions: Tranexamic Acid (TXA) is a potent antifibrinolytic drug. The main action is blocking of the lysine-binding sites of the plasminogen molecule. This prevents activation of plasminogen by plasminogen activator. There is no evidence of a thrombogenic effect.

Indications:

Age >= 16 years OR weight > 100lbs (45kg)
AND Trauma with suspected hemorrhagic shock (SBP <= 90, measured or reported)

Contraindications:

- Time since injury > 3 hours
- Isolated traumatic brain injury
- Isolated spinal shock (cord injury without evidence of hemorrhage)
- Known clot physiology – MI, PE, DVT

Dosage and Administration:

- **TXA Bolus (IV/IO):** Infuse 1g in 100cc (NS or LR) over 10 minutes before IV fluids if possible
- **TXA Infusion** to follow bolus (IV/IO): If ETA to the receiving facility following completion of the bolus is > 20 minutes - Begin infusion of 1g in 250cc NS over 8 hours via pump or dial-a-flow (31cc/hr).

Special Considerations:

The provider should transfer the 8 hour TXA infusion to the receiving center if it has been started.
Tourniquet Use

General:

1. Tourniquets should be considered part of standard equipment for all prehospital personnel due to their proven lifesaving benefits in the setting of uncontrolled extremity hemorrhage.

2. The use of windlass, pneumatic, or ratcheting type commercial tourniquets is advised instead of improvised tourniquets, elastic, or bungee type tourniquets. This is due to their proven superiority in occluding arterial flow. All providers should be familiar with and train on the use of the specific device(s) they carry or to which they have access.

Clinical Indications:

1. Life threatening extremity hemorrhage that cannot be controlled by other means

2. Serious or life threatening extremity hemorrhage in a setting where tactical, extrication, or man-power considerations prevent the use of standard hemorrhage control techniques

Contraindications:

1. Non-extremity hemorrhage

2. Proximal extremity location where tourniquet application is not practical

3. Hemorrhage controllable by standard means

Procedure:

1. Place tourniquet proximal to wound

2. Tighten per manufacturer instructions until hemorrhage stops and/or distal pulses in affected extremity disappear.

3. Secure tourniquet per manufacturer instructions

4. Note time of tourniquet application and communicate this to receiving care providers

5. Dress wounds per standard wound care protocol

6. If delayed or prolonged transport and tourniquet application time > 45 minutes: consider reattempting standard hemorrhage control techniques and removing tourniquet