

Ankeny Fire Department & Polk City Fire Department Emergency Medical Services **Unified Patient Care Protocol** **September 2020 Update**



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The Mission of the Ankeny Fire Department is to deliver to our residents and neighbors the highest quality fire, medical, and emergency services.

The mission of the Polk City Fire Department is to minimize the loss of life and property of our residents and neighbors through education, prevention, and by delivering the highest level of fire and emergency medical services.

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Section 1:

Administrative Documents

1.01 Introduction

These protocols have been adopted from the Iowa Department of Public Health, Bureau of Emergency Medical Services: State of Iowa Protocols - 2005

The purpose of protocols in the out-of-hospital setting is to assure safe and effective intervention during the out-of-hospital phase of patient care. In consideration of the unique resources, needs, population, and geography of individual service programs in Iowa, physician medical directors may choose to enhance or omit portions of these protocols in accordance with Iowa Code, Chapter 147A. Medical directors are responsible to ensure that EMS personnel use protocols, have the training and skills required, and perform Continuous Quality Improvement. Regardless of EMS provider level of certification, use of skills in the out-of-hospital setting are limited to the EMS provider's scope of practice and EMS service program's level of authorization in accordance to the skills and protocols approved by the physician medical director. The service program medical director must determine what skills within the level of service authorization and provider scope of practice are to be included and also which, if any, are not included for individual EMS services. **The "Iowa EMS Scope of Practice" document, adopted by reference to the administrative rules outlines skills by certification level. It is available on the Bureau of EMS website, or by contacting the Bureau of EMS.**

Protocols are essential to assure that education, training, and standards of care meet the needs of patients. Ongoing review and update of protocols is necessary to keep pace with interventions known to be effective in out-of-hospital care. The challenge is for all EMS providers, out-of-hospital and in-hospital, to keep current with the protocols so the EMS continuum of care can effectively reduce suffering, disability, death, and costs from life-threatening illness and injury. It is the intent of the Protocol Committee and the Iowa EMS Advisory Council that these protocols will serve as a standard throughout Iowa's EMS system. According to Iowa Administrative Code 641-132.9(2)(a) individual physician medical directors duties include *"developing, approving, and updating protocols to be used by service program personnel that meet or exceed the minimum standard protocols developed by the department."* Additionally, according to Iowa Administrative Code 641-132.8(3)(b) service programs shall *"utilize department protocols as the Initial Care. The service program medical director may make changes to the department protocols provided the changes are within the EMS provider's scope of practice and within acceptable medical practice. A copy of the changes shall be filed with the department."*

1.02 Authority

According to Iowa Code, Chapter 147A, emergency medical personnel may only deliver emergency medical care under the direction of a physician medical director who is licensed to practice medicine in Iowa. The medical practice of out-of-hospital personnel is an extension of the medical director's license. Protocols shall be approved, signed, and dated by the EMS service medical director prior to implementation. Any changes must be on file with your State EMS System Coordinator. Skills must be within the level of service authorization and EMS provider scope of practice.

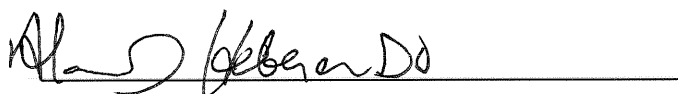
Service Program Name: Ankeny and Polk City Fire Departments

Service Authorization Level: Paramedic

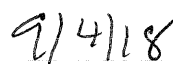
Service Medical Director: Alan Heberer, D.O.

☒ **YES** ☐ **NO** These protocols are to be considered a standing order. Radio communications are not required prior to performing any protocol action. EMTs/ Paramedics should call in for further direction or confirmation of orders whenever the situation warrants.

☒ **YES** ☐ **NO** The emergency medical care provider present with the highest level of certification (on the transporting service) shall determine, based upon patient care needs, the appropriate level of provider to attend the patient during transport.



Alan Heberer, D.O.
Medical Director
Ankeny Fire Department
Polk City Fire Department



Date

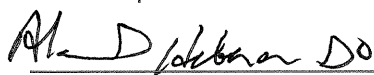
1.03 Approval of Skills & Training Level

The Medical Director authorizes the following skills as applicable to the Iowa Scope of Practice:

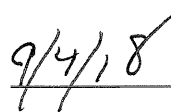
Skills	Minimum Level
King Airway	EMT
Glucose monitor	EMT
Epinephrine auto-injector pen	EMT
Patient assisted medications: inhaler, Epipen, NTG	EMT
CPAP	EMT
Selective spinal immobilization	EMT
Intraosseous Infusion	Paramedic
RSI (protocol attached)	Paramedic
EZ-IO Procedure	Paramedic

Medical Director Affirmation:

I have reviewed the Iowa EMS Scope of Practice and authorize these protocols, assigned skills, medications and listed/attached revisions for Ankeny and Polk City Fire Department's



Alan Heberer, D.O.
Medical Director
Ankeny Fire Department
Polk City Fire Department



Date

1.04 Transport Directive

Transport of Patients to Iowa Methodist West, Mercy West Lakes, Mary Greeley Medical Center, and other regional medical facilities

Ankeny and Polk City Fire Departments shall continue to strive to meet the needs of our patients and their family members by providing quality emergency medical care and transportation to appropriate medical facilities.

Requests to transport patients to hospitals outside Des Moines shall be redirected to the appropriate downtown hospital in the following potential medical scenarios:

- Obstetrical emergencies
- Cardiac emergencies including STEMI or possible AMI*
- Stroke*
- Shock
- Trauma (with the exception of minor traumatic injury or fracture)
- Respiratory distress
- Any unstable patient

Patients with the above medical scenarios who request transport to hospitals outside Des Moines shall be advised that the Ankeny and Polk City Fire Departments are only able to transport patients to an appropriate downtown Des Moines hospital in accordance with the Medical Director's directive.

*Exception to this directive may be made when a cardiac emergency (including STEMI or possible AMI) or stroke patient is requesting transport to Mary Greeley Medical Center in Ames, and the expected travel time to this facility is equal to or less than the expected travel time to a downtown Des Moines hospital.

1.05 VA Transport Guidelines

According to the Department of Veterans Affairs, there are three instances when the initial evaluation of the Veteran should take place at a designated trauma center/tertiary care facility instead of the VA Central Iowa Health Care System (VACIHCS). They are as follows:

1. Major Trauma Patients

- a) If the Veteran fits the Out of Hospital Trauma Triage Destination Decision Protocol criteria for transport to a Level 1 or Level 2 facility, he or she should be transported directly to a trauma facility
- i) See appendix **8.01 Adult - Out of Hospital Trauma Triage Destination Decision Protocol**

2. Probable MI with ST segment elevation per EKG or cardiac arrest

- a) If a Veteran has typical signs and symptoms of an acute MI or is in cardiac arrest, the Veterans Administration recommends that the Veteran be taken directly to a facility with immediate interventional catheterization lab capability
- b) *However*, if a Veteran has chest pain, but there is doubt as to the diagnosis (e.g., atypical chest pain, absence of dyspnea, nausea, diaphoresis and/or non-diagnostic or negative EKG) we recommend that the Veteran be transported to VACIHCS for evaluation.

3. Probable acute Stroke

- a) If a Veteran has signs and symptoms consistent with acute stroke, the Veterans Administration recommends that the Veteran be taken to a designated stroke center (See procedure **6.501 - Stroke Alert**).

Questions? Contact VA Central Iowa Health Care System for questions regarding the transportation of a Veteran patient to VACIHCS by calling (515) 699-5848 and requesting to speak with an ER physician.

Note: During community emergencies, the VA will assist and furnish hospital care or medical services to non-VA beneficiaries as a humanitarian service. In a community mass casualty incident, the VA is capable of accepting patients triaged as “yellow” or “green.”

Reference: April 17, 2014 Department of Veterans Affairs Letter 636A6/11

Section 2:

Initial Protocols for All Patients

2.01 Initial Protocols for All Patients

1) Scene Size-up

- a) As you approach the scene, ensure safety for yourself, other responders, bystanders, and the patient.
- b) Establish and follow the Incident Command System.
 - i) If multiple patients are suspected, consider a possible multi-casualty incident (See protocol **3.16 Multi-Casualty Incident**).
 - ii) Contact dispatch for additional resources as needed.

2) Body Substance Isolation (BSI)

- a) Prior to patient assessment, employ precautions to prevent contact with potentially infectious body fluids or materials
 - i) Goggles should be worn when performing procedures that increase the risk of splash or airborne contamination (e.g., advanced airway management).

3) Initial Assessment

- a) Assess mental status.
 - i) Maintain spinal immobilization if needed (See procedure **6.302 Spinal Immobilization**).
 - ii) Evaluate mental status by assessing AVPU and GCS.
- b) Assess the patient's airway.
 - i) Consider appropriate advanced airway management (See procedure **6.101 Adult Advanced Airway Management** or **6.102 KING LTS-D** or **6.110 Pediatric Advanced Airway Management**).
 - ii) If cervical precautions are indicated, utilize the jaw thrust maneuver.
- c) Assess the patient's breathing.
 - i) Administer oxygen if indicated (See procedure **6.104 Oxygen Administration**).
 - ii) Evaluate breathing by looking for chest rise and fall, respiratory rate, and work of breathing.
- d) Assess the patient's circulation.
 - i) Check for pulse. If absent, start CPR (See protocol **3.09 Adult Cardiac Arrest** or **4.07 Pediatric Cardiac Arrest**).
 - ii) Check for bleeding. If present, control (See protocol **3.29 Trauma**).
 - iii) Evaluate perfusion by assessing skin color, temperature, and capillary refill

2.01 Initial Protocols (continued)

- 4) Conduct the appropriate focused history and physical examination based on the patient's presentation.
 - a) Expose the patient if needed to continue assessment.
 - b) Follow applicable protocol(s) and standing orders based on the patient's presentation (see **Table of Contents**).
 - i) Prioritize treatments for life threatening condition(s).
 - ii) You may need to use more than one protocol for a single patient
 - c) If indicated, obtain vascular access (See procedure **6.402 Intravenous Access and Infusion** or **6.403 Intraosseous Access and Infusion**).
 - d) Apply cardiac monitor as indicated. Treat dysrhythmias per protocol.
- 5) Administer medications as indicated by protocol or medical direction order (See procedure **6.401 General Medication Administration**).
- 6) Patients should be transported to an appropriate medical facility as soon as possible (See procedure **6.507 Transportation**).
 - a) Contact the receiving facility with a patient report or as needed for medical direction orders (see procedure **6.506 Communications**).
- 7) Conduct an ongoing assessment during transport.
 - a) Reassess mental status, ABC's, and vital signs.
 - b) Monitor interventions to check for continued effectiveness.
- 8) Patients younger than 16 years of age should be treated as pediatric patients.
 - a) The Broselow tape can be used in place of the pediatric medication dosages listed in these protocols.
- 9) Other
 - a) If the patient refuses treatment or transport, complete necessary documentation (See protocol **3.32 Refusal of Treatment/Transport**).
 - b) Document all interventions in the patient care report.
 - c) Remember the importance of patient confidentiality .
 - d) If a physician on scene attempts to intervene with patient care, he or she should be qualified and willing to remain with patient throughout transport (See appendix **8.03 Physician On Scene**).
 - e) Providers shall operate within the State of Iowa EMS Scope of Practice for their certification level (See appendix **8.04 Iowa EMS Scope of Practice**).
 - f) Obtain a signature on the Billing Authorization form from the patient or the patient's agent when transport to the hospital is provided.

Section 3:

Adult Patient Care Protocols

3.01 Abdominal Pain

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) If medical emergency, refer to appropriate protocol.
- 3) If trauma emergency, refer to appropriate protocol.
- 4) Keep the patient lying still.
- 5) Transport in a position of comfort.
- 6) Be alert for vomiting.
- 7) Keep the patient NPO.

Advanced Care Guidelines

- 1) Consider use of pain management (See protocol **3.20 Pain Management**).
- 2) Treat nausea and vomiting if present (See protocol **3.17 Nausea and Vomiting**).
- 3) Be alert for pulsating masses. If present, be highly suspicious of abdominal aortic aneurysm (AAA).
 - a) Monitor peripheral pulses and BP in both arms.
 - b) Establish large bore IV(s).

3.02 Allergic Reaction & Anaphylaxis

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) If ALS is unavailable, administer preloaded auto-injectable **EpiPen** (0.3 mg of 1:1,1000 Epinephrine) and transport. Tier with paramedic level service when available.
- 3) Continuously reassess airway, breathing, and circulation status.
- 4) Treat for shock/hypoperfusion if present, and be prepared to initiate CPR and AED as necessary during transport. Continue transport without delay.

Advanced Care Guidelines

- 1) Be prepared to intubate if necessary (See procedure **6.101 Adult Advanced Airway Management**).
- 2) If reaction is not life threatening, consider administration of:
 - a) **EPINEPHRINE 1:1,000** 0.3-0.5 mg IM. If treating a bite or sting, inject proximal to the site when possible. Use caution in patients with coronary artery disease (CAD).
 - b) **DIPHENHYDRAMINE (Benadryl)** 25-50 mg IM or slow IV push.
- 3) If reaction is severe and immediately life threatening, consider administration of **EPINEPHRINE 1:10,000** 0.3-0.5 mg slow IV push.
- 4) Consider **ALBUTEROL (Proventil)** 2.5 mg in 3.0 mL NS by nebulizer for signs of bronchospasm.
- 5) Consider **SOLU-MEDROL** 2mg/kg slow IV push. Maximum dose 125 mg.

3.03 Altered Mental Status

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Consider all possible causes including head trauma
- 3) Utilize appropriate airway management
- 4) Obtain blood glucose level (See procedure **6.502 Blood Glucose Level Check**).
 - a) If blood glucose level is less than 60 mg/dL, the patient is conscious, and the patient is able to swallow, administer 15 grams oral glucose.
- 5) Be alert for combativeness
- 6) Transport in position of comfort

Advanced Care Guidelines

- 1) Obtain blood glucose level (See procedure **6.502 Blood Glucose Level Check**).
 - a) If blood sugar less than 60 mg/dL, administer 25 grams **50% DEXTROSE** IV and observe for changes.
 - b) If symptoms suggest hypoglycemia, administer 12.5 grams **50% DEXTROSE** IV even if BS greater than 60 mg/dL.
- 2) Consider **NALOXONE (Narcan)** 2 mg IV or Intranasal if unknown history of events or signs of narcotic overdose are present.
 - a) If no response or inadequate response, may repeat 1-2 mg **NALOXONE (Narcan)** IV or intranasal every 2 minutes (max total dose 10 mg).
 - b) Evaluate the need for intubation

3.04 Amputated Part

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) General amputated part treatment:
 - a) Control bleeding with tourniquet(s) (See procedure **6.303 Tourniquets**).
 - b) Follow trauma protocol to treat for shock (See protocol **3.29 Trauma**).
- 3) Care of Amputated Part:
 - a) Rinse part gently with normal saline to remove loose debris; do not scrub
 - b) Wrap amputated part in saline moistened gauze and transport with the patient
 - c) Place wrapped part in plastic bag and seal (do not directly immerse part in water/saline). Label with name, date and time.
 - d) Place the plastic bag with the amputated part in a water and ice mixture

Advanced Care Guidelines

- 1) Consider use of pain management (See protocol **3.20 Pain Management**).

3.05 Apparent Death

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Make determination of apparent death. Patient will meet the following criteria:
 - a) No respiratory effort on examination over a 30 second time frame.
 - b) No palpable carotid pulse on examination over a 30 second time frame.
 - c) No pupillary response.
 - d) No painful stimuli response.
 - e) Decapitation, rigor mortis and/or postmortem lividity, incineration, massive crushing and/or evisceration of the heart, lungs or brain.
- 3) Preserve the crime scene if present
- 4) Obtain temperature if possible. Document in patient care report.
- 5) If Apparent Death is determined:
 - a) Law enforcement shall be contacted
 - b) Medical Examiner shall be contacted by law enforcement or with consult of senior law enforcement office
 - c) Remain on scene until released by law enforcement or medical examiner
 - d) Provide emotional support to family/survivors
 - e) Complete pre-hospital care report
 - f) Consider notification of supervisor if high profile event or there is the potential for media coverage

Advanced Care Guidelines

- 1) Confirm asystole in 3 leads if patient is accessible and no hazards are present to care providers.
 - a) Confirming asystole in 3 leads is not necessary when the patient presents with decapitation, rigor mortis and/or postmortem lividity, incineration, massive crushing and/or evisceration of the heart, lungs, or brain.

3.06 Bradycardia

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Administer oxygen per Initial Care Protocols unless patient condition warrants otherwise.
- 3) Elevate lower extremities.

Advanced Care Guidelines

- 1) Consider 250 mL bolus NS if indicated. Repeat PRN.
- 2) Obtain 12-lead ECG.
- 3) Symptomatic bradycardia (hypotension, altered mental status, shock, chest pain):
 - a) Administer **ATROPINE** 0.5 mg IV every 3-5 minutes to a maximum dose of 3 mg or until bradycardia resolves.
 - b) If Atropine is ineffective:
 - i) Consider external pacing (see Procedure **6.203 Transcutaneous Pacing**).
 - a) Consider pain management if the patient's blood pressure is greater than 90 mmHg systolic (see Protocol **3.20 Pain Management**)
 - ii) Consider **DOPAMINE (Intropin)** 5-20 mcg/kg/min for hypotension. Dopamine may also assist with heart rate at low doses (2-10 mcg/kg/min)
- 4) If non-symptomatic, consider placing pacing pads. Monitor the patient closely.

3.07 Breathing Difficulty

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Administer oxygen (See procedure **6.104 Oxygen Administration**).
 - a) If possible, obtain a room air SpO₂ level prior to applying oxygen
- 3) For patients in severe respiratory distress, consider application of CPAP without delay. (See procedure **6.105 CPAP**)
 - a) Initiate CPAP therapy at 5 cm H₂O and titrate up to 7.5 cm H₂O and 10 cm H₂O as patient condition warrants. See CPAP procedure for therapy goals.
- 4) *Bronchospasm*: If signs of Bronchospasm (wheezing, diminished breath sounds) are present and the patient has a physician prescribed, hand-held, metered dose inhaler:
 - a) Consider assisted administration of patient medication, contact Medical Control for Direction.
 - b) If administration is approved by Medical Control:
 - i) Ensure patient is alert enough to take the medication
 - ii) Shake inhaler vigorously
 - iii) Depress the inhaler and have the patient inhale as deeply as possible, and have them hold their breath as long as possible to facilitate medication absorption
 - iv) Reassess patient and repeat second dose as ordered by Medical Control
- 5) **Obstructed Airway** (See procedure **3.19 Obstructed Airway**).
 - 1) If patient is conscious and alert, instruct to cough forcefully
 - 1) If coughing does not clear obstruction, position hands slightly above navel and perform Heimlich maneuver until blockage is dislodged. For pregnant or larger patients, position hands at base of breast bone.
 - 2) If patient becomes unconscious, initiate CPR (See protocol **3.09 Cardiac Arrest (CPR)**)

3.07 Breathing Difficulty (continued)

Advanced Care Guidelines

- 1) Be prepared to intubate if necessary (See procedure **6.101 Adult Advanced Airway Management**).
- 2) *Bronchospasm*:
 - a) Advanced EMT: administer **ALBUTEROL (Proventil)** 2.5 mg in 3 mL NS every 5-10 minutes.
 - b) Paramedic: Administer DuoNeb (**ALBUTEROL (Proventil)** 2.5 mg and **ATROVENT (Ipratropium Bromide)** 0.5 mg combination nebulizer). May only use once. If indicated may repeat **ALBUTEROL (Proventil)** 2.5 mg in 3 mL NS every 5-10 minutes.
 - c) Consider **SOLU-MEDROL** 2mg/kg slow IV, maximum dose 125 mg.
 - d) Consider **MAGNESIUM SULFATE** 40 mg/kg mixed in 100 mL NS over 10-15 minutes, to a maximum of 2 grams, for patients with severe bronchoconstriction and concern for impending respiratory failure.
 - e) Consider administration of **EPINEPHRINE 1:1,000** 0.3-0.5 mg IM. Repeat in 12-15 minutes per medical direction
- c) Complete airway obstruction: (see protocol **3.19 Obstructed Airway**)
- 4) *Anaphylaxis*: See protocol **3.02 Allergic Reaction & Acute Anaphylaxis**
- 5) *Pulmonary Edema*:
 - a) Administer 0.4 mg **NITROGLYCERIN** SL if blood pressure is greater than 100 mmHg.
 - i) May be administered prior to an IV being initiated if:
 - (1) Has received Nitroglycerin before without significant drop in B , and
 - (2) BP is greater than 120 mmHg.
 - b) Repeat 0.4 mg **NITROGLYCERIN** SL every 3-5 minutes for a total of three doses, as long as blood pressure remains greater than 100 mmHg systolic.
 - c) Consider 12-lead ECG (See procedure **6.205 12-Lead ECG**).

3.08 Burns

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Thermal Burns
 - a) Stop the burning process with water or saline. Do not use ice water. Be careful to avoid causing hypothermia.
 - b) Use “rule of nines” to estimate percent of body surface area injured (see below for reference diagram) and estimate depth of burn as superficial, partial thickness or full thickness
 - c) Remove smoldering clothing and jewelry
 - d) Do not break blisters or apply any type of ointment, lotion, or antiseptic
 - e) Cover the burned area with a dry sterile dressing or plastic wrap
 - f) Keep patient warm
 - g) Continually monitor the airway for evidence of obstruction.
- 3) Chemical Burns
 - a) Brush off powders prior to flushin
 - b) Immediately begin to flush with large amounts of wate
 - c) Continue flushing the contaminated area when en route to the receiving facility
 - d) Do not contaminate uninjured areas while flushin
 - e) Attempt to identify contaminant
- 4) Toxin in the Eyes
 - a) Flood eyes with lukewarm water for at least 20 minutes, having patient blink frequently during irrigation.
 - b) Continue irrigation during transport to hospital.
 - c) Attempt to identify contaminant.
- 5) Electrical Burns
 - a) Treat soft tissue injuries associated with the burn with dry dressings
 - b) Treat for shock if indicated

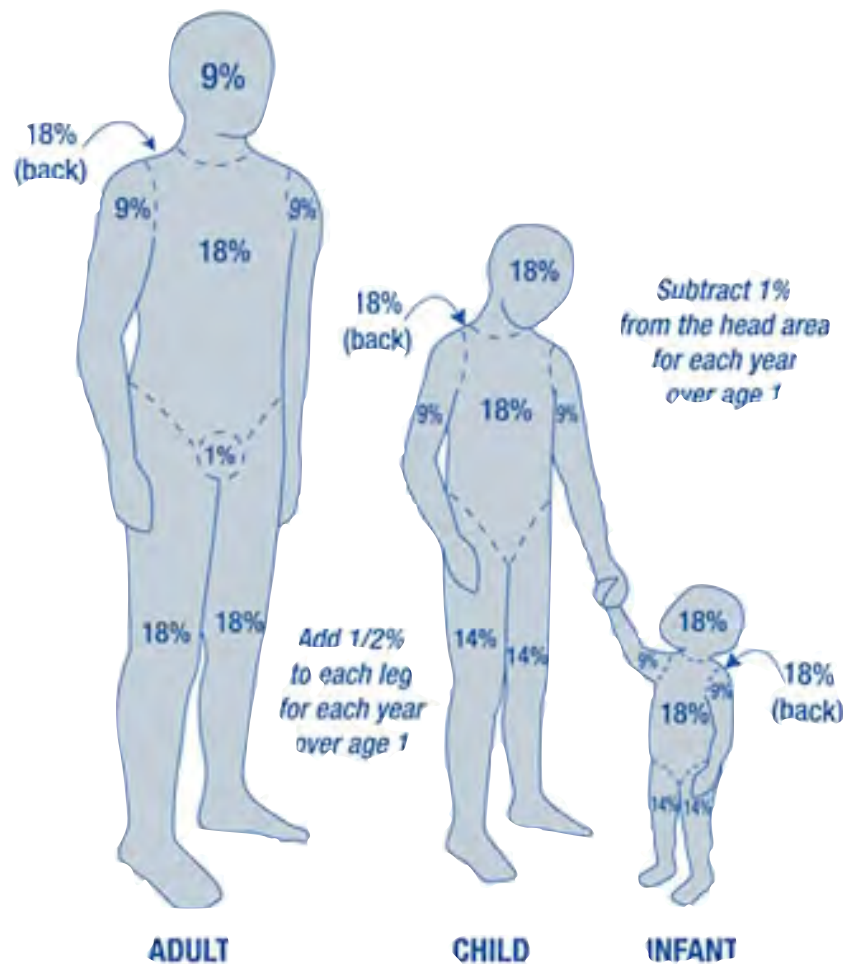
3.08 Burns (continued)

Advanced Care Guidelines

- 1) Anticipate the need for advanced airway management especially in the presence of singed nasal hair and mucosa with respiratory distress, or facial/oral burns. Monitor airway closely, intubate early if indicated (See procedure **6.101 Adult Advanced Airway Management**).
- 2) Consider use of pain management (See protocol **3.20 Pain Management**).
- 3) Contact medical control for further orders

Special Considerations

Utilize the following diagram when estimating the percentage of body surface area involved in a burn injury.



(Image used with permission from The University of Michigan Health System.)

3.09 Cardiac Arrest (CPR)

Special Considerations

- 1) Resuscitation can be successful after prolonged periods of hypothermia.

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Follow American Heart Association Basic Life Support Health Care Provider CPR guidelines.
- 3) If the patient is unresponsive and not breathing or not breathing adequately, check for a definite pulse for 10 seconds
 - a) For patients with a pulse, provide 1 rescue breath every 6 seconds while continuing to monitor the patient.
 - b) For patients without a pulse, begin **immediate** chest compressions.
 - i) Cycles: 30 compressions/2 breaths
 - ii) Rate: at least 100 compressions/minute
 - iii) Depth: 2 inches
 - iv) Allow complete chest recoil after each compression
 - v) Minimize interruptions in chest compressions (less than 10 seconds)
- 4) Continue chest compressions and breaths until AED is ready.
 - a) Follow defibrillation protocol (See procedure **6.201 Automatic (AED) and Manual Defibrillation**).
 - b) Minimize interruptions in CPR while utilizing AED. Resume CPR with chest compressions immediately following shocks.
 - c) If no shock is advised, resume CPR and reanalyze rhythm in 2 minutes.
- 5) If bag-mask ventilations are inadequate, consider placement of a King-LTSD Airway (See procedure **6.102 King LTS-D**).
 - a) Begin continuous chest compressions without pauses for ventilations. Provide 1 breath every 6 to 8 seconds via King LTS-D.
- 6) If available, apply the LUCAS 2 Device to provide mechanical chest compressions (See procedure **6.207 LUCAS 2 Device**).
 - a) Do not delay other therapies in order to apply the LUCAS device.
 - b) Only consider device application when adequate personnel are available to apply the device with minimal interruption to chest compressions.

3.09 Cardiac Arrest (continued)

Advanced Care Guidelines

- 1) Establish IV or IO access without interrupting chest compressions. (See procedure **6.402 Intravenous Access** or **6.08 Intraosseous Access**).
- 2) If bag-mask ventilations are inadequate or as soon as time and personnel permits, consider placement of an advanced airway.
 - a) Advanced airway management should not interrupt chest compressions for greater than 10 seconds.
 - b) Follow procedures for advanced airway management (See procedure **6.101 Adult Advanced Airway Management**).
 - c) Begin continuous chest compressions without pauses for ventilations. Provide 1 breath every 6 to 8 seconds via the advanced airway.
- 3) Follow current arrest rhythm protocol:
 - a) Adult Asystole/PEA (See protocol **5.01 Adult Asystole/PEA**)
 - b) Adult Ventricular Fibrillation/Pulseless V-Tach (See protocol **5.02 Adult Ventricular Fibrillation/Pulseless Ventricular Tachycardia**).
- 4) Consider and treat reversible causes of cardiac arrest:
 - a) Hypovolemia
 - b) Hypoxia
 - c) Acidosis
 - d) Hypo-/hyperkalemia
 - i) Consider hyperkalemia with dialysis patients.
 - e) Hypothermia (See protocol **3.11 Cold Emergencies**)
 - f) Tension pneumothorax (See procedure **6.106 Needle Decompression**)
 - g) Cardiac Tamponade
 - h) Toxins (See protocol **3.23 Poisoning**)
 - i) Pulmonary/Coronary Thrombosis
- 5) Administer **SODIUM BICARBONATE** 1 mEq/kg for cardiac arrest due to known acidosis, tricyclic antidepressant overdose, or hyperkalemia.
- 6) Consider termination of resuscitation after prolonged resuscitation efforts (See protocol **5.05 Termination of Resuscitation**).
- 7) If return of spontaneous circulation occurs, follow post-cardiac arrest care protocol (See protocol **5.04 Post-Cardiac Arrest Care**).

3.10 Suspected Acute Coronary Syndrome

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) If trauma related, refer to protocol **3.29 Trauma**.
- 3) If suspected AMI, place patient in position of comfort, loosen tight clothing, and reassure.
- 4) Administer 4-**ASPIRIN** 81 mg (324 mg total) chewable if the patient has not taken one prior to arrival of EMS.
 - a) Withhold if the patient is allergic to aspirin or if the patient is wheezing.
- 5) Assist the patient with their own **NITROGLYCERIN** if blood pressure is greater than 100 mmHg systolic (see Special Consideration section below).

Advanced Care Guidelines

- 1) Establish cardiac monitoring. Perform 12-lead ECG (see procedure **6.205 12-Lead ECG**).
 - a) If an Acute Myocardial Infarction is suspected based on the 12-lead ECG, call a STEMI Alert (See procedure **6.206 STEMI Alert**).
- 2) Administer **NITROGLYCERIN** 0.4 mg SL (see Special Consideration section below):
 - a) *Suspected Right-Sided MI* (Paramedic Only): Nitroglycerin is contraindicated for patients with an inferior wall or suspected right-sided myocardial infarction as evidenced by ST elevation in 2 contiguous inferior leads (II, III, and aVF). Consider 250 mL NS bolus for hypotensive patients.
 - b) May administer nitroglycerin without IV if BP is greater than 120 mmHg and the patient is hemodynamically stable.
 - c) May repeat nitroglycerin administration every 3-5 minutes to a maximum of 3 doses, as long as BP remains greater than 100 mmHg systolic.
 - d) May proceed to Fentanyl (Sublimaze) if no relief from Nitroglycerin administration after 1 dose.
- 3) If possible, avoid initiating IVs below the right AC in patients with chest pain.

3.10 Suspected ACS (continued)

- 4) Consider **FENTANYL (Sublimaze)** 25-100 mcg IV repeat every 5 minutes.
Use caution with elderly patients.
 - a) Titrate to effect until one of the following occurs:
 - i) Total of 250 mcg has been administered
 - ii) Relief of pain
 - iii) Systolic BP below 90 mmHg
 - iv) Respiratory depression occurs
 - v) CNS depression occurs
- 5) If time allows, establish second IV line and infuse as patient condition warrants.
- 6) If time allows, obtain follow-up 12-lead ECG.

Special Consideration

- 1) If patient has taken sexual enhancement drugs such as Viagra, Cialis, or other PDE inhibitor within the past 48 hours, use of nitroglycerin is contraindicated. Proceed with Fentanyl administration per protocol.

3.11 Cold Emergencies

Special Considerations

- 1) Shivering occurs between 86-98 degrees Fahrenheit, but not below. This is a fair indicator of the severity of hypothermia in the patient.
- 2) Do not allow the patient to eat or drink stimulants.
- 3) Un-warmed high flow oxygen may cause hypothermia
- 4) The hypothermic myocardium may be unresponsive to cardiac drugs, pacemaker stimulation, and defibrillation
- 5) Medicines may accumulate to toxic levels.
- 6) After failed initial resuscitative measures, avoid defibrillation or drug therapy until core temperature is greater than 86 degrees Fahrenheit.

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Remove patient from the cold environment, and protect from further heat loss.
- 3) Remove wet clothing, and cover with blankets.
- 4) Assess pulses for 30-45 seconds before initiating CPR.
- 5) If patient is alert and responding appropriately, actively re-warm with hot packs to neck, armpits, and groin.
- 6) If patient is unresponsive or not responding appropriately, re-warm with caution.
- 7) Obtain vital signs every 5 minutes.
- 8) All cold emergencies should be transported as soon as possible to an appropriate medical facility.
- 9) Maintain horizontal position of patient.
- 10) Avoid rough handling.
- 11) Local Cold Injuries (frostbite):
 - a) Remove the patient from the environment.
 - b) Protect the cold injured extremity from further injury.
 - c) Administer oxygen per Initial Care Protocols unless patient condition warrants otherwise.
 - d) Remove wet or restrictive clothing.
 - e) Splint extremity.

3.11 Cold Emergencies (continued)

- f) Do not rub or massage.
 - g) Do not re-expose to the cold.
 - h) Remove jewelry.
 - i) Cover with dry clothing or dressing.
 - j) Transport to appropriate medical facility.
- 12) Long or delayed transport inevitable (Contact medical control prior to the following)
- a) Start rapid re-warming by immersing the affected part in warm water of 100-105° Fahrenheit.
 - b) Monitor the water to ensure it does not become cool from the frozen body part.
 - c) Continuously stir the water.
 - d) Continue until the part is soft and color and sensation return.
 - e) Dress the area with dry sterile dressing.
 - f) Protect against freezing.

Advanced Care Guidelines

- 1) Establish IV access using warmed fluids if possible. Infuse as patient condition indicates.
- 2) Monitor ECG and treat dysrhythmias.

3.12 DNR Protocol

Definition

Qualified Patient means an adult patient determined by an attending physician to be in a terminal condition for which the attending physician has issued an Out of Hospital DNR order in accordance with the law. Iowa Administrative Code 641-142.1 (144A) Definitions

Purpose

This protocol is intended to avoid unwarranted resuscitation by emergency care providers in the out-of-hospital setting for a qualified patient. There must be a valid Out-Of-Hospital Do-Not-Resuscitate (OOH DNR) order signed by the qualified patient's attending physician or the presence of the OOH DNR identifier indicating the existence of a valid OOH DNR order.

No Resuscitation

No resuscitation means withholding any medical intervention that utilizes mechanical or artificial means to sustain, restore, or supplant a spontaneous vital function, including but not limited to:

- 1) Chest compressions,
- 2) Defibrillation
- 3) Esophageal/tracheal/double-lumen airway; endotracheal intubation, or
- 4) Emergency drugs to alter cardiac or respiratory function or otherwise sustain life.

Patient Criteria

The following patients are recognized as qualified patients to receive no resuscitation

- 1) The presence of the uniform OOH DNR order or uniform OOH DNR identifier , or
- 2) The presence of the attending physician to provide direct verbal orders for care of the patient.

3.12 DNR Protocol (continued)

Other Documentation

The presence of a signed physician order on a form other than the uniform OOH DNR order form approved by the department may be honored if approved by the service program EMS medical director. However, the immunities provided by law apply only in the presence of the uniform OOH DNR order or uniform OOH DNR identifier. When the uniform OOH DNR order or uniform OOH DNR identifier is not present contact must be made with on-line medical control and on-line medical control must concur that no resuscitation is appropriate.

Revocation

An OOH DNR order is deemed revoked at any time that a patient, or an individual authorized to act on the patient's behalf as listed on the OOH DNR order, is able to communicate in any manner the intent that the order be revoked. The personal wishes of family members or other individuals who are not authorized in the order to act on the patient's behalf shall not supersede a valid OOH DNR order.

Comfort Care (♥)

When a patient has met the criteria for no resuscitation under the foregoing information, the emergency care provider should continue to provide that care which is intended to make the patient comfortable (comfort care). Whether other types of care are indicated will depend upon individual circumstances for which medical control may be contacted by or through the responding ambulance service personnel.

Comfort Care (♥) may include, but is not limited to:

- 1) Pain medication
- 2) Fluid therapy
- 3) Respiratory assistance (oxygen and suctioning)

3.13 Fractures and Dislocations

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Assess pulse, motor, and sensation distal to injury before and after splinting.
- 3) Immobilize the joint above and below the injury.
- 4) Cover open wounds with sterile dressing.
- 5) If there is a severe deformity or the distal extremity is cyanotic or lacks pulses, align with gentle traction before splinting, and transport immediately.
- 6) Do not intentionally replace protruding bones.
- 7) Pad each splint to prevent pressure and discomfort to the patient.
- 8) Splint the patient before moving when feasible.
- 9) When in doubt, splint the injury.

Advanced Care Guidelines

- 1) Establish large bore IV if indicated, infuse as patient condition indicates.
- 2) Consider use of pain management (See protocol **3.20 Pain Management**).

3.14 Heat Emergencies

Special Considerations

- 1) Not all heat emergencies are environmental in nature. They may have febrile or neurological etiology.
- 2) High body temperatures may cause seizures.

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Remove the patient from the hot environment and place in cool environment.
- 3) Place in supine position with legs elevated.
- 4) Loosen or remove clothing.
- 5) Cool patient by applying water and fans, and apply cold packs to neck, groin, and armpits.
- 6) If patient is alert, stable, and not nauseated, have patient slowly drink small sips of water.
- 7) If the patient is unresponsive or is vomiting, transport to an appropriate medical facility with patient on their left side.

Advanced Care Guidelines

- 1) Consider a second site of IV access if patient conditions warrants.

3.15 Hypertensive Crisis

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Reassure patient.
- 3) Transport to an appropriate medical facility.

Advanced Care Guidelines

- 1) Consider **NITROGLYCERIN** 0.4 mg SL for patients that present with either of the following:
 - a) Systolic BP greater than 200 mmHg with chest pain or shortness of breath.
 - b) Diastolic BP greater than 130 mmHg with chest pain or shortness of breath.
 - c) Do not attempt to lower the blood pressure of potential stroke patients unless the blood pressure is greater than 220/110 mmHg and medical control has been contacted
- 2) If patient condition warrants, consider the possibility of an acute cerebrovascular attack/stroke (see protocol **3.27 Stroke**).

3.16 Multi-Casualty Incident

Basic Care Guidelines

- 1) This protocol should be followed until superseded or overridden by a community disaster plan.
- 2) Follow Initial Protocols for All Patients when possible (See protocol **2.01 Initial Protocols**).
- 3) Any incident involving five (5) or more “red” patients (trauma or medical) or a total patient count greater than ten (10) at one location may be declared Multiple/Mass Casualty Incident.
 - a) The first responding EMS unit should declare a possible major incident while en route to the scene if the dispatch information suggests the likelihood that one exists.
 - i) Contact Polk County Dispatch to declare a MCI.
 - ii) Provide estimated number of injured.
 - iii) Request hospital availability for injured patient disposition.
 - b) As soon as possible upon arrival to the scene, the unit should verify that a major incident does or does not exist.
- 4) The first arriving unit will initiate Incident Command.
 - a) Command will be delegated to appropriate staff when they arrive.
 - b) Implementation of complete system and unified command will depend upon scale and type of incident.
 - c) Command center should be identified with green flashing light. est system will be utilized.
- 5) Unified Comman
 - a) Dependent upon the type, scope, and size of the Incident, an Unified Command Center may be established.
 - b) Appropriate department representatives may include: Law Enforcement, Fire Department, and Emergency Management Agency.
- 6) Initial EMS Responder:
 - a) Initiates Triage of patients following the SMART triage system and triage tags (See procedure **6.504 Triage Tags**).
 - b) If necessary, apply tourniquet (See procedure **6.303 Tourniquets**)
 - c) Directs all patients who can walk to a specific location, these are considered triaged as “Green” or walking wounded until re-evaluated.

3.16 Multi-Casualty Incident (continued)

- d) SMART triage:
 - i) Yellow (Priority 2):
 - (1) Respirations less than 30
 - (2) Capillary refill less than 2 second
 - (3) Able to follow commands
 - ii) Red (Priority 1):
 - (1) Begins breathing after repositioning airway
 - (2) Breathing greater than 30 breaths per minute
 - (3) Capillary refill greater than 2 second
 - (4) Unable to follow commands
 - (5) Requires bleeding control
 - iii) Black (Deceased/Morgue)
 - (1) Unconscious with no respirations after head tilt
- 7) Movement of Patients.
 - a) Red-tagged patients should be moved to Treatment area first, reassessed and assigned to transport or to personnel to initiate care.
 - b) Yellow-tagged then Green tagged patients should be moved to treatment area after Red tagged patients, reassessed and assigned to transport or personnel to provide care.
 - c) Black-tagged patients will be left in the position found unless Incident Command designates a temporary Morgue location.
- 8) Medical Command.
 - a) Will advise the Incident Commander of the need for assistance.
 - b) Manages treatment area.
 - c) Reassess patients (or assigns task) as they arrive at the treatment area and assigns personnel to provide care per protocols.
- 9) Staging Office .
 - a) Will stage arriving transport units.
 - b) Will delegate removal of needed equipment.
 - c) Will maintain vehicle operators with each unit and position them as appropriate.
 - d) Will report transport unit availability to the Transport Office .

3.16 Multi-Casualty Incident (continued)

10) Transport Office .

- a) Receives hospital Emergency Department availability.
- b) Coordinates with Medical Command the transport of patients to appropriate hospitals with appropriate personnel.
- c) Requests additional resources from Incident Command.

3.17 Nausea and Vomiting

Special Considerations

When transporting patients with certain medical problems, nausea and vomiting may be present. In many cases, the nausea and vomiting may cause patients more distress than the actual illness itself. Providing relief to these patients will be beneficial. Possible medical conditions associated with nausea and vomiting are as follows but not limited to:

- Flu
- Pancreatic and gall bladder disease
- Inner ear disorders
- GI bleeding
- Motion sickness

Remember that nausea and vomiting may be due to a serious underlying trauma or medical condition. It is important to obtain a thorough medical history on all patients to ensure that a more serious condition does not exist. Do not hesitate to consult with medical control.

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) If other conditions exist, refer to appropriate protocol(s).
- 3) Be alert for airway compromise caused by vomiting.
- 4) Transport in position of comfort.
- 5) Keep the patient NPO

Advanced Care Guidelines

- 1) Consider 12-lead ECG (See procedure **6.205 12-Lead ECG**).
- 2) Consider **ZOFRAN (Ondansetron)** 4.0 mg IV or IM, repeated every 15 minutes as signs/symptoms persist.
 - a) If the patient is pregnant or if pregnancy is suspected, then ZOFRAN (Ondansetron) is contraindicated and must not be administered.

3.18 Obstetrical Emergencies

Basic Care Guidelines

1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).

2) Normal Delivery

- a) If delivery is imminent with crowning, prepare for on-site delivery. If delivery does not occur within 10 minutes, contact medical direction for permission to transport.
- b) If delivery on site, apply gloves, mask, gown and eye protection for infection control precautions.
 - i) Have mother lie with knees drawn up and spread apart.
 - ii) Elevate buttocks - with blankets or pillow.
 - iii) Create sterile field around vaginal opening with sterile towels or paper barriers.
 - iv) When the infant's head appears during crowning, place fingers on bony parts of skull (not fontanelle or face) and exert very gentle pressure to prevent explosive delivery. Use caution to avoid fontanelle.
 - v) If the amniotic sac does not break, or has not broken, use a clamp to puncture the sac and push it away from the infant's head and mouth as they appear.
 - vi) As the infant's head is being born, determine if the umbilical cord is around the infant's neck. If necessary, slip the cord over the shoulder or clamp, cut, and unwrap
 - vii) After the infant's head is born, support the head, suction the mouth two or three times and then the nostrils. Use caution to avoid contact with back of the mouth.
 - viii) As the torso and full body are born, support the infant with both hands.
 - ix) As the feet are born, grasp the feet.
 - x) Wipe blood and mucus from the mouth and nose with sterile gauze, suction mouth and nose again.
 - xi) Wrap infant in a warm blanket and place on its side, head slightly lower than trunk.
 - xii) Keep infant level with vagina until the cord is cut.

3.18 Obstetrical Emergencies (continued)

- xiii) Assign partner to monitor infant and complete initial care of the newborn.
 - xiv) Utilize two clamps, place first clamp approximately 4 fingers width from infant, place second clamp. Cut umbilical cord between clamps after pulsations cease.
 - xv) Observe for delivery of placenta while preparing mother and infant for transport.
 - (1) When delivered, wrap placenta in towel and put in plastic bag; transport placenta to hospital with mother.
 - xvi) Massage mother's abdomen until it becomes firm
 - xvii) Place sterile pad over vaginal opening, lower mother's legs.
 - xviii) Record time of delivery and transport mother, infant and placenta to hospital. Do not wait for delivery of placenta before transport.
- 3) Initial Care of Baby
- a) Prevent/minimize heat loss.
 - b) Warm the external environment (use engine heater, warm blankets, etc.)
 - c) Dry the infant thoroughly. Remove wet linen immediately after drying.
 - d) Wrap the newborn in blankets and cover the head in order to minimize heat loss
 - e) Position the infant in a supine or slight Trendelenburg position with a small towel roll under the shoulders.
 - f) Using a bulb syringe, suction MOUTH first then the NOSE
 - g) Assess breathing, heart rate, and color.
 - i) Assess Breathing: If absent or irregular, do BVM ventilations with 100% oxygen @ 40-60 breaths per minute.
 - ii) Assess Circulation: If less than 100 beats/minute, do BVM ventilations.
 - iii) Assess Heart rate after 30 seconds of ventilation, if less than 60 beats/minute proceed with chest compressions at 120 per minute.
 - iv) Continue positive pressure ventilation until heart rate is above 100 beats/minute and spontaneous breathing is present.
 - h) Monitor baby's respiratory and circulatory status carefully.
 - i) Transport to hospital.

3.18 Obstetrical Emergencies (continued)

4) Abnormal Delivery Situations

a) Frank Breech Delivery (Buttocks presentation)

- i) Allow spontaneous delivery.
- ii) Support the infant's body as it is delivered. If head delivers spontaneously, proceed with normal delivery guidelines.
- iii) If head DOES NOT deliver within 3 minutes, insert gloved hand into the vagina, keeping your palm TOWARD baby's face; form a "V" with your fingers and push wall of vagina away from baby's face, thereby creating an airway for baby.

(1) TRANSPORT IMMEDIATELY AND DO NOT REMOVE YOUR HAND UNTIL RELIEVED BY HOSPITAL STAFF.

- iv) Advise receiving hospital en route of the situation.

b) Limb Presentation

- i) Place mother in Trendelenburg position.
- ii) Administer oxygen per Initial Care Protocols unless patient condition warrants otherwise.
- iii) TRANSPORT TO HOSPITAL IMMEDIATELY, notifying receiving hospital.

c) Prolapsed Cord

- i) Place mother in Trendelenburg position
- ii) Insert gloved hand into the vagina and gently push up on the baby's head to take pressure off the cord.

(1) DO NOT REMOVE YOUR HAND UNTIL RELIEVED BY HOSPITAL STAFF.

- iii) TRANSPORT IMMEDIATELY TO HOSPITAL, and notify receiving hospital en route of the situation.

d) Multiple Births

- i) This is usually not a surprise to mother as she has probably already been told by her doctor, but BE ALERT for the multiple birth possibility. Monitor your patient closely.
- ii) Deliver as you would for normal delivery of one infant.

e) Heavy Vaginal Bleeding Following Delivery

- i) Control bleeding - massage lower abdomen firmly.

3.18 Obstetrical Emergencies (continued)

- ii) Treat for shock.
- iii) Transport immediately, notifying hospital en route of the situation.
- iv) Consider putting baby to mother's breast.
- f) Miscarriage
 - i) May result in profuse vaginal bleeding.
 - ii) Administer oxygen per Initial Care protocols unless patient condition warrants otherwise.
 - iii) Provide emotional support to mother, and treat her immediately for shock.
 - iv) Transport without delay to hospital, notifying them of the situation en route. Save all expelled tissues, (to include fetus), and transport with patient.

Advanced Care Guidelines

- 1) Establish large bore IV, infuse as patient condition indicates.
- 2) If the patient presents with seizure activity, treat per seizure protocol (See protocol **3.25 Seizures**).

Special Considerations

- 1) Consider the possibility of pregnancy in any female of child bearing age with complaints of vaginal bleeding, menstrual cycle irregularity, abdominal cramping and/or pain, low back pain (not associated with trauma), or shoulder pain (not associated with trauma).
- 2) The greatest risk to the mother is postpartum hemorrhage, so watch closely for signs of hypovolemic shock and excessive vaginal bleeding.
- 3) In instances where delivery is not proceeding normally and the mother exhibits sudden onset of severe abdominal pain and the clinical signs of shock, treat for shock.

3.19 Obstructed Airway

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) If unable to ventilate proceed with clearing airway observing current CPR guidelines according to the American Heart Association in all of the following cases:
 - a) Conscious adult patient
 - b) Unconscious adult patient (witnessed)
 - c) Unconscious adult patient (unwitnessed)

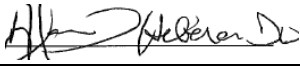
Advanced Care Guidelines

- 1) If unrelieved by basic protocol, visualize airway for supraglottic obstruction and attempt to remove obstruction.
 - a) If unable to remove obstruction and vocal cords are visualized, attempt intubation.

Ankeny Fire Department / Polk City Fire Department

Patient Care Protocol Addendum

3.20 Pain Management Protocol

Alan Heberer, DO: 

Date: 4/25/2019

This protocol revision is intended to supersede Protocol 3.20 Pain Management.

Advanced Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol 2.01 Initial Protocols).
- 2) Perform thorough assessment to rule out major trauma or serious medical problem.
- 3) Continuously monitor vital signs, pulse oximetry, cardiac rhythm, and mental status for changes.
- 4) Consider **KETAMINE (Ketalar)** 0.1-0.3 mg/kg slow IV, may repeat every 10 minutes to maximum of 30 mg.
 - a. Ketamine may be considered with systolic BP below 90 mmHg.
 - b. Consider diluting Ketamine in Normal Saline.
 - c. For pain refractory to initial **KETAMINE (Ketalar)** administration, consider **FENTANYL (Sublimaze)** 25-100 mcg IV, may repeat every 5 minutes to maximum 250 mcg. Use caution with elderly patients.
- 5) Consider **FENTANYL (Sublimaze)** 25-100 mcg IV, may repeat every 5 minutes. Use caution with elderly patients.
 - a. Titrate to effect until one of the following occurs:
 - i. Total of 250 mcg has been administered
 - ii. Relief of pain
 - iii. Systolic BP below 90 mmHg
 - iv. Respiratory depression
 - v. CNS depression
 - b. For pain refractory to initial **FENTANYL (Sublimaze)** administration, consider **KETAMINE (Ketalar)** 0.1-0.3 mg/kg IV. May repeat every 10 minutes to maximum of 30 mg.
 - i. Consider diluting Ketamine in Normal Saline.
- 6) May administer **KETAMINE (Ketalar)** 0.4 mg/kg IM if unable to obtain IV access, maximum of 30 mg.
- 7) May administer **FENTANYL (Sublimaze)** 50-100 mcg IM if unable to obtain IV access.
- 8) May administer **FENTANYL (Sublimaze)** 25-50 mcg Intranasal for immediate pain management prior to IV initiation.
- 9) Consider use of **DIAZEPAM (Valium)** 1-5 mg IV or **MIDAZOLAM (Versed)** 1-2 mg IV for severe pain and discomfort that may be present with fractures, dislocations, or strains if systolic blood pressure is above 90 mmHg.
 - a. Be prepared to ventilate patient if respiratory rate decreases.
 - b. **DO NOT** administer a benzodiazepine if Ketamine **AND** Fentanyl have already been administered.

3.21 Paroxysmal Supraventricular Tachycardia (PSVT)

Special Considerations

- 1) This protocol may be utilized for narrow complex SVT or PSVT.
- 2) Progression through this protocol assumes the patient remains in SVT or PSVT.
- 3) Consider immediate synchronized cardioversion if the patient is unstable as evidenced by:
 - a) Chest Pain
 - b) Shortness of breath
 - c) Decreased level of consciousness
 - d) Hypotension
 - e) Shock
 - f) Pulmonary congestion
 - g) Congestive heart failure
 - h) Acute myocardial infarction
- 4) A brief trial of medications may be utilized before proceeding to synchronized cardioversion.
- 5) Consider AMI if atypical cardiac pain (e.g., shoulder, arm, or jaw pain in absence of chest pain, especially in patients having past cardiac history or irregular pulse).
- 6) Check for history of illicit drug use such as Cocaine and Methamphetamine.

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Place patient in position of comfort, loosen tight clothing and reassure.
- 1) Perform vagal maneuvers.

Advanced Care Guidelines

- a) NOTE: Carotid Sinus massage is not to be utilized by Paramedics.
- 2) Administer **ADENOSINE (Adenocard)** 6 mg rapid IV over 1-3 seconds.
 - a) Follow with a 20-30 mL bolus of NS.
 - b) May be repeated once in 1-2 minutes at 12 mg.
 - c) Re-evaluate patient after each administration.

3.21 PSVT (continued)

- d) NOTE: IV should be started in antecubital vein and medication administered directly into the medication port closest to the patient followed by flushing the line with IV fluid
- 3) If PSVT persists and is unresponsive to Adenosine, consider synchronized cardioversion (See procedure **6.202 Synchronized Cardioversion**).
- 4) Be alert for widening complex. (See protocol **3.31 Ventricular/Wide Complex Tachycardia**).
- 5) Contact Medical Control for further direction for unresolved SVT/PSVT.
- 6) As time allows, establish a 2nd point of IV access if patient presents with signs of acute coronary syndrome. Infuse as patient condition indicates.

3.22 Reserved for Future Expansion

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3.23 Poisoning

Special Considerations

- 1) It is important to find out patient's weight and the estimated amount of the poisonous substance that was ingested which will help medical direction determine appropriate treatment.
- 2) Because it is usually extremely difficult or impossible to be sure exactly how much the patient has taken, always treat for the worst.
- 3) *Poison Control Center*: 1-800-272-6477 or 1-800-222-1222

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) *Ingested Poisons*
 - a) Identify and estimate the amount of substance ingested. Take container to receiving facility when feasible.
 - b) Contact Medical Direction facility or the Poison Control Center if indicated.
- 3) *Inhaled Poisons* - (If hazard of inhaled poison is still present, DO NOT ENTER SCENE without self-contained breathing apparatus!)
 - a) Remove patient to fresh air. Administer high-flow oxygen
 - b) Identify substance inhaled. Bring containers, bottles, labels, etc. of poison agents to receiving facility.
 - c) Contact medical direction immediately, and advise of the nature of the problem and substance.
 - d) Treat as per medical direction's recommendations and transport.
- 4) *Absorbed Poisons*
 - a) Identify contaminate. If it will be a hazard to you, use protective clothing and extreme caution.
 - b) Flood skin with copious amounts of water and remove contaminated clothing. EXCEPTION: if contaminate is dry lime, brush powder off well BEFORE rinsing.
 - c) If eye is involved irrigate with clean water for at least 20 minutes and continue en route to facility if possible.
 - d) Call medical direction immediately, and advise them of the substance, this will allow them time to contact poison control if it is necessary.

3.23 Poisoning (continued)

- e) Treat per medical direction recommendations, and transport.
- 5) Injected Poisons
 - a) Be alert for respiratory difficulty and maintain airway
 - b) Check patient for marks, rashes, or welts.
 - c) Try to identify source of injected poison.
 - d) Transport immediately, closely monitoring signs en route.
 - e) Notify hospital en route of patient's problem and status.
 - f) Bring suspected substance with you to the emergency department if possible.

Advanced Care Guidelines

- 1) Intubate as needed (See procedure **6.101 Adult Advanced Airway Management**).
- 2) Contact Medical Direction for orders if needed.
- 3) Tricyclic Overdose - Ingestion of 10 mg/kg or greater
 - a) Administer 500-1,000 mL NS fluid bolus for hypotension.
 - b) Consider **AMIODARONE** 150 mg IV mixed in 100 mL normal saline over 10 minutes if wide complex tachycardia present.
 - c) Administer **SODIUM BICARBONATE** 1 mEq/kg slow IV for ventricular dysrhythmias or hypotension not responding to 500-1,000 mL of fluid
 - d) Administer **DOPAMINE (Intropin)** 5-20 mcg/kg/min per protocol for hypotension.
 - e) Begin fluid infusion of 1-2 NS to assist treatment of toxicity.
- 4) Suspected Organophosphate Poisoning
 - a) Administer **ATROPINE** 2-5 mg every 5 minutes until bronchial secretions clear.

3.24 Psychiatric/Behavioral Emergencies

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) If evidence of immediate danger, protect yourself and others by summoning law enforcement to enable safe patient care.
- 3) Assess and treat life-threatening injuries.
- 4) Transport of Patient with Consent
 - a) The EMT making initial contact with the patient should remain with the patient during transport.
 - b) Crew members of the same sex may relate better to the patient crisis.
 - c) Do not allow patient in front with driver.
 - d) Keep environment as calm/quiet as possible. Do not use sirens, unless patient condition warrants.
- 5) Transport of Patient without Consent
 - a) Obtain consent from law enforcement officer who placed patient in custody.
 - b) If patient is unconscious, then the consent is implied.

Advanced Care Guidelines

- 1) Prepare for airway and ventilatory support prior to sedation.
- 2) Sedation as patient condition warrants.
 - a) **LORAZEPAM (Ativan)** 1-2 mg IV bolus over 1 minute. May repeat 1 time in 5-10 minutes.
 - i) For elderly patients limit dose to 0.5-1 mg IV over 1 minute. May repeat 1 time in 5-10 minutes.
 - ii) May administer **LORAZEPAM (Ativan)** 1-2 mg IM if unable to secure IV.
 - b) If Lorazepam (Ativan) is unavailable:
 - i) **DIAZEPAM (Valium)** 2-5 mg IV
 - ii) **DIAZEPAM (Valium)** 5-10 mg IM if no IV established.
 - c) If patient continues to be combative after onset of initial sedation attempt, consider **MIDAZOLAM (Versed)** 1-2 mg IV PRN up to max of 5 mg
 - d) Consider **KETAMINE (Ketalar)** 1-2mg/kg IV for patients who are combative or present with a high risk to become violent. May repeat 1 time to a max of 200 mg.
 - i) May administer **KETAMINE (Ketalar)** 4mg/kg IM if unable to obtain IV, max dose of 400 mg.

3.25 Seizures

Special Considerations

- 1) Status epilepticus is a life-threatening emergency that requires immediate transport

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Status Epilepticus
 - a) Consider nasopharyngeal airway.
 - b) Transport immediately taking special care to protect the patient from injury during packaging and transport. Avoid excessive (potentially harmful) restraints.
- 3) During Seizure
 - a) Protect patient from injury by clearing area of all possible hazards.
 - b) Avoid physical restraints unless necessary to protect patient or yourself.
 - c) Do not attempt to put anything into patient's mouth.
- 4) Post Seizure
 - a) Treat injuries and transport while monitoring vital signs and respiratory status.
- 5) Perform blood glucose level check.

Advanced Care Guidelines

- 1) Consider administration of one of the following benzodiazepines if necessary to control seizure activity:
 - a) **LORAZEPAM (Ativan)** 2-3 mg IV bolus over 1 minute.
 - i) Repeat in 5-10 minutes up to 4 mg total dose.
 - ii) Limit dose to 1-2 mg for elderly patients. Repeat with caution to 4 mg total.
 - b) If Lorazepam (Ativan) is unavailable:
 - i) **DIAZEPAM (Valium)** 2-5 mg IV bolus for initial dose then 2 mg increments thereafter until one of the following occur:
 - (1) 10 mg total has been administered
 - (2) Seizure activity ceases
 - (3) Hypotension develops
 - ii) Administer **DIAZEPAM (Valium)** 5-10 mg IV bolus for status epilepticus.
 - iii) Valium may also be administered IM or Rectal route

3.25 Seizures (continued)

- 2) Without IV access or if IV access delayed, administer Intranasal **MIDAZOLAM (Versed)** 5-10 mg
- 3) Consider **50% DEXTROSE** 25 grams IV push if blood glucose level check < 60 mg/dL or if the patient has a history of hypoglycemia induced seizures.
- 4) For seizures in pregnancy associated with pre-eclampsia/eclampsia, administer 4 g **MAGNESIUM SULFATE** IV/IO over 20 minutes.
 - a) Mix Magnesium Sulfate in 100 mL NS
 - b) While securing IV access, administer Intranasal **MIDAZOLAM (Versed)** 5-10 mg
 - c) If seizure activity continues, administer benzodiazepines as indicated above.

3.26 Sexual Assault (Alleged)

Special Considerations

- 1) Crew members of the same sex (when available) may relate better to the patient in time of such emotional crisis.
- 2) Accurately record your observations and conversations with the patient.
- 3) Do not allow the patient to bathe, douche, change clothes, or go to the bathroom.

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Identify yourself to the patient, assure patient that they are safe, and are in no further danger.
- 3) Do not burden patient with questions about the details of the crime; you are there only to provide emergency medical care.
- 4) Be alert to the immediate scene and document what you see! Touch only what you need to touch at the scene to administer appropriate care.
- 5) Do not disturb any evidence unless necessary for treatment of patient. If it is necessary to disturb evidence, document why and how it was disturbed.
- 6) Treat for shock if indicated.
- 7) Treat other injuries as indicated.
- 8) Preserve evidence, such as clothing you may have had to remove for treatment, and make sure that it is never left unattended at any time to preserve "chain of evidence".

Advanced Care Guidelines

- 1) Provide advanced treatment as patient condition warrants.

3.27 Stroke (CVA)

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Monitor and maintain patent airway.
- 3) Calm and reassure the patient, even if not conscious.
- 4) Determine exact time of symptom(s) onset if possible.
- 5) Complete Cincinnati Stroke Scale, report findings to the receiving hospital
 - a) Facial Droop (have patient show teeth or smile).
 - i) Normal: Both sides of face move equally.
 - ii) Abnormal: One side of face does not move as well as the other.
 - b) Arm Drift (patient closes their eyes and extends both arms straight out, palms up for 10 seconds).
 - i) Normal: Both arms move the same, or both arms do not move at all.
 - ii) Abnormal: One arm either does not move, or one arm drifts down compared to the other.
 - c) Speech (patient repeats "The sky is blue in Cincinnati").
 - i) Normal: Patient says correct words with no slurring of words.
 - ii) Abnormal: Patient slurs words, says wrong words, or unable to speak.
- 6) Perform blood glucose level check.
- 7) Transport in semi-fowlers position or if decreased level of consciousness, transport lying on affected side.
- 8) Protect affected limbs from injury during transport and maintain body heat.

Advanced Care Guidelines

- 1) Monitor and maintain patent airway, including intubation if necessary (See procedure **6.101 Adult Advanced Airway Management**).
- 2) Do not attempt to lower the blood pressure of potential stroke patients unless the blood pressure is greater than 220/110 mmHg and medical control has been contacted (See protocol **3.15 Hypertensive Crisis**).
- 3) If time allows, perform MEND exam and complete the stroke alert form. (See procedure **6.509 MEND Exam**).
- 4) Call prehospital stroke alert (See procedure **6.501 Stroke Alert**).

3.28 Suspected Sepsis

Special Considerations

- 1) Suspect sepsis if patient meets the following criteria
 - a) Suspected or known infection
 - b) Two or more of the following
 - i) Temperature $> 38^{\circ}\text{C}$ (100.4°F) OR $< 36^{\circ}\text{C}$ (96.8°F)
 - ii) Respiratory rate > 20 breaths/min
 - iii) Heart rate > 90 beats/min
 - c) $\text{ETCO}_2 \leq 25$ mmHg (Associated with lactate levels > 4 mmol/L)

Basic Care Guidelines

- 1) Follow Initial Protocols for all patients (See protocol **2.01 Initial Protocols**).
- 2) Perform thorough assessment to rule out major trauma or serious medical problem.
- 3) Administer oxygen as appropriate to maintain oxygen saturation between 90%-92%.
- 4) Obtain temperature.
- 5) Obtain blood glucose level (See procedure **3.03 Altered Mental Status**).
- 6) Notify hospital of incoming suspected sepsis patient.

Advanced Care Guidelines

- 1) Consider advanced airway management if indicated. (See procedure **6.101 Adult Advanced Airway Management**).
- 2) Apply and monitor ETCO_2 .
- 3) Titrate fluids to maintain $\text{MAP} \geq 65$ mmHg [$\text{Systolic BP} + (\text{Diastolic BP} \times 2) \div 3$]
 - a) Total amount of IV fluids should not exceed 30 mL/kg.

3.29 Trauma

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Prioritize appropriate airway management (see procedure **6.102 KING LTS-D**) and the treatment of shock in all trauma patients
- 3) Attempt to limit scene time for all critical patients unless necessary due to extrication or life-saving treatments
- 4) External Bleeding
 - a) Control bleeding by applying a bandage and direct pressure at the point of bleeding
 - b) Bandage wounds to prevent further contamination after bleeding is controlled
 - c) If hemorrhage control is unsuccessful with direct pressure, consider application of a tourniquet (See procedure **6.303 Tourniquets**).
 - d) Treat for shock if present.
- 5) Internal Bleeding
 - a) If bleeding is suspected in an extremity, control bleeding by direct pressure and application of a splint.
 - b) Keep the patient warm.
 - c) Immediate transport is critical for patient with signs and symptoms of shock/hypoperfusion.
- 6) Shock
 - a) Control any external bleeding.
 - b) Elevate the lower extremities approximately 8-12 inches. If the patient has serious injuries to the pelvis, lower extremities, head, chest, abdomen, neck or cervical spine, keep the patient supine.
 - c) Prevent heat loss by covering the patient with blankets when appropriate.
- 7) Impaled Objects
 - a) Impaled objects must be left in place, and should be stabilized by building up and around the object with trauma dressings taking care that the penetrating object is not allowed to do further damage.
 - b) Impaled objects in the cheek may be removed if causing airway problems or you are having trouble controlling bleeding. Use direct pressure on injury after removal to control any bleeding.

3.29 Trauma (continued)

8) Chest Injuries

- a) Seal open chest wounds immediately. Use occlusive dressing taped down on three sides, allow fourth side to remain untaped.
- b) Be alert if a tension pneumothorax develops, you will have to briefly lift one corner to release pressure.
- c) Check subcutaneous emphysema and obvious chest deformity if injuries resulted from severe compression of chest
- d) Rib fractures or flail segments of chest should be stabilized with a thick pad, dressings, or a small pillow taped securely in place with wide strips of tape or secured with wide triangular bandages.

9) Abdominal Trauma

- a) Bandage wounds to prevent further contamination
- b) Evisceration should be covered with a sterile saline soaked occlusive dressing

10) Head/Neck and Spinal Injuries

- a) Establish and maintain in-line spinal immobilization
- b) Immobilize patient per protocol (see procedure **6.302 Spinal Immobilization**)
- c) Repeat vital signs, GCS, and pupillary response frequently.

11) Amputated Parts

- a) Treat per protocol (See protocol **3.04 Amputated Part**).

Advanced Care Guidelines

- 1) Intubate if necessary (See procedure **6.101 Adult Advanced Airway Management**).
- 2) Consider use of blindly inserted, KING LTS-D airway if indicated and unable to intubate with ETT (See procedure **6.102 KING LTS-D**).
- 3) Establish large bore IV or IO, and infuse per protocol (See procedure **6.402 IV Access & Infusion**).
- 4) With severe trauma, establish second large bore IV or IO, and infuse as patient condition indicates.
- 5) IV lines should be started en route to the hospital, except when there is an unavoidable scene delay (e.g., extrication, etc.)
- 6) Consider chest decompression if indicated (See procedure **6.106 Chest Needle Decompression**)

3.30 Unconscious Patient

Special Considerations

- 1) If unconsciousness is due to trauma or unknown etiology, assume patient has a spinal cord injury.
- 2) Be prepared to handle combative, disorientated patient, or seizures.

Basic Care Guidelines

- 1) *Unconscious Medical Patient*
 - a) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
 - b) Open and maintain airway.
 - c) Obtain blood glucose level (See procedure **6.502 Blood Glucose Level Check**).
 - d) If problem identified, follow appropriate protocol
 - e) Transport patient and advise hospital en route of any information gathered during assessment.
- 2) *Unconscious Trauma Patient*
 - a) Follow appropriate trauma protocol (See protocol **3.29 Trauma**).

Advanced Care Guidelines

- 1) Consider intubation (See procedure **6.103 Endotracheal Intubation**).
- 2) Obtain blood glucose level (See procedure **6.502 Blood Glucose Level Check**).
 - a) Administer **50% DEXTROSE** 25 grams IV push and observe patient response if blood glucose level check < 60 mg/dL.
- 3) Consider **NALOXONE (Narcan)** 2 mg IV or Intranasal if unknown history of events or signs of narcotic overdose are present.
 - a) If no response or inadequate response, may repeat 1-2 mg **NALOXONE (Narcan)** IV or intranasal every 2 minutes (max total dose 10 mg).
 - b) Evaluate the need for intubation

3.31 Ventricular/Wide Complex Tachycardia

Special Considerations

- 1) Progression through this protocol assumes the patient remains in Ventricular Tachycardia or wide complex tachycardia of unknown origin.
- 2) Consider immediate synchronized cardioversion if the patient is unstable as evidenced by:
 - a) Chest Pain or Shortness of breath
 - b) Decreased level of consciousness
 - c) Hypotension or Shock
 - d) Congestive heart failure or pulmonary congestion
 - e) Acute myocardial infarction
- 3) A brief trial of medications may be utilized before proceeding to synchronized cardioversion.
- 4) If patient converts after administration of an anti-arrhythmic medication, consider administration of an infusion of the appropriate medication.

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).

Advanced Care Guidelines

- 1) Consider **ADENOSINE (Adenocard)** 6 mg rapid IV push if a regular and monomorphic wide QRS complex is present
 - a) If needed, repeat at 12 mg rapid IV push.
- 2) Consider **AMIODARONE** 150 mg IV mixed in 100 mL normal saline over 10 minutes if wide complex tachycardia present. Repeat as needed if wide complex tachycardia recurs.
- 3) For patients with torsades de pointes (irregular/polymorphic Ventricular Tachycardia associated with prolonged QT interval) administer 2 g **MAGNESIUM SULFATE** IV/IO over 1-2 minutes
- 4) Consider synchronized cardioversion for the patient who is significantly unstable (See procedure **6.202 Synchronized Cardioversion**).
- 5) Contact Medical Control for further direction for unresolved dysrhythmia.

3.32 Refusal of Treatment & Transport

Basic Care Guidelines

- 1) Patient refusal of medical treatment and/or transport shall be documented using a refusal form on all responses where patient contact has been made, the patient is assessed for illness or injury, and the patient is refusing medical treatment and/or transportation.
- 2) The risks of refusing treatment and/or transportation shall be explained to the patient.
- 3) Vital signs shall be taken and documented in the appropriate section of the refusal form.
- 4) The patient shall be encouraged to seek medical attention as appropriate or to call 911 if symptoms persist or worsen.
- 5) Witnesses to the refusal shall be obtained in the following order of preference:
 - a) Family
 - b) Friend
 - c) Law Enforcement Office
 - d) Fire Department personnel
- 6) "No patient" reports may be completed when no patient contact was made or no patient was located.

Special Considerations

- 1) Patient release after care has been provided:
 - a) In some cases, patients may refuse further treatment or transport after basic or advanced level care has been provided by Ankeny or Polk City Fire Department personnel.
 - b) In order for the patient to be able to refuse further treatment once care has been initiated, the patient must be an adult and be alert and oriented.

3.32 Refusal (continued)

- 3) If advanced level care has been initiated, Medical Control **must** be consulted before allowing the patient to refuse further care or transport to the hospital.
 - a) Discontinue care if the patient continues to refuse treatment after contacting Medical Control.
 - b) Document that Medical Control was contacted and that the patient refused care and/or transport against medical advice.
- 4) Hypoglycemic Diabetic Patient Specific: If the patient has a documented history of diabetes and is demonstrating signs and symptoms of hypoglycemia:
 - a) After administering basic or advanced level patient care per the Ankeny and Polk City Fire Departments' EMS Protocols,
 - i) The patient may be allowed to refuse care without contacting Medical Control after the hypoglycemia has been corrected if they are an adult and are alert and oriented.
 - ii) Assure someone is able to remain with the patient and assure the patient is able to eat prior to returning to service.
 - iii) Follow this protocol when obtaining the patient's refusal of further treatment or transport. Document vital signs and a post-care blood sugar.
 - iv) Contact Medical Control with any questions.

Section 4:

Pediatric Patient Care Protocols

4.01 Pediatric Allergic Reaction & Acute Anaphylaxis

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) If ALS is unavailable, administer preloaded auto-injectable **EpiPen** (0.15 mg if patient is less than 60 lbs. or 0.30 mg if patient is greater than 60 lbs.) and transport. Tier with paramedic level service when available.
- 3) Continuously reassess airway, breathing, and circulation status.
- 4) Treat for shock/hypoperfusion if present, and be prepared to initiate CPR and AED as necessary during transport.
- 5) Initiate transport without delay

Advanced Care Guidelines

- 1) Intubate as necessary (See procedure **6.110 Pediatric Advanced Airway Management**).
- 2) If reaction is not life threatening, consider administration of :
 - a) **EPINEPHRINE 1:1,000** 0.01 mg/kg (0.01 ml/kg) IM with maximum dose of 0.35 mg. If treating a bite or sting, inject proximal to the site when possible.
 - b) **DIPHENHYDRAMINE (Benadryl)** 1-2 mg/kg IM or slow IV push.
- 3) If reaction is severe and life threatening, consider administration of:
 - a) **EPINEPHRINE 1:10,000** 0.01 mg/kg (0.1 ml/kg) slow IV push or administer additional Epinephrine 1:1,000 SQ.
- 4) Consider **ALBUTEROL (Proventil)** 2.5 mg in 3.0 mL NS by nebulizer for wheezing.
- 5) If hypotensive, administer 20 mL/kg bolus of normal saline. Reassess and repeat if necessary.
- 6) Consider **SOLU-MEDROL**:
 - 1) Children under 12 years old: 1 mg/kg slow IV, maximum dose of 60 mg
 - 2) Children over 12 years old: 2 mg/kg slow IV, maximum of 125 mg

4.02 Pediatric Altered Mental Status

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Consider all possible causes including head trauma
- 3) Utilize appropriate airway management.
- 4) Obtain blood glucose level. Pediatric hypoglycemic blood glucose levels (See procedure **6.502 Blood Glucose Level Check**):
 - a) Infant and child with blood glucose level less than 60 mg/dL
 - b) Newborn with blood glucose level less than 40 mg/dL
- 5) If the patient is hypoglycemic, the patient is conscious, and the patient is able to swallow, administer 15 grams oral glucose.
- 6) Transport in position of comfort.

Advanced Care Guidelines

- 1) Intubate as necessary (See procedure **6.110 Pediatric Advanced Airway Management**).
- 2) Obtain blood glucose level. Pediatric hypoglycemic blood glucose levels (See procedure **6.502 Blood Glucose Level Check**):
 - a) Infant and child with blood glucose level less than 60 mg/dL
 - b) Newborn with blood glucose level less than 40 mg/dL
- 3) If indicated, administer **DEXTROSE** for hypoglycemia:
 - a) Child > 3 years old, administer D₅₀W, 0.5-1.0 mL/kg IV bolus.
 - b) Child < 3 years old (toddlers), administer D₂₅W, 1-2 mL/kg IV bolus
 - i) NOTE: Mix 1 part D₅₀W with 1 part normal saline.
 - c) Neonates and Infants: administer D₁₀W 2.5-5.0 mL/kg (0.25-0.5 g/kg) IV bolus
 - i) NOTE: Mix 1 part D₅₀W with 4 parts normal saline.
- 4) If unknown history of events, history of drug abuse, and/or signs and symptoms of a narcotic overdose are present, consider administration of **NALOXONE (Narcan)** 1 mg IV and observe for response. May repeat if necessary.
 - a) May administer **NALOXONE (Narcan)** Intranasal 0.1 mg/kg.

4.03 Pediatric Apparent Death

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Make determination of apparent death. Patient will meet 4 of the 6 following criteria:
 - a) No respiratory effort on examination over a 30 second time frame
 - b) No palpable carotid pulse on examination over a 30 second time frame
 - c) Normothermic
 - d) No pupillary response
 - e) No painful stimuli response
 - f) Decapitation, rigor mortis, and/or postmortem lividity, incineration or massive crushing and/or evisceration of the heart, lungs or brain
- 3) If there is uncertainty with the examination outlined above in section 2 or it does not provide a clear determination of death, begin resuscitative measures and contact Medical Control. Continue resuscitation until directed to stop by medical control if patient does not meet the criteria in section 2.
- 1) If apparent death is determined:
 - a) Law enforcement shall be contacted
 - b) Medical Examiner shall be contacted by law enforcement or with consult of senior law enforcement office
 - c) Remain on scene until released by law enforcement or medical examiner
 - d) Provide emotional support to family/survivors
 - e) Complete pre-hospital report
 - f) Consider notification of supervisor if high profile event or there is the potential for it to be
 - g) Complete section for Out-of Hospital Responders on the Infant Death Scene Investigation Report

Advanced Care Guidelines

- 1) Confirm asystole in 3-leads if patient is accessible and/or if no hazards are present to care providers.

4.04 Pediatric - Bradycardia

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Compressions performed if:
 - a) Infant: HR less than 80/minute
 - b) Child: HR less than 60/minute

Advanced Care Guidelines

- 1) Consider administration of the following medications
 - a) **EPINEPHRINE 1:10,000** 0.01 mg/kg (0.1 mL/kg) IV
 - i) **EPINEPHRINE 1:1,000** 0.1mg/kg for ETT administration.
 - ii) Repeat every 3-5 minutes.
 - b) **ATROPINE** 0.02 mg/kg IV with minimum dose of 0.1 mg.
 - i) Maximum Single Dose:
 - i) Child: 0.5 mg
 - ii) Adolescent: 1.0 mg
 - ii) May be repeated once.

4.05 Pediatric - Breathing Difficulty

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Be prepared to assist respirations.
- 3) Allow patient to assume position of comfort if conscious.
- 4) Loosen restrictive clothing.

Advanced Care Guidelines

- 1) Be prepared to intubate if necessary (see procedure **6.110 Pediatric Advanced Airway Management**).
- 2) Bronchospasm:
 - a) For children older than 1 year old:
 - i) Administer DuoNeb (**ALBUTEROL** 2.5 mg and **ATROVENT** 0.5 mg combination nebulizer). May only use once.
 - ii) If indicated, may repeat **ALBUTEROL** 2.5 mg in 3 mL NS every 5-10 minutes.
 - b) For children under 1 year old:
 - i) Administer **ALBUTEROL** 2.5 mg in 3 mL NS. May repeat every 5-10 minutes as necessary.
 - c) Consider **SOLU-MEDROL**:
 - i) Children under 12 years old: 1 mg/kg slow IV, maximum dose of 60 mg
 - ii) Children over 12 years old: 2 mg/kg slow IV, maximum dose of 125 mg.
 - d) Evaluate the need for **EPINEPHRINE 1:1,000**. Use Broselow or length-based tape for dosing. Dosage may be repeated once after 5 minutes.
- 3) *Anaphylaxis*: See **4.01 Pediatric Allergic Reaction & Acute Anaphylaxis**
- 4) *Suspected Croup* (e.g., barking cough, inspiratory stridor, gradual onset of symptoms, possible recent upper respiratory infection, low-grade fever):
 - a) Administer one dose **RACEMIC EPINEPHRINE** (2.25% 0.5 ML) by nebulizer. Dilute the 0.5 mL of Racemic Epinephrine with 2.5-3.0 mL NS
 - b) Do not repeat Racemic Epinephrine. If needed, a second nebulizer of normal saline may be administered.
 - c) Do not administer to patients who are symptomatic of epiglottitis (e.g., acute onset of symptoms, high-grade fever).

4.06 Pediatric Burns

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Thermal Burns
 - a) Do not apply any type of ointment, lotion, or antiseptic. Prevent further contamination.
 - b) Remove smoldering clothing and jewelry.
 - c) Do not break blisters.
 - d) Cover the burned area with a dry sterile dressing.
 - e) Transport.
 - f) If burn area is less than 10% of body surface area, stop the burning process initially with water or saline.
 - g) Continually monitor the airway for evidence of obstruction.
 - h) Use “rule of nines” to estimate percent of body surface area injured.
 - i) Estimate depth of burn as superficial, partial thickness, or full thickness.
- 3) Chemical Burns
 - a) Brush off powders prior to flushing.
 - b) Immediately begin to flush with large amounts of water .
 - c) Continue flushing the contaminated area while en route to the receiving facility.
 - d) Do not contaminate uninjured areas while flushing.
 - e) Attempt to identify contaminant.
- 4) Toxin in the Eyes
 - a) Flood eyes with lukewarm water for at least 20 minutes, having patient blink frequently during irrigation.
 - b) Continue irrigation during transport to hospital.
 - c) Attempt to identify contaminant.
- 5) Electrical Burns
 - a) Treat soft tissue injuries associated with the burn with dry dressings.
 - b) Treat for shock if indicated.

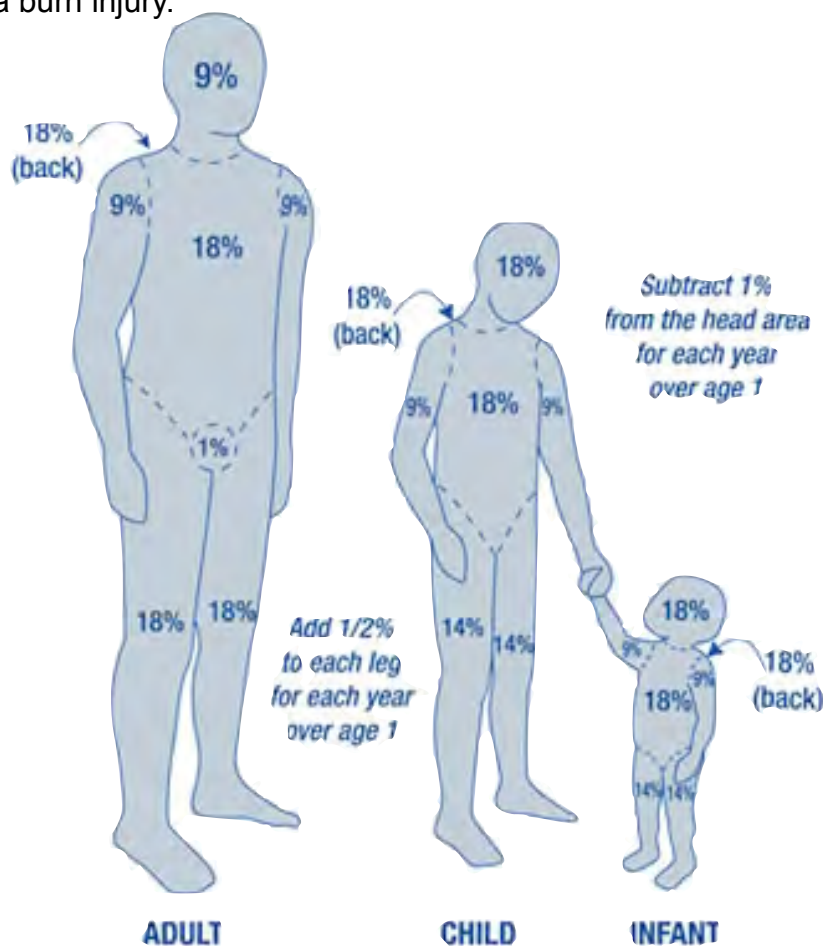
4.06 Pediatric Burns (continued)

Advanced Care Guidelines

- 1) Consider use of pain management (See protocol **4.09 Pediatric Pain Management**).
- 2) Contact medical control for further orders.
- 3) Anticipate the need for advanced airway management especially in the presence of singed nasal hair and mucosa with respiratory distress, or facial/oral burns. Monitor airway closely, intubate if indicated (See procedure **6.110 Pediatric Advanced Airway Management**).

Special Considerations

Utilize the following diagram when estimating the percentage of body surface area involved in a burn injury.



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4.07 Pediatric Cardiac Arrest (CPR)

Special Considerations

Drug dosages shall be determined by written protocol or by Broselow tape (if applicable).

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Follow American Heart Association Basic Life Support Health Care Provider CPR guidelines.
- 3) If the patient is unresponsive and not breathing or not breathing adequately, check for a definite pulse for 10 seconds
 - a) For patients with a pulse, provide 1 rescue breath every 3 seconds while continuing to monitor the patient.
 - b) For patients without a pulse, begin **immediate** chest compressions.
 - i) Cycles:
 - (1) One rescuer: 30 compressions/2 breaths
 - (2) Two rescuer: 15 compressions/2 breaths
 - ii) Rate: at least 100 compressions/minute
 - iii) Depth: greater than 1/3 the depth of the chest
 - iv) Allow complete chest recoil after each compression
 - v) Minimize interruptions in chest compressions (less than 10 seconds)
- 4) Continue chest compressions and breaths until AED is ready.
 - a) Follow defibrillation protocol (See procedure **6.201 Automatic/Semi-Automatic External Defibrillato**).
 - b) Minimize interruptions in CPR while utilizing AED. Resume CPR with chest compressions immediately following shocks.
 - c) If no shock is advised, resume CPR and reanalyze rhythm in 2 minutes.

Advanced Care Guidelines

- 1) Establish IV or IO access without interrupting chest compressions. (See procedure **6.402 Intravenous Access and Infusion** or **6.403 Intraosseous Access and Infusion**).

4.07 Pediatric Cardiac Arrest (continued)

- 2) If bag-mask ventilations are inadequate, consider placement of an advanced airway.
 - a) Advanced airway management should not interrupt chest compressions for greater than 10 seconds.
 - b) Follow procedures for advanced airway management (See procedure **6.110 Pediatric Advanced Airway Management**).
 - c) Monitor advanced airways with inline ETCO₂ and waveform capnography.
 - d) Begin continuous chest compressions without pauses for ventilations. Provide 1 breath every 6-8 seconds via the advanced airway.
- 3) Follow current arrest rhythm protocol:
 - a) Pediatric Cardiac Arrest Dysrhythmias (See protocol **5.03 Pediatric Arrest Dysrhythmias**)
- 4) Consider and treat reversible causes of cardiac arrest:
 - a) Hypovolemia
 - b) Hypoxia
 - c) Acidosis
 - d) Hypo-/hyperkalemia
 - e) Hypothermia
 - f) Tension pneumothorax
 - g) Cardiac Tamponade
 - h) Toxins (See protocol **4.10 Pediatric Poisoning**)
 - i) Pulmonary/Coronary Thrombosis
- 5) Administer **SODIUM BICARBONATE** 1 mEq/kg for cardiac arrest due to known acidosis, tricyclic antidepressant overdose, or hyperkalemia.
- 6) Consider termination of resuscitation after prolonged resuscitation efforts (See protocol **5.05 Termination of Resuscitation**).
- 7) If return of spontaneous circulation occurs, follow post-cardiac arrest care protocol (See protocol **5.05 Post-Cardiac Arrest Care**).

4.08 Pediatric Nausea and Vomiting

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) If other conditions exist, refer to appropriate protocol.
- 3) Be alert for airway compromise caused by vomiting.
- 4) Administer oxygen as patient condition warrants.
- 5) Transport in position of comfort.
- 6) Keep the patient NPO.

Advanced Care Guidelines

- 1) Consider 12-lead ECG if patient condition warrants (See procedure **6.205 12-Lead ECG**).
- 2) Consider **ZOFRAN (Ondansetron)** 4.0 mg IV or IM.
 - a) 2-12 years of age
 - i) Greater than 40 kg: 4 mg IV X 1 dose
 - ii) Less than 40 kg: 0.1 mg/kg IV X 1 dose
 - b) Contraindications
 - i) Hypersensitivity
 - c) Caution:
 - i) Reduce dose with severe hepatic impairment and nursing women.
Cross sensitivity with 5HT reuptake blockers (ie Paxil)
 - d) Adverse Reactions
 - i) Headache, dizziness, diarrhea and constipation

4.09 Pediatric Pain Management Protocol

Alan Heberer: 

Effective Date: 4/25/2019

This protocol revision is intended to supersede Protocol 4.09 Pediatric Pain Management.

Special Considerations

- 1) Indications: Patients in significant pain due to isolated orthopedic or burn related injury.
- 2) Contraindications:
 - a. Major trauma to head, chest, abdomen or pelvis (**See protocol 4.13 Pediatric - Trauma**).
 - b. Patients with chest pain who meet criteria for Adult Chest Pain Protocol (**See adult protocol 3.10 Chest Pain & Suspected ACS**).
- 3) Complications: Hypotension, CNS depression, or respiratory depression

Advanced Care Guidelines

- 1) Follow Initial Protocols for All Patients (**See protocol 2.01 Initial Protocols**).
- 2) Perform thorough assessment to rule out major trauma or serious medical problems.
- 3) Continuously monitor vital signs, pulse oximetry, cardiac rhythm and mental status for changes.
- 4) Consider **KETAMINE (Ketalar)** 0.1 – 0.3 mg/kg slow IV, may repeat every 10 minutes to maximum of 0.3 mg/kg.
 - a. Ketamine may be considered with hypotensive patients.
 - b. Consider diluting Ketamine in Normal Saline.
 - c. For pain refractory to initial **KETAMINE (Ketalar)** administration, consider **FENTANYL (Sublimaze)** 1 mcg/kg IV, may repeat every 5 minutes to a maximum of 3 mcg/kg or 120 mcg.
- 5) Consider **FENTANYL (Sublimaze)** 1 mcg/kg IV, repeat every 5 minutes to a maximum of 3 mcg/kg or 120 mcg.
 - a. Titrate to effect until one of the following occurs:
 - i. Maximum dosage is achieved
 - ii. Relief of pain
 - iii. Respiratory depression
 - iv. Hypotension
 - v. CNS depression
 - b. For pain refractory to initial **FENTANYL (Sublimaze)** administration, consider **KETAMINE (Ketalar)** 0.1-0.3 mg/kg, may repeat every 10 minutes to maximum of 0.3 mg/kg.
 - i. Consider diluting Ketamine in Normal Saline.
- 6) May administer **KETAMINE (Ketalar)** 0.3 mg/kg IM if unable to obtain IV access.
- 7) May administer **FENTANYL (Sublimaze)** 1 mcg/kg IM or Intranasal for immediate pain management prior to IV initiation.
- 8) (6 mo. or older) Consider use of **MIDAZOLAM (Versed)** 0.05-0.1 mg/kg over 2-3 minutes up to a maximum of 6 mg or **DIAZEPAM (Valium)** 0.05-0.2 mg/kg IV/IO one time for severe pain that may be present with fractures, dislocations, or strains.
 - a. Be prepared to ventilate patient if respiratory rate decreases.
 - b. **DO NOT** administer a benzodiazepine if Ketamine **AND** Fentanyl have already been administered.

4.10 Pediatric Poisoning

Special Considerations

- 1) It is important to find out an infant or child's weight, in combination with the estimated amount of the poisonous substance that was ingested which will help medical direction determine appropriated treatment.
- 2) Because it is usually extremely difficult or impossible to be sure exactly how much the child has taken, always treat for the worst.
- 3) Poison Control - 1-800-272-6477 or 1-800-222-1222

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Ingested Poisons
 - a) Identify and estimate the amount of substance ingested. Take container to receiving facility when feasible.
 - b) Contact the Poison Control Center if indicated.
- 3) Inhaled Poisons: (If hazard of inhaled poison is still present, DO NOT ENTER SCENE without self-contained breathing apparatus!)
 - a) Remove patient to fresh air, and administer high flow oxygen.
 - b) Identify substance inhaled. Bring containers, bottles, labels, etc. of poison agents to receiving facility.
 - c) Contact medical direction immediately, and advise of the nature of the problem and substance.
 - d) Treat as per medical direction's recommendations and transport.
- 4) Absorbed Poisons
 - a) Identify contaminate. If it will be a hazard to you, use protective clothing and extreme caution.
 - b) Brush off any visible substance prior to irrigation. Remove clothing and flood skin with copious amounts of water .
 - c) If eye is involved, irrigate with clean water for at least 20 minutes and continue en route to facility if possible.

4.10 Pediatric Poisoning (continued)

- d) Call medical direction immediately, and advise them of the substance, this will allow them time to contact poison control if it is necessary.
- e) Treat as per medical direction recommendations, and transport. Be careful to protect yourself.
- 5) Injected Poisons
 - a) Be alert for respiratory difficulty and maintain airway
 - b) Check patient for marks, rashes, or welts.
 - c) Try to identify source of injected poison.
 - d) Transport immediately, closely monitoring vital signs en route.
 - e) Notify hospital en route of patient's problem and status.
 - f) Bring suspected substance with you to the Emergency Department.

Advanced Care Guidelines

- 1) Intubate as necessary (See procedure **6.110 Pediatric Advanced Airway Management**).
- 2) Contact Medical Direction for orders if needed.
- 3) Tricyclics Overdose - Ingestion of 10 mg/kg or greater
 - a) Administer 20 mL/kg NS fluid bolus for hypotension
 - b) Administer **AMIODARONE** 5 mg/kg IV bolus for ectopy. Repeat up to two times if needed.
 - c) Administer **DOPAMINE (Intropin)** 2-20 mcg/kg/min for hypotension.
- 4) Suspected Narcotic Overdose
 - a) Administer **NALOXONE (Narcan)** 0.1 mg/kg IV or IM
 - i) Use 1 mg IV for patient less than 20 kg
 - ii) Use 1-2 mg IV for patient greater than 20 kg
- 5) Suspected Organophosphate Poisoning
 - a) Administer **ATROPINE** 0.05 mg/kg every 5 minutes until bronchial secretions clear.

4.11 Pediatric Seizures

Special Considerations

- 1) Status epilepticus is a life-threatening emergency and requires immediate transport.
- 2) Approximately 5% of children have seizures as a result of fever. Febrile seizures are most common between ages of 6 months and 4 years.

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Status Epilepticus
 - a) Consider nasopharyngeal airway.
 - b) Transport immediately.
 - c) Special care to protect the patient from injury during packaging and transport.
- 3) During Seizure
 - a) Protect patient from injury by clearing area of all possible hazards.
 - b) Avoid physical restraints unless absolutely necessary
 - c) Do not attempt to put something into patient's mouth.
- 4) Post Seizure
 - a) Protect the airway
 - b) Treat for any injuries and transport monitoring vital signs and respirations.
 - c) Perform blood glucose level check.

Advanced Care Guidelines

- 1) Perform blood glucose level check. If indicated, treat hypoglycemia (See protocol **4.02 Pediatric Altered Mental Status**).
- 2) Administer **LORAZEPAM (Ativan)** 0.05-0.1 mg/kg IV up to 4 mg total dose.
 - a) May repeat 1 time in 10-15 minutes unless 4 mg maximum dose has already been administered.
- 3) If Lorazepam (Ativan) is unavailable:
 - a) Consider **DIAZEPAM (Valium)** 0.2-0.4 mg/kg IV or 0.1-0.3 mg/kg p.r. (per rectum)
- 4) Without IV access or if IV access delayed, administer intranasal **MIDAZOLAM (Versed)**, 0.1 mg/kg.

4.12 Suspected Child Abuse & Neglect

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Apply appropriate protocol as indicated by the patient's condition.
- 3) Observe conditions/features of the environment and parental behavior that may be helpful in establishing a diagnosis of abuse or neglect:
 - a) Evidence of violence or disarray
 - b) Frightened or bruised mother or siblings
 - c) Aggressive or inappropriate behavior of parent or other household member
- 4) Be sympathetic and supportive towards parent and child. Do not mention that you suspect abuse, act in a judgmental manner, or confront the parents in any way. This will only inflame them and may subject caregivers and the patient to physical risk.
- 5) Transport the patient to the hospital. If parents refuse, contact medical control and law enforcement. DO NOT allow refusal of treatment.
- 6) Report your concerns in private to the Emergency Department staff at receiving hospital.
- 7) In addition to documentation of patient care, such as noted injuries/illness and treatment, document noted observations that have lead you to suspect abuse and/or neglect in an objective manner. Consider the following areas:
 - a) History
 - i) History of injury incompatible with type or degree of injury.
 - ii) Parent reluctant to give history, changes in stories, or contradictory histories given by each parent.
 - iii) History impossible for child's level of development.
 - iv) Significant and inappropriate delay between time of injury and time you were called.
 - v) You have been repeatedly called to this home for ingestions and/or other injuries and may have been asked to take the child to a different hospital each time.
 - vi) You have been repeatedly called to this home about alarming chief complaints and find a well infant (this may be a "pre-abuse" situation).

4.12 Suspected Child Abuse & Neglect (continued)

- b) Behavior
 - i) Parent doesn't show concern appropriate to the child's injury.
 - ii) Parent shows inappropriate expectations of the child.
 - iii) Parent makes inappropriate demands of the child.
 - iv) Parents demonstrate angry impulsive behavior toward the child.
- c) Physical
 - i) Bruises in unusual location (e.g., back, buttocks, face, ears, upper arms, thighs, hands, feet).
 - ii) Surface marks suggesting a weapon (e.g., belt, looped cord, switch, rope, or chain).
 - iii) Burns (e.g., immersion scalds, large imprints of an iron, radiator, heater, or cigarette).
 - iv) Long bone and/or rib fractures in children under 2 years of age with no reasonable history.
 - v) Skull fractures or signs suggesting CNS injury (especially in an infant with no reasonable history).
 - vi) Signs suggestive of significant abdominal, perineal, or chest injury without a reasonable history.
 - vii) Signs of failure to thrive (thin or wasted infant or toddler), often dirty and apathetic.
- d) Most Likely Situations
 - i) Severe acute injury with loss of consciousness, seizures, or cardiovascular collapse.
 - ii) Sudden decompensation in an infant with prior head or abdominal injury.
 - iii) Sudden decompensation in an infant with failure to thrive due to dehydration or sepsis.
 - iv) Severe symptoms due to an ingestion.
- 8) Report findings to appropriate child protective agency. Emergency Care Providers are mandatory reporters! Contact Polk County DHS at 1-800-362-2178.

4.13 Pediatric Trauma

Basic Care Guidelines

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Prioritize appropriate airway management (see procedure **6.102 KING LTS-D**) and the treatment of shock in all trauma patients
- 3) Attempt to limit scene time for all critical patients unless necessary due to extrication or life-saving treatments
- 4) External Bleeding
 - a) Control bleeding by applying a bandage and direct pressure at the point of bleeding
 - b) Bandage wounds to prevent further contamination after bleeding is controlled
 - c) If hemorrhage control is unsuccessful with direct pressure, consider application of a tourniquet (See procedure **6.303 Tourniquets**).
 - d) Treat for shock if present.
- 5) Internal Bleeding
 - a) If bleeding is suspected in an extremity, control bleeding by direct pressure and application of a splint.
 - b) Keep the patient warm.
 - c) Immediate transport is critical for patient with signs and symptoms of shock/hypoperfusion.
- 6) Shock
 - a) Control any external bleeding.
 - b) Elevate the lower extremities approximately 8-12 inches. If the patient has serious injuries to the pelvis, lower extremities, head, chest, abdomen, neck or cervical spine, keep the patient supine.
 - c) Prevent heat loss by covering the patient with blankets when appropriate.
- 7) Impaled Objects
 - a) Impaled objects must be left in place, and should be stabilized by building up and around the object with trauma dressings taking care that the penetrating object is not allowed to do further damage.
 - b) Impaled objects in the cheek may be removed if causing airway problems or you are having trouble controlling bleeding. Use direct pressure on injury after removal to control any bleeding.

4.13 Pediatric Trauma (continued)

8) Chest Injuries

- a) Seal open chest wounds immediately. Use occlusive dressing taped down on three sides, allow fourth side to remain untaped.
- b) Be alert if a tension pneumothorax develops, you will have to briefly lift one corner to release pressure.
- c) Check subcutaneous emphysema and obvious chest deformity if injuries resulted from severe compression of chest from steering wheel, etc.
- d) Rib fractures or flail segments of chest should be stabilized with a thick pad, dressings, or a small pillow taped securely in place with wide strips of tape or secured with wide triangular bandages.
- e) Impaled objects must be left in place, and should be stabilized by building up and around object with multi-trauma dressing, etc., taking care that the penetrating object is not allowed to do further damage.
- f) Impaled objects in the cheek may be removed if causing airway problems, or if you are having trouble controlling bleeding. Use direct pressure on injury after removal to control any bleeding.

9) Abdominal Trauma

- a) Bandage wounds to prevent further contamination
- b) Evisceration should be covered with a sterile saline soaked occlu

10) Head/Neck and Spinal Injuries

- a) Establish and maintain in-line spinal immobilization
- b) Immobilize patient per protocol (see procedure **6.302 Spinal Immobilization**)

Advanced Care Guidelines

- 1) Intubate as necessary (See procedure **6.110 Pediatric Advanced Airway Management**).
- 2) Consider use of blindly inserted, KING LTS-D airway if indicated and unable to intubate with ETT and patient meets 5 foot height requirement (See procedure **6.102 King LTS-D**).
- 3) Establish IV or IO, infuse as patient condition indicates.
- 4) If hypotensive administer fluid challenge of 20 mL/kg as appropriate. Consider repeat fluid challenge if hypotension persists and there is no evidence of CHF pulmonary edema.

4.13 Pediatric Trauma (continued)

- 5) Establish second large bore IV or IO with severe trauma, and infuse as patient condition indicates.
- 6) IV lines should be started en route to the hospital, except where there is an unavoidable delay such as extrication, etc.
- 7) Monitor ECG and treat dysrhythmia if indicated.
- 8) Consider chest decompression if needed (See procedure **6.106 Chest Needle Decompression**)

Special Considerations

- 1) Initial assessment and management of any traumatic incident, minor or major, should be accomplished in a similar manner during each situation following the general orders for all patients.
- 2) It is necessary that all First Responders and EMTs use the Glasgow Coma Score and the Iowa Trauma System Out-Of-Hospital Trauma Triage Destination Decision Protocol (See appendix **8.02 Pediatric - OOHTTDDP**).

Section 5:

Cardiac Arrest Appendix

5.01 Adult Asystole/PEA

Advanced Care Guidelines

- 1) The following is assumed when utilizing this protocol:
 - a) CPR will be continued when applicable (See protocol **3.09 Cardiac Arrest**).
 - b) If cardiac arrest rhythm changes, consider appropriate protocol (See protocol **5.02 Adult Ventricular Fibrillation/Pulseless Ventricular Tachycardia**).
- 2) When treating asystolic patients, confirm asystole in more than one lead
- 3) Administer **EPINEPHRINE 1:10,000** 1.0 mg IV
 - a) Repeat every 3-5 minutes
- 4) If spontaneous circulation returns, provide post-cardiac arrest care (See protocol **5.04 Post-Cardiac Arrest Care**).
- 5) Follow Current Advanced Cardiac Life Support guidelines

5.02 Adult V-Fib/Pulseless V-Tach

Advanced Care Guidelines

- 1) The following is assumed when utilizing this protocol:
 - a) CPR will be continued when applicable (See protocol **3.09 Cardiac Arrest**).
 - b) If cardiac arrest rhythm changes, consider appropriate protocol (See protocol **5.01 Adult Asystole/PEA**).
- 2) Analyze rhythm and defibrillate at 2 minute intervals (see procedure **6.201 Automatic (AED) and Manual Defibrillation**).
- 3) Administer **EPINEPHRINE 1:10,000** 1.0 mg IV
 - a) Repeat every 3-5 minutes
 - b) Defibrillate within 30-60 second
- 4) Administer **AMIODARONE** 300 mg IV bolus
 - a) Repeat in 3-5 minutes with 150 mg IV bolus
- 5) For patients with torsades de pointes (irregular/polymorphic Ventricular Tachycardia associated with prolonged QT interval) administer 2 g **MAGNESIUM SULFATE** IV/IO over 1-2 minutes
- 6) If spontaneous circulation returns, provide post-cardiac arrest care (see protocol **5.04 Post-Cardiac Arrest Care**).
- 7) Follow Current Advanced Cardiac Life Support guidelines

5.03 Pediatric Arrest Dysrhythmias

Advanced Care Guidelines

- 1) The following is assumed when utilizing this protocol:
 - a) CPR will be continued when applicable (See protocol **4.07 Pediatric Cardiac Arrest**).
 - b) If cardiac arrest rhythm changes, consider the appropriate treatment in this protocol.
- 2) Ventricular Fibrillation/Pulseless Ventricular Tachycardia
 - iii) Defibrillation 2 joules/kg followed by 4 joules/kg (See procedure **6.201 Automatic (AED) and Manual Defibrillation**)
 - (1) Minimum of 2 minutes of CPR between defibrillations.
 - iv) Medications
 - (1) **EPINEPHRINE 1:10,000** 0.01 mg/kg (0.1 mL/kg) IV/IO. Repeat every 3 to 5 minutes
 - (2) **AMIODARONE** 5 mg/kg IV bolus.
 - (i) May repeat up to 2 times if ventricular fibrillation/pulseless ventricular tachycardia persists.
 - (3) Defibrillate at 4 joules/kg after medications.
- 2) Asystole/Pulseless Electrical Activity
 - i) Medications
 - (1) **EPINEPHRINE 1:10,000** 0.01 mg/kg (0.1 mL/kg) IV/IO
 - (2) Repeat every 3-5 minutes.
- 3) If spontaneous circulation returns, provide post-cardiac arrest care (See protocol **5.04 Post-Cardiac Arrest Care**).
- 4) Follow Current Pediatric Advanced Life Support guidelines

5.04 Post-Cardiac Arrest Care (Adult & Pediatric)

Basic Care Guidelines

- 1) Be prepared for rearrest. Keep the defibrillation pads attached in case further defibrillation is necessary, and continue to monitor the patient closely.
- 2) Administer oxygen. Manage the patient's airway and breathing as indicated. Provide 1 rescue breath every 6-8 seconds for adult patients or 1 breath every 3 seconds for pediatric patients
 - a) Do not hyperventilate.
 - b) Titrate oxygen administration to maintain oxygen saturation greater than or equal to 94%.
- 3) Follow other protocol(s) if indicated.
- 4) Consider blood glucose level check

Advanced Care Guidelines

- 1) Consider placement of an advanced airway:
 - a) Follow procedures for advanced airway management (See procedure **6.101 Adult Advanced Airway Management** or **6.110 Pediatric Advanced Airway Management**).
 - b) Monitor advanced airways with inline ETCO₂ and waveform capnography.
- 2) Consider **AMIODARONE** 150 mg IV mixed in 100 mL normal saline over 10 minutes for adult patients if wide complex tachycardia present.
- 3) Treat hypotension (systolic blood pressure less than 90 mmHg):
 - a) IV bolus of 1-2 L normal saline for adult patients.
 - b) IV bolus of 20 mL/kg normal saline for pediatric patients
 - c) Consider **DOPAMINE (Intropin)** 5-20 mcg/kg/min for adult patients. Titrate to effect.
- 4) Obtain 12-lead ECG if time permits.
- 5) Treat reversible causes of cardiac arrest (See Protocol **3.09 Cardiac Arrest**).
- 6) Check neurologic response

5.05 Termination of Resuscitation

Advanced Care Guidelines

- 1) Indications to consider termination of resuscitation:
 - a) Patient is in full arrest with no signs of life present.
 - b) Patient is considered an adult.
 - c) Full ACLS has been instituted (Paramedic level) to include rhythm analysis and defibrillation if indicated, advanced airway management, and drugs given per protocol.
 - d) No return of circulation or shockable rhythm exists.
 - e) Any family members present are in agreement to terminate efforts.
- 2) Termination of resuscitation:
 - a) Patient meets all five criteria under 'indications' above, or patient is terminally ill/DNR where CPR was started prior to knowledge of resuscitation status (See protocol **3.12 DNR Protocol**).
 - b) Physician on-line medical direction is contacted while ACLS care continues to discuss any further appropriate actions.
 - c) ACLS may be discontinued if on-line medical direction authorizes.
 - d) Documentation must reflect that the decision to terminate resuscitation was determined by physician on-line medical direction.
 - e) An EMS/health care provider must attend the deceased until the appropriate authorities arrive.
 - f) All IVs, tubes, etc. should be left in place until the medical examiner authorizes their removal.
- 3) Physician on-line medical direction includes either of the following:
 - a) Hospital based physician contact via phone or radio.
 - b) Patient's primary care physician or on call physician contacted via phone

Special Considerations

- 1) Patients with hypothermia or a metabolic disorder may benefit from continued resuscitation.

Section 6: **Procedures**


Section 6.100:

Airway and Breathing Procedures

Ankeny Fire Department / Polk City Fire Department

Patient Care Protocol Addendum

6.101 Adult Advanced Airway Management

Alan Heberer, DO: 

Date: 9/1/2020

This protocol revision is intended to supersede Protocol 6.101 Adult Advanced Airway Management.

Indications

- 1) Patient with respiratory compromise or arrest, deep coma, or cardiac arrest.
- 2) Patient where complete obstruction of the airway appears imminent (e.g., respiratory or facial burns).
- 3) Conscious patient in acute respiratory distress requiring ventilatory assistance or airway control.
- 4) Extremely combative patient who is potentially dangerous to themselves or others.
- 5) Need to control the airway of head injury patients with the potential for increased intracranial pressure (ICP).
- 6) Inability to maintain control of their airway due to altered level of consciousness.

Contraindications

- 1) Inability to manage the patient's airway with the use of a BVM device.
- 2) Anticipated difficult intubation or severe maxillo-facial trauma.
- 3) Patient with preexisting condition that may cause laryngeal spasm (e.g., epiglottitis or croup)
- 4) The following contraindications apply when utilizing paralytics:
 - a. Patients with tissue destructive conditions (e.g., crushing injuries older than 72 hrs., sepsis), preexisting hyperkalemia, or a history of malignant hyperthermia.
 - b. Patients with muscle wasting conditions: Parkinson's disease, muscular dystrophy, Guillian-Barre Syndrome, or spinal cord transection with paralysis.

Equipment

- 1) BVM
- 2) Laryngoscope and blade(s) and King Vision Video Laryngoscope
- 3) Endotracheal tube, stylet, and gum elastic bougie
- 4) Rescue airway (KING LTS-D or i-gel)
- 5) End tidal CO₂ device, tube holder, cervical collar
- 6) Appropriate medications (if necessary)

Preparation

- 1) Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
- 2) Pre-oxygenate with 100% O₂ via BVM for 2 minutes.
- 3) Assist ventilations as needed prior to intubation.
- 4) Secure vascular access (See procedure **6.402 Intravenous (IV) Access and Infusion** or **6.403 Intraosseous (IO) Access and Infusion**).
- 5) Ensure cardiac and SpO₂ monitoring are in place prior to attempting intubation.
- 6) Place the head in the “sniffing position” unless cervical spine injury is suspected.
 - a. If cervical spine injury is suspected, maintain immobilization during intubation.

Advanced Procedure

- 1) Apply cricoid pressure if needed.
- 2) If the patient is unconscious without an intact gag reflex, attempt intubation.
- 3) If medication assistance is required to perform intubation:
 - a. Pre-medicate with 2 mcg/kg **FENTANYL (Sublimaze)** IV over 30-60 seconds prior to intubation
 - i. Do not use fentanyl to pretreat hypotensive or hypovolemic patients.
 - b. Administer 2 mg/kg **KETAMINE (Ketalar)** IV followed by IV flush. Wait 30 seconds.
 - i. If Ketamine is unavailable, administer **MIDAZOLAM (Versed)** 1-2 mg IV titrated to effect up to 10 mg.
 - c. Consider the administration of a paralytic, particularly with patients that have clenched jaw muscles that require relaxation prior to attempted intubation.
 - i. Administer 1.0-1.5 mg/kg **SUCCINYLCHOLINE (Anectine)** IV, maximum dose of 150 mg.
- 4) Utilize standard laryngoscope or, if difficult intubation is suspected, utilize King Vision video laryngoscope to place endotracheal (ET) tube while maintaining visualization of the tube as it passes through the vocal cords.
- 5) Inflate cuff with approximately 10 mL of air.
- 6) Verify proper placement of the endotracheal (ET) tube by visualization of the tube passing the vocal cords, auscultation over the lungs and epigastrium, and the application of end-tidal CO₂ monitoring device (See procedure **6.107 Capnography Monitoring**).
 - a. All intubated patients will be continuously monitored with ETCO₂.
- 7) In cases of failed intubation and further sedation and/or paralysis is required:
 - a. Utilize appropriate airway adjuncts and maneuvers to maintain ventilation.
 - b. Administer 2-5 mg **MIDAZOLAM (Versed)** for additional sedation.
 - c. If necessary, repeat **SUCCINYLCHOLINE (Anectine)** 1.0-1.5 mg/kg.
 - d. Reattempt intubation and consider use of King Vision video laryngoscope if available and if not used in first attempt.
- 8) If unable to successfully intubate the patient after three attempts, utilize the KING LTS-D or i-gel to secure the airway (See procedure **6.102 KING LTS-D** or **6.111 i-gel Airway**).

- 9) After placement has been confirmed and the endotracheal tube has been secured, maintain sedation:
 - a. May also be followed for patients who have obtained ROSC.
 - b. Administer **KETAMINE (Ketalar)** 1 mg/kg, may repeat every 10 minutes as needed.
 - c. Consider **MIDAZOLAM (Versed)** 2-5 mg if sedation is difficult to maintain. May repeat every 5-10 minutes to a maximum of 20 mg.
 - d. If additional sedation is needed, contact medical control.
- 10) Consider use of soft restraints and a cervical collar to maintain intubation.

Intubation Attempts

- 1) Consider use of a bougie device following a failed first attempt.
- 2) A total of three (3) attempts at intubation are allowed on each patient.
 - a. An attempt is defined as the ET tube passing the patients lips.
- 3) Attempts at intubation must be no longer than twenty seconds.
 - a. Ventilate patient with BVM in-between all intubation attempts.

6.102 KING LTS-D Airway

Indications

- 1) The KING LTS-D is intended for airway management in patients who fit the criteria listed in the table below
- 2) Difficult and emergent airway cases.

Contraindications

- 1) The following contraindications are applicable for routine use of the KING LTS-D:
 - a) Responsive patients with an intact gag reflex.
 - b) Patients with known esophageal disease.
 - c) Patients who have ingested caustic substances.

Equipment

KING LTS-D and syringe

Procedure

- 1) Select appropriate size airway.

Size:	2.0	2.5	3	4	5
Color:	Green	Orange	Yellow	Red	Purple
Patient criteria:	35-45 inches or 26-55 lbs	41-51 inches or 55-77 lbs	4-5 feet	5-6 feet	Taller than 6 feet
Inflation volume:	25-35 mL	30-40mL	40-55 mL	50-70 mL	60-80 mL
Approved Staff:	Paramedic level only			All personnel	

- 2) Prepare airway, BVM, ETCO₂ and have suction ready.
 - a) Lubricate the posterior surface of the KING LTS-D to avoid blockage of the ventilation apertures or aspiration of the lubricant.
 - b) Have BVM ready with supplemental oxygen attached.
 - c) Cardiac monitor turned on and ETCO₂ plugged in and ready to attach to the airway device.

6.102 King LTS-D Airway (continued)

- 3) Apply chin lift and introduce the KING LTS-D into the corner of the mouth with the curve of the airway pointed toward the center of the patient's mouth.
- 4) Advance the tip under base of tongue, while rotating tube back to midline.
- 5) Without excessive force, advance tube until base of connector is aligned with teeth or gums.
- 6) Inflate cu fs with syringe to appropriate volume (see table above). Remove syringe.
- 7) Attach bag valve mask. While gently bagging, slowly withdraw tube until ventilation is easy and free flowing (large tidal volume with minimal airway pressure).
- 8) Ventilate patient every 6-8 seconds titrating to ETCO₂ of 35-45 mmHg with smooth wave form (See procedure **6.107 Capnography Monitoring**).
- 9) Confirm placement by auscultation
- 10) Secure airway with tube holder

6.103 Suctioning

Indications

- 1) Obstruction of the airway due to blood, secretions, vomitus, or any foreign substance.

Contraindications

- 1) None when used in the emergency setting

Equipment

- 1) Electronic suction unit with Yankauer or soft suction tip

Basic Procedure

- 1) Attach Yankauer (rigid) tip to the suction unit. Ensure the unit is properly functioning.
- 2) Pre-oxygenate the patient if possible.
- 3) Explain the procedure to the patient if they are alert.
- 4) Examine the oropharynx and remove any visible obstruction.
- 5) Insert the distal end of the suction catheter into the oropharynx with the thumb port of the suction catheter uncovered. Do not insert the suction tip past the visible portion of the airway.
- 6) Occlude the thumb port of the suction catheter, and suction the airway while withdrawing the suction catheter for no longer than 15 seconds.
 - a) If the patient is alert, the patient may be able to assist with suctioning.
- 7) Immediately reapply oxygen and/or assist ventilations as needed.
- 8) Clear the suction catheter with sterile water. Repeat suctioning as patient condition warrants.
 - a) Ventilate the patient between all suction attempts.

Advanced Procedure

- 1) Ensure the suction unit is properly functioning.
- 1) While maintaining sterile technique, attach the soft suction catheter to the suction unit. Keep the sterile wrapper on the catheter until ready to use.
- 2) Pre-oxygenate the patient if possible.

6.103 Suctioning (continued)

- 3) Measure the insertion depth from the external tip (BVM adapter) of the advanced airway to the suprasternal notch. Mark insertion depth with the thumb and index finger .
 - a) Use judgement to determine the depth of insertion when suctioning a tracheostomy tube.
- 4) Remove bag valve mask from the airway.
- 5) Insert the distal end of the suction catheter into the advanced airway with the thumb port of the suction catheter uncovered.
- 6) Continue to advance the suction catheter until the desired depth is reached or resistance is met.
- 7) Occlude the thumb port of the suction catheter, and suction the airway while slowly withdrawing the suction catheter for no longer than 15 seconds.
- 8) Up to 10 mL of Normal Saline may be inserted into the advanced airway if needed to loosen secretions.
- 9) Reattach the bag valve mask, and continue ventilations.
- 10) Clear the suction catheter with sterile water. Repeat suctioning as patient condition warrants.
 - a) Ventilate the patient between all suction attempts.

6.104 Oxygen Administration

Indications

- 1) Patients with difficulty breathing or shortness of breath
- 2) Patients with chest pain or other cardiac complications
- 3) Trauma patients with evidence of shock
- 4) SpO₂ less than 94% on room air

Equipment

- 1) Nasal cannula, non-rebreather mask, or bag valve mask
- 2) Pulse oximeter

Basic Procedure

- 1) If the patient is not breathing or if breathing is inadequate, provide bag valve mask ventilations using high flow oxygen (15 LPM)
 - a) Consider appropriate advanced airway management (See procedure **6.101 Adult Advanced Airway Management** or **6.102 KING LTS-D**).
- 2) Monitor oxygen delivery with pulse oximeter. Titrate oxygen delivery to maintain a SpO₂ of greater than 94%.
 - a) Do not withhold oxygen from COPD patients. If in respiratory distress, titrate oxygen delivery with appropriate adjunct to maintain SpO₂ greater than 94%
- 3) Utilize capnography to monitor the respiratory status of applicable patients (See procedure **6.107 Capnography Monitoring**)

6.105 CPAP (Pulmodyne System)

Indications

- 1) Patients with difficulty breathing secondary to CH , COPD, emphysema, asthma, or near-drowning
- 2) Shortness of breath not associated with pneumothorax
- 3) Respiratory rate greater than 25 breaths per minute
- 4) SpO₂ less than 92% on room air
- 5) Accessory muscle use or early signs of patient fatigue

Contraindications

- 1) Unconscious patient
- 2) Inability to follow commands (GCS less than 10)
- 3) Patients less than 12 years of age
- 4) Respiratory arrest or agonal respirations
- 5) Pneumothorax
- 6) Facial trauma and/or facial abnormalities
- 7) Systolic blood pressure less than 90 mmHg
- 8) Penetrating chest trauma
- 9) Nausea or vomiting
- 10) Inability to maintain mask seal

Equipment

- 1) CPAP System
- 2) Oxygen cylinder
- 3) Nebulizer kit (as necessary)
- 4) Pulse oximeter

Preparation

- 1) Obtain initial vital signs including SpO₂ on room air if possible.
- 2) Administer oxygen per Initial Care Protocols while preparing CPAP equipment (See protocol **2.01 Initial Protocols**).

6.105 CPAP (continued)

Basic Procedure

- 1) Place patient in an upright position
- 2) Explain the procedure to the patient:
 - a) The pressure generated by the mask may be uncomfortable for the patient.
- 3) Ensure the oxygen regulator is set to 0 (zero) LPM.
- 4) Connect the DISS fitting from the C AP tubing to the oxygen regulator.
- 5) Set the oxygen flow rate to 15 LP
 - a) Note: With the Pulmonary CPAP device, the oxygen flow rate is 15 LPM for all CPAP pressures.
- 6) Initiate CPAP therapy at 5 cm H₂O and titrate up to 7.5 cm H₂O and 10 cm H₂O as patient condition warrants.
 - a) Adjust the CPAP pressure by rotating the 3-SET valve to the appropriate pressure setting.
- 7) Place the mask over the patient's mouth and nose.
 - a) If the patient's condition allows, instruct the patient to hold the mask in place on their face before securing the straps. This may help to increase patient compliance with the therapy.
 - b) Instruct the patient to breathe in through their nose slowly and exhale through their mouth for as long as possible. (E.g., count slowly to four, and then instruct the patient to exhale slowly.)
- 8) Adjust the BiTrac forehead pad up or down to a comfortable position by pinching the Omniclip on the front of the mask.
- 9) Secure the head harness starting with the two upper straps. The mask should form a tight seal with the patient's face.
- 10) If **ALL** of the treatment goals listed below are met, taper off CPAP by decreasing pressure 2.5 cm H₂O at a time.
 - a) Treatment Goals:
 - i) Respiratory rate less than 25 breaths per minute
 - ii) Decreased respiratory distress
 - iii) SpO₂ greater than or equal to 92%
- 11) All patients receiving CPAP therapy will be monitored using inline ETCO₂ (See procedure **6.107 Capnography Monitoring**).

6.105 CPAP (continued)

- 12) Continue to follow breathing difficulty protocol. (See Protocol **3.07 Breathing Difficult**)
- a) Utilize inline nebulizer treatments with CPAP therapy as necessary for patients with bronchospasm.
- 13) Advise receiving facility of CPAP therapy. Continually reassess patient condition.
- 14) If patient condition deteriorates (decreased level of consciousness, decreasing SpO₂, poor patient compliance, etc.), discontinue CPAP therapy, and consider bag valve mask ventilation or endotracheal intubation per protocol.

Special Considerations

Note: CPAP therapy is a non-invasive procedure

6.106 Chest Needle Decompression

General Information

- 1) Needle decompression of the chest on protocol without medical control authorization will be restricted to immediately life threatening situations as evidenced by trauma arrest or a rapidly deteriorating patient exhibiting the signs and symptoms as noted in this protocol.
- 2) Paramedics who have successfully completed the Department's in-service and skill lab may perform this skill.
- 3) Chest Needle Decompression shall be completed on the affected side.
- 4) If there is any question as to if the patient is immediately life threatening, Medical Control shall be contacted prior to executing this skill.
- 5) Use of Chest Needle Decompression in the Pediatric Patient should be performed with caution and preferably on the order of Medical Control.

Tension Pneumothorax

- 1) Tension Pneumothorax is rare and more difficult to diagnose than a simple Pneumothorax. A simple Pneumothorax will cause decreased breath sounds, chest pain, subcutaneous air, and some degree of air hunger, but the patient's vital signs will remain stable!
- 2) Tension Pneumothorax is associated with respiratory and cardiovascular collapse. The recognition of tension Pneumothorax and prompt treatment can be dramatically lifesaving.
- 3) The Patient may present with a mechanism of injury suggesting chest trauma and the following signs:
 - a) Restlessness and agitation.
 - b) Hyperexpanded chest.
 - c) Respiratory distress – severe dyspnea, tachypnea, and air hunger in the conscious patient.
 - d) Unilateral absence of breath sounds of the affected side.
 - e) Hypotension or Cyanosis.
 - f) Distended neck veins (may be absent with significant blood loss)
 - g) Rapidly deteriorating patient
 - h) Deviated trachea away from the affected side. This sign is very difficult to detect and is considered a very late sign.

6.106 Needle Decompression (continued)

Trauma Arrest

- 1) Trauma arrest with mechanism of injury to the chest may result in a tension Pneumothorax. This condition will be evident by:
 - a) Absence of breath sounds over the affected side after intubation of the trachea with an endotracheal tube.
 - b) Inability or difficulty to ventilate with the BVM (with confirmed tube placement)
 - c) Commonly a PEA or Asystole heart rhythm on the monitor.

Equipment

- 1) 10 gauge over the needle catheter and 10 mL syringe.
- 2) A finger cut off of a disposable glove (optional)
- 3) A commercially prepared kit may be utilized in lieu of items 1-2.

Advanced Procedure

- 1) Observe Body Substance Isolation precautions.
- 2) Prepare equipment: attach 10 mL syringe to 10-gauge catheter.
- 3) Locate the landmark on the affected side (second intercostal space superior to the third rib in the mid-clavicular line).
- 4) Cleanse the site with alcohol prep.
- 5) Puncture the skin perpendicularly, just superior to the third rib (second intercostal space) in the mid-clavicular line (approximately in line with the nipple) until the thoracic cavity is entered.
- 6) On entering the thoracic cavity with a tension Pneumothorax, you should feel a “pop”, and then depending on the ambient noise, you may here a “hiss” as air is decompressed. Alternately, you may see the plunger of the syringe push outward.
- 7) Advance the catheter and remove the needle.
- 8) Place the finger of the rubber glove over the catheter hub, cut a small hole in the rubber glove to make a one-way or flutter valve. Secure to catheter using tape (Optional).
- 9) Secure the catheter to the chest wall with a dressing and tape.

6.107 Capnography (ETCO₂) Monitoring

Indications

- 1) Assessment, verification, and continual monitoring of advanced airway
- 2) Respiratory monitoring of critical patients
- 3) All patients treated with CPAP

Equipment

- 1) Cardiac monitor with capnography capability
- 2) Capnography sampling set (Oral/Nasal or Airway adapter)

Advanced Procedure

- 1) For responsive patients, place oral/nasal capnography sampling set into position. Attach sensor to monitor, and connect oxygen.
 - a) Limit oxygen delivery to less than or equal to 5 liters per minute.
- 2) For patients with an advanced airway, connect the capnography airway adapter between the BVM and the advanced airway. Attach sensor to monitor.
- 3) Record the initial ETCO₂ reading and waveform in the patient care report. Leave the capnography sampling set in place, and record any changes in ETCO₂ readings throughout the call.
- 4) If the CO₂ level suddenly drops to zero or the waveform is suddenly lost, immediately reassess the airway. Correct any problems.
- 5) Titrate ventilatory rate to maintain an ETCO₂ between 35 mmHg and 45 mmHg.
 - a) If the ETCO₂ is less than 35 mmHg, decrease the ventilatory rate.
 - b) If the ETCO₂ is greater than 45 mmHg, increase the ventilatory rate.
- 6) In the pulseless patient, an ETCO₂ greater than 10 mmHg indicates adequate airway placement.
- 7) A sudden increase in ETCO₂ may indicate a return of spontaneous circulation in the cardiac arrest patient.
- 8) Vomit and secretions may occlude the ETCO₂ sensor preventing accurate readings.
- 9) Continue patient care per appropriate protocols.

6.108 Carboxyhemoglobin Monitoring

Indications

- 1) Carboxyhemoglobin monitoring should be used to assess the SpCO level of patients who were possibly exposed to carbon monoxide. Consider the following symptoms:
 - a) Headache, dizziness, syncope, weakness, altered mental status, confusion, and/or lethargy
 - b) Nausea and/or vomiting
 - c) Shortness of breath
 - d) Chest pain
- 2) Assessment of firefighters after extended fire ground operation

Equipment

- 1) Portable carboxyhemoglobin monitor (e.g., Masimo RAD-57)

Basic Procedure

- 1) Remove patient to fresh air if an exposure is suspected.
- 2) Turn on the device.
- 3) Place probe on the patient's finger .
- 4) Press the Display button to switch from SpO₂ to SpCO monitoring.
- 5) Record the SpCO and the SpO₂ readings from the device.
- 6) When indicated, administer oxygen to all patients regardless of their carboxyhemoglobin reading (See procedure **6.104 Oxygen Administration**).
- 7) Transport to a facility with hyperbaric treatment capabilities.

% SpCO	Possible Symptoms
10	No symptoms expected. Heavy smokers may have a "normal" SpCo near 9%.
15	Mild headache
25	Nausea and serious headache.
30	Intense symptoms
45	Unconsciousness
50+	Death

6.109 Tracheostomy Management

Indications

- 1) Need for emergency airway management in the adult or pediatric patient with a tracheostomy

Contraindications

- 1) The ability to provide adequate ventilation or oxygenation with the patient's tracheostomy tube
- 2) Blockage or obstruction that can be cleared with suctioning

Equipment

- 1) Intubation supplies
- 2) Endotracheal tubes equal to the size of and one size smaller than the patient's tracheostomy tube


Advanced Procedure

- 1) Prepare intubation supplies.
- 2) Attempt to pre-oxygenate the patient using a BVM if possible.
- 3) Remove any securing devices from the tracheostomy tube.
- 4) If the tracheostomy tube is cuffed, deflate the cuff using a syringe or by cutting the balloon.
- 5) Carefully remove the tracheostomy tube.
- 6) Insert an endotracheal tube equal in size to the patient's tracheostomy tube.
 - a) If the same-sized endotracheal tube cannot be placed, reattempt with the next size smaller endotracheal tube.
- 7) If using a cuffed endotracheal tube, inflate the tube's cuff. Secure with tape.
- 8) Confirm placement of the endotracheal tube with auscultation over the lungs and epigastrium and the application of a quick-cap or end-tidal CO₂ monitoring device (See procedure **6.107 Capnography Monitoring**).
 - a) Ensure the tube is not placed in the right bronchus
- 9) If unable to secure the tracheostomy site with an endotracheal tube replacement, attempt ventilation via BVM or attempt oral endotracheal intubation (See procedure **6.101 Adult Advanced Airway Management**).

Ankeny Fire Department / Polk City Fire Department

Patient Care Protocol Addendum

6.110 Pediatric Advanced Airway Management

Alan Heberer, DO: 

Date: 9/1/2020

This protocol revision is intended to supersede Protocol 6.110 Pediatric Advanced Airway Management.

Indications

- 1) Patient with respiratory compromise or arrest, deep coma, or cardiac arrest.
- 2) Patient where complete obstruction of the airway appears imminent (e.g., respiratory or facial burns).
- 3) Conscious patient in acute respiratory distress requiring ventilatory assistance or airway control.
- 4) Extremely combative patient who is potentially dangerous to themselves or others.
- 5) Need to control the airway of head injury patients with the potential for increased intracranial pressure (ICP).
- 6) Inability to maintain control of their airway due to altered level of consciousness.

Contraindications

- 1) Inability to manage the patient's airway with the use of a BVM device.
- 2) Anticipated difficult intubation or severe maxillo-facial trauma.
- 3) Patient with preexisting condition that may cause laryngeal spasm (e.g., epiglottitis or croup).
- 4) The following contraindications apply when utilizing paralytics:
 - a. Patients with tissue destructive conditions (e.g., crushing injuries older than 72 hrs., sepsis), preexisting hyperkalemia, or a history of malignant hyperthermia.
 - b. Patients with muscle wasting conditions: Parkinson's disease, muscular dystrophy, Guillian Barre Syndrome, or spinal cord transection with paralysis.

Equipment

1. Use Broselow Tape to determine appropriate equipment sizes.
2. Laryngoscope and blade(s)
3. BVM, Endotracheal tube, stylet, and gum elastic bougie
4. Rescue airway (KING LTS-D or i-gel)
5. End tidal CO₂ device, tube holder, cervical collar
6. Appropriate medications (if necessary)

Preparation

1. Follow Initial Protocols for All Patients (See protocol **2.01 Initial Protocols**).
2. Pre-oxygenate with 100% O₂ via BVM for 2 minutes.
3. Assist ventilations as needed prior to intubation.
4. Secure vascular access (See procedure **6.402 Intravenous (IV) Access and Infusion** or **6.403 Intraosseous (IO) Access and Infusion**).
5. Ensure cardiac and SpO₂ monitoring are in place prior to attempting intubation.
6. Place padding underneath the patient's shoulders unless cervical spine injury is suspected.
 - a. If cervical spine injury is suspected, maintain immobilization during intubation.

Advanced Procedure

1. If the patient is unconscious without an intact gag reflex, attempt intubation.
2. If medication assistance is required to perform intubation:
 - a. Pre-medicate with **ATROPINE** 0.02 mg/kg IV (minimum dose: 0.1 mg; maximum dose: 0.5 mg) for all children less than 5 years of age.
 - b. Administer 2 mg/kg (or Broselow Dose listed under "Rapid Sequence Intubation - 'Induction Agents'") **KETAMINE (Ketalar)** IV followed by IV flush. Wait 30 seconds.
 - i. If Ketamine is unavailable, administer **MIDAZOLAM (Versed)** as listed on Broselow Tape under "Rapid Sequence Intubation - 'Induction Agents'"
 - c. If adequate sedation is achieved (evidenced by loss of corneal reflex and flaccidity,) attempt intubation or administer **SUCCINYLCHOLINE (Anectine)** 1.5 -2.0 mg/kg IV (or Broselow Dose listed under "Rapid Sequence Intubation - 'Paralytic Agents'").
3. Utilize standard laryngoscope or, if difficult intubation is suspected, utilize King Vision video laryngoscope to place endotracheal (ET) tube while maintaining visualization of the tube as it passes through the vocal cords.
4. Verify proper placement of the endotracheal (ET) tube by visualization of the tube passing the vocal cords, auscultation over the lungs and epigastrium, and the application of end-tidal CO₂ monitoring device (See procedure **6.107 Capnography Monitoring**).
 - a. All intubated patients will be continuously monitored with ETCO₂.
5. In cases of failed intubation and further sedation and/or paralysis is required:
 - a. Utilize appropriate airway adjuncts and maneuvers to maintain ventilation.
 - b. Pre-medicate with **ATROPINE** 0.02 mg/kg IV (minimum dose: 0.1 mg; maximum dose: 0.5 mg) for all children receiving a second paralytic dose.
 - c. Repeat **SUCCINYLCHOLINE (Anectine)** 1.5-2.0 mg/kg IV.
 - d. Reattempt intubation and consider use of King Vision video laryngoscope if available and if not used in first attempt.

6. If unable to successfully intubate the patient after three attempts, utilize the KING LTS-D or i-gel to secure the airway (See procedure **6.102 KING LTS-D** or **6.111 i-gel Airway**).
7. After placement has been confirmed and the endotracheal tube has been secured, maintain sedation:
 - a. May also be followed for patients who have obtained ROSC.
 - b. Administer **KETAMINE (Ketalar)** 1 mg/kg, may repeat every 10 minutes as needed.
 - c. Consider **MIDAZOLAM (Versed)** 0.05-0.1 mg/kg (Maximum initial dose: 2 mg) if sedation is difficult to maintain, may repeat every 5-10 minutes to a maximum of 0.2 mg/kg.
 - d. If additional sedation is needed, contact medical control.
8. Consider use of soft restraints and a cervical collar to maintain intubation.

Intubation Attempts

- 1) Consider use of a bougie device following a failed first attempt.
- 2) A total of three (3) attempts at intubation are allowed on each patient.
 - a. An attempt is defined as the ET tube passing the patients lips.
- 3) Attempts at intubation must be no longer than twenty seconds.
 - a. Ventilate patient with BVM in-between all intubation attempts.

6.111 i-gel Airway

Indications

- 1) The i-gel airway is intended for airway management in adult and pediatric patients
- 2) Difficult and emergent airway cases

Contraindications

- 1) Trismus or limited mouth opening
- 2) Pharyngeal/peri-laryngeal abscess or other mass
- 3) Trauma to airway
- 4) Responsive patients with intact gag reflex

Special Considerations








- 1) Use care to avoid the introduction of lubricant in or near the ventilatory openings
- 2) Do not use excessive force to insert the device
- 3) Do not allow peak airway pressure of ventilation to exceed 40 cmH₂O
- 4) After insertion, i-gel should be secured with holder or taped down from maxilla-to-maxilla in accordance with the technique described below
 - a) Do not use commercial ET tube holders
- 5) Ensure optimal depth of i-gel during insertion to avoid air leakage

Procedure

- 1) Select appropriate size (see table below)
- 2) Open the packaging and remove the inner tray, setting the support strap, suction tubing, and sachet of lubricant to one side and within easy reach
- 3) Lubricate the back, sides and front of the i-gel airway with a thin layer of water-based lubricant. Remove any excess lubricant.
- 4) Place the patient in the “sniffing the morning air” position (unless contraindicated) with the head extended and the neck flexed
- 5) Guide the device downwards and backwards along the hard pallet with a continuous but gentle push until a definitive resistance is felt

6.111 i-gel Airway (continued)

- 6) The tip of the airway should be located into the upper esophageal opening with the cuff located against the laryngeal framework. The incisors should be resting on the bite block.
- 7) Secure device by sliding the strap underneath the patient's neck and attaching to the hook ring. Take care to ensure the strap is not secured too tight.
 - 1) Alternatively, the device can be secured by taping maxilla-to-maxilla

	i-gel size	Patient Size	Patient weight guidance (kg)
	1	Neonate	2-5kg
	1.5	Infant	5-12kg
	2	Small paediatric	10-25kg
	2.5	Large paediatric	25-35kg
	3	Small adult	30-60kg
	4	Medium adult	50-90kg
	5	Large adult	90+kg

Section 6.200: **Cardiac Procedures**

6.201 Automatic (AED) and Manual Defibrillation

Indications

- 1) Apply defibrillation pads to patients who are or have the potential to become unresponsive, breathless, and pulseless.

General Guidelines

- 1) Perform 2-rescuer CPR with BVM until the AED arrives and is ready (See protocol **3.09 Cardiac Arrest** or **4.07 Pediatric Cardiac Arrest**).
- 2) For a witnessed arrest with high-quality CPR in progress, attach AED and analyze the heart rhythm without delay.
- 3) When the arrest time is unknown or the patient has gone for greater than 5 minutes without high-quality CPR, perform 2 minutes of high-quality CPR before analyzing the heart rhythm.
- 4) Remove patients from wet environments prior to defibrillation
- 5) Pediatric patients:
 - a) Ages 1-8: utilize pediatric pads if available. If not available, consider applying adult pads in the anterior/posterior position.
 - b) Do not utilize on patients less than 1 year of age.

Basic Procedure

- 1) Turn on AED
- 2) Apply defibrillator pads firmly as directed on packaging
 - a) Remove any medication patches or jewelry from the chest area.
- 3) Confirm that defibrillator pads are connected to AED.
- 4) Push ANALYZE.
- 5) Follow prompts given by AED.
- 6) If “shock advised”, ensure that all rescuers are clear of the patient prior to shocking the patient. Push SHOCK to deliver energy.
- 7) Minimize interruptions in CPR while utilizing AED. Resume CPR with chest compressions immediately following shocks. Do not stop to check pulse.
- 8) If no shock is advised, resume CPR and reanalyze rhythm in 2 minutes.
- 9) If spontaneous circulation returns, provide post resuscitation care (See protocol **5.04 Post-Cardiac Arrest Care**).

6.201 AED/Manual Defibrillation (continued)

Advanced Procedure

- 1) Turn ON the monitor.
- 2) Apply defibrillation pads as directed on packaging
 - a) Remove any medication patches or jewelry from the chest area.
- 3) Minimize interruptions in chest compressions while performing defibrillation
- 4) Assess the heart rhythm.
- 5) If defibrillation is indicated, select ENERGY.
 - a) Adult defibrillation
 - i) Initial: 200 Joules
 - ii) Subsequent: 360 Joules
 - b) Pediatric defibrillation
 - i) Initial: 2 Joules/kg
 - ii) Subsequent: 4 Joules/kg
- 6) Push CHARGE.
 - a) Chest compressions can continue while the monitor is charging.
- 7) Ensure that all rescuers are clear of the patient, and push SHOCK to deliver energy.
 - a) Do not check for a pulse. Resume CPR with chest compressions immediately following shocks.
- 8) Reassess heart rhythm after 2 minutes of CPR. Defibrillate if indicated
- 9) Continue to follow appropriate cardiac arrest protocol (see protocol **5.01 Adult Asystole/PEA**, **5.02 Adult Ventricular Fibrillation/Pulseless Ventricular Tachycardia**, or **5.03 Pediatric Cardiac Arrest Dysrhythmias**).
- 10) If spontaneous circulation returns, provide post resuscitation care (See protocol **5.04 Post-Cardiac Arrest Care**).

6.202 Synchronized Cardioversion

Indications

- 1) Critical patient evidenced by:
 - a) Severe Hypotension or signs of poor systemic perfusion
 - b) Decreased level of consciousness or unconscious
 - c) Significant Congestive Heart Failure
 - d) Heart rhythms:
 - i) Ventricular Tachycardia
 - ii) Wide complex Tachycardia of unknown origin.
 - iii) PSVT that is non-responsive to Adenosine therapy.
- 2) May give brief trial of medications based on specific dysrhythmias.

Contraindications

- 1) Poison/drug induced Tachycardia.

Precautions

- 1) In critical conditions, go to immediate unsynchronized shocks.
- 2) Urgent cardioversion is generally not needed if heart rate is < 150 BPM
- 3) Reactivation of synchronized mode is required after each attempted cardioversion (defibrillators/cardioverters default to unsynchronized mode)
- 4) Prepare to defibrillate immediately if cardioversion causes ventricular Fibrillation.
- 5) Synchronized cardioversion cannot be performed unless patient is connected to monitor leads. The lead select switch must be on lead I, II, or III, and not on "paddles".

Advanced Procedure

- 1) Apply conductor pads in the proper positions and connect to monitor. The 3 lead monitoring electrodes must be on and the lead selector must be in Lead I, II or III.
- 2) Apply combination pads according to the instructions on the product. Ensure that all pads are making good contact with the patient's skin and are not covering any part of the other electrodes.

6.202 Synchronized Cardioversion (continued)

- 3) Consider sedation, pre-medicate when possible. Consider **MIDAZOLAM (Versed)** 1-2 mg IV over 2 minutes. Sedation should not delay cardioversion in the critical patient.
 - a) Repeat every 5 minutes as needed up to 6 mg.
- 4) Engage the synchronization mode by pressing the “sync” control button.
- 5) Look for markers on R waves indicating sync mode. If necessary, adjust monitor gain until sync markers occur with each R wave.
- 6) Deliver shocks in the following sequence: 100 J, 200 J, 300 J, 360 J. Reevaluate the patient and monitor between synchronized cardioversion.
- 7) Press “charge” button, “clear” the patient, and press the “shock” button.
- 8) Check the monitor. If the tachycardia persists, increase the joules as listed below.
 - a) in the following sequence: 100 J, 200 J, 300 J, 360 J. Reevaluate the patient and monitor between synchronized cardioversion.
- 9) NOTE: Reactivate the synchronized mode after each synchronized cardioversion because most defibrillators default back to unsynchronized mode. This default allows for an immediate shock if the cardioversion produced Ventricular Fibrillation.

6.203 Transcutaneous Pacing (TCP)

Indications

- 1) Hemodynamically unstable bradycardias (heart rate less than 60 BPM, blood pressure greater than 90 mmHg) that is unresponsive to Atropine.

Contraindications

- 1) None when used in the emergency setting.

Advanced Procedure

- 2) Consider **MIDAZOLAM (Versed)** 1-2 mg IV over 2 minutes for sedation. Sedation should not delay the initiation of pacing in the critical patient.
 - a) Repeat every 5 minutes as needed up to 6 mg.
- 3) Apply external pacing electrodes according to manufacturer instructions. The 3 lead monitoring patches must be on and the lead selector must be in Lead I, II or III. The pacer will not function if using fast patch system for monitoring in "paddles" mode.
- 4) Turn selector switch to PACER.
- 5) Set PACER OUTPUT to 0 mA. If the unit has just been turned on, the PACER OUTPUT will automatically be set to 0 mA.
- 6) Set PACER RATE to a value 10-20 BPM higher than patient's intrinsic rate. If no intrinsic rate exists, use 100 BPM.
- 7) Increase PACER OUTPUT mA until stimulation is effective (capture)
 - a) Determine capture. Electrical capture is determined by the presence of a widened QRS complex, the loss of any underlying intrinsic rhythm, and the appearance of an extended and sometimes enlarged T-wave.
 - b) Mechanical capture is assessed by palpation of peripheral pulse. In order to avoid mistaking muscular response to pacing stimuli for arterial pulsation's the FEMORAL and RIGHT BRACHIAL or RADIAL arteries are the ONLY recommended locations for palpating pulse during pacing.
- 8) Determine optimum threshold. The ideal output current is lowest value that will maintain capture. This is usually about 10% above threshold. Typical threshold currents are between 40 and 80 mA. Location of pacing pads will affect the current required to obtain capture.
- 9) Constant monitoring for loss of capture should be performed.

6.204 AICD Malfunction Management

Note

While rare in occurrence, management of the patient with a malfunctioning AICD presents a life threatening emergency. The following guidelines should be followed when treating a patient with a malfunctioning AICD.

- 1) If the AICD discharges while you are touching the patient, you may feel a slight sensation. It will not hurt you!
- 2) AICD's are generally implanted under the skin in the upper left chest area, just below the clavicle or in the right upper chest. Do not place an ECG patch over this area.
- 3) Patients with an AICD will either tell you about and/or have some type of identification noting the type of AICD. They may also have a medic-alert bracelet, providing important data regarding cutoff rates.
- 4) AICD's will deliver the first shock within 10-30 seconds after recognizing the dysrhythmia. Subsequent shocks will be delivered every 10-20 seconds.
- 5) Use of the deactivating ring magnet will "blind" the AICD from seeing the dysrhythmia. Use of the deactivating ring magnet on a patient with a dual purpose pacemaker/AICD will not shut off pacemaker.

Basic Care Guidelines

- 1) Follow Initial Care Protocol.
- 2) Administer oxygen as patient condition warrants.

Advanced Care Guidelines

- 1) Manage airway appropriately.
- 2) Establish IV access and infuse as patient condition warrants.
- 3) Monitor ECG and establish on ECG that AICD is inappropriately discharging in the presence of a non-VF/VT rhythm. Print copy of this for the ER and for the written report.
- 4) Deactivate the AICD by locating the unit and placing the top arc of the magnetic ring on the center of the AICD unit. Once the unit has stopped discharging, tape the magnet in place.
- 5) Perform 12-lead ECG. Monitor ECG continuously and treat dysrhythmias as indicated.

6.205 12-Lead ECG

Indications

- 1) Patients with chest pain (See protocol **3.10 Chest Pain & Suspected ACS**).
- 2) Possible cardiac patients
 - a) Consider weakness, diaphoresis, shortness of breath, syncope, nausea, back pain, jaw pain, and/or abdominal pain
- 3) As indicated per protocol

Equipment

- 1) Cardiac monitor
- 2) Electrodes
- 3) 12-lead cable

Preparation

- 1) Place patient in a comfortable position.
- 2) Expose the patient's chest while maintaining the patient's modesty.
 - a) Prepare chest by removing hair and/or drying excessive sweat as necessary.
- 3) Attach limb and precordial leads based on the appropriate landmarks:
 - a) RA - right arm
 - b) LA - left arm
 - c) RL - right leg
 - d) LL - left leg
 - e) V₁ - 4th intercostal space to the right of the sternum
 - f) V₂ - 4th intercostal space to the left of the sternum
 - g) V₃ - Midway between V₂ and V₄
 - h) V₄ - 5th intercostal space at the midclavicular line
 - i) V₅ - level with V₄ at the anterior axillary line
 - j) V₆ - level with V₅ at the midaxillary line
- 4) NOTE: When acquiring a 12-lead ECG, the limb leads (RA, LA, RL, LL) should be placed on the extremity, not the abdomen or chest.
- 5) Enter the patient's age into the monitor. Enter other identifying information if time permits.

6.205 12-Lead ECG (continued)

Basic Procedure

- 1) Advise the patient to remain still. Acquire 12-lead ECG.
- 2) Transmit 12-lead ECG to appropriate facility.
 - a) During your patient report, notify the receiving facility that a 12-lead ECG has been transmitted.

Advanced Procedure

- 1) Interpret 12-lead ECG (Paramedic only)
- 2) Consider STEMI Alert if indicated (See procedure **6.206 STEMI Alert**).
- 3) Continue treatment per appropriate protocol (See protocol **3.10 Chest Pain & Suspected ACS**).
- 4) Based on the patient's presentation, consider serial 12-lead ECG's as time permits.
- 5) Attach a copy of the 12-lead to the patient care report.

6.206 STEMI Alert

Indications

- 1) Evidence of Acute Myocardial Infarction on 12-lead ECG
 - a) 1 mm of ST elevation in 2 or more anatomically contiguous leads
 - i) Note: Numerically contiguous precordial leads are also anatomically contiguous
 - ii) Or cardiac monitor indicates potential ST elevation MI
- 2) No Bundle Branch Block (BBB)
 - a) QRS less than 120 ms
- 3) Patient does not have a pacemaker rhythm

Advanced Procedure

- 1) Continue aggressive treatment of chest pain (See protocol **3.10 Chest Pain & Suspected ACS**)
- 2) Closely monitor patient for deterioration
 - a) Initiate a 2nd large bore IV if time permits
 - b) Consider placement of defibrillation pad
- 3) Transmit ECG to the receiving facility if possible (required for Iowa Paramedic Level)
- 4) Contact the receiving facility as soon as possible to request "STEMI Alert."
 - a) Provide the following information:
 - a) Patient report including assessment findings and patient condition
 - b) Reason for activation request
 - c) Patient name and date of birth
 - d) ETA
- 5) Complete the Central Iowa EMS STEMI Alert tag
- 6) Explain the situation to the patient.
- 7) Upon arrival at the receiving facility, the patient may be taken directly to the cardiac catheterization lab. Be prepared to bypass the Emergency Department. Leave the cardiac monitor on the patient until the hospital is ready to assume cardiac monitoring.
 - a) Provide a copy of your 12 lead ECG and patient care report to the receiving facility

6.207 LUCAS 2 Device

Indications

- 1) Patients in cardiac arrest where chest compressions are indicated

Contraindications

- 1) Patients with chest trauma that interferes with the proper placement of the chest compression device
- 2) Patients who are too large for the upper part of the device to lock into the back plate without compressing the chest
- 3) Patients who are too small for the pressure pad to touch the sternum when the upper part of the device is locked into the back plate

Preparation

- 1) Manual chest compressions should be initiated immediately for all patients in cardiac arrest. Do not delay manual CPR for application of the LUCAS device.
- 2) Continue manual CPR until enough personnel are available to safely apply the LUCAS device.
- 3) Limit interruptions in chest compressions to 10 seconds or less.
- 4) Continue cardiac arrest management as indicated by these protocols.

Basic Procedure

- 1) Push the ON/OFF switch to turn the device on and start the 3 second self-test.
- 2) Stop manual CPR, and position the backplate underneath the patient.
 - a) The backplate should be centered on the patient with the top of the backplate positioned directly below the patient's armpits.
 - b) Restart manual CPR.
- 3) Pull the release rings on the upper part of the LUCAS device to open the locks.
- 4) Lock the upper part of the device to the backplate on the side opposite the person performing manual chest compressions.
 - a) Stop manual CPR.
 - b) Place the LUCAS device across the patient's chest, and lock the upper part of the device to the other side of the back plate.
 - c) Ensure the locks are engaged by pulling up on the device.

6.207 LUCAS 2 Device (continued)

- 5) Use a finger to make sure that the lower edge of the suction cup is directly above the end of the sternum.
- 6) Push the orange ADJUST button (button # 1) to unlock the compression arm for adjustment.
 - a) Use two fingers to push the suction cup down until the pressure pad touches the patient's chest without compressing the chest.
 - b) The pressure pad should be located in the same position as the hand position for manual CPR.
 - c) Push the green PAUSE button (button # 2) to lock the compression arm in the start position.
- 7) Start chest compressions with the LUCAS device:
 - a) If the patient's airway is secured with an advanced airway, push the green ACTIVE continuous button (button # 3).
 - b) If the patient's airway is not managed with an advanced airway, push the green ACTIVE 30:2 button (button # 3).
- 8) To maintain proper device position during operation, place the stabilization strap behind the patient's neck and attach the straps to the upper part of the device.
- 9) Once initiated, chest compressions should only be interrupted for rhythm checks prior to defibrillation
 - a) Push the green PAUSE button (button # 2) to stop chest compressions.
 - b) Keep interruption to less than 10 seconds.
 - c) Push the appropriate green ACTIVE button (30:2 or continuous) to resume compressions.
 - d) After confirming a shockable rhythm, return the device to active mode while charging the defibrillator .
 - e) Defibrillate the patient as indicated per protocol while the device is compressing the patient's chest.
- 10) Perform pulse checks throughout resuscitation to confirm quality of compressions.
- 11) If the patient moves or becomes responsive, discontinue compressions and reevaluate the patient.

6.207 LUCAS 2 Device (continued)

- 12) If the LUCAS device malfunctions or alarms while in operation, immediately push the ON/OFF button for 1 second to stop the device. Remove the device, and start manual chest compressions.
 - a) Do not interrupt chest compressions to correct device alarms.
- 13) Prepare the patient for movement by securing the patient's arms to the LUCAS device with the provided straps without compromising intravenous access.
 - a) Place one hand below the claw locks under the support leg, and use the other hand to hold the patient's belt, trousers, or thigh.
 - b) Temporarily stop chest compressions by pressing the green PAUSE button (button # 2).
 - c) Recheck suction cup position. Push the green ACTIVE (30:2 or continuous) button (button # 3) to resume chest compressions.
 - d) Lift the patient to an appropriate moving device (e.g., long back board).
 - e) The LUCAS device can be used while moving the patient if the patient is safely positioned on a transportation device, and the device stays in the correct position throughout patient movement.
 - f) Recheck suction cup position during and after patient moving the patient.
- 14) The LUCAS 2 will operate for approximately 45 minutes to 1 hour on a fully charged battery.
 - a) A second charged battery should be kept in the LUCAS carrying bag.
 - b) The orange battery LED will flash intermittently when the battery is low. Immediately replace the battery, or connect to a wall outlet.
 - a) If the batteries are changed in 60 seconds or less, the device will remember the previously set start position. Resume compressions by pushing the green ACTIVE button (button # 3).
 - c) The LUCAS device will automatically charge the battery when plugged into a wall outlet.
 - i) The device will remain fully operational when the battery is charging.

Section 6.300: **Trauma Procedures**

6.301 Trauma Alert

Indications

- 1) Critical trauma patients including patients with altered levels of consciousness and/or altered vital signs, significant or extensive injuries, and/or a severe mechanism of injury.
- 2) EMS provider's judgment of the patient's condition.

Advanced Procedure

- 1) Continue treatment per appropriate protocol (See protocol **3.29 Trauma**).
- 2) Minimize scene time.
- 3) Contact the receiving facility as soon as possible. Advise the hospital of a possible "trauma alert" prior to giving patient report. Include mechanism of injury and scene considerations when providing report.
- 4) Closely monitor the patient throughout transport.

6.302 Spinal Immobilization

Indications

- 1) All patients with potential spinal trauma

Equipment

- 1) Adjustable cervical collar (appropriate for patient size)
- 2) Long back board and straps
- 3) Headbed or towel rolls and tape

Basic Procedure

- 1) Immediately maintain manual, in-line cervical spine stabilization.
 - a) Place an appropriately sized cervical collar while maintaining manual spinal stabilization.
 - b) The rescuer holding manual spine stabilization should continue to providing manual stabilization with the cervical collar in place until the head is secured to the long back board.
- 2) Position patient on the long back board using the safest method possible. Consider log roll, standing take down, KED, or other appropriate technique.
- 3) Secure the torso first with at least two straps in an "X" pattern followed by at least one strap securing the legs. A fourth strap is preferred to secure the pelvis.
 - a) Consider padding any voids with towels.
 - b) Assess pulse, motor, and sensation in all extremities before and after spinal immobilization.
- 4) Secure the patient's head to the long back board using a headbed or towel rolls with tape. Once the head has been secured to the long back board, manual spinal stabilization may be discontinued.
- 5) If the patient is too large to secure the head in an in-line position, a second rescuer may need to hold manual spinal stabilization throughout transport.

Advanced Procedure

- 1) Assessment of the spine will not be used to withhold spinal immobilization from any patient.

6.303 Tourniquets

Indications

- 1) Severe extremity hemorrhage that is uncontrolled by basic bleeding control measures (i.e., direct pressure) that poses a life-threatening risk to the patient due to significant blood loss
- 2) Multi-Casualty incident or dangerous/uncontrolled scene conditions which prevent the use of routine bleeding control measures (i.e., direct pressure)

Contraindications

- 1) Non-extremity hemorrhage

Equipment

- 1) Commercial tourniquet
- 2) Blood pressure cuff (if commercial device is unavailable)

Basic Procedure

- 1) Place tourniquet proximal to the wound
 - a) Do not place tourniquet over joints
 - b) Placement over single bones (humerus or femur) is preferred
- 2) Tighten tourniquet per manufacturer instructions until hemorrhage stops and/or distal pulses in the affected extremity disappear
 - 1) If using a blood pressure cuff, continue to inflate the cuff until the hemorrhage stops and/or distal pulses in the affected extremity disappear
- 3) Secure tourniquet per manufacturer instructions
- 4) Note time of tourniquet application
 - a) During a multi-causality incident, document time of tourniquet application on a piece of tape secured to tourniquet
- 5) Dress wound with bandages and gauze as indicated
- 6) Contact receiving facility if scene time will be extended and tourniquet application time will exceed 2 hours

6.304 Selective Spinal Immobilization

Indications

- 1) This protocol is intended for all patients (adult and pediatric) who present with a traumatic mechanism of injury
- 2) Immobilization is contraindicated for patients with penetrating trauma without a neurologic deficit
- 3) Patients should not be routinely transported on long back boards unless the clinical situation warrants use.
 - a) An example of appropriate long backboard use may be facilitation of multiple extremity injuries or an unstable patient where removal of a board will delay transport and/or other treatment priorities.
 - b) Long backboards should be padded to minimize secondary injuries

Basic Procedure

- 1) Assessment:
 - a) Assess for mental status, neurologic deficits, spinal pain, tenderness, any evidence of intoxication, or other severe injuries.
 - b) While maintaining spinal alignment, examine the spine for tenderness on palpation or deformities.
- 2) Treatment and Interventions:
 - a) Apply a cervical collar if there is any of the following:
 - i) Patient complains of neck pain
 - ii) Any neck tenderness on palpation
 - iii) Any abnormal mental status including extreme agitation or neurologic deficit
 - iv) Any evidence of alcohol or drug intoxication
 - v) There are other severe or painful injuries present
 - vi) Any communication barrier that prevents accurate assessment
 - b) Immobilize the patient with a cervical collar **and** a long spine board, full body vacuum splint, scoop stretcher, or similar device if:
 - i) Patient complains of midline back pain
 - ii) Any midline back tenderness
 - iii) Note: Distracting injuries or altered mental status alone do not necessitate long spine board use

Section 6.400: **Medication Administration Procedures**

6.401 General Medication Administration

Basic Procedure

- 1) Before administration of a medication, you must ask yourself the following questions as you select the medication:
 - a) Do I have the right patient?
 - b) Is this the right medication & the right dose?
 - c) What is this medication's expiration date?
 - d) Am I giving this medication by the right route of administration?
- 2) Verify the patient's allergies and current medications prior to administering any medication.
- 3) Follow the appropriate protocol or medical direction order to determine medication dosages.
- 4) Closely monitor the patient before and after medication administration.
 - a) If signs of allergic reaction are noted, treat per protocol (See protocol **3.02 Allergic Reaction & Acute Anaphylaxis** or **4.01 Pediatric Allergic Reaction & Acute Anaphylaxis**).
- 5) Follow the appropriate medication administration procedure when administering medications.
- 6) Document all medication administrations in the patient care report. Include:
 - a) Medication name
 - b) Dose administered
 - c) Time of administration
 - d) Route of administration and/or site of administration
 - e) Administration authorization (protocol or medical direction)
 - f) Patient condition before and after administration
- 7) Complete all necessary documentation for narcotic administration including amount wasted with witness signature.
- 8) For all instances where a patient wishes to take his/her own medication(s) or prescription, medical control should be contacted when the medication(s) the patient desires to take would deviate from the approved treatment guidelines contained in these protocols.

6.402 Intravenous (IV) Access & Infusion

Indications

- 1) Patients who require, or may require, intravenous access for medication administration or fluid resuscitation.

Considerations

- 1) IVs should be started en route to the hospital except when there is an unavoidable delay (e.g., long extrication, CPR, etc.) If an advanced level intervention for an unstable patient requires IV access, the IV should be started as soon as feasible.
- 2) Intraosseous access should be considered for children and adults in a life threatening situations without IV access or when IV attempts are unsuccessful (See procedure **6.403 Intraosseous Access and Infusion**).

Equipment

- 1) Normal saline IV fluid
- 2) Administration set or IV extension set:
 - a) Normal access for adult patients: Macro drip (10 or 15 gtts/mL)
 - b) Medication administration for adult patients: Micro drip (60 gtts/mL)
 - c) Pediatric patients: Micro drip (60 gtts/mL)
- 3) Intravenous cannula
- 4) Veni-guard
- 5) Constricting band
- 6) Alcohol swab

Advanced Procedure

- 1) Select appropriate IV access:
 - a) Saline locks are encouraged for patients who require or may require medication administration but are unlikely to require IV fluid administration
 - b) IV access with fluid administration is indicated for patients who have signs of intravascular volume depletion due to trauma, dehydration, or metabolic conditions including diabetic ketoacidosis.

6.402 IV Access and Infusion (continued)

- 2) Prepare IV fluid and appropriate administration set or IV extension set without contaminating the equipment. Flush the administration set to remove air from the line.
- 3) Select a peripheral IV site. Place the constricting band proximal to the IV site. Cleanse site with alcohol swab.
- 4) Insert intravenous cannula into the vein. Watch for blood in the flashback chamber. Slide the catheter into the vein. Remove constricting band. Remove needle, and connect IV tubing or IV extension set.
- 5) Flush fluid into the vein to ensure proper placement.
- 6) Administer IV fluids as indicated
 - a) TKO: slow drip for patients with systolic blood pressure greater than or equal to 100 mmHg without signs of volume depletion or hypotension
 - b) 250-500 mL fluid bolus for patients with signs of volume depletion or hypotension
 - i) May be repeated up to 1 L if signs of volume depletion or hypotension (systolic blood pressure less than 100 mmHg) persist and no signs of pulmonary edema are present after each 250-500 mL bolus
 - c) Fluid bolus in pediatric patients is limited to 20 mL/kg
 - d) After administering appropriate fluid bolus, readjust flow rate to TKO
- 7) Monitor the IV site and flow rate. If the site becomes infiltrated, discontinue the IV immediately. Document the infiltration. Consider restarting the IV if necessary.
- 8) Consider a second IV for critical patients.

6.403 Intraosseous (IO) Access & Infusion

General Information

- 1) A Paramedic who has completed the in-service and skill lab may perform this skill on protocol as outlined in this procedure.
- 2) Use of an IO is indicated whenever traditional vascular access techniques are not possible or require too much time to achieve a successful insertion.
- 3) All IV medications may be administered at the same dosage via IO

Equipment

- 1) EZ-IO AD® (40 kg and over) & EZ-IO PD® (3 – 39 kg)
- 2) Intraosseous Needle (Jamshedi style) for infants

Indications

- 1) Immediate vascular access in emergencies.
- 2) Intravenous fluids or medications are urgently needed and a peripheral IV cannot be established in 2 attempts or 90 seconds AND the patient exhibits one or more of the following:
 - a) An altered mental status (GCS of 8 or less)
 - b) Respiratory compromise (SpO₂ less than 90% after appropriate oxygen therapy, respiratory rate less than 10 or greater than 40 min)
 - c) Hemodynamic instability (Systolic BP of less than 90).
- 3) EZ-IO AD® & EZ-IO PD® should be considered PRIOR to peripheral IV attempts in the following situations:
 - a) Cardiac arrest (medical or traumatic)
 - b) Profound hypovolemia with alteration of mental status
 - c) Patient in extremis with immediate need for delivery of medications and or fluids.

Contraindications

- 1) Fracture of the bone selected for IO infusion (*consider alternate site*)
- 2) Excessive tissue at insertion site with the absence of anatomical landmarks (*consider alternate site*)

6.403 IO Access and Infusion (continued)

- 3) Previous significant orthopedic procedures *IO within 24 hours, prosthesis - consider alternate tibia)*
- 4) Infection at the site selected for insertion (*consider alternate site)*

Precautions

- 1) Flow rate: Due to the anatomy of the IO space, flow rates may appear to be slower than those achieved with an IV catheter.
 - a) Ensure the administration of an appropriate rapid SYRINGE BOLUS (flush) prior to infusion NO FLUSH = NO FLOW
 - i) Rapid syringe bolus (flush) the EZ-IO AD® with 10 mL of normal saline
 - ii) Rapid syringe bolus (flush) the EZ-IO PD® and Jamshedi Needle with 5 mL of normal saline
 - iii) Repeat syringe bolus (flush) as needed
 - b) To improve continuous infusion flow rates always use a syringe, pressure bag or infusion pump
- 2) Pain: Insertion of the EZ-IO AD® & EZ-IO PD® in conscious patients has been noted to cause mild to moderate discomfort (usually no more painful than a large bore IV). However, IO Infusion for conscious patients has been noted to cause severe discomfort.
 - a) Prior to IO syringe bolus (flush) or continuous infusion in alert patients, SLOWLY administer Lidocaine 2% (Preservative Free) through the EZ-IO hub. Ensure that the patient is not allergic or sensitive to Lidocaine.
 - i) EZ-IO AD® Slowly administer 20 – 40 mg **LIDOCAINE**
 - ii) EZ-IO PD® Slowly administer 0.5 mg/kg **LIDOCAINE**

Advanced Procedure

- 1) Jamshedi Needle (Infant weighing less than 3 KG)
 - a) Assemble Equipment:
 - i) Jamshedi IO Needle
 - ii) Infusion set and Normal Saline IV fluid

6.403 IO Access and Infusion (continued)

- iii) Pressure infuser bag
- iv) 10 mL syringe with 5 mL Normal Saline
- v) Alcohol prep pads
- b) Procedure:
 - i) Identify insertion site and cleanse skin with alcohol prep pad.
 - ii) Insert the needle at a 90-degree angle. A twisting or boring motion should be utilized to overcome resistance of the cortex.
 - iii) Advance the needle, feeling a soft “pop” and lack of resistance as the needle passes through the cortex.
 - iv) Remove the stylet, attempt to aspirate bone marrow with a saline filled syringe.
 - v) If unable to aspirate bone marrow, attempt to flush I/O with saline, observe for any swelling at the site.
 - vi) Verify placement further by needle standing in position without support.
 - vii) Connect IV fluids to the site. Utilize pressure bag to maintain adequate flow rate.
 - viii) Multiple puncture sites should not be attempted.
 - ix) Secure in place with tape.
- 2) EZ-IO AD® (40 kg and over) & EZ-IO PD® (3 – 39 kg)
 - a) Assemble Equipment:
 - i) EZ-IO® Driver
 - ii) EZ-IO AD® or EZ-IO PD® Needle Set
 - iii) Alcohol
 - iv) EZ-Connect® or Standard Extension Set, and Lidocaine 2%
 - v) 10 mL Syringe
 - vi) Infusion set and Normal Saline IV fluid
 - vii) Pressure Bag or Infusion Pump
 - viii) EZ-IO® Yellow wristband

6.403 IO Access and Infusion (continued)

b) Procedure:

- i) If the patient is conscious, advise of *EMERGENT NEED* for this procedure and obtain informed consent
- ii) Wear approved Body Substance Isolation Equipment (BSI)
- iii) Determine EZ-IO AD® or EZ-IO PD® Indications
- iv) Rule out Contraindications
- v) Locate appropriate insertion site (Approved sites: Proximal Tibia and Proximal Humerus)
- vi) Prepare insertion site using aseptic technique
- vii) Prepare the EZ-IO® driver and appropriate needle set.
- viii) Insert needle into selected site, assure 5 mm mark on needle is visible after contact with bone.
- ix) Continue with EZ IO insertion. Stop driver when “pop” is felt.
- x) Remove EZ-IO® driver from needle set while stabilizing catheter hub.
- xi) Remove stylet from catheter, and place in shuttle or approved sharps container.
- xii) Connect primed EZ connect and slowly administer appropriate dose of Lidocaine 2% (Preservative Free) IO to conscious patients.
- xiii) Syringe bolus (flush) the EZ-IO® catheter with the appropriate amount of normal saline to confirm placement.
- xiv) Utilize pressure (syringe bolus, pressure bag, or infusion pump) for continuous infusions where applicable
- xv) Begin infusion
- xvi) Dress site, secure tubing, and apply wristband as directed
- xvii) Monitor EZ-IO® site and patient condition – Remove catheter within 24 hours.

6.404 IV/IO Medication Administration

Indications

- 1) The need to administer medication(s) via the IV/IO route

Contraindications

- 1) Infiltrated IV/I
- 2) Redness or swelling around the IV/IO site

Equipment

- 1) Appropriate medication
- 2) Syringe
- 3) Alcohol swab
- 4) Needle if necessary for medication preparation

Advanced Procedure

- 1) Follow general medication administration guidelines (See procedure **6.401 General Medication Administration**).
- 2) IV/IO Bolus Medication Administration
 - a) Prepare syringe with desired dose of medication.
 - i) All IV medications may be administered at the same dosage via IO.
 - ii) Remove excess air from syringe
 - b) Explain the procedure to the patient
 - c) Confirm the IV/IO is patent
 - d) Cleanse the administration port with the alcohol swab.
 - i) Utilize the administration port closest to the patient.
 - e) Clamp or pinch the IV line above the administration port.
 - f) Attach the syringe to the administration port.
 - i) If possible, utilize the a needlessly connector to reduce unnecessary exposure to the risk of a needle stick.
 - g) Administer the medication at the proper push rate.
 - h) Flush the IV line with 10 mL of normal saline, and adjust administration set to proper flow rate

6.404 IV/IO Medication Admin (continued)

- 3) IV/IO Piggyback Medication Infusion Administration
 - a) Prepare appropriate medication for infusion:
 - i) Dopamine
 - ii) Amiodarone
 - b) Mix if necessary by injecting the desired medication dose into the injection port on a bag of normal saline solution, and mix by gently shaking the fluid bag
 - c) Confirm primary line IV/IO is patent
 - d) Connect the correct administration set to the secondary medication solution, and flush the administration set to remove air.
 - e) Cleanse the needless connector port on the primary administration set, and connect the secondary administration set.
 - f) Hang the secondary medication solution approximately 6 inches above the primary fluid solution
 - g) Slowly open the roller clamp on the secondary administration set, and adjust the medication's flow rate to the calculated desired dose
 - i) The medication flow rate should be calculated using the appropriate administration set.
 - h) Label the medication bag and administration set with the medication's name, dose, date, time of infusion and your initials.
 - i) Closely monitor the patient during the infusion. Observe for signs of infiltration throughout infusion
 - j) If possible, obtain a second form of vascular access.
 - k) After the infusion is complete, close the roller clamp on the secondary administration set, and continue to administer intravenous fluid via the primary administration set as indicated.

6.405 IM/SQ Medication Administration

Indications

- 1) The need to administer medications when vascular access is not available or when the medication must be administered via the SQ or IM route

Contraindications

- 1) Trauma proximal to the injection site
- 2) Skin rash at injection site

Equipment

- 1) Appropriate medication
- 2) Syringe with needless connector or carpject syringe
- 3) Needle
 - a) Subcutaneous (SQ):
 - i) 25-30 gauge, 1/2-5/8 inch
 - b) Intramuscular (IM):
 - i) 20-23 gauge, 1-2 inch
- 4) Alcohol prep pad and 2 x 2 bandage (if needed)

Advanced Procedure

- 1) Follow general medication administration guidelines (See procedure **6.401 General Medication Administration**).
- 2) Prepare syringe with desired dose of medication.
- 3) Remove excess air from syringe.
- 4) Explain the procedure to the patient.
- 5) Select the appropriate injection site:
 - a) Subcutaneous (SQ):
 - i) Arm (up to 1 mL)
 - b) Intramuscular (IM):
 - i) Arm (up to 1 mL)
 - ii) Thigh or buttock (up to 2 mL)
- 6) Expose the selected site, and cleanse with an alcohol prep pad.

6.405 IM/SQ Medication Admin (continued)

- 7) Steadily insert the needle into the selected site.
 - a) Subcutaneous (SQ): Skin pinched at a 45° angle
 - b) Intramuscular (IM): Skin flattened at a 90° angle
- 8) Pull back on the syringe to aspirate for blood.
 - a) If blood is aspirated, withdraw the needle and select a new administration site.
- 9) Administer the medication.
- 10) Remove the needle, and dispose of in a Biohazard Sharps container.
- 11) Apply direct pressure to the injection site. Bandage if needed.
- 1) Pediatric intramuscular injections should be in the thigh with an injection volume not to exceed 1 mL.
 - a) Use a 22-25 gauge, 1 inch needle
- 2) Continue to follow the above procedure.

6.406 Inhaled Medication Administration

Indications

- 1) The need to administer medications with a nebulizer via the inhaled route

Contraindications

- 1) Epistaxis
- 2) Nasal Trauma

Equipment

- 1) Appropriate medication
- 2) Nebulizer kit
- 3) Nebulizer mask (if needed)
- 4) Oxygen cylinder

Advanced Procedure

- 1) Follow general medication administration guidelines (See procedure **6.401 General Medication Administration**).
- 2) Prepare and assemble the nebulizer kit.
- 3) Assess and document lung sounds before and after the procedure.
- 4) Place the appropriate medication in the mixing chamber
 - a) Add the appropriate amount of normal saline if necessary
- 5) Keep the nebulizer upright to avoid spilling the medication.
- 6) Attach the nebulizer to oxygen at 6 LPM.
 - a) Adjust oxygen flow rate to ensure an adequate flow of medication
- 7) If the patient is spontaneously breathing, instruct the patient to inhale normally through the mouthpiece.
 - a) If necessary, utilize a nebulizer mask.
- 8) If the patient is not spontaneously breathing, administer the medication by attaching the nebulizer kit to the bag valve mask.
 - a) If necessary, utilize the ET tube adapter.
- 9) Continue the treatment until the mixing chamber is empty or the patient's condition inhibits its continuation.
 - a) Tap the mixing chamber to facilitate using all of the medication.

6.407 Intranasal Medication Administration

Indications

- 1) The need to control seizures, sedation, pain management, and opiate overdose when vascular access is not available

Contraindications

- 1) Epistaxis
- 2) Nasal Trauma
- 3) Nasal septal abnormalities
- 4) Nasal congestion or discharge

Equipment

- 1) Appropriate medication:
 - a) **FENTANYL (Sublimaze)**
 - b) **MIDAZOLAM (Versed)**
 - c) **NALOXONE (Narcan)**
- 2) Syringe
- 3) Mucosal Atomizer Device (M.A.D.)

Advanced Procedure

- 1) Follow general medication administration guidelines (See procedure **6.401 General Medication Administration**).
- 2) Prepare equipment for medication administration
- 3) Prepare syringe with desired dose of medication
- 4) Remove excess air from syringe
- 5) Explain the procedure to the patient
- 6) Assure the patient is near supine or supine
- 7) Wedge atomization device firmly into nostril
- 8) Firmly deploy half of the desired volume into nostril
- 9) Switch nostril and firmly deploy remainder of the medication
- 10) Place no more than 0.5 to 1.0 mL of medication into each nostril

6.408 Sublingual Medication Administration

Indications

- 1) The need to administer medications via the sublingual (SL) route

Contraindications

- 1) Epistaxis
- 2) Nasal Trauma
- 3) Nasal septal abnormalities
- 4) Nasal congestion or discharge

Equipment

- 1) Appropriate medication

Basic Procedure

- 1) Follow general medication administration guidelines (See procedure **6.401 General Medication Administration**).
- 2) Prepare the appropriate medication for administration.
- 3) Explain the procedure to the patient.
- 4) If necessary, temporarily remove any oxygen administration device.
- 5) Instruct the patient to lift his or her tongue to the roof of his or her mouth.
 - a) If the patient is unable to follow commands, medications should not be administered via the sublingual route.
- 6) Administer the medication under the tongue.
- 7) Advise the patient to allow the medication to dissolve under the tongue.
- 8) If applicable, reapply the oxygen administration device.

6.409 Oral (PO) Medication Administration

Indications

- 1) The need to administer medications via the oral (PO) route

Contraindications

- 1) Epistaxis
- 2) Nasal Trauma
- 3) Nasal septal abnormalities
- 4) Nasal congestion or discharge

Equipment

- 1) Appropriate medication

Basic Procedure

- 1) Follow general medication administration guidelines (See procedure **6.401 General Medication Administration**).
- 2) Prepare the appropriate medication for administration.
- 3) Explain the procedure to the patient.
- 4) If necessary, temporarily remove any oxygen administration device.
- 5) Place the medication in the patient's hand.
- 6) Instruct the patient to put the medication in his or her mouth and swallow.
 - a) Advise the patient to chew the medication if necessary.
 - b) If the patient is unable to follow commands, medications should not be administered via the oral route.
- 7) If applicable, reapply the oxygen administration device.

6.410 Rectal Medication Administration

Indications

- 1) Administration of rectal **DIAZEPAM (Valium)** may be considered for pediatric seizure emergencies when vascular access cannot be secured.

Contraindications

- 1) Secured vascular access

Equipment

- 1) Valium
- 2) Syringe
- 3) 14 gauge Teflon IV cathete
- 4) Lubricant

Advanced Procedure

- 1) Follow general medication administration guidelines (See procedure **6.401 General Medication Administration**).
- 2) Follow pediatric seizure procedure (See protocol **4.11 Pediatric Seizures**).
- 3) Prepare syringe with desired dose of **DIAZEPAM (Valium)**. Consult Broselow tape.
- 4) Remove needle from the Teflon IV cathete , and attach the Teflon catheter to the syringe.
- 5) Lubricate the Teflon cathete .
- 6) Gently insert approximately 2 inches into the rectum.
- 7) Administer the medication.
- 8) Remove the catheter from the rectum and hold buttocks together.
- 9) Continue to closely monitor the patient.

6.411 ET Medication Administration

Indications

- 1) The need to administer medications to the cardiac arrest patient when vascular access is not available.

Contraindications

- 1) Secured vascular access
- 2) Dislodged or unconfirmed Endotracheal Tube
- 3) Advanced airway other than an ET tube

Equipment

- 1) Appropriate medication
 - a) Lidocaine
 - b) Epinephrine
 - c) Narcan
- 2) Syringe
- 3) 10 mL normal saline flush

Advanced Procedure

- 1) Follow general medication administration guidelines (See procedure **6.401 General Medication Administration**).
- 2) Prepare syringe with desired dose of the appropriate medication.
 - a) ET administration will be at 2.5 times the protocol dosage.
- 3) Ensure proper tube placement. Pre-oxygenate the patient.
- 4) Disconnect BVM.
- 5) Inject the medication into the ET tube. Flush with 10 mL of normal saline.
- 6) Reattach BVM, and hyperventilate the patient.
- 7) Resume normal ventilations.

Section 6.500: **General Procedures**

6.501 Stroke Alert

Indications

- 1) Abnormal Cincinnati Prehospital Stroke Scale
 - a) If any one of the three stroke scale signs is abnormal, the probability of a stroke is 72%
- 2) Normal blood glucose level
- 3) Onset of symptoms less than 4.5 hours

Advanced Procedure

- 1) Continue treatment based on stroke protocol (See protocol **3.27 Stroke**).
- 2) Contact the receiving facility as soon as possible. Request a “stroke alert” when giving patient report.
 - a) All stroke alert patients will be transported to one of the following Primary Stroke Centers (See administrative document **1.04 Transport Directive**):
 - i) Mercy Medical Center - Des Moines
 - ii) Iowa Methodist Medical Center
 - iii) Mary Greeley Medical Center
- 3) Closely monitor the patient
- 4) Treat hypertension (See protocol **3.15 Hypertensive Crisis**).

6.502 Blood Glucose Level Check

Indications

- 1) Any unresponsive or altered mental status patient with or without a known history of diabetes

Equipment

- 1) Glucometer, lancet, and test strip
- 2) Alcohol prep pad and 2 x 2 gauze
- 3) Adhesive bandage (if necessary)

Basic Procedure

- 1) Load a new test strip into the glucometer. When loading the strip, the glucometer will power on automatically.
- 2) Advise the patient, if possible, that a glucometer check will be performed.
- 3) Prepare the test site with an alcohol prep pad. The side of the finger tip is the preferred test site for routine blood glucose monitoring.
 - a) When using an alternative test site, ensure the site is clean, dry, and warm. Look for fleshy areas away from bone
 - b) Capillary blood should be used to ensure accurate readings.
- 4) Allow the alcohol to dry.
- 5) Removing the needle guard from the lancet. Puncture the chosen site.
- 6) Wipe the first drop of blood away from the site with a 2 x 2 gauze, and apply a drop of blood to test strip.
- 7) The glucometer will count down while analyzing the blood sample.
- 8) Hold pressure to the puncture site to stop bleeding that may occur and apply an adhesive bandage if necessary.
- 9) When the glucometer presents the blood glucose level, record the value and time of reading in the patient care report.
- 10) Dispose of the lancet and used test strip in a Biohazard Sharps container.
- 11) Treat the patient per appropriate protocols (See protocol **3.03 Altered Mental Status**, **3.30 Unconscious Patient**, or **4.02 Pediatric Altered Mental Status**).
- 12) Repeat blood glucose level checks as indicated by patient condition.
- 13) Perform regular calibration per manufacturer's recommendations.

6.503 Electronic Control Device Deployment

Definitio

- 1) Electronic Control Device (ECD) – means any device that is powered by electrical charging units, such as batteries, which fires one or several barbs attached to a length of wire and which upon connecting with a human can send a current capable of disrupting a persons nervous system in such a manner to render him/her incapable of normal functioning. The device may also be used in the drive stun mode.

Policy

- 1) All patients that are in contact with fire department personnel shall be evaluated and decision shall be made if the patient requires further medical evaluation to rule out any serious underlying medical conditions.

Procedure

- 1) Follow Initial Protocols for All Patients and appropriate patient care protocols.
- 2) Assure your safety. Encourage law enforcement to secure the subject with handcuffs behind his/her back, but the patient should not be maintained in a prone position or with hand cuffs attached to ankle cuffs behind the subjects back (i.e., hog tie or hobble position).
- 3) Barbs may be removed unless they are in the eye, genitals, neck, or female breast.
 - a) Keep in mind that barbs embedded overlying vascular structures may involve underlying vessels (e.g., volar wrist, groin, armpit).
 - b) If barbs are removed from these areas, monitor for bleeding or hematoma formation. If bleeding or a hematoma occurs, use direct compression to the area.
 - c) Treat embedded barbs as impaled objects and stabilize appropriately.
 - d) Imbedded barbs shall require EMS transport to the Emergency Department.
- 4) Check for other injuries and treat appropriately. Consider occult trauma or potential for toxic ingestions.

6.503 Electronic Control Device Deployment (continued)

- 5) Continued physical restraint is likely necessary to ensure your safety and that of the patient.
- 6) Consider chemical sedation with **MIDAZOLAM (Versed)** 1-5 mg increments IV until the patient is sedate or a total of 10 mg has been administered.
 - a) If no IV access consider **MIDAZOLAM (Versed)** 0.1 mg/kg IM to a maximum of 10 mg.
- 7) **SODIUM BICARBONATE** 1-3 amps (50-150 mEq) IV should be considered if the patient is showing signs of hemodynamic instability or cardiac dysrhythmia (e.g., bradycardia, QRS widening, or frequent ectopy)

Special Considerations

- 1) Patients that continue to aggressively fight against physical restraint are at risk for acidosis and death. Keep in mind that benzodiazepines are the first line treatment of sympathomimetic (cocaine, methamphetamine, and crack) toxicity which commonly precipitates excited delirium.
- 2) In a series of patients that suffered extreme acidosis from resisting arrest, IV administration of sodium bicarbonate may help preserve cellular function. Signs suggestive of extreme acidosis after extreme physical exertion include altered mental status, and increased respiratory rate or volume. In the late stages, respiratory depression and hemodynamic instability occurs and often results in death.
- 3) An ominous finding in the excited delirium patient is a period of tranquility after the struggle. The patient suddenly becomes quiet with deep respirations. This period was noted just prior to death in many cases.

Transport Guidelines

- 1) It is generally accepted that releasing patients to law enforcement after ECD deployment is safe if the subject is:
 - a) No longer combative
 - b) Alert and conversant
 - c) Has no evidence of significant bodily injury
 - d) Does not appear to be in physiologic danger from alcohol or drug intoxication

6.503 Electronic Control Device Deployment (continued)

- e) ECD darts have been removed from approved sites without bleeding or hematoma formation
- 2) Sometimes it will be necessary for patients to be further evaluated at the hospital. Consider the following:
 - a) Patients that have obtained benzodiazepines for agitation should be transported to the hospital
 - b) Patients with continued agitation despite physical restraints should be transported to hospital
 - c) Patients with alteration in mental status, significantly abnormal vital signs, or an abnormal EKG should be transported to the hospital
 - d) Patients that have swallowed drugs in an attempt to evade recognition by law enforcement should be transported to the hospital.
 - e) Patients that admit to or are suspected of drug “packing” should be transported to the hospital
 - f) All patients under the age of 18 should be transported to the hospital
 - g) Pregnant women should be transported to the hospital

6.504 Triage Tags

Procedure

- 1) Construction:
 - a) Tag is constructed of Synthetic Paper making it 100% resistant to all commonly used decontamination solutions.
- 2) SLUDGEM:
 - a) Using the mnemonic SLUDGEM (Salivation, Lacrimation, Urination, Defecation, Gastrointestinal upset, Emesis, Miosis) responders can record signs and symptoms displayed by victims and record findings by marking or circling boxes.
- 3) Auto Injectors:
 - a) The tag provides space to record the use of auto injectors.
- 4) Contaminated Strip:
 - a) Perforated strip prevents the tag from being used until patient contamination has been ruled out. If contamination is suspected, the bar coded and numbered strip is to be bagged with the victim's clothing.
- 5) Personal Property Receipt:
 - a) Perforated tag on top provides a Personal Property Receipt for valuables belonging to victims that may be contaminated.
 - b) Place the valuables and the perforated tag from the triage tag into a clear zip lock bag and seal it.
 - c) The victim may deposit the bag with law enforcement prior to exiting the contamination reduction zone. The victim's tag then becomes a claim ticket for the return of valuables.
- 6) Patient Tracking:
 - a) This part of the tag shall be removed at the ambulance loading area to record patient destination.
 - b) To expedite patient processing the name of the victim should be recorded on the back of this part of the tag.
 - c) It is this tag that the Transportation recorder uses to capture patient data. This information can also be captured electronically.
- 7) Decon:
 - a) Record Decontamination information in this section. Information recorded prior to the victim leaving the contamination reduction zone.

6.504 Triage Tags (continued)

- 8) Agent Symbol Identification
 - a) Agent symbol identification, if known, shall be recorded by circling class of identified agent.
- 9) RPM (Respirations, Pulse, Mental status):
 - a) RPM mnemonic used to initiate START triage.
- 10) Split Immediate, Delayed, Minor tear off tags:
 - a) One Half collected by the Triage Unit Leader and used by the Medical Communications Coordinator and Incident Commander to obtain an accurate count of the injured.
- 11) Bar Coded Plus Human Readable Numbers:
 - a) All parts of the triage tag are printed with Linear Code 39 Bar Coding and Human Readable Number.
 - b) Allows patients to be processed by hand recording or the information can be scanned.

6.505 Release of Patient Care to EMT

General Information

- 1) A Paramedic or RN Exception may release care of a patient for transport to a hospital to EMT or Advanced EMT level of care if the following criteria is met:
 - a) Patient is alert and oriented.
 - b) A full patient assessment including vital signs has been completed.
 - c) The completed assessment does not indicate the need for Paramedic level care.
 - d) The EMT or Advanced EMT agrees to accept the transfer of care.
- 2) The Paramedic will complete the Release of Patient Care Report form and file it at the station.
- 3) The EMT or Advanced EMT who accepts the transfer of care will indicate in their Patient Care Report that the patient was assessed by (name of the Paramedic or RN Exception) and that patient care was released under protocol.
- 4) The Medical Director for compliance will review any response that involves the use of this protocol.

6.506 Communications

Basic Procedure

- 1) Contact online medical direction when needed for orders.
- 2) For seriously injured or critically ill patients, give a brief initial report from the scene when possible, with a more detailed report given while en route.
- 3) When communicating with medical direction or the receiving facility, a brief verbal report should include these essential elements when possible:
 - a) Identify unit and level of provider
 - b) Patient's age, sex & physician
 - c) Patient's chief complaint
 - d) Brief pertinent history of the present illness
 - e) Major past illnesses
 - f) Baseline vital signs including mental status/GCS when appropriate
 - g) Pertinent findings of the physical exam
 - h) Emergency medical care given
 - i) Patient response to emergency care given
 - j) Estimated time of arrival (ETA)
- 4) Consider an out of hospital alert when indicated:
 - a) STEMI Alert (see procedure **6.206 STEMI Alert**)
 - b) Stroke Alert (see procedure **6.501 Stroke Alert**)
 - c) Trauma Alert (see procedure **6.301 Trauma Alert**)
- 5) Advise receiving facility of changes occurring in patient's status while en route.
- 6) Upon arrival, provide a verbal report to the receiving facility's staff.
- 7) Complete a written patient care report and provide a copy to the receiving facility as soon as possible to ensure continuity of patient care.

6.507 Transport

Basic Procedure

- 1) Patients should be transported to an appropriate medical facility as soon as possible (See administrative document **1.04 Transport Directive**).
- 2) Immediate transport with treatment en route is recommended for patients with significant trauma or unstable airways
- 3) All patients shall be attended at a minimum by an EMT.
 - a) Patients requiring advanced level care shall be attended by a Paramedic
- 4) Patients shall be transported on the ambulance stretcher and secured with the following straps:
 - a) Shoulder straps
 - b) Chest strap
 - c) Pelvis strap
 - d) Knee strap
 - e) If straps cannot be connected due to the patient's size, the attending provider shall determine if the patient can be safely transported without full use of securing straps
- 5) If two patients are transported, the second patient must be secured in the supine position on the squad bench
- 6) Seated patients shall only be transported in a multiple casualty incident
- 7) Bariatric Patient Transportation
 - a) A bariatric transport service shall be requested if:
 - i) The patient weight may exceed the maximum weight capacity as noted on the stretcher
 - ii) Unable to safely secure the patient to the stretcher
 - iii) Cannot safely load the patient and stretcher into the ambulance
 - iv) Inability to secure patient and stretcher into the stretcher retention system in the ambulance
 - b) Bariatric transport services should be requested in the following order:
 - i) Mercy Ambulance Service
 - ii) Iowa EMS alliance
 - iii) Midwest Ambulance Service

6.507 Transport (continued)

- 8) The attending provider may approve an individual to accompany the patient during transport to the hospital
 - a) The attending provider will determine if the individual is allowed to ride in the patient care compartment or in the cab of the ambulance
 - b) Individuals accompanying the patient to the hospital are required to wear seat belts during transport
- 9) Patients should not be transported in the prone position.
 - a) When patients are in the custody of Law Enforcement, utilize one of the following techniques to safely transport the patient:
 - i) Arms secured behind the back with handcuffs
 - ii) Handcuffs secured directly to a backboard. If using this method, at least three straps shall be used to ensure the patient will not move during lifting/moving.
 - b) For the safety of personnel, Law Enforcement personnel shall be required to accompany patients who are in custody, in the patient compartment, during transport to the hospital unless the patient is unconscious and not restrained by Law Enforcement personnel.
 - c) Use chemical restraint if necessary (See protocol **3.24 Psychiatric/Behavioral Emergencies**).
- 10) Follow the Out of Hospital Trauma Triage Destination Decision Protocol for the identification of time critical injuries and trauma facility resources (See appendix **8.01 Adult - OOHTTDDP** or **8.02 - Pediatric OOHTTDDP**).

Pediatric Procedure

- 1) Pediatric patients shall be transported on the stretcher
- 2) When possible, the appropriate equipment for securing a pediatric patient should be utilized throughout transport:
 - a) Patients weighing 10-40 lb.(4.5-18 kg) shall be secured in the Ferno Pedi-Mate
 - b) Patients weighing less than 10lb (4.5 kg) should be transported in the patient's car seat if available. If no car seat is available, padding may be added to the Pedi-Mate in order to secure the patient.
- 3) Infants or pediatric patients shall not be transported in the arms of a caregiver or fire department personnel

6.508 Scene Rehabilitation

Logistics

- 1) A scene rehabilitation area should be established by the incident commander as soon as staffing and scene management permit
- 2) Rehab group personnel have authority designated through incident command
- 3) NIMS guidelines recommend 1 EMS provider for every 5 members in the rehabilitation area
- 4) Follow fire department SO when establishing the rehabilitation area
 - a) At minimum, whenever fire department personnel are operating in turnout gear, an ambulance should prepare the following:
 - a) Backboard and straps placed on cot with monitor and first-out bag
 - b) Protect the loaded cot from the elements near the area of operation

Indications

- 1) Use of two 30-minute or one 45-minute SCBA cylinder(s)
- 2) 40 minutes of intense physical labor without SCBA
- 3) When directed by an officer or rehabilitation group member
- 4) When the individual member feels the need to do so

Procedure

- 1) Upon entry into the rehabilitation area:
 - a) Record time of entry and collect accountability tags
 - b) Take pulse rate, temperature, and SpCO on all members
 - i) Assess SpCO of all staff including commanders and pump operators
 - ii) Oral digital thermometers may be more reliable in the rehab setting
 - c) If a crew member has an injury or a medical complaint, follow the appropriate protocol(s).
- 2) If heart rate is less than 120 BPM, temperature is less than 100°F, SpCO is less than 5%, and the member does not require medical attention, direct the patient to rehabilitation group (see section below).
- 3) If heart rate is greater than 120 BPM, temperature is greater than or equal to 100°F, SpCO is greater than 5%, or the member requires medical attention, direct the patient to treatment group (see section below).

6.508 Scene Rehabilitation (continued)

Rehabilitation

- 1) In warm weather, remove gloves, helmet, hood, and turnout coat, and at least roll turnout pants down over the boots
- 2) Protect members from the elements
- 3) Rehydrate with 10-32 oz of water or sports drink over 20 minutes
- 4) Provide cooling or rewarming as necessary.
 - a) In warm weather, consider:
 - i) Misting fans, cool moist shirts, etc.
 - ii) Consider forearm submersion for 10-20 minutes
 - b) In cool weather, consider:
 - i) Dry patient, place in warm environment, apply hot packs to axilla, etc.
- 5) Observe members for signs of altered mental status or a medical problem
- 6) Reassess the member after 20 minutes in the rehabilitation area. Assess pulse rate and temperature. A member may not return to duty until they have been assessed and released by the rehabilitation area staff.
 - a) If heart rate is less than 100 BPM, temperature is less than 99.5°F, SpCO is less than 5%, and the member has spent at least 20 minutes in the rehabilitation area, the member may be discharged and allowed to return to work. Document discharge time.
 - b) If heart rate is greater than 100 BPM, temperature is greater than or equal to 99.6°F, or SpCO is greater than 5%, the member is required to stay in the rehabilitation area until vital signs improve. Consider treatment or transport if necessary.

Treatment

- 1) The treatment area will be staffed at the paramedic level with a transport ambulance available. Establish treatment area near the rehabilitation area but ensure a clear path for ambulance departure and arrival.
- 2) A full report will be completed on every patient entering the treatment area
- 3) A complete set of vitals will be taken on all individuals in the treatment area
 - a) Assess pulse, blood pressure, respiratory rate, body temperature, SpO₂, SpCO, blood sugar, and ECG (consider 12-lead ECG based on patient presentation)

6.508 Scene Rehabilitation (continued)

- 4) Guidelines for mandatory transport by ambulance:
 - a) Temperature greater than 101°F at any time
 - b) Irregular pulse
 - c) Heart rate greater than NFPA Age Predicted 85% Maximum Heart Rate (see table to right) after resting for 20 minutes
 - d) Systolic blood pressure less than 90 mmHg or diastolic blood pressure greater than 130 mmHg at any time
 - e) Systolic blood pressure greater than 160 mmHg after resting for 20 minutes
 - f) SpCO greater than 15%
 - g) Any signs of chest pain or dyspnea
 - h) Any signs of mental status change
- 5) If a member's heart rate exceeds the NFPA Age Predicted 85% Maximum Heart Rate, administer a 1-2 liters NS bolus until heart rate is less than 110 BPM and systolic BP is greater than 100 mmHg.
- 6) If a member's temperature is greater than 101°F or the member shows signs of exertional heat illness, consider ice packs applied to neck, axilla, and inguinal region, and/or administration of 1-2 liters IV NS.
 - a) Cool until the patient begins to shiver
- 7) Administer high-flow oxygen to any member with an SpCO greater than 5%
 - a) Continually reassess SpCO and consider transport if necessary
- 8) Follow appropriate protocols based on patient complaint or presentation
- 9) Rehydrate with 10-32 oz of water or sports drink over 20 minutes
- 10) Follow rehabilitation guidelines for cooling or warming patient as necessary
- 11) Continually monitor and document vital signs on the patient's EMS report
- 12) Guidelines for discharge from treatment area and return to duty:
 - a) Patient has no complaints of a medical problem or injury
 - b) Heart rate is less than 100 BPM
 - c) Temperature is less than 99.5°F
 - d) SpCO less than 5% and SpO₂ greater than 90% on room air
 - e) Systolic blood pressure between 90-160 mmHg and diastolic blood pressure less than 90 mmHg

NFPA Age Predicted 85% Maximum Heart Rate	
Age	Heart Rate
20-25	170
26-30	165
31-35	160
36-40	155
41-45	152
46-50	148
51-55	140
55-60	136
61-65	132

6.509 MEND Exam

Indications

- 1) Patients with neurologic deficits concerning for potential stroke

Procedure

- 1) Follow protocol **3.27 Stroke** and obtain appropriate history
 - a) Severe headache? Time since onset of symptoms? Recent head trauma? Last time without symptoms? Bleeding disorders or on blood thinners? Seizure at onset? History of stroke or head trauma?
- 2) The MEND Exam should be performed en route to the hospital if time allows. (The Cincinnati Prehospital Stroke Scale is appropriate for the initial assessment of the stroke patient on scene.)
- 3) Record exam findings on the MEND checklist or the patient care report
- 4) MEND Exam
 - a) Mental Status
 - i) Level of consciousness (AVPU)
 - ii) Speech (repeat "You can't teach an old dog new tricks")
 - iii) Questions (age, month)
 - iv) Commands (close, open eyes)
 - b) Cranial Nerves - record which side is abnormal (L vs. R)
 - i) Visual fields (test four quadrants)
 - ii) Horizontal gaze (side-to-side)
 - c) Limbs - record which side is abnormal (L vs. R)
 - i) Motor - Arm Drift (close eyes and hold out both arms)
 - ii) Motor - Leg Drift (open eyes and lift each leg separately)
 - iii) Sensory - Arm and Leg (close eyes and touch, pinch extremities)
 - (1) Note deficit if patient does not register either touch or pinch
 - iv) Coordination - Arm and Leg (finger to nose, heel to shin)
- 5) Notify receiving hospital of findings (see procedure **6.501 Stroke Alert**)
- 6) Monitor for changing patient condition throughout transport
 - a) Repeat MEND Exam to monitor patient condition as indicated by patient presentation

Section 7: **Medications**

7.01 Adenosine (Adenocard)

Classification Antiarrhythmic

Mechanism of Action

Adenosine is used to slow conduction through the AV node of the heart. It may also interrupt re-entry pathways through the AV node.

Indications

Symptomatic paroxysmal supraventricular tachycardia (PSVT) or regular and monomorphic wide-complex tachycardia

Contraindications

- 1) Second or third degree heart block.
- 2) Sick sinus syndrome.
- 3) Known hypersensitivity to the medication.
- 4) Patient taking dipyridamole (Persantine).

Precautions

- 1) Dysrhythmias, including blocks, are common at the time of conversion.
- 2) Use with caution in patients with asthma.
- 3) Pregnancy Category: C

Possible Side Effects/Complications

Facial flushing, headache, shortness of breath, dizziness, nausea, sinus pause of 3-1 seconds.

Adult Protocols

Paroxysmal Supraventricular Tachycardia (PSVT).....3.21
Ventricular/Wide Complex Tachycardia3.31

Pediatric Protocols

Not applicable to pediatric protocols.

7.02 Albuterol (Proventil)

Classification Sympathomimetic, beta₂-agonist, bronchodilator

Mechanism of Action

Binds to and stimulates beta₂ receptors which relaxes bronchial smooth muscle

Indications

- 1) Bronchospasm associated with asthma and anaphylaxis
- 2) Reversible bronchospasm associated with COPD

Contraindications

Known history of hypersensitivity to the medication.

Precautions

- 1) Vital signs must be monitored, especially in cases of cardiovascular disease or hypertension
- 2) Pregnancy category: C

Possible Side Effects/Complications

↑ Heart rate, ↓ BP with multiple treatments, palpitations, headache, dizziness, flushing, nervousness, nausea/vomitin

Adult Protocols

Allergic Reaction & Acute Anaphylaxis3.02
Breathing Difficulty 3.07

Pediatric Protocols

Pediatric - Allergic Reaction & Acute Anaphylaxis.....4.01
Pediatric - Breathing Difficulty4.05

7.03 Aspirin

Classification Anti-platelet, anti-pyretic, salicylate, nonnarcotic analgesic

Mechanism of Action

Blocks formation of thromboxane A₂ which prevents platelet aggregation and arteriole constriction.

Indications

All patients with pain suggestive of acute myocardial infarction (MI)

Contraindications

- 1) Known hypersensitivity to aspirin
- 2) Patients with history of active ulcer disease or asthma attack
- 3) Females in last trimester of pregnancy
- 4) History of blood coagulation defects or in conjunction with anticoagulation therapy

Precautions

- 1) Higher doses can interfere with prostacyclin production and interfere with positive benefits
- 2) Pregnancy Category: C (except during the last 3 months of pregnancy when it is a category D)

Possible Side Effects/Complications

Dyspepsia, Heartburn, Anorexia, Nausea, Occult blood loss, Epigastric discomfort

Adult Protocols

Chest Pain & Suspected ACS3.10

Pediatric Protocols

Not applicable to pediatric protocols.

7.04 Atrovent (Ipratropium Bromide)

Classification Bronchodilator, anticholinergic, parasympatholytic

Mechanism of Action

Causes bronchodilation by antagonizing cholinergic receptors in bronchial smooth muscle

Indications

- 1) Bronchospasm
- 2) Reversible bronchospasm associated with COPD

Contraindications

- 1) Hypersensitivity to medication
- 2) Pediatric patients less than 1 year of age

Precautions

- 1) Pregnancy category: B

Possible Side Effects/Complications

↑ Heart rate, palpitations, dizziness, nervousness, headache, nausea, cough

Adult Protocols

Breathing Difficulty 3.07

Pediatric Protocols

Pediatric - Breathing Difficulty 4.05

7.05 Atropine

Classification Parasympatholytic, anticholinergic

Mechanism of Action

Competes with the neurotransmitter acetylcholine for receptor sites in smooth muscle, blocking the stimulation of the parasympathetic nerve fibers. This blocking action enhances both sinus node and atrioventricular conduction.

Indications

- 1) Symptomatic bradycardia
- 2) Organophosphate poisoning
- 3) Premedication in advanced airway management

Contraindications

None when used in an emergency situation.

Precautions

- 1) Maximum dose of 3.0 mg should not be exceeded except in organophosphate poisoning
- 2) Tachycardia, hypertension
- 3) Use with caution in patients with myocardial ischemia, Type II AV block, or third degree block with wide QRS
- 4) Be prepared to pace
- 5) Pregnancy category: C

Possible Side Effects/Complications

Palpitations, tachycardia, headache, dizziness, anxiety, delirium, dry mouth, pupillary dilation, blurred vision, urinary retention, flushed and hot skin

7.05 Atropine (continued)

Adult Protocols

Bradycardia.....	3.06
Poisoning.....	3.23

Pediatric Protocols

Pediatric - Bradycardia.....	4.04
Pediatric - Poisoning	4.10
Pediatric Advanced Airway Management.....	6.110

7.06 50% Dextrose (D-50)

Classification Carbohydrate, hyperglycemic

Mechanism of Action

Increases blood glucose concentrations

Indications

- 1) Hypoglycemia
 - a) Adult with glucose less than 60 mg/dL
 - b) Infant and child with glucose less than 60 mg/dL
 - c) Newborn with glucose less than 40 mg/dL
- 2) Coma of unknown origin

Contraindications

None when used in the emergency setting

Precautions

- 1) Make sure IV is patent, extravasation of D-50 may cause necrosis of tissue
- 2) Pregnancy category: C

Possible Side Effects/Complications

Local venous irritation

Adult Protocols

Altered Mental Status	3.03
Seizures	3.25
Unconscious Patient.....	3.30

Pediatric Protocols

Pediatric - Altered Mental Status	4.02
Pediatric - Seizures	4.11

7.07 Diazepam (Valium)

Classification Benzodiazepine, anticonvulsant, sedative, anxiolytic

Mechanism of Action

Binds to benzodiazepine receptors and enhances the effects of GABA

Indications

- 1) General seizures and/or Status epilepticus
- 2) Sedation
- 3) Skeletal muscle relaxation
- 4) Acute anxiety states

Contraindications

- 1) Hypersensitivity to medication
- 2) Substance abuse (use with caution)
- 3) Coma (unless patient has seizures, severe muscle rigidity, or myoclonus)
- 4) Shock
- 5) CNS depression as a result of head injury

Precautions

- 1) Can cause local venous irritation
- 2) Has short duration of effects
- 3) Do not mix with other drugs because of possible precipitation problems
- 4) Pregnancy Category: D

Possible Side Effects/Complications

Drowsiness, hypotension, respiratory depression, confusion, apnea, nausea

Adult Protocols

Pain Management	3.20
Psychiatric/Behavioral Emergencies	3.24
Seizures	3.25

7.07 Diazepam (Valium) (continued)

Pediatric Protocols

Pediatric - Pain Management	4.09
Pediatric - Seizures	4.11

7.08 Diphenhydramine (Benadryl)

Classification Antihistamine, H₁ receptor antagonist

Mechanism of Action

Binds to and blocks H₁ histamine receptors

Indications

- 1) Anaphylaxis
- 2) Allergic reactions
- 3) Dystonic reactions due to phenothiazine

Contraindications

- 1) Asthma
- 2) Nursing mothers

Precautions

- 1) Hypotension
- 2) Pregnancy category: B

Possible Side Effects/Complications

Sedation, dries bronchial secretions, blurred vision, headache, palpitations, hypotension, dizziness, confusion, anxiety, wheezing, chest tightness, dilated pupils

Adult Protocols

Allergic Reaction & Acute Anaphylaxis.....3.02

Pediatric Protocols

Pediatric - Allergic Reaction & Acute Anaphylaxis.....4.01

7.09 Dopamine (Intropin)

Classification Sympathomimetic

Mechanism of Action

- 1) Increases cardiac contractility
- 2) Causes peripheral vasoconstriction

Indications

- 1) Significant hypotension (BP less than 100 mmHg) with signs and symptoms of hypoperfusion (shock)
- 2) Hypovolemic shock (only after complete fluid resuscitation)

Contraindications

Hypovolemic shock when complete fluid resuscitation has not occurred

Precautions

- 1) Use with caution in cardiogenic shock and CHF
- 2) Should not be administered in the presence of severe tachycardias
- 3) Should not be administered in the presence of ventricular fibrillation
- 4) Ventricular irritability
- 5) Pregnancy category: C

Possible Side Effects/Complications

Vasoconstriction, ventricular tachydysrhythmias, hypertension, nausea/vomiting

Adult Protocols

Bradycardia.....	3.06
Poisoning.....	3.23
Post-Cardiac Arrest Care	5.04

Pediatric Protocols

Pediatric - Poisoning	4.10
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7.09 Dopamine (Intropin) (continued)

Infusion Reference Chart

Dopamine Infusion Reference Chart (gtts/min with microdrip administration set)												
kg	3	5	10	20	30	40	50	60	70	80	90	100
5 µg/kg/min	-	1	2	4	6	8	9	11	13	15	17	19
10 µg/kg/min	1	2	4	8	11	15	19	23	26	30	34	38
15 µg/kg/min	1	3	6	11	17	23	28	34	39	45	51	56
20 µg/kg/min	2	4	8	15	23	30	38	45	53	60	68	75

NOTE: Mix 400 mg in 250 mL of NS giving a concentration of 1600 mcg/mL

7.10 Epinephrine 1:10,000

Classification Sympathomimetic

Mechanism of Action

Binds with alpha and beta receptors producing increased blood pressure, increased heart rate, and bronchodilation.

Indications

- 1) Cardiac arrest
- 2) Anaphylactic shock

Contraindications

None when used in the emergency setting.

Precautions

- 1) Should be protected from light.
- 2) Can be deactivated by alkaline solutions.
- 3) Pregnancy Category: C

Possible Side Effects/Complications

Tachycardia, palpitations, hypertension, anxiety, headache, tremors, nausea/vomiting

Adult Protocols

Allergic Reaction & Acute Anaphylaxis	3.02
Adult - Asystole/PEA	5.01
Adult - Ventricular Fibrillation/Pulseless V-Tach	5.02

Pediatric Protocols

Pediatric - Allergic Reaction & Acute Anaphylaxis.....	4.01
Pediatric - Bradycardia	4.04
Pediatric - Arrest Dysrhythmias	5.03

7.11 Epinephrine 1:1,000

Classification Sympathomimetic

Mechanism of Action

Binds with alpha and beta receptors producing increased blood pressure, increased heart rate, and bronchodilation.

Indications

- 1) Cardiac arrest
- 2) Anaphylactic shock
- 3) Exacerbation of chronic obstructive pulmonary disease (COPD)
- 4) Bronchial asthma

Contraindications

- 1) Patients with underlying cardiovascular disease
- 2) Hypertension
- 3) Pregnancy
- 4) Patients with tachydysrhythmias
- 5) None in the cardiac arrest setting or other life-threatening situations listed

Precautions

- 1) Should be protected from light
- 2) Can be deactivated by alkaline solutions
- 3) Blood pressure, pulse, and EKG must be constantly monitored
- 4) Pregnancy Category: C

Possible Side Effects/Complications

Tachycardia, palpitations, hypertension, anxiety, headache, tremors, nausea/vomiting

Adult Protocols

Allergic Reaction & Acute Anaphylaxis	3.02
Breathing Difficult	3.07

7.11 Epinephrine 1:1,000 (continued)

Pediatric Protocols

Pediatric - Allergic Reaction & Acute Anaphylaxis.....	4.01
Pediatric - Bradycardia	4.04
Pediatric - Difficulty Breathing	4.05
Pediatric - Arrest Dysrhythmias	5.03

7.12 Ketamine (Ketalar)

Classification General anesthetic

Mechanism of Action

Produces a state where the patient is dissociated from the surrounding environment.

Ketamine is a noncompetitive NMDA receptor antagonist that blocks glutamate.

Protective airway reflexes are typically maintained.

Onset: Within 30 seconds (Dose dependent)

Duration: 5-10 minutes (Dose dependent)

Recommended to administer over 1 minute for airway management/psychiatric emergencies and over 5-10 minutes for pain management when given IV.

Indications

- 1) For general anesthesia in patients who need advanced airway management
- 2) Painful conditions requiring medication intervention
- 3) Patients who are combative or present with high risk to be violent

Contraindications

- 1) Hypersensitivity to the medication or inability to manage airway with BVM
- 2) Brain tumor and/or known condition that would cause increased ICP excluding acute traumatic injury
- 3) Glaucoma and acute globe injury
- 4) Schizophrenia: At sub-dissociative dose, may exacerbate symptoms

Precautions

- 1) Ketamine causes increased sympathomimetic effects, use caution with patients who have any of the following conditions: CHF, CAD, HTN, Hyperthyroidism or are on thyroid replacement medication, porphyria.
- 2) Maintain patent airway and assist respirations as necessary.
- 3) Emergence reaction (occurs in 12%) presenting as anxiety, agitation, and hallucinations or nightmares as the medication wears off.
- 4) Pregnancy category: C

7.12 Ketamine (Ketalar) (continued)

Side Effects

Tachycardia, hypertension, bradycardia, hypotension, arrhythmia, emergence reaction, respiratory depression, nausea/vomiting, laryngospasm, nystagmus, tonic-clonic like muscle movements

7.13 Fentanyl (Sublimaze)

Classification Narcotic analgesic

Mechanism of Action

Binds to specific opiate receptors in the Central Nervous System which alters pain perception by inhibiting pain pathways and increasing pain threshold.

Indications

Painful conditions requiring pain medication intervention.

Contraindications

- 1) Systolic BP less than 90 mmHg (call Medical Control)
- 2) Hypersensitivity to the medication
- 3) Respiratory depression
- 4) Major trauma to head, chest, abdomen, or pelvis (follow appropriate protocol)

Precautions

- 1) Hypotension
- 2) Respiratory depression
- 3) CNS depression
- 4) Pregnancy Category: C

Possible Side Effects/Complications

Headache, Dizziness/Light-headedness, Palpitations, Hypotension, Bradycardia, Nausea/Vomiting, Laryngospasm, Apnea, Bronchospasm

Adult Protocols

Chest Pain & Suspected ACS	3.10
Pain Management	3.20
Adult Advanced Airway Management.....	6.101

Pediatric Protocols

Pediatric - Pain Management.....	4.09
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7.14 Methylprednisolone (Solu-Medrol)

Classification Glucocorticoid (Steroid)

Mechanism of Action

Inhibition of inflammatory response.

Indications

- 1) Anaphylactic reactions
- 2) Bronchoconstriction/bronchospasm

Contraindications

- 1) Severe infection
- 2) GI bleed
- 3) Hypersensitivity

Precautions/Side Effects/Complications

Headache, hypertension, electrolyte imbalance, GI irritation, vertigo

7.16 Lidocaine (Xylocaine)

Classification Local anesthetic

Mechanism of Action

Inhibits nerve impulse initiation and conduction and inhibits sodium ion channels.

Indications

- 1) Intraosseous access and infusion in the conscious patient

Contraindications

- 1) High degree heart blocks and PVC's in conjunction with bradycardia
- 2) Sensitivity to "-caines"

Precautions

- 1) Dosage should not exceed 3 mg/kg in a 24-hour period
- 2) Monitor for CNS toxicity
- 3) Pregnancy category: B

Possible Side Effects/Complications

Bradycardia, hypotension, anxiety, convulsions, drowsiness, widening of QRS, dizziness, confusion, psychosis, nausea, vomiting

Adult Protocols

Intraosseous Access and Infusion6.403

Pediatric Protocols

Intraosseous Access and Infusion6.403

7.17 Lopressor (Metoprolol)

MEDICATION REMOVED FROM FORMULARY

7.18 Midazolam (Versed)

Classification Benzodiazepine

Mechanism of Action

Binds to benzodiazepine receptors and enhances the effects of the neurotransmitter GABA. 3-4 times as potent as diazepam (Valium). Diminishes patient recall and relieves apprehension.

Indications

- 1) To produce sedation in conscious patients and high anxiety patients
- 2) To produce sedation in order to provide a patent airway
- 3) To impair memory of therapeutic procedures

Contraindications

- 1) Systolic BP less than 90 mmHg (call Medical Control)
- 2) Acute narrow-angle glaucoma
- 3) Hypersensitivity to the medication
- 4) Pregnancy or Lactation
- 5) Acute alcohol intoxication with depression of vital signs

Precautions

- 1) Use caution in the elderly and patients with chronic disease states
- 2) Does not protect against increased ICP or circulatory changes noted with succinylcholine
- 3) Increased risk of apnea
- 4) Be alert for developing hypotension
- 5) Pregnancy category: D

Possible Side Effects/Complications

Apnea, airway obstructions, blurred vision, bradycardia, dysrhythmias, hypotension, coma, nausea/vomiting

7.18 Midazolam (Versed) (continued)

Adult Protocols

Pain Management	3.20
Psychiatric/Behavioral Emergencies	3.24
Seizures	3.25
Post-Cardiac Arrest Care	5.04
Adult Advanced Airway Management.....	6.101
Synchronized Cardioversion.....	6.202
Transcutaneous Pacing.....	6.203
Electronic Control Device (TASER) Deployment.....	6.503

Pediatric Protocols

Pediatric - Pain Management.....	4.09
Pediatric - Seizures	4.11
Pediatric Advanced Airway Management.....	6.110

7.19 Naloxone (Narcan)

Classification Opioid Narcotic Antagonist

Mechanism of Action

Binds to opioid receptors and blocks the effects of narcotics

Indications

- 1) Narcotic overdoses including: Morphine, Dilaudid, Fentanyl, Demerol, Paregoric, methadone, Heroin, Percodan, and Tylox
- 2) Synthetic analgesic overdoses including: Nubain, Stadol, Talwin, Darvon
- 3) Alcohol coma
- 4) To rule out narcotics in coma of unknown origin

Contraindications

Known hypersensitivity to the medication.

Precautions

- 1) Should be administered with caution to patients dependent on narcotics as this may cause withdrawal effects.
- 2) Short acting, should be augmented every 5 minutes.
- 3) Pregnancy Category: C

Possible Side Effects/Complications

None.

Adult Protocols

Altered Mental Status	3.03
Poisoning.....	3.23
Unconscious Patient.....	3.30

Pediatric Protocols

Pediatric - Altered Mental Status	4.02
Pediatric - Poisoning	4.10

7.20 Nitroglycerin

Classification Antianginal, Vasodilator

Mechanism of Action

Decreases cardiac preload by relaxing smooth muscles which dilates peripheral arteries & veins causing venous blood to pool which decreases venous return.

Indications

- 1) Angina Pectoris
- 2) Chest pain associated with myocardial infarction
- 3) Hypertensive crisis.

Contraindications

- 1) Children under 12 years of age
- 2) Hypotension (Blood pressure less than 100 mmHg)
- 3) Patient use of Viagra (or other PDE inhibitor) within the past 24 hours

Precautions

- 1) Constantly monitor blood pressure
- 2) Drug must be protected from light and expires quickly once bottle is open
- 3) Ensure the pump has been primed prior to administration
- 4) Pregnancy category: C

Possible Side Effects/Complications

Hypotension, palpitations, headache, dizziness, syncope

Adult Protocols

Breathing Difficult	3.07
Chest Pain & Suspected ACS	3.10
Hypertensive Crisis.....	3.15

Pediatric Protocols

Not applicable to pediatric protocols.

7.21 Racemic Epinephrine

Classification Bronchodilator, Sympathomimetic

Mechanism of Action

Stimulates alpha and beta receptors causing vasoconstriction, reduced mucosal edema, and bronchodilation.

Indications

Croup (Laryngotracheobronchitis)

Contraindications

- 1) Epiglottitis
- 2) Known hypersensitivity to the medication

Precautions

- 1) Pregnancy category: C

Possible Side Effects/Complications

Palpitations, anxiety, headache, dizziness, tachycardia, hypertension, nausea/vomiting

Adult Protocols

Not applicable to adult protocols.

Pediatric Protocols

Pediatric - Breathing Difficult4.05

7.22 Sodium Bicarbonate

Classification Alkalizing agent

Mechanism of Action

Sodium bicarbonate buffers acid build-up in the body caused by severe hypoxia. Severe hypoxia results in anaerobic metabolism which produces lactic acid and metabolic acidosis. Raises pH and neutralizes gastric acidity.

Indications

- 1) Tricyclic antidepressant overdose
- 2) Severe acidosis refractory to hyperventilation
- 3) Known preexisting hyperkalemia

Contraindications

- 1) Metabolic Alkalosis

Precautions

- 1) Correct dosage is essential to avoid overcompensation of pH
- 2) Can deactivate catecholamines
- 3) Can precipitate with calcium
- 4) Delivers large sodium load
- 5) Pregnancy category: C

Possible Side Effects/Complications

Metabolic Alkalosis, peripheral edema, sodium and fluid retention

Adult Protocols

Adult Cardiac Arrest.....	3.09
Poisoning.....	3.23
Electronic Control Device (TASER) Deployment.....	6.503

Pediatric Protocols

Pediatric - Cardiac Arrest	4.07
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7.23 Succinylcholine (Anectine)

Classification Depolarizing neuromuscular blocker

Mechanism of Action

Competes with the acetylcholine receptor of the motor end plate on the the muscle cell resulting in muscle paralysis. Onset: 1 minute.

Indications

To facilitate tracheal intubation as an adjunct to general anesthesia. Provides skeletal muscle relaxation during surgery or mechanical ventilation.

Contraindications

- 1) Patients with muscle wasting conditions such as Parkinson's Disease, Muscular Dystrophy, spinal cord transaction/resection resulting in paralysis, or Guillain Barre Syndrome
- 2) Patients with tissue destructive conditions such as crushing injuries, large surface area burns greater than 24 hours old, severe septic intra-abdominal infections, or tetanus.
- 3) Patients with renal failure or any condition where the possibility exists for an increased potassium level.
- 4) Patients with a history of malignant hyperthermia

Precautions

SUCCINYLCHOLINE SHOULD BE USED ONLY BY THOSE SKILLED IN THE MANAGEMENT OF ARTIFICIAL RESPIRATION AND ONLY WHEN FACILITIES ARE INSTANTLY AVAILABLE FOR TRACHEAL INTUBATION AND FOR PROVIDING ADEQUATE VENTILATION OF THE PATIENT, INCLUDING THE ADMINISTRATION OF OXYGEN UNDER POSITIVE PRESSURE AND THE ELIMINATION OF CARBON DIOXIDE. THE CLINICIAN MUST BE PREPARED TO ASSIST OR CONTROL RESPIRATION.

- 1) Pregnancy category: C

7.23 Succinylcholine (Anectine) (continued)

Possible Side Effects/Complications

Initial muscle contractions and fasciculations may produce additional trauma in patients with fractures and dislocations. Prolonged neuromuscular blockade may occur in persons who metabolize the drug slowly (abnormal plasma cholinesterase). Bradycardia and asystole may occur in adults and children (more common in children). The incidence of bradycardia and asystole increases with the second dose. Pretreatment with atropine may reduce the incidence of bradyarrhythmias. Hyperkalemia may be especially more frequent in patients with massive Digitalis overdose. Hyperkalemia may occur more frequently in patients with major burns, multiple trauma, paraplegia, extensive denervation of skeletal muscle due to disease or injury to the CNS, or with degenerative neuromuscular disease.

Malignant hyperthermia has occurred acutely after administration of succinylcholine (acute intractable jaw spasm progressing to generalized rigidity, tachycardia, tachypnea, profoundly increased temperature). Acute rhabdomyolysis and hyperkalemia with life threatening ventricular dysrhythmias has rarely occurred in pediatric patients who were subsequently found to have a myopathy such as Duchenne's muscular dystrophy.

Adult Protocols

Advanced Airway Management.....6.101

Pediatric Protocols

Pediatric - Advanced Airway Management.....6.110

7.24 Zofran (Ondansetron)

Classification Antiemetic & selective 5-HT₃ receptor antagonist

Mechanism of Action

Selectively antagonizes serotonin 5-HT₃ receptors.

Indications

Nausea/Vomiting

Contraindications

- 1) Hypersensitivity
- 2) Phenylketonuria (PKU)
- 3) Pregnancy

Precautions

- 1) Reduce dose with severe hepatic impairment and nursing women.
- 2) Cross sensitivity with 5HT re-uptake blockers (eg. Paxil)
- 3) Pregnancy category: B

Possible Side Effects/Complications

Headache, dizziness, diarrhea, constipation, agitation

Adult Protocols

Abdominal Pain.....	3.01
Nausea and Vomiting	3.17

Pediatric Protocols

Pediatric - Nausea and Vomiting	4.08
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7.25 Lorazepam (Ativan)

Classification Benzodiazepine

Mechanism of Action

Binds to benzodiazepine receptors and enhances GABA effects. Metabolized in liver.

Indications

- 1) General seizures and/or Status epilepticus
- 2) Acute anxiety states

Contraindications

- 1) Hypersensitivity
- 2) Respiratory impairment

Precautions

- 1) Use caution if CNS depression is present
- 2) Use caution in intoxicated patients
- 3) Use caution in sleep apnea patients
- 4) Pregnancy category: D

Possible Side Effects/Complications

Sedation, apnea, respiratory depression, dizziness, seizures, syncope, hypotension, fatigue, amnesia, confusion, irritability

Adult Protocols

Psychiatric and Behavioral Emergencies	3.24
Seizures	3.25

Pediatric Protocols

Pediatric - Seizures	4.11
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7.26 Amiodarone

Classification Antiarrhythmic

Mechanism of Action

Prolongs action potential and repolarization.

Indications

- 1) Ventricular arrhythmias

Contraindications

- 1) Hypersensitivity
- 2) Bradycardia and/or 2nd and 3rd degree AV blocks
- 3) Cardiogenic shock

Precautions

- 1) Hypokalemia
- 2) Elderly patients
- 3) Do not administer sodium bicarbonate in the same IV/IO
- 4) Pregnancy category: D (only use in life-threatening emergencies)

Possible Side Effects/Complications

Severe bradycardia, severe hypotension, cardiogenic shock, cardiac arrest, torsades de pointes, QT prolongation, AV block

Adult Protocols

Poisoning.....	3.23
Ventricular/Wide Complex Tachycardia.....	3.31
Adult Ventricular Fibrillation/Pulseless V-Tach.....	5.02
Post-Cardiac Arrest Care	5.04

Pediatric Protocols

Pediatric - Arrest Dysrhythmias.....	5.03
Pediatric - Poisoning	4.10

7.27 Magnesium Sulfate

Classification Anticonvulsant, Electrolyte Supplement

Mechanism of Action

Depresses CNS and blocks neuromuscular transmission. Slows SA node conduction.

Indications

- 1) Torsades de Pointes (irregular/polymorphic VT with prolonged QT interval)
- 2) Seizures in pre-eclampsia/eclampsia
- 3) Severe bronchoconstriction

Contraindications

- 1) Hypersensitivity
- 2) Unconscious diabetic
- 3) Myocardial damage or heart block

Precautions

- 1) Use caution in patients with myasthenia gravis or other neuromuscular disease
- 2) Use caution in patients with renal impairment
- 3) Pregnancy category: D (only use in life-threatening emergencies)

Side Effects/Complications

Hypotension, hypothermia, respiratory paralysis, pulmonary edema, drowsiness, hyperkalemia, vision changes, depressed reflexes

Side Effects/Complications

Breathing Difficulty	3.07
Seizures	3.25
Ventricular/Wide Complex Tachycardia	3.31
Adult Ventricular Fibrillation/Pulseless V-Tach	5.02

Section 8: **Appendix**

8.01 Adult - OOHTTDDP

Adult - Out of Hospital Trauma Triage Destination Decision Protocol

The following criteria shall be utilized to assist the EMS provider in the identification of time critical injuries, method of transport and trauma care facility resources necessary for treatment of those injuries

Step 1 - Assess for Time Critical Injuries: Level of Consciousness & Vital Signs

Glasgow Coma Score <14
Heart Rate >120

Respiratory diff./rate <10 or >29
Systolic B/P <90

If ground transport time to a Resource (Level I) or Regional (Level II) TCF is less than 30 minutes,

Transport to the nearest **Resource (Level I)** or **Regional (Level II)** Trauma Care Facility.

If greater than 30 minutes ground transport time to Resource (Level I) or Regional (Level II), Transport to the nearest appropriate Trauma Care Facility.

If time can be saved or level of care needs exist, tier with ground or air ALS service program

If step 1 does not apply, move on to step 2

Step 2 - Assess for Anatomy of an Injury

Step 2 - Assess for Anatomy of an Injury

All Penetrating injury to head, neck, torso, and extremities proximal to elbow and knee
Partial or full thickness burns > 10% TBSA or involving face/airway

Amputation proximal to wrist or ankle
Crushed, degloved, or mangled extremity
Paralysis or Parasthesia
Flail chest

Suspected two or more long bone fractures
Any open long bone fracture
Suspected pelvic fracture
Open or depressed skull fracture

EMS provider judgment for possible abdominal or thoracic injuries.

If ground transport time to a Resource (Level I) or Regional (Level II) TCF is less than 30 minutes,

Transport to the nearest **Resource (Level I)** or **Regional (Level II)** Trauma Care Facility.

If greater than 30 minutes ground transport time to Resource (Level I) or Regional (Level II), Transport to the nearest appropriate Trauma Care Facility.

If time can be saved or level of care needs exist, tier with ground or air ALS service program

If step 2 does not apply, move on to step 3

8.01 Adult - OOHTTDDP (continued)

Step 3 - Consider Mechanism of Injury & High Energy Transfer

Falls – Adult: > 20 ft. (1 story = 10 ft)

High-risk auto crash:

Intrusion: > 12 in, occupant site; > 18 in, any site, Ejection (partial or complete) from automobile
Death in same passenger compartment, Vehicle telemetry data consistent with high risk of injury

Auto vs. pedestrian/bicyclist thrown, run over, or with significant (>20 mph) impact

Motorcycle crash > 20 mph

Rollover (unrestrained occupant)

Any intentional injury

Bicyclist into handlebars

Transport to the nearest **(Any Level)** Trauma Care Facility.

Transport to the nearest appropriate Trauma Care Facility, need not be the highest level trauma care facility.

If step 3 does not apply, move on to step 4

Step 4 - Consider risk factors:

Age > 55 yrs (Risk of injury/death increases)

Anticoagulation and bleeding disorders

Time-sensitive extremity injury

Pregnancy > 20 weeks

EMS provider judgment

Transport to the nearest appropriate Trauma Care Facility, need not be the highest level trauma care facility.

If none of the criteria in the above 4 steps are met, follow local protocol for patient disposition.
When in doubt, transport to nearest trauma care facility for evaluation.

For all Transported Trauma Patients

Contact receiving trauma care facility:

1. Give patient report to include: MOI, Injuries, Vital Signs & GCS, Treatment, Age, Gender and ETA
2. Obtain further orders from Medical Control as needed.

8.02 Pediatric - OOHTTDDP

Pediatric - Out of Hospital Trauma Triage Destination Decision Protocol

The following criteria shall be utilized to assist the EMS provider in the identification of time critical injuries, method of transport and trauma care facility resources necessary for treatment of those injuries

Step 1 - Assess for Time Critical Injuries: Level of Consciousness & Vital Signs

Abnormal Responsiveness: abnormal or absent cry or speech. Decreased response to parents or environmental stimuli. Floppy or rigid muscle tone or not moving. Verbal, Pain, or Unresponsive on AVPU scale.

OR

Airway/Breathing Compromise: obstruction to airflow, gurgling, stridor or noisy breathing. Increased/excessive retractions or abdominal muscle use, nasal flaring, stridor, wheezes, grunting, gasping, or gurgling. Decreased/absent respiratory effort or noisy breathing. Respiratory rate outside normal range.

OR

Circulatory Compromise: cyanosis, mottling, paleness/pallor or obvious significant bleeding. Absent or weak peripheral or central pulses; pulse or systolic BP outside normal range. Capillary refill > 2 seconds with other abnormal findings.

If ground transport time to a TCF is less than 30 minutes,

Transport to the nearest **Resource (Level I)** or **Regional (Level II)** TCF.

If time can be saved or level of care needs exist, tier with ground or air ALS service program

If step 1 does not apply, move on to step 2

Step 2 - Assess for Anatomy of an Injury

All Penetrating injury to head, neck, torso, and extremities proximal to elbow and knee
Partial or full thickness burns > 10% TBSA or involving face/airway

Amputation proximal to wrist or ankle
Crushed, degloved, or mangled extremity
Paralysis or Parasthesia
Flail chest

Suspected two or more long bone fractures
Any open long bone fracture
Suspected pelvic fracture
Open or depressed skull fracture

EMS provider judgment for possible abdominal or thoracic injuries.

If ground transport time to a TCF is less than 30 minutes,

Transport to the nearest **Resource (Level I)** or **Regional (Level II)** TCF.

If time can be saved or level of care needs exist, tier with ground or air ALS service program

If step 2 does not apply, move on to step 3

Step 3 - Consider Mechanism of Injury & High Energy Transfer

Falls – > 10 feet or

Pediatric: > 2-3 times the victims height.

High-risk auto crash:

Intrusion: > 12 in, occupant site; > 18 in, any site, Ejection (partial or complete) from automobile
Death in same passenger compartment, Vehicle telemetry data consistent with high risk of injury

Auto vs. pedestrian/bicyclist thrown, run over, or with significant (>20 mph) impact

Motorcycle crash > 20 mph

Rollover (unrestrained occupant)

Any intentional injury

Bicyclist into handlebars

Transport to the nearest **(Any Level)** Trauma Care Facility.

If step 3 does not apply, move onto step 4

8.02 Pediatric - OOHTTDDP (continued)

Step 4 - Consider risk factors:

Age < 5 yrs (Risk of injury/death increases)

ETOH/drugs

Time-sensitive extremity injury

Transport to the nearest **(Any Level)** Trauma Care Facility.

For all Transported Trauma Patients**Contact Medical Control:**

1. Give patient report to include: MOI, Injuries, Vital Signs & GCS, Treatment, Age, Gender and ETA
2. Obtain further orders as needed

8.03 Physician On Scene

Basic and Advanced Guidelines

Your offer of assistance is appreciated. However, this EMS service, under law and in accordance with nationally recognized standards of care in Emergency Medicine, operates under the direct authority of a Physician Medical Director. Our Medical Director and his or her physician designees have already established a physician-patient relationship with this patient. To ensure the best possible patient care, and to prevent on your part inadvertent patient abandonment or interference with an established physician-patient relationship, please comply with our established protocols.

Please review the following if you wish to assume responsibility for this patient:

- 1) You must be recognized or identify yourself as a qualified physician
- 2) You must be able to provide proof of licensure and identify your specialty.
- 3) If requested, you must speak directly with the on-line medical control physician to verify transfer of responsibility for the patient from that physician to you.
- 4) EMS personnel, in accordance with State law, can only follow orders that are consistent with the approved protocols.
- 5) You must accompany this patient to the hospital, unless the on-line medical control physician agrees to reassume responsibility for this patient prior to transport.

8.04 Iowa EMS Scope of Practice

The complete Iowa EMS Scope of Practice document can be found online at the Iowa Department of Public Health Bureau of EMS website:

<https://idph.iowa.gov/bets/ems/scope-of-practice>

8.05 Initiation of Organ Donation

REMOVED FROM PROTOCOLS

8.06 Special Needs Patients

General Considerations

These guidelines should be used when an EMS provider, responding to a call, is confronted with a patient using specialized medical equipment that the EMS provider has not been trained to use, and the operation of that equipment is outside of the EMS provider's scope of practice. The EMS provider may treat and transport the patient, as long as the EMS provider doesn't monitor or operate the equipment in any way while providing care.

Basic and Advanced Care Guidelines

- 1) When providing care to patients with special needs, EMS personnel should provide the level of care necessary, within their level of training and certification.
- 2) When possible, the EMS provider should consider utilizing a family member or caregiver who has been using this equipment to help with monitoring and operating the special medical equipment if necessary during transport.
- 3) Some examples of special medical devices: PCA (patient controlled analgesic), Chest Tube.

Section 9: **Protocol Revision Log**

9.01 Protocol Revision Log

Protocol:	Change:	Date:
3.20 Pain Management	Removed exception for Ketamine administration with TBI or penetrating eye injury.	August 3, 2018
3.32 Refusal of Treatment and Transport	Removal of section on patient refusal to sign.	August 3, 2018
9.02 Acute Adrenal Crisis	Addition of addendum.	December 17, 2018
3.20 Pain Management	Removed inability to administer Fentanyl and Ketamine together.	April 25, 2019
4.09 Pediatric Pain Management	Addition of Ketamine to protocol.	April 25, 2019
7.28 Tranexamic Acid	Addition of new medication.	April 25, 2019
9.03 Trauma Resuscitation	Addition of addendum.	April 25, 2019
7.12 Ketamine	Addition of contraindication of known medical conditions causing increased ICP. Addition of recommended administration times. Addition of indication for patients who present as combative or have high risk to become violent.	December 1, 2019
7.27. Magnesium Sulfate	Addition of new indication of severe bronchoconstriction.	December 1, 2019
7.04 Atrovent	Addition of ability to administer a DuoNeb treatment to patients older than 1 year.	December 1, 2019
7.14 Methylprednisolone	Addition of new medication.	December 1, 2019
3.02 Allergic Reaction & Acute Anaphylaxis	Addition of Methylprednisolone for signs of bronchospasm.	December 1, 2019
3.07 Breathing Difficulty	Addition of Methylprednisolone for signs of bronchospasm. Addition of Magnesium Sulfate for impending respiratory failure.	December 1, 2019
3.20 Pain Management	Ketamine dose range lowered along and a maximum administration amount was added.	December 1, 2019
3.24 Psychiatric/Behavioral Emergencies	Addition of Ketamine for patients who are combative or present with high risk to become violent.	December 1, 2019
3.28 Suspected Sepsis	Addition of new protocol.	December 1, 2019
4.01 Pediatric Allergic Reaction & Acute Anaphylaxis	Addition of Methylprednisolone for signs of bronchospasm.	December 1, 2019
4.05 Pediatric Breathing Difficulty	Addition of Methylprednisolone for signs of bronchospasm.	December 1, 2019
6.101 Adult Advanced Airway Management	Removal of Fentanyl and Midazolam for continued sedation, replaced with Ketamine.	December 1, 2019
6.110 Pediatric Advanced Airway Management	Removal of Fentanyl and Midazolam for continued sedation, replaced with Ketamine.	December 1, 2019

6.101 Adult Advanced Airway Management	Addition of i-gel for a rescue airway.	March 21, 2020
6.110 Pediatric Advanced Airway Management	Addition of i-gel for a rescue airway.	March 21, 2020
6.111 i-gel Airway	New airway equipment procedure.	March 21, 2020
6.101 Adult Advanced Airway Management	Addition of Midazolam as a secondary medication for continued sedation.	September 1, 2020
6.110 Pediatric Advanced Airway Management	Addition of Midazolam as a secondary medication for continued sedation.	September 1, 2020