When patient care matters
Introduction

Protocols are essential to assure education, training, and a standard of care to meet the needs of our patients. Ongoing review and update of protocols are necessary to keep pace with interventions known to be effective while providing out-of-hospital care. The challenge is for all Emergency Medical Services (EMS) providers on emergent and non-emergent transports to keep up with changing protocols so our continuum of care can effectively reduce suffering, disability, death and costs from life threatening illness and injury.

Protocols shall be approved, signed and dated by the Medical Director for Midlands MedTech LLC prior to implementation. Any changes must be filed with the Director of Operations. Skills must be within the EMS provider’s scope of practice. The scope of practice document can be found on page ____ and the South Carolina DHEC EMS website under the resources link. http://www.scdhec.gov/health/ems/resources.htm

Midlands MedTech LLC Patient Care Guidelines are based on the following reference materials.

- South Carolina DHEC state approved protocols, revised June 2008
- South Carolina state drug formulary, revised November 1996
- American Heart Association ACLS, PALS, BLS guidelines
- International Trauma Life Support
- Advanced Stoke Life Support

Medical Director’s Signature

Garrett Clanton, II MD

Date
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## Patient Care Guidelines

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General Protocols
Universal Patient Care

1. Assure scene safety prior to entry. Assure the appropriate levels of personal protective equipment (gloves, safety glasses, gown) are worn.
2. Assess Pt’s level of consciousness and ABC’s.
3. Apply oxygen as needed, using device appropriate for Pt’s condition.
4. Initiate cardiac monitoring and pulse ox if indicated. Cardiac monitoring will be applied to any patient who receives medications administered by Midlands MedTech personnel.
5. Obtain a 12 lead ECG early in assessment, interpret findings. If clear or showing inferior MI, obtain 15 lead with V4R, V8, V9. If positive for STEMI, call a Code STEMI and transport immediately to a PCI center utilizing air or ground transport. Obtain serial 12/15 leads until delivery of Pt.
6. Obtain serial vital signs.
7. Obtain SAMPLE history from Pt, bystanders, or family members.
8. Obtain a BGL for Pt’s who have altered sensorium.
9. Consider IV/IO access as needed.
11. Go to protocol appropriate for Pt’s chief complaint and most life threatening condition.
12. Contact receiving facility, with a verbal report, as soon as feasible.

Pearls

- Exam: Minimal exam, if not noted on specific protocol, is vital signs, mental status, and location of injury or complaint
- Required vital signs on EVERY Pt includes: Blood pressure, pulse, respirations, pain/severity
- A pediatric Pt is defined by the Broselow Tape. If the Pt doesn’t fit on the tape, they are considered to be an adult for medication treatment purposes
- Timing of transport should be based on Pt’s chief clinical condition, location of appropriate level of care facility, and ability to delivery Pt to facility in a timely manner
Determination of Death

1. Paramedics may determine that death has occurred and withhold resuscitative attempts if:
   a. All four presumptive signs of death are present:
      • Unresponsive
      • Apnea
      • Pulseless
      • Pupils fixed
   b. AND at least one of the following signs of death is present:
      • Profound lividity
      • Rigor mortis
      • Damage or destruction of the body that is incompatible with life:
         o Incineration
         o Decapitation
         o Massive injury to the skull/brain
         o Decomposition
   c. OR, if 1a is true:
      • Cardiopulmonary arrest is unwitnessed and secondary to blunt force trauma to the thorax and patient is not a child
   d. OR, if Pt has already been determined to be dead by an authorized official such as a Medical Examiner/Coroner, a Physician licensed to practice medicine in the state of South Carolina, or a Paramedic associated with the local county EMS or Fire Rescue service.

2. Paramedics are permitted to accept an order to halt resuscitation in person, by radio, or by telephone from a licensed physician if the conditions of 1a are met.
   a. Such an order must be confirmed by the second crew member.
   b. Second crew member does not need to be a Paramedic.
   c. If resuscitation is terminated after the Pt has been placed into the ambulance, the Pt’s body will be transported to the ordering physician’s hospital for disposition.

3. The Paramedic may, at his/her discretion, elect to continue resuscitation and transport to the hospital in case of mitigating circumstances.

4. This policy does not supersede policies for triage in the case of a declared Mass Causality Incident (MCI).
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Note: the printed name and signature of the physician who orders the termination of resuscitation must be obtained on the Patient Care Report (PCR)

Determination of Death continued

1. If Pt meets criteria for Determination of Death and has not been loaded into ambulance, then:
   a. Notify local dispatch of situation
   b. Secure the scene until arrival of Law Enforcement (LE)
   c. Remain on scene until custody of the patient is transferred to an authorized individual such as the Medical Examiner/Coroner or a Paramedic associated with the local EMS / Fire Rescue service.

2. In case of infant demise:
   a. Consider transport of infant if family dynamics require.
   b. Be supportive of parents regardless of suspicions of impropriety
   c. Investigation of scene and questioning of parents is the responsibility of LE, but observations raising suspicion should be relayed to LE, receiving physician, and documented on PCR.
Do Not Resuscitate Order (DNR) / Comfort of Care

1. When Midlands MedTech LLC personnel report to a scene, the crew members will perform a patient assessment. If an EMS DNR bracelet or necklace is found, crew members will make a reasonable effort to determine that an EMS DNR form exists and to assure that the form applies to the person on which the assessment is being made. If no DNR form is found, resuscitative efforts will be initiated. If a family member expresses DNR status without EMS DNR form, contact on-line medical control for medical direction. If after starting resuscitative efforts a valid DNR form is found, resuscitative measure will be stopped immediately. Call on-line medical control if you have any questions.

2. Procedures to provide comfort of care to Pt’s who have executed a valid DNR order:
   - Suction
   - Oxygen
   - Pain management
   - Non-cardiac medications
   - Assistance in maintenance of an open airway, as long as, such assistance do not include intubation or advanced airway management with combitube or LMA
   - Control of bleeding
   - Support to the family of the Pt

3. Resuscitation efforts that are to be withheld or withdrawn in the event the Pt has a valid DNR orders:
   - CPR
   - Endotracheal intubation or other advanced airway device
   - Artificial ventilations with BVM or mechanical ventilator
   - Defibrillation
   - Cardiac resuscitation medications
   - Diagnostic cardiac monitoring (rate and rhythm only, no 12 lead)

4. The EMS DNR may be revoked at anytime by oral expression of the Pt or family member or by mutilation, obliteration, or destruction of the document in any manner. If the order is revoked, the crew will perform full resuscitation and treatment of the Pt.

5. If possible, the DNR order should be transported with Pt to the hospital.
Trauma Field Triage Decision Scheme
IV / IO Protocol

1. Assess ABC’s.
2. Assess need for Intravenous access (IV) or Intraosseous access, an emergency or potential medical emergency or traumatic event.
3. Utilize aseptic technique when performing IV/IO access.
4. Establish IV/IO with appropriate fluid.
   a. Peripheral sites should be utilized whenever possible.
   b. IO access is for life threatening events.
   c. External jugular (EJ) are for Pt’s > 12 years old with a life threatening event.
5. Limit IV attempts to 3 for hemodynamically stable Pt’s, Attempts per Pt, not per technician.
6. Unless the patient requires a fluid bolus, the technician may use an INT saline lock.
7. Monitor infusion at appropriate rate.
8. IO lines should be established with IO needles for that are weight and age appropriate.
9. Continue IV attempts per physician order for hemodynamically unstable Pt’s.

Pearls

- Any perhospital fluids or medications approved for IV use may be given through an IO line
- All IV rates should be at KVO unless administering medications with a set drip rate or given a fluid bolus
- Use 60gtts/ml sets in all Pt’s < 6 years old
- EJ lines may be attempted for life threatening events where no obvious peripheral site is noted. EJ sticks should be limited to 1 per patient. IO is preferred over EJ when equipment is available
- Any venous catheter which has already been accessed prior EMS arrival may be used
- Upper extremity sites are preferable to lower extremity sites. Lower extremity sites are contraindicated in Pt’s with vascular disease or diabetes
- In post-mastectomy Pt’s avoid IV, blood draw, injection, or blood pressure in arm on affected side
- Consider a Twin Cath and multiple IV sites for Pt’s going to a PCI or Trauma center
Scope of Practice

Basic Skills

All EMT-Basic candidates who successfully complete a SC approved EMT-Basic course which use the 1994 DOT EMT-Basic curriculum, successfully pass the National Registry EMT-Basic (i.e. SC State basic written and practical examinations) and receive subsequent SC certification as an EMT-Basic are authorized to perform the following skills (All skills are inclusive of adult and infant unless otherwise stated).

Cardio – Respiratory Skills:

- One and two person CPR
- Conscious and unconscious obstructed airway
- Oxygen administration
- OPA and NPA airways
- One and two person BVM
- Oral Suction
- Combitube, LMA, King Airway
- Sterile suction
- AED use

Bandage and Splint Skills:

- Upper and lower extremities
- Spinal Movement Restriction (Long and Short Spine Board)
- Pneumatic Anti-Shock Garments
- Hemorrhage control (Direct pressure, pressure point, tourniquet, etc)

General Skills:

- Patient Assessment (Trauma and Medical)
- Vital Signs
- Patient Lifting
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- IV maintenance (involves ONLY monitoring and maintenance of previously initiated IV lines as well as calculation and adjustment of flow rates – fluids NOT containing any medications or blood products).
- Monitoring of Blood Glucose with use of automated chem.-strip analysis.

**Scope of practice continued on next page.**

- EMT administration Medications (oxygen, activated charcoal, ipecac, instant glucose)
- EMT Patient Assisted Medications (NTG, Epi auto-injector, prescribed inhalers)
- CPAP
- Primary administration of Epinephrine auto-injector for sever anaphylaxis.

*These skills require the EMT-Basic to be affiliated with a SC licensed ambulance provider and gain authorization (on-line or off-line) from the provider’s medical control physician prior to initiating these skills.*

**Intermediate Skills**

All EMT-Intermediate candidates who successfully complete a SC EMT-Intermediate course, successfully pass the National Registry of EMT-intermediate/85 (i.e. SC Intermediate written and practical examination) and receive subsequent SC certification as an EMT-Intermediate are authorized to perform the following skills (all skills are inclusive of adult and infant unless otherwise stated).

- All skills listed under SC EMT-Basic
- Pharyngeal Tracheal Lumen Airway (PTL)
- Intravenous Therapy (peripheral, external jugular, intraosseous, INT – Heploc/PRN adaptor)
- Finger stick for blood glucose testing (BGL)
- D50 administration

*NOTE:* All additional skills listed above for the EMT-Intermediate may only be performed when the EMT is affiliated with a SC licensed ambulance provider under the authority of the provider’s medical control physician.

**Paramedic Skills**

All EMT-Paramedic candidates who successfully complete a SC approved EMT-Paramedic course which uses the current DOT EMT-Paramedic curriculum, successfully pass the National Registry EMT-Paramedic (i.e. SC State Paramedic written and practical examinations) and
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receive subsequent SC certification as an EMT-Paramedic are authorized to perform the following skills (all skills are inclusive of adult and infant unless otherwise stated).

- All skills listed under EMT-Basic and EMT-Intermediate
- Endotracheal Intubation
- Medication Administration
  - Sub Q injection
  - IM injection
  - IV push
  - IV drip
  - IO administration
  - Endotracheal Tube
  - Rectal
- Pleural Decompression
- Gastric lavage
- Vagal maneuvers
- ECG monitoring and rhythm identification to include 12 lead
- Defibrillation
- Cardioversion
- External Pacing
- Rapid Sequence Induction
- Monitoring approved Interfacility drugs
- Managing cardiac patients per current ACLS standards
- Induced Hypothermia
- Automatic Implantable Cardio-Defibrillator (AICD) deactivation
- Crico

**NOTE:** All additional skills listed above for the EMT-Paramedic may only be performed when the EMT is affiliated with a SC licensed ambulance provider under the authority of the provider’s medical control physician.
Spinal Movement Restriction

1. Perform and document Neuro exam; Any focal deficit?
2. Assess for the following:
   a. Is there significant mechanism of injury present?
   b. Does the patient have an altered level of consciousness?
   c. Is there any evidence of intoxication?
   d. Does the patient have a distracting injury? (Any painful injury that might distract the patient from the pain of a C-spine injury)
   e. Is there point of tenderness or ANY pain upon incidental movement by the patient?

If you answered “No” to ALL of the above questions, the patient may not require spinal movement restriction in the field.

If you answered “Yes” to ANY of the above questions, the patient MUST be placed in spinal movement restriction using a long spine board, at least 3 straps, and a device to restrict movement of the head.

You should also immobilize any other time you feel the patient requires this procedure. If the patient adamantly refuses the procedure, document the refusal on the Refusal of Medical Treatment/Advice form with the patient’s signature and a witness.

For Interfacility, C-spine MUST be cleared both physically and radiographically. Patient will be placed in spinal movement restriction prior to transport if not accomplished.

Pearls

- Significant mechanism of injury (MOI), including high energy events; ejection, falls > twice height of Pt, and abrupt deceleration may indicate the need for spinal movement restriction in the absence of signs and symptoms
- The decision NOT to implement spinal movement restriction is the responsibility of the SENIOR CREW MEMBER. If the senior crew member decides not to do procedure, they must assume patient care and attend to patient
- In very young and very old patients, a normal exam may not be sufficient to rule out spinal injury
Refusal of Medical Care or Advice

All adults have the right to accept or refuse any and all pre-hospital care and transportation, provided that the decision to refuse the treatment and transportation is made on an informed basis and provided that these adults have the mental capacity to make and understand the implications of such a decision. To meet the standard of “meaningful understanding” the patient must be informed and must understand (best demonstrated by the patient’s ability to restate) the nature and consequences of the consent or refusal at the time the care and/or treatment is being offered. The patient, legal guardian or durable power of attorney must meet the following criteria to refuse medical care or advice by the emergency medical personnel.

CRITERIA FOR REFUSING CARE

- The patient must be fully alert and oriented to person, place, time and event with NO altered mental status
- Patient is of legal age, a legal guardian or have durable power of attorney AND capable of making a decision
- The patient has been provided information to enhance understanding of his/her condition
- The patient has been advised of the possible consequences of refusing treatment/transport
- The patient has been informed that if signs and symptoms persist to seek medical attention without delay

Once this criteria has been met. The patient, legal guardian or durable power of attorney must sign the refusal of medical care or transport form. A witness must also sign the form to verify the signature is that of the patient, legal guardian or durable power of attorney. When possible the witness will be a third party, such as, Law Enforcement, Fire Department, Public Servant, or a competent bystander.

Patients who present with Behavioral Emergencies that appear to be mentally unstable are considered to have altered mental status (AMS) and Do Not meet the criteria to refuse care and transport. Refer to and follow the Behavioral Emergency treatment protocol on page __. Notify law enforcement to assist with safely restraining patient. If Law Enforcement places patient in handcuffs, an officer with a handcuff key MUST accompany the patient in the back of the ambulance during transport. At no time will a patient be handcuffed to a stretcher, piece of equipment, or the vehicle.
Medical Protocols
Abdominal Aortic Aneurysm (AAA)

1. Assess ABC’s.
2. If necessary, secure an advanced airway and ventilate with BVM or transport ventilator.
3. If patient has adequate spontaneous respirations, admin O2 at 15 LPM by NRB mask.
4. Establish two large bore IV’s of 0.9% NaCl @ KVO rate.
5. Connect patient to cardiac monitor and pulse ox.
6. Obtain a set of vital signs
7. If patient displays signs of inadequate perfusion, begin resuscitation with 0.9% NaCl per the Hypotension protocol on page __. If the patient is being transferred from a facility that has a blood bank, consider taking packed RBC’s for transfusion in the event of hypotension. Fresh Frozen Plasma (FFP) and/or platelets should also be considered for patients who are anticoagulated.
8. If the patient has pain and/or anxiety, treat as per Pain Management protocol on page __ or the Sedation Management protocol on page __.
9. If the patient remains tachycardic and hypertensive (SBP>110) after analgesia and anxiolysis consider short-acting anti-hypertensives per the Hypertension protocol on page __.
10. As the management of the patient with a symptomatic AAA is operative and extremely time dependant, the transport team should minimize scene time by performing all critical interventions while en route to receiving facility. Use air medical transport when appropriate.

Maintain systolic blood pressure between 100 – 120 mmHg
Abdominal Pain (with peds considerations)

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1. Assess ABC’s.
2. Apply oxygen appropriate for condition.
3. Initiate cardiac monitoring, pulse ox, and serial vital signs.
4. Establish IV access at a KVO rate (consider 2 sites).
5. Administer NaCl solution to maintain perfusion; if patient is being transported from a community facility obtain and administer colloid products as determined by patient condition.
6. Monitor closely for any changes in mental status, vital signs and/or impending shock. Early detection of signs of hemorrhagic shock and appropriate fluid administration can prevent or reduce the degree of shock. Keep in mind that IV volume administration may result in increased bleeding from intra-abdominal sources. If the source of bleeding is from a noncompressible site, judicious use of fluids may be wise.

Fluid replacements for Pediatric patients are as follows:

(+) signs of shock = 20ml/kg warmed NS or LR and repeat x1 then consider 10ml/kg of PRBC’s if available. **If whole blood is administered, use 20ml/kg
Maintenance fluids of 5% Dextrose with 0.25% NaCl (obtain from facility) =
4 ml/kg/hr for first 10kg
2 ml/kg/hr for second 10kg
1 ml/kg/hr for each kg of body weight about 20 kg

*Maintenance crystalloid should be calculated and administered on every pediatric patient, even in the absence of hemodynamic instability, and should contain dextrose.*

7. If patient is vomiting excessively administer 4mg Zofran slow IVP/IM for Adults and 0.15mg/kg Zofran slow IVP/IM for Pediatrics.
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**Acute Coronary Syndrome (ACS)**

1. Assess ABC’s.
2. Apply oxygen appropriate for condition.
3. Apply cardiac monitoring, pulse ox, and serial vital signs.
4. Obtain 12 lead ECG early in assessment, interpret findings, assess for presence of STEMI, if positive transport to nearest PCI facility by air or ground.
   
   **If 12 lead comes back clear or if showing inferior MI, obtain a 15 lead using V4R, V8, V9. If positive for Right Ventricular involvement, NTG is contraindicated. Establish 2 large bore IV’s and begin 2L bolus of NaCl.**

5. Administer 162-324 mg ASA unless contraindicated by a true allergy.
6. Establish IV access at KVO rate (if patient is going to PCI center, obtain 2 sites).
7. Administer 0.4 mg NTG SL spray every 5 minutes. If symptoms are relieved by SL NTG, consider utilizing continuous NTG by initiating a NTG infusion. If pain persists, initiate NTG drip at 10 mcg/min, titrate until pain free, keeping SBP>90. Do not exceed 200 mcg/min.

   **If patient has received a dose of Viagra or other erectile dysfunction Rx within past 24 hours for Viagra and 72 hours for Cialis or Levitra, NTG is contraindicated (Consult Med Control)**

8. If symptoms persist, consider administering Fentanyl 0.5 – 1 mcg/kg IV every 5 minutes PRN (maintain SBP>90) *Only with Online Med Control Order*
9. Administer Metoprolol (Lopressor) 5mg slow IVP over 2 minutes. Repeat every 5 minutes up to a total of 15 mg. Obtain an optimal heart rate of 50-60 bpm.
   
   **Avoid with patients in CHF, heart block, valvular failure, cocaine use, HR <50, SBP <90 or severe bronchospasm.**

10. If thrombolytic therapy has not been initiated and is being considered, screen patient for inclusion criteria.
    
    a. **Inclusion age <75, 12 hours or less onset of symptoms, ECG showing new LBBB or ST segment elevation > 1 mm in two contiguous leads.**
    
    b. **Exclusion** previous hemorrhagic stroke or other strokes within one year, known intracranial neoplasm, active internal bleeding, suspected aortic dissections.
    
    c. **Cautions** severe uncontrolled hypertension, recent trauma within last 2-4 weeks, major surgery <3 weeks, active peptic ulcer, pregnancy, traumatic or prolonged CPR.

11. If thrombolytic therapy has been initiated, continue infusion per referring physician’s protocols. Monitor closely for bleeding.

   **ACS continued on next page**
ACS continued

12. If patient has not received low molecular weight heparin during the previous 12 hours and heparin therapy has not been initiated, consult physician for administration of a heparin bolus of 60 IU/kg (max 400 IU) and infusion at 12 IU/kg (max 1000 IU/hr).

13. If glycoprotein IIb/IIa inhibitor therapy has been initiated, continue infusion per referring physician’s protocol. (most common Eptifibatide (Integrilin)

14. If hypotension is present and there is no evidence of pulmonary edema, consider an IV fluid challenge of 250-500ml of NaCl. Repeat as necessary.

15. If hypotension persists, consider using vasopressors.

12 Lead Layout

12 Lead Changes

<table>
<thead>
<tr>
<th>Elevated Leads</th>
<th>Myocardial Region</th>
<th>Coronary Artery</th>
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<tbody>
<tr>
<td>II, III, aVF</td>
<td>Inferior</td>
<td>RCA</td>
</tr>
<tr>
<td>V4R</td>
<td>RV Involvement</td>
<td>RCA</td>
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<tr>
<td>V1, V2</td>
<td>Septal</td>
<td>LAD branch of LCA</td>
</tr>
<tr>
<td>V3, V4</td>
<td>Anterior</td>
<td>LAD branch of LCA</td>
</tr>
<tr>
<td>V5, V6</td>
<td>Lateral</td>
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<tr>
<td>I, aVL</td>
<td>High Lateral</td>
<td>Diagonal branch of LCA</td>
</tr>
</tbody>
</table>

Global elevation with no reciprocal changes is classic Paracarditis
Integrilin Chart
Airway Management (adult and peds)

1. Assess airway for respiratory rate, effort, and adequate volume.
2. Basic airway maneuvers first – open airway; nasal, oral airway; BVM
3. If obstructed, identify partial versus complete airway obstruction. If a partial obstruction exists, assess the patient’s ability to maintain his own airway and adequacy of ventilation.
   a. Conscious patient < 1 year of age
      i. 5 back blows & 5 chest thrust
      ii. Repeat until effective or until patient becomes unresponsive.
   b. 1 – 8 years of age
      i. Give abdominal thrust / Heimlich maneuver
      ii. Repeat until effective or until patient becomes unresponsive.
   c. Unresponsive patient < 1 – 8 years of age
      i. Perform tongue-jaw life and look for obstructing object, do not perform a blind finger sweep.
      ii. Use a laryngoscope and Magill forceps and attempt direct visualization and removal of object.
      iii. Open airway and attempt ventilation, reposition if unsuccessful.
      iv. Start chest compressions
      v. Repeat steps I – v until effective
   d. If above steps are ineffective, initiate the following.
      i. An airway must be established somehow!
      ii. The object may be retrieved with Magill forceps if it can be seen near the cords. If the object is below the cords and in the trachea, it may be possible to displace obstruction distally by pushing it into the right main stem bronchus with the endotracheal tube. This will allow ventilation of one lung. An obstruction distal to the cricothyroid membrane may render cricothyrotomy ineffective.
      iii. If ETT used to displace object into the right main, pull tube back into trachea to ventilate the left lung. Contact receiving facility and inform them of situation as soon as possible.
4. If indicated, place ET tube, confirm tube placement with multiple methods. Secured ET tube and reconfirm tube placement every few minutes and after each patient move. Apply pulse ox and end tidal CO2 detector. Attach oxygen to BVM.
5. If three failed intubation attempts by most proficient paramedic on scene, go to Combitube or LMA device.
Rapid Sequence Intubation (RSI)

Indications
1. Trauma patients with Glasgow Coma Scale of nine or less with gag reflex.
2. Trauma patients with significant facial trauma and poor airway control.
3. Closed head injury or major stroke with unconsciousness.
4. Burn patients with airway involvement and inevitable airway loss.
5. Respiratory exhaustion such as severe asthma, CHF or COPD with hypoxia.
6. Overdoses with altered mental status where loss of airway is inevitable.

Preparation
1. Assess oropharynx and neck anatomy to anticipate difficult intubation. “Can I bag this patient if I cannot intubate him?”
2. Administer 100% oxygen. Have bag-valve-mask at hand.
3. Apply three lead cardiac monitor, BP monitor, pulse oximeter.
4. Secure intravenous access. (Suggest 2 IV lines).
5. Test ET tube and all equipment necessary for intubation.
6. Estimate patient’s weight, calculate drug dosages, and draw up into syringes.

Procedure
1. Preoxygenate with 100% oxygen by non-rebreather mask for at least 3 full, deep breaths. If ventilation is required, bag gently while cricoid pressure is applied. Preoxygenate four minutes if situation allows.
2. Administer either Versed OR Etomidate.
   a. Versed (Midazolam) dose is 2mg for average size adult.
   b. Etomidate dose is 0.3 mg/kg, about 20 mg for the average size adult.
   c. If systolic pressure is 80-100 mmHg, utilize Etomidate or decrease Versed dose.
3. Administer Lidocaine 1.5 mg/kg to patients with head trauma or stroke.
4. Apply cricoid pressure and hold until patient has been intubated, balloon of ETT has been inflated, position of tube tip has been assured, and ETT has been secured in place.
5. Administer Succinyllcholine 1.5 mg/kg IVP (100 mg for average 70kg patient) and wait for paralysis to occur.

RSI continued on next page
RSI continued

6. Intubate Discontinue attempt and ventilate with 100% O₂ if
   a. 30 seconds has passed and SPO2 falls below 91% OR
   b. Heart rate fall below 60 bpm.
7. When successfully intubated, confirm placement (and document) by
   a. Bilateral lung sounds
   b. Chest wall raise
   c. End tidal CO₂ measurement, and
   d. Continued PO₂ readings in the high 90’s (if this is consistent with the
      patient’s baseline)
8. A second qualified person will then confirm correct tube placement.
9. Secure tube in place to a stable facial structure.
10. If intubation is unsuccessful, maintain cricoid pressure and provide BVM ventilation until
    the paralytic wears off, or consider use of the LMA or combitube.
11. If patient becomes agitated, administer Versed (Midazolam) 1 mg every 1 – 2 min. until
    patient is calm, BP drops, or max. 10 mg is utilized. Further doses may be given Only
    with On Line Med Control Order

If a long transport is anticipated, consider administering Norcuron (Vecuronium) (0.1 mg/kg).
Remember sedation is still required when Norcuron (Vecuronium) is utilized.

Trouble-Shooting Inadequate Ventilation or Oxygenation

A. Mnemonic: DOPE
   1. Dislodged tube
   2. Obstructed tube
   3. Pneumothorax
   4. Equipment failure
B. Confirm tube positioned correctly as above
C. Is ET Tube too small, cuff (>8yo) under-inflated?
D. Is the pop-off valve on Resuscitation bag depressed?
   1. With Near-drowning, pulmonary edema, and Asthma
      a. higher ventilation pressures are needed
E. Is the Bag-Valve Device Leaking?
   1. Compress the bag against an Occluded ET connection
      a. Air will be expelled from any leaks
F. Is the operator providing adequate tidal breaths?
G. Is there a Pneumothorax present?

RSI continued on next page
### Reference Chart

<table>
<thead>
<tr>
<th>Drug</th>
<th>Standard Dose</th>
<th>Age</th>
<th>2 mo</th>
<th>1 yr</th>
<th>3 yr</th>
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<tr>
<td>Versed</td>
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<td>0.3mg</td>
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<td>Atropine</td>
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<tr>
<td>Etomidate</td>
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<td>Versed</td>
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Allergic Reaction (Anaphylaxis)

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<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset &amp; location</td>
<td>Itching or hives</td>
<td>Urticaria (rash only)</td>
</tr>
<tr>
<td>Insect sting or bite</td>
<td>Coughing/wheezing or Resp Distress</td>
<td>Anaphylaxis (systemic)</td>
</tr>
<tr>
<td>Food allergy</td>
<td>Chest or throat constriction</td>
<td>Shock (vascular effect)</td>
</tr>
<tr>
<td>Medication allergy</td>
<td>Difficulty swallowing</td>
<td>Angioedema</td>
</tr>
<tr>
<td>New clothing / soap</td>
<td>Hypotension</td>
<td>Vasovagal event</td>
</tr>
<tr>
<td>PMHX of reactions</td>
<td>Edema</td>
<td>Asthma or COPD</td>
</tr>
<tr>
<td>Rx history</td>
<td>AMS</td>
<td>CHF</td>
</tr>
</tbody>
</table>

1. While assess patient do not attempt to determine cause of allergic reaction, it may distract you from a life threatening condition.
2. Assess ABC’s.
3. Apply oxygen appropriate for condition. Secure an advanced airway if the potential for airway obstruction exists or the patient has severe dyspnea.
4. Apply cardiac monitor and pulse ox.
5. If the patient is experiencing dyspnea (with or without wheezing), administer 5 mg Albuterol via nebulizer for adult and pediatric patient OR 1.25 mg Xopenex via nebulizer for patients > 12 years of age. Consider Epinephrine (1:1,000) 0.3 – 0.5ml IM for severe cases. When administering Epinephrine IV to patients with risk of cardiovascular disease, consider beginning at the lower end of dosage range.
6. Establish large bore IV access of NS 0.9% at KVO rate, multiple IV’s for seriously ill patients.
7. If patient is hypotensive, administer fluid bolus of 250ml of NS 0.9%. Repeat as necessary, so long as the patient shows no signs of volume overload. Treat per Hypotension Protocol on page __.
8. Consider IV administration of Epinephrine (1:10,000) 0.1-0.5mg (1-5ml of 1:10,000) IV over 5 minutes if patient is experiencing a severe life threatening reaction or show signs of shock.
9. Administer 25 – 50mg Diphenhydramine IVP.
10. Consider 125mg Solumedrol (Methylprednisolone) IVP (use caution in patients with; GI bleeding, Diabetes, Severe infections).
11. If the patient remains hypotensive after multiple fluid boluses, consider initiating a continuous Epinephrine infusion at 1 – 10mcg/min.

Pearls
- Any patient with respiratory symptoms or extensive reaction should receive IV or IM Benadryl (Diphenhydramine)
- The shorter the onset from contact to symptoms, the more severe the reaction.
- Use caution when administering epinephrine to patients >50, Hx of cardiac disease, or if the patient’s HR is >150. Epinephrine may precipitate cardiac ischemia.
Altered Mental Status (AMS)

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Known diabetic</td>
<td>Decreased mental status</td>
<td>Head trauma</td>
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<tr>
<td>Medic alert bracelet</td>
<td>Change in baseline mental status</td>
<td>CNS (stroke, tumor, SZ, infection)</td>
</tr>
<tr>
<td>Drugs, paraphernalia</td>
<td>Bizarre behavior</td>
<td>Cardiac (MI, CHF)</td>
</tr>
<tr>
<td>Report of illicit drug use</td>
<td>Hypoglycemia (diaphoretic skin)</td>
<td>Infection</td>
</tr>
<tr>
<td>Toxic ingestion</td>
<td>Hyperglycemia (dry skin, fruity breath</td>
<td>Thyroid (hyper/hypo)</td>
</tr>
<tr>
<td>PMHX</td>
<td>Kussmal resp, signs of dehydration</td>
<td>Toxicological</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Administer oxygen appropriate for condition.
3. Apply cardiac monitor and pulse ox. Obtain 12 lead early in assessment. If positive for STEMI refer to ACS protocol on page 20.
4. Place in Spinal Movement Restriction if indicated, refer to protocol page 15.
5. Obtain IV access.
6. If patient is suspected to have abused ETOH, chronic wasting or Delirium Tremens, administer 100mg Thiamine IM or slow IVP.
7. Obtain BGL
   
   If BGL < 60 administer 25 grams of D50% IVP adults, D25% 0.5 – 1 grams/kg for Peds, D10% 0.5 – 1 grams/kg for Neonates (> 1 month of age)
   
   Consider 1mg Glucagon IM, if no IV site available
   
   If BGL > 60 continue with protocol

8. If patient is able to swallow, may administer a tube of Oral Glucose.
9. Obtain serial BGL checks after interventions that effect patients BGL.
10. Consider other causes such as; head injury, CVA, overdose, hypoxia, etc.
11. If unknown or suspected Narcotics overdose with respiratory depression or arrest, administer 1 – 2mg Narcan IV/IM slowly titrated to respirations.

- Do not let alcohol confuse the clinical picture. Alcoholics frequently develop hypoglycemia
- You will not be able to differentiate between a head injury and ETOH intoxication
AMS (continued) Possible Causes

**Toxic ingestion** – Question caregivers/referring staff about possibility of ingestion, access to substances. Observe for toxidromes, for example, narcotic ingestion (pinpoint pupils, hypoventilation with AMS).

**Hypoxia** – Observe for airway patency, work of breathing (grunting, retractions, nasal flaring), tachypnea, tachycardia or bradycardia (late sign), cyanosis. ABC’s, pulse ox, or ETCO2 sampling may be useful; however, **identification of the need for ventilator support must be made rapidly, and largely based on clinical observation.**

**Hypovolemia** – Assess for signs of volume deficit: tachycardia, tachypnea, pallor, dry and/or pale mucous membranes, sunken fontanelles, sunken eyes, poor skin turgor, decreased urine output (indwelling urinary catheter, or ask about number of wet diapers in a given period). Decreased BP is a late sign and should not be used to “rule out” Hypovolemia in children.

**Meningitis** – Observe for fever, nuchal rigidity, petechial rash (non-blanching reddish-purple areas), bulging fontanelles.

**Sepsis** – Assess for Hx of recent illness, suspected source, or physical portal of entry (wound, umbilical stump, etc). Assess for fever OR hypothermia, mottling of skin, signs of Hypovolemia. Review available lab work for increased WBC’s, left shit, (+) cultures.

**Hypoperfusion of cardiac etiology** – Assess patient for heart rate and regularity. Auscultate for murmurs or adventitious cardiac sounds. Palpate brachial and femoral pulses for equality (coarctation (narrowing) of the aorta may present with bounding upper extremity pulses and diminished/absent femorals). In cyanotic heart defects, cyanosis will persist despite appropriate oxygen administration and ventilation. Review ECG for dysrhythmias.

**Neurotrauma** – Question caregivers/referring staff about recent trauma. Inquire about presence/absence of papilledema. Assess for head injuries; palpate head for depressed areas or hematomas. Observe for otorrhea (discharge from ear), rhinorrhea, bulging fontanelles. Spinal movement restriction is appropriate if neurotrauma is suspected.

**DKA** – Assess glucose level. The initial diagnosis of type I diabetes is often made when the patient presents with DKA. Hyperventilation and signs of dehydration may trigger suspicion for DKA.

**Electrolyte abnormality** – Assess lab work, if available. Sodium imbalances can have a major impact on mental status.
**Midlands MedTech LLC**
Patient Care Guidelines

**Non-Trauma neurologic issues** – Though rare, pediatric ischemic strokes and intracranial hemorrhages do occur. Careful hx taking may provide vital clues to the etiology of the problem.

**Anxiety Sedation Management**

1. Attempt verbal reassurance.
2. Apply extremity restraints to any patient observed to be agitated or with potential to become agitated.
3. For patients who do not respond to verbal reassurance, the following medications can be considered.
   a. Versed (Midazolam) 0.05 – 0.1mg/kg IV every 3 – 5 minutes. Usual adult dose is 2 – 4 mg IV
   b. Ativan (Lorazepam) 0.05 – 0.1mg/kg IV. May repeat every 15 – 30 minutes as necessary. Usual adult dose is 2 – 4mg IV
4. If the medical transport team determines that transporting the patient is unsafe due to combativeness, contact Law Enforcement to assist with restraining. If unable to obtain assistance with restraining, crew may refuse to transport. Medical Control should be consulted.

*ANY patient receiving neuromuscular blockade shall also receive sedation and analgesia*
Asystole / PEA

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMHX</td>
<td>Pulseless</td>
<td>Medical v/s Trauma</td>
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<td>Medications</td>
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<td>No electrical activity</td>
<td>Death</td>
</tr>
<tr>
<td>End stage renal disease</td>
<td>Electrical activity no pulse</td>
<td>4 H’s and 4 T’s</td>
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<tr>
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<td>Hypovolemia</td>
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<tr>
<td>Suspected hypothermia</td>
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<td>Hypoxemia</td>
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<td>Lightning strike</td>
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<td>Hypothermia</td>
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<tr>
<td>DNR or Living will</td>
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<td>Hyperkalemia (hypo)</td>
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<tr>
<td>Tricyclics (Triavil, Elavil, Etrafon, Noratriptyline)</td>
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<td>Hydrogen (acidosis)</td>
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<td>Digitalis</td>
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<td>Tablets (overdose)</td>
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<td>Beta Blockers</td>
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<tr>
<td></td>
<td></td>
<td>Thrombosis (ACS)</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Consider withholding resuscitation efforts if patient meets criteria as specified in Determination of Death procedures on page 8.
3. Secure airway and ventilate with 100% oxygen
4. Apply cardiac monitor and record rhythm strip. Confirm Asystole in two leads.
5. Begin/Continue CPR (consider possible causes early in assessment) minimize interruptions in chest compressions.
6. Establish IV/IO access, 0.9% NS at KVO rate, multiple lines if possible.
7. Administer 1mg Epinephrine (1:10,000) IV/IO every 3 – 5 minutes throughout the arrest.
8. Administer 1mg Atropine IV. May repeat every 3 – 5 minutes, max dose of 0.04mg/kg. If in PEA, Atropine is for absolute bradycardia < 60 per min.
9. Consider Sodium Bicarbonate 1 mEq/kg IV/IO if > 15 unknown or extended down time, suspected renal failure patients or dialysis patients. May repeat 0.5mEq/kg every 10 minutes. **For age < 2 must be diluted 1:1 with D5 or NS prior to administration.**
10. Consider Calcium Gluconate 5 – 20ml IV/IO for adults. Pediatric dose is 50 – 100mg/kg. **DO NOT administer with Sodium Bicarbonate, obtain additional access or provide significant bolus between drug administrations.**
11. Consider criteria for discontinuation of efforts. Working cardiac arrest for 30 minutes with secured airway, refractory to interventions.
Atrial Fibrillation / Atrial Flutter

1. Assess ABC’s.
2. Apply oxygen appropriate for condition.
3. Apply cardiac monitor and pulse ox. Obtain 12 lead early in assessment. If positive for STEMI transport to nearest PCI facility. 15 lead indicated for clear ECG and/or inferior MI. Follow ACS protocol on page 22.
4. Consider applying hands free defibrillator pads. May proceed directly to synchronized cardioversion if patient becomes unstable.
5. Establish IV access. 0.9% NS at KVO rate.
6. If patient is asymptomatic with vital signs within normal limits, monitor and transport.
7. If patient is symptomatic, with onset < 8 hours, continue with therapeutic treatment.
8. If patient is stable, may attempt vagal maneuvers prior to medication administration.
   a. Lopressor (Metoprolol) 5mg slow IVP. May repeat x 2 every 5 minutes until a total of 15mg. Obtain an optimal heart rate of 50 – 60 BPM. Avoid in CHF, heart block, valvular failure, cocaine use, HR < 50 or systolic BP < 90mmHg.
   b. OR, Amiodarone 150mg IV over 10 minutes.
9. If patient is unstable (systolic < 90mmHg, AMS, severe chest pain, pulmonary edema)
   a. Consider sedation prior to cardioversion. Versed (Midazolam) 0.5 – 2.5mg
   b. Perform synchronized cardioversion at 50J, 100J, 200J, 300J, 360J

Pearls

- Continuous pulse ox is required for all A-Fib/A-Flut patients
- Obtain rhythm strips after before and after rhythm changes and therapeutic interventions
- Approved vagal maneuvers include; coughing, straining as if attempting a bowel movement, attempting to “inflate” a glass bottle. Carotid sinus massage is not approved
- Adenosine may not be effective in identifying A-fib/A-flut, yet is not harmful
Behavioral Emergency

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Situational crisis</td>
<td>Anxiety, agitation, confusion</td>
<td>AMS</td>
</tr>
<tr>
<td>Psychiatric illness/Rx</td>
<td>Affect change, hallucinations</td>
<td>Alcohol intoxication</td>
</tr>
<tr>
<td>Self harm or threats to others</td>
<td>Delusional thoughts</td>
<td>Substance abuse</td>
</tr>
<tr>
<td>Medic alert tag</td>
<td>Bizarre behavior</td>
<td>Medication effect</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Combative, violent</td>
<td>Withdrawal syndromes</td>
</tr>
<tr>
<td>Hypoxemia</td>
<td>Suicidal/homicidal thoughts</td>
<td>Bipolar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Depression</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Schizophrenia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anxiety disorder</td>
</tr>
</tbody>
</table>

1. Assure scene is safe.
   
a. DO NOT APPROACH until scene is determined to be safe.
   
b. Evaluate for evidence of violence, substance abuse, suicide attempt.
2. Assess ABC’s.
3. Apply oxygen appropriate for condition and pulse ox.
4. Remove patient from stressful environment.
5. Utilize verbal techniques (reassure, calm, establish rapport).
6. Treat suspected medical or trauma problems, patients with behavioral problems can also be sick.
7. If restraints are required, use minimal force necessary to protect patient and crew. Use only soft restraints, kling arms and legs to stretcher.
   
a. Once a patient is restrained DO NOT release patient until you deliver patient to the receiving hospital.
8. For safety of patient and crew consider administering 2 – 4 mg Ativan IV/IM to combative patients.

Pearls
- YOUR SAFETY FIRST!
- Be sure to consider all possible medical/trauma causes for behavior (hypoglycemia, overdose, substance abuse, hypoxia, head injury, etc)
- Do not irritate patient with a prolonged exam
- Do not overlook the possibility of associated domestic violence or child abuse
Bradycardia

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMHX</td>
<td>HR &lt; 60 bpm</td>
<td>Acute MI</td>
</tr>
<tr>
<td>Medications</td>
<td>Chest pains</td>
<td>Hypoxia</td>
</tr>
<tr>
<td>Beta Blockers</td>
<td>Respiratory distress</td>
<td>Athletes</td>
</tr>
<tr>
<td>Calcium channel blockers</td>
<td>Hypotension or shock</td>
<td>Head injury (elevated ICP)</td>
</tr>
<tr>
<td>Clonidine</td>
<td>AMS</td>
<td>CVA</td>
</tr>
<tr>
<td>Digitalis</td>
<td>Cyanosis</td>
<td>Spinal cord lesion</td>
</tr>
<tr>
<td>Enhanced vagal tone</td>
<td></td>
<td>AV blocks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hyperkalemia</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply oxygen appropriate for condition.
3. Apply cardiac monitor and pulse ox. Obtain 12 lead early in assessment. If positive for STEMI transport to nearest PCI facility. If 12 lead is negative or showing Inferior MI obtain 15 lead and follow ACS protocol on page 22.
4. Establish IV access. 0.9% NS at KVO rate.
5. If that patient is not symptomatic, stable vital signs, monitor closely and transport.
6. If patient is symptomatic consider
   a. Atropine 0.5 – 1mg IV for five minutes (max dose 0.04mg/kg)
   b. Prepare for transcutaneous external pacing (TCP). Consider sedation and/or analgesia. Start pacing with 50 MA, HR 80 and increase MA until capture is obtained.
   c. Vasopressor therapy for hypotension.

Treat symptomatic 2nd degree type II or greater with immediate TCP
7. If suspected Calcium Channel Blocker or Beta Blocker overdose, administer 1-2mg Glucagon IV/IO for adults. 0.1mg/kg to max of 1mg for pediatric patients.
8. If known Calcium Channel Blocker overdose, administer 5 – 20ml Calcium Gluconate IV/IO for adults, 50 – 100mg/kg for pediatrics.

**Vasopressor Therapy**
- **Dopamine** 5mcg/kg/min titrate to max of 20mcg/kg/min. Caution: high dose increases heart rate and myocardial O2 demand
- **Dobutamine** (500mg/500ml) start at 2mcg/kg/min and titrate to perfusion indicators. Max dose is 20mcg/kg/min.
- **Norepinephrine (Levophed)** (obtain from facility). Infusion (4mg/250ml) at 1mcg/min to max of 20mcg/min. Caution causes increased afterload and my cause dysrhythmias.
Congestive Heart Failure (CHF)

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHF</td>
<td>Respiratory Distress, bilateral rales</td>
<td>Myocardial infarction</td>
</tr>
<tr>
<td>PMHX</td>
<td>Apprehension, Shortness of breath</td>
<td>CHF</td>
</tr>
<tr>
<td>Rx (Digoxin, Lasix)</td>
<td>Jugular vein distention</td>
<td>Asthma</td>
</tr>
<tr>
<td>Viagra/ED Rx use</td>
<td>Pink, frothy sputum</td>
<td>Anaphylaxis</td>
</tr>
<tr>
<td>Cardiac history</td>
<td>Peripheral edema, diaphoresis</td>
<td>Aspiration</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>Hypotension, Shock</td>
<td>COPD</td>
</tr>
<tr>
<td>Near drowning</td>
<td>Hypertension</td>
<td>Pleural effusion</td>
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<tr>
<td></td>
<td></td>
<td>Pneumonia</td>
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<td></td>
<td></td>
<td>Pulmonary embolus</td>
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<td></td>
<td></td>
<td>Pericardial Tamponade</td>
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<td></td>
<td></td>
<td>Lung CA</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply oxygen appropriate for condition.
3. Apply cardiac monitor and pulse ox. Obtain 12 lead ECG early in assessment. If positive for STEMI transport to nearest PCI facility. Follow ACS protocol on page 22.
4. Precipitating factors should be identified and corrected if possible. Specific attention should be give to:
   - Dysrhythmias
   - Hypertension
   - Hypotension
   - On-going cardiac ischemia
5. Airway:
   - Ensure patent airway, confirm placement of airway adjunct
   - Consider placing patient on CPAP to reduce work of breathing
   - High fowlers position for hypertensive patients
6. Establish IV access; consider multiple sites for seriously ill patients.
7. Administer NTG 0.4mg SL every 3-5 minutes, maintain BP > 100mmHg. If patient has received erectile dysfunction within past 24 hours for Viagra and 72 hours for Cialis or Levitra, NTG is contraindicated.
8. Administer 40 – 80mg Lasix (Furosemide) slow IV/IO.
9. Consider Albuterol 2.5mg Nebulizer, will help with potassium shift.
10. If patient is receiving Nesiritide, continue current infusion.
CHF continued

11. Consider Dobutamine infusion at 2 – 10mcg/kg/min if SBP > 90 for inotropic support.
12. Consider for cardiogenic shock;
   - Dopamine infusion 5 – 20mcg/kg/min
   - Levophed infusion 1mcg/min (obtain from facility)
13. Consider having facility insert an indwelling urinary catheter (prior to transport) to monitor urine output.

Pearls

- Consider Myocardial Infarction in all CHF patients
- Diabetics and geriatric patients often have atypical pain, or only generalized complaints, make sure you obtain your 12 lead
- Careful monitoring of level of consciousness, BP, respiratory status with CHF patients is essential
- Allow patient to be in their position of comfort to maximize their breathing effort.
CVA (Stroke)

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous CVA, TIA’s</td>
<td>Altered mental status</td>
<td>see AMS protocol</td>
</tr>
<tr>
<td>Previous cardiac/vascular surgery</td>
<td>Paralysis</td>
<td>TIA</td>
</tr>
<tr>
<td>Associated diseases;</td>
<td>Blindness or other sensory loss</td>
<td>Seizure</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Asphasia, Dsyarthria</td>
<td>Hypoglycemia</td>
</tr>
<tr>
<td>HTN, CAD</td>
<td>Syncpe</td>
<td>CVA</td>
</tr>
<tr>
<td>Atrial fibrillation</td>
<td>Vertigo/dizziness</td>
<td>Thrombotic</td>
</tr>
<tr>
<td>Blood thinning medications</td>
<td>Vomiting</td>
<td>Embolic</td>
</tr>
<tr>
<td>History of trauma</td>
<td>Headache</td>
<td>Hemorrhagic</td>
</tr>
<tr>
<td></td>
<td>Seizure</td>
<td>Tumor</td>
</tr>
<tr>
<td></td>
<td>Respiratory pattern changes</td>
<td>Trauma</td>
</tr>
<tr>
<td></td>
<td>Hypertension/hypotension</td>
<td></td>
</tr>
</tbody>
</table>

1. Assess ABC’s
2. Apply oxygen appropriate for condition.
3. Apply cardiac monitor and pulse ox.
4. Establish IV access; consider multiple sites for seriously ill patients.
5. Obtain BGL reading to rule out CVA imposter.
   a. If BGL < 70; administer 12.5 grams of D50% slow IVP and repeat BGL. If symptoms of CVA are resolved; monitor BGL q 5 min’s to maintain >70, administer additional 12.5 grams of D50% if needed. Consider 1 mg Glucagon IM if no patent IV available.
   b. If BGL > 70; proceed with protocol.
6. Complete MEND checklist, if positive for CVA/Stroke, transport immediately to a certified Stroke Center, consider the use of Helicopter EMS.

Pearls
- With duration of symptoms of less than 3 hours, scene time and transport should be minimized. A certified Stroke center can extend reperfusion time to 6 or more hours from time of onset
- Elderly patients may not be excluded from some interventions available at the Stroke center, don’t let age prevent you from arranging transport to the appropriate facility
- Elevated blood pressure is commonly present with CVA/stroke. This is a natural defense mechanism and should not be treated in the prehospital setting
- Be alert for airway problems (swallowing difficulties, vomiting)
- For any hypoglycemic patient suspected of abusing alcohol, always administer 100 mg Thiamine before administering D50%
MEND Checklist
Adult Diabetic Ketoacidosis

1. Assess ABC’s.
2. Apply oxygen as appropriate for condition.
3. Apply cardiac monitor and pulse ox.
4. Establish or confirm IV access, preferably 2 large bore IV’s.
5. Obtain vital signs
6. Initiate fluid replacement immediately. Patients with DKA have an average of 5 – 7 liters of fluid deficit.
   a. Initially patients should receive a 1000ml 0.9% NS bolus over 1 hour, followed by 500ml of 0.9% NS per hour for the next 3 – 4 hours.
   b. When plasma glucose reaches 300mg/dl, fluid should be changed to D5NS with continued insulin therapy (obtained from facility).
7. Evaluate the need for Potassium replacement prior to departing the referring facility. Normal potassium level in an acidotic patient will require potassium replacement as the acidosis is corrected. See Electrolyte Disorders page 40.
8. Following fluid resuscitation, regular insulin should be administered.
   a. The patient should receive a regular insulin infusion of 100units/100ml at 0.1 units/kg/hr. Obtained from facility.
   b. Blood glucose levels should be monitored every 30 minutes during transport while the patient is receiving insulin therapy.
   c. When blood glucose level fall to 300mg/dl, glucose should be added to IV fluids (D5N5 at 100ml/hr). The insulin drip should be continued at the current rate until ketonemia and acidosis have been corrected (obtained from facility).
Electrolyte Disorders

**Hypokalemia**

1. Assess ABC’s.
2. Administer oxygen as appropriate for condition.
3. Apply cardiac monitor and pulse ox. If patient is severely bradycardic and symptomatic or manifesting cardiac arrhythmias, appropriate pharmacologic therapy or cardiac pacing should be considered.
4. Establish IV access.
5. Begin infusion of 0.9% NS at KVO rate.
6. Direct potassium replacement therapy by the symptomatology and the potassium level. Usually patient who have mild or moderate Hypokalemia (potassium 2.5 – 3.5 mEq/l) are asymptomatic, or have only minor symptoms need only oral potassium replacement therapy. If cardiac arrhythmias or significant symptoms are present, then more aggressive therapy is warranted.
7. If potassium level is < 2.5 mEq/l, consult physician to administer potassium 10 – 20 mEq/100ml IV at a rate not to exceed 10 mEq/hr. Serum potassium is difficult to replenish if serum magnesium is also low. Consider replacing both.

**Hyperkalemia**

1. Assess ABC’s.
2. Administer oxygen as appropriate for condition, apply pulse ox.
3. Apply cardiac monitor and record rhythm strip.
4. Establish IV access.
5. Begin infusion of 0.9% NS at KVO rate.
6. Calcium is indicated when the ECG shows advanced changes such as loss of P waves and prolonged QRS duration. Calcium is also recommended regardless of ECG findings, when the serum potassium exceeds 7.0 mEq/l. Administer 5 – 20 ml Calcium Gluconate slow IVP. If patient is on digitalis, more caution is required as calcium can increase the toxic effects of digitalis.
7. Administer 40 – 50 mEq of Sodium Bicarbonate IV to shift potassium into intracellular space.
8. During transport consider administration of
   a. Albuterol 2.5 mg via nebulizer.
   b. Lasix (Furosemide) 40 mg IV.
9. Repeat steps 6, 7, 8 for continued signs of Hyperkalemia.
Diabetic Ketoacidosis

1. Initiate therapy as outlined in Diabetic Ketoacidosis protocol on page 38.
2. When serum potassium levels reach 5.5 mEq/l and urine output is confirmed, add 20 mEq of potassium as KCl to each liter of solution. Rate of administration should not exceed 500 ml/hr or 10 mEq/hr. Obtain from facility.
3. Potassium may be administered via the same manner as KP04 (potassium phosphate); though it is recommended that 2/3 of the replacement be with KCl. Obtain from facility.

Hypomagnesemia

1. Assess ABC’s.
2. Treat dysrhythmia with appropriate protocol.
3. Seizures should be treated with benzodiazepines per Seizure Protocol on page __.
4. Apply oxygen appropriate for condition.
5. Establish IV access; consider 2 lines for seriously ill patients. 0.9% NS at KVO rate.
6. Apply cardiac monitor and record rhythm strip.
7. Treatment of hypomagnesemia depends on the degree of deficiency and the clinical effects. Oral replacement is appropriate for mild symptoms; with IV replacement is indicated for severe clinical effects.
8. Most patients with symptomatic hypomagnesemia and normal renal function, with an estimated deficit of 1 – 2 mEq/kg should receive 1 mEq/kg of Magnesium Sulfate for the first 24 hours as a continuous IV infusion.
9. If cardiac dysrhythmias or seizures are present, infuse 2 grams Magnesium Sulfate IV push over 2 minutes.

Hypermagnesemia

1. Assess ABC’s.
2. Apply oxygen appropriate for condition.
3. Establish IV access; consider 2 lines for seriously ill patients. 0.9% NS at KVO rate.
4. Apply cardiac monitor and record rhythm strip.
5. Calcium can be effective in reversing the physical findings associated with Hypermagnesemia. Administer 5 – 20 ml Calcium Gluconate (adult dose). If the patient is on Digitalis, more caution is required as calcium can increase the toxic effects of digitalis.

<table>
<thead>
<tr>
<th>Lab</th>
<th>Normal</th>
<th>Increases</th>
<th>Decreases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium</td>
<td>1.7 – 2.4 mg/dl</td>
<td>Renal failure</td>
<td>Alcoholism</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Diabetic coma</td>
<td>Diuretics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe dehydration</td>
<td>Chronic dialysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hypothyroidism</td>
<td>NG suctioning</td>
</tr>
</tbody>
</table>
GI Bleed

1. Assess ABC’s.
2. Apply oxygen appropriate for condition.
3. Establish 2 large bore IV with 0.9% NS.
4. Apply cardiac monitor and pulse ox.
5. Obtain vital signs.
6. If patient is hypotensive, treat per Hypotension Protocol on page __.
7. A nasogastric tube should be placed in all patients with significant GI bleeding.
   a. If bright red blood or clots are found, gentle lavage with room temperature water should be performed.
   b. Over-vigorous suction should be avoided to prevent mucosal trauma.
   c. If balloon Tamponade (Minnesota or Blakemore tube) is in place, endotracheal intubation should be strongly considered (ideally prior to its placement) to prevent airway obstruction during transport.
8. Consider administration of H2 blocker.

<table>
<thead>
<tr>
<th>Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUN (Blood Urea Nitrogen) elevation 8 – 18 mg/dl normal range</td>
</tr>
<tr>
<td>Hbg (Hemoglobin) decrease with blood loss; 14 – 18 g/dl normal range</td>
</tr>
<tr>
<td>Hct (Hematocrit) elevation with shock. 42 – 52% normal range</td>
</tr>
<tr>
<td>Platelet Count will increase with acute blood loss 150,000 – 450,000/mm3 normal value</td>
</tr>
<tr>
<td>INR</td>
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</tbody>
</table>

Sengstaken-Blakemore tube for esophagogastric tamponade.
Heat Related Illness

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>AMS or unconsciousness</td>
<td>Fever (infection)</td>
</tr>
<tr>
<td>Exposure to high temperature</td>
<td>Hot, dry, or sweaty skin</td>
<td>Dehydration</td>
</tr>
<tr>
<td>PMHX</td>
<td>Hypotension/shock</td>
<td>Medications</td>
</tr>
<tr>
<td>Extreme exertion</td>
<td>Seizures</td>
<td>Hyperthyroidism</td>
</tr>
<tr>
<td>Time and length of exposure</td>
<td>Nausea</td>
<td>Delirium Tremens</td>
</tr>
<tr>
<td>Poor PO intake</td>
<td></td>
<td>Heat cramps</td>
</tr>
<tr>
<td>Fatigue and/or muscle cramping</td>
<td></td>
<td>CNS lesions/tumors</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Remove patient from the current environment and place in an area that is cool.
   Remove or loosen constrictive clothing.
3. Apply oxygen appropriate for condition.
5. Apply cardiac monitor and pulse ox.
6. Obtain a set of vital signs.
7. Establish IV access; consider 2 IV for seriously ill patients. Begin 0.9% NS fluid bolus at 250ml/hr. If that patient is hypotensive, infuse 250ml fluid bolus until the blood pressure increases or the patient begins to show signs of volume overload.
8. Actively cool the patient. Apply room temperature water to skin and increase airflow around patient.
9. Obtain BGL reading:
   a. If glucose < 70; administer 25 grams of D50% IV push.
   b. Consider 1mg Glucagon IM, if no paten IV available.
   c. Always administer 100mg Thiamine if alcohol abuse is suspected.

Pearls

- Extremes of ages are more prone to heat emergencies (young and old)
- Cocaine, amphetamines, and salicylates may elevate body temperatures
- Sweating generally disappears as body temperatures rise above 104 f.
- Intense shivering may occur as a patient is cooled.
- For any hypoglycemia suspected of abusing alcohol. **ALWAYS** administer 100mg Thiamine prior to D50%
Hypertension (HTN)

1. Assess ABC’s.
2. Apply oxygen appropriate for patient condition.
3. Apply cardiac monitor and pulse ox. Obtain 12 lead early in assessment, if clear or showing inferior MI, obtain 15 lead. If positive for STEMI, transport to nearest PCI center by air or ground. Follow ACS protocol on page 22.
4. Obtain a set of vital signs.
5. Position patient with head elevated.
6. Establish IV access, consider 2 IV for seriously ill patients. 0.9% NS saline lock.
7. The initial goal of therapy should be reduction of the mean arterial pressure (MAP) by one-third.
8. Consider the following antihypertensives:
   a. Labetalol 5 – 10 mg slow IVP. May repeat 10 – 20 mg every 10 minutes until adequate BP is reached. Adequate BP is a reduction of 10%.
   b. Hydralazine 10 – 20 mg slow IVP. (obtain from facility)
   c. Nicardipine 5mg/hr IV continuous infusion (titrated for effect up to 15/mg/hr). (obtain from facility)
   d. Nitroglycerin drip may also be used. Initiate Nitroglycerin drip @ 10 mcg/min and titrate. Do not exceed 200 mcg/min. (obtain from facility)

### Pearls
- Exam: Mental status, skin, neck, lungs, heart, ABD, back, extremities, and neuro
- Never treat elevated Blood Pressure based on one set of vital signs
- Symptomatic HTN is typically revealed through end organ damage to the cardiac, CNS, or renal systems
- All symptomatic patients with hypertension should be transported with their head elevated
- Complete MEND exam if CVA suspected

### History
- Documented HTN
- Related diseases: DBM, CVA
- Renal failure, Cardiac
- Medication compliance
- Viagra
- Pregnancy

### Signs & Symptoms
- **One of these:**
  - Systolic: 200 or higher
  - Diastolic: 120 or higher
- **And at least one of these:**
  - Headache
  - Nosebleed
  - Visual changes
  - Dizziness
  - Chest pain or ABD pain

### Differential
- HTN encephalopathy
- Primary CNS injury
- (Cushing’s reflex = Bradycardia with HTN)
- Myocardial Infarction
- Aortic dissection
- Pre-eclampsia
- Eclampsia
## Hypotension

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood loss – GI or Vaginal</td>
<td>Restlessness, confusion</td>
<td>Shock</td>
</tr>
<tr>
<td>AAA</td>
<td>Weakness, dizziness</td>
<td>Hypovolemia</td>
</tr>
<tr>
<td>Ectopic pregnancy</td>
<td>Weak, rapid pulse</td>
<td>Cardiogenic</td>
</tr>
<tr>
<td>Fluid loss – vomiting, diarrhea</td>
<td>Pale, cool, clammy skin</td>
<td>Septic</td>
</tr>
<tr>
<td>Fever</td>
<td>Delayed capillary refill</td>
<td>Neurogenic</td>
</tr>
<tr>
<td>Infection</td>
<td>Hypotension</td>
<td>Anaphylactic</td>
</tr>
<tr>
<td>Cardiac Ischemia (MI, CHF)</td>
<td>Coffee ground emesis</td>
<td>Ectopic pregnancy</td>
</tr>
<tr>
<td>Medications</td>
<td>Tarry or bright red stools</td>
<td>Dysrhythmias</td>
</tr>
<tr>
<td>Allergic reaction</td>
<td></td>
<td>Pulmonary Embolus</td>
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<tr>
<td></td>
<td></td>
<td>Tension Pneumothorax</td>
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<tr>
<td></td>
<td></td>
<td>Overdose, Vasovagal</td>
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<tr>
<td></td>
<td></td>
<td>ETOH abuse</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Administer high flow oxygen by NRB.
3. Apply cardiac monitor and pulse ox. Obtain 12 lead early in assessment, if clear or inferior Mi, obtain 15 lead. If positive for STEMI, transport to nearest PCI center by air or ground. Follow ACS protocol on page 22.
4. Obtain vital signs.
5. Establish two large bore IV of 0.9% NS.
6. If patient shows no signs of volume overload (edema, JVD, pulmonary edema), administer a 250 ml fluid bolus and re-evaluate blood pressure. Repeat boluses as needed in the absence of signs and symptoms of volume overload.
7. If patient remains hypotensive and the cause is likely a condition other than Hypovolemia, administer a continuous vasopressor or inotropic infusion to support blood pressure.
   a. Consider Dopamine 2 – 20 mcg/kg/min, titrating the dose to maintain a systolic BP of at least 100 mmHg.
   b. Consider Dobutamine 2 – 10 mcg/kg/min if SBP > 90 mmHg for inotropic support.
   c. Consider Norepinephrine at 1 – 12 mcg/min for cardiogenic shock. (obtain from facility)
   d. Consider Phenylephrine at 100 – 180 mcg/min. (obtain from facility)
8. If the patient is actively hemorrhaging, control bleeding and consult facility to begin infusing blood products.
9. Consult facility to insert indwelling urinary catheter with urometer to accurately monitor urine output.

## Hypothermia

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMHX</td>
<td>Cold, Clammy skin</td>
<td>Sepsis</td>
</tr>
<tr>
<td>Medications</td>
<td>Shivering</td>
<td>Environmental exposure</td>
</tr>
<tr>
<td>Exposure to extreme cold</td>
<td>Mental status change</td>
<td>Hypoglycemia</td>
</tr>
<tr>
<td>Extremes of ages</td>
<td>Extremity pain or sensory abnormality</td>
<td>CNS dysfunction</td>
</tr>
<tr>
<td>Drug use: ETOH, barbiturates</td>
<td>Bradycardia</td>
<td>CVA</td>
</tr>
<tr>
<td>Infections/Sepsis</td>
<td>Hypotension/shock</td>
<td>Head Injury</td>
</tr>
<tr>
<td>Length of exposure</td>
<td></td>
<td>Spinal cord injury</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply oxygen appropriate for condition.
3. Remove patient from cold environment and place them in an area that is warm. Remove wet clothing. Attempt to obtain temperature. **CAUTION! Gentle handling of the patient is imperative. Rough handling could cause sudden cardiac arrest.**
4. Apply cardiac monitor and pulse ox. Allow additional time to assess heart rate since patient may present with bradycardia.
5. Establish IV access. 2 IV lines for seriously ill patients. When possible, administer warmed 104 – 107 degrees F (40 – 42 degree Celsius) IV fluids.
   a. If core temperature is between 93 – 96.8 F (34 – 36 C) gradually re-warm the patient using blankets, heat packs (if available), and other external warming devices (if available).
   b. If core temperature is between 86 – 93 F (30 – 34 C) actively re-warm the trunk of body. Do not attempt to re-warm extremities. Do Not rub frostbitten skin.

### Pearls

- Remember **“NO PATIENT IS DEAD UNTIL THEY ARE WARM AND DEAD”**
- Hypothermia is defined by core temperature of < 95 F (35 C)
- Extremes of age are more susceptible (young and old)
- With temperatures less than 88 F (31 C) V-Fib is a common cause of death. Handling patients gentle may prevent this
- Bradycardia is common with hypothermia. Treat Bradycardia by warming patients not Atropine
- Shivering stops below 90 F (32 C). The most dangerous temp range for arrhythmias is 85 – 90 F
- Hypothermic cardiac arrest patients generally do not respond to defibrillation and medications until they are warmed, limit the use of these interventions.
Induced Hypothermia

Inclusion Criteria/Screening Utilization:
- Non-traumatic cardiac arrest with return of spontaneous circulation (ROSC)
- Patient age > 12 or > 55kg
- Comatose after ROSC: GCS < 8 AND no purposeful movement
- Intubated with ETCO2 > 20 mmHg
- Pregnant female with obviously gravid uterus (Contact On Line Med Control)

Exclusion Criteria (any of the following):
- Uncontrolled GI bleeding
- Conflict with a valid Do Not Resuscitate Order (DNRO)
- Major intracranial, intrathoracic, or intraabdominal surgery within last 14 days
- Sepsis as suspected cause of cardiac arrest
- Cardiovascular instability as evidenced by uncontrollable arrhythmias, refractory hypotension

Procedure
1. Perform Neuro exam: Pupil (size, reactivity, equality), motor response to pain.
2. Ensure accepting transport destination and physician.
3. Expose patient. Apply ice packs to axilla & groin.
4. Administer Versed 0.15 mg/kg to max of 10 mg.
5. Administer Norcuron 0.1 mg/kg to max of 10mg.
6. Attempt second IV (large bore) if not already in place.
7. Begin cold saline bolus 30 ml/kg to max of 2 liters.
8. Administer Dopamine 10 – 20 mcg/kg/min for MAP 90 – 100.
9. If there is loss of ROSC after cooling is initiated, revert to appropriate protocol and contact medical control as soon as feasible.

Pearls
- If patient meets other criteria for induced hypothermia and is not intubated, then intubate according to protocol before inducing cooling. If unable to intubate DO NOT initiate induced hypothermia
- When exposing patient for purpose of cooling, undergarments may be left in place. Be mindful of environment and take steps to preserve patient’s modesty
- Do not delay transport for the purpose of cooling
- Reassess airway frequently and with every patient move
- Patients develop metabolic alkalosis with cooling. Do not hyperventilate
- Continue to address specific differentials associated with original dysrythmia
Midlands MedTech LLC
Patient Care Guidelines

Nausea

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Pain</td>
<td>CNS (ICP, HA, CVA, Trauma)</td>
</tr>
<tr>
<td>Time of last meal</td>
<td>Character of pain (constant etc)</td>
<td>Myocardial Infarction</td>
</tr>
<tr>
<td>Last emesis</td>
<td>Distention</td>
<td>Drugs (NSAID, antibiotics, narcotics, chemotherapy)</td>
</tr>
<tr>
<td>Improvement or worsening</td>
<td>Radiation</td>
<td>Diabetic Ketoacidosis</td>
</tr>
<tr>
<td>Duration of problem</td>
<td>Associated symptoms</td>
<td>Infections</td>
</tr>
<tr>
<td>PMHX, Past Surgical Hx</td>
<td>Fever, malaise, blurred vision, weakn</td>
<td>Electrolyte abnormalities</td>
</tr>
<tr>
<td>Medications</td>
<td>substance/ETOH abuse</td>
<td>Pregnancy</td>
</tr>
<tr>
<td>Travel Hx</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply oxygen appropriate for condition.
3. Apply cardiac monitor and pulse ox. Obtain 12 lead early in assessment. If clear or inferior MI, obtain 15 lead. If positive for STEMI, transport to nearest PCI center by air or ground. Follow ACS protocol on page 22.
4. Establish IV access, consider 2 IV lines if patient seriously ill. Maintain 0.9% NS at KVO rate unless fluid therapy indicated.
5. Always have suction equipment immediately available and ready. Be prepared to place patient in the recovery position if illness/injury and size permits.
6. For patients who are known to be sensitive to motion, consider administering prior to beginning transport.
7. For nauseated or vomiting during transport, administer Zofran (Ondansetron) 4 mg IV for adults (may repeat after 10 minutes). Pediatric dose is 0.15 mg/kg IV max dose of 4mg.

NOTE: To administer Zofran over two (2) minutes, draw up 8ml of NS and 2ml/4mg of Zofran. This equals 10cc of fluid. Give 2.5 cc every thirty (30) seconds.
Overdose / Toxic Ingestion

1. Assess ABC’s.
2. Apply oxygen appropriate for condition.
3. Apply cardiac monitor and pulse ox. Obtain 12 lead early in assessment. If clear or inferior MI, obtain 15 lead. If positive for STEMI, transport to nearest PCI center by air or ground. Follow ACS protocol on page 22.
4. Obtain history of substance: Name and/or type, amount, time ingested, etc.
5. If external substance (absorbed or inhaled): remove patient from dangerous environment while protecting self from contamination. Irrigate patient as needed; trap run off irrigant, as well as possible. Do not transport a contaminated patient into a facility or transfer to helicopter before decontamination has been completed.
6. Establish IV access. Consider 2 IV lines for seriously ill patients.
7. Obtain BG reading. Treat if indicated.
8. If unknown substance or known narcotics ingestion, consider 2 mg Narcan SLOW IV, IO, IM, SC titrated to respirations. Narcan should only be administered via ET to prevent or reverse cardiac arrest. Pediatric dose; 0.1 mg/kg for children up to 5 years old or < 20 kg. Administer 2 mg for children over 5 years or > 20 KG.
9. If organophosphate poisoning, consider 2 mg Atropine IV, repeated every 5 minutes until decrease in secretions are observed or a total of 6mg. Pediatric dose 0.1 mg/kg loading dose IV. Adolescents 2mg. Repeat every 10 minutes until rales and bronchial secretions are resolved.
10. If known or highly suspected Tricyclic overdose, administer 1 mEq/kg Sodium Bicarbonate IVP.

Pearls
- Do not rely on patient history of ingestion, especially in suicide attempts
- Bring bottles, contents, and emesis to ER with patient
- S&S of organophosphate poisoning may include; excessive sweating, salivation, headache, dizziness, fatigue, chest tightness, seizure, numbness, abdominal pain, constricted pupils, pulmonary edema
- Common tricyclics = Elavil, Triavil, Etrafon, Amitriptyline

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingestion or suspected ingestion of a potentially toxic substance</td>
<td>Mental status changes</td>
<td>Tricyclic antidepressants</td>
</tr>
<tr>
<td>Substance ingestion, route, quantity</td>
<td>Hypotension/hypertension</td>
<td>Acetaminophen (Tylenol)</td>
</tr>
<tr>
<td>Time of ingestion</td>
<td>Decreased respiration rate</td>
<td>Depressants</td>
</tr>
<tr>
<td>Reason (suicidal, accidental, criminal)</td>
<td>Tachycardia, other dysrhythmias</td>
<td>Stimulants</td>
</tr>
<tr>
<td>Available medications in home</td>
<td>Seizures</td>
<td>Anticholinergic</td>
</tr>
<tr>
<td>PMHX</td>
<td></td>
<td>Cardiac medications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Solvents, alcohols</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cleaning agents</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Insecticides</td>
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<tr>
<td></td>
<td></td>
<td>Narcotics</td>
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Pain Management

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Severity (Pain Scale)</td>
<td>Musculoskeletal</td>
</tr>
<tr>
<td>Location</td>
<td>Quality (sharp, dull)</td>
<td>Visceral (ABD)</td>
</tr>
<tr>
<td>Duration</td>
<td>Radiation</td>
<td>Cardiac</td>
</tr>
<tr>
<td>PMHX</td>
<td>Relation to movement, respiration</td>
<td>Pleural/respiratory</td>
</tr>
<tr>
<td>Medications</td>
<td>Increased with palpation of area</td>
<td>Neurogenic</td>
</tr>
<tr>
<td>Drug allergies</td>
<td></td>
<td>Renal (colic)</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply oxygen appropriate for condition.
3. Place patient in position of comfort.
4. Apply cardiac monitor and pulse ox. Obtain 12 lead early in assessment. If clear or inferior MI, obtain 15 lead. If positive for STEMI, transport to nearest PCI center by air or ground. Follow ACS protocol on page 22.
5. Establish IV access. Consider 2 IV lines for seriously ill patients.
6. Consider other treatment protocols based on patient’s specific complaint.
7. If pain is mild to moderate and patient is stable, attempt non-pharmacological interventions prior to administration of analgesia or sedation.
8. Use caution with all agents as they may cause respiratory depression and hypotension.
9. Ensure reversal agents are available to the administration of analgesia medications. Have Atropine, Narcan, Suctioning, and BVM available
10. If pain is severe consider Fentanyl 1 – 2 mcg/kg SLOW IVP,IM, IO, may repeat every 10 minutes, titrated to effect. Pediatric dose same as adult. **Fentanyl dose is based and administration is ONLY WITH ONLINE MED CONTROL ORDER**
11. Monitor vital signs closely before & after administration, record vital signs every 5 – 10 minutes if possible. Rapid push of Fentanyl may cause a sudden drop in blood pressure; doses > 5 mcg/kg have been associated with chest wall rigidity.

**Pearls**
- Pain severity (0-10) is a vital sign to be recorded 15 minutes pre/post IV or IM medication administration and at disposition of patient
- All patients must have drug allergies documented prior to administering pain control
- Burn patients should not receive Morphine during Interfacility transfer, obtain order for Fentanyl
Pulmonary Embolism

1. Assess ABC’s.
2. Apply high flow oxygen by NRB.
3. Apply cardiac monitor and pulse ox.
4. Establish large bore IV access. Consider 2 IV lines for seriously ill patients.
5. Treat for Hypotension Protocol page 44.
6. Consult facility for Anticoagulation therapy when PE suspected and no contraindications exist.
   a. The patient should receive a Heparin bolus of 80 units/kg. Followed by a continuous Heparin infusion of 18 units/kg/hr (obtain from facility).
7. For persistent hypotension refractory to preceding measures, initiation of thrombolytic therapy (per sending physician) may be considered prior to departing the referring facility.
8. Provide pain management per the Pain Management protocol page 49.
Respiratory Distress / Bronchospasm

1. Assess ABC’s.
2. Apply oxygen appropriate for condition. Be cautious with O2 administration in COPD patients as they may retain CO2. Be prepared for advanced airway management.
3. Apply cardiac monitor and pulse ox. Obtain 12 lead early in assessment. If clear or inferior MI, obtain 15 lead. If positive for STEMI, transport to nearest PCI center by air or ground. Follow ACS protocol on page 22.
4. Establish IV access 0.9% NS at KVO rate. Consider 2 IV lines for seriously ill patients.
5. Auscultate lungs for wheezing, rales, and/or ronchi. Catagorize type of obstruction; upper or lower. If signs & symptoms of CHF proceed to protocol on page 34.
6. If patient presents with acute dyspnea (with or without wheezing) administer 1.25 mg Xopenex (age > 12 years) OR 5 mg Albuterol by nebulizer.
7. Consider administration of 125 mg Solumedrol IV push, even if patient experiences relief with bronchodilator. Pediatric dose 1 – 2 mg/kg IV. Use caution with patients with GI Bleeding, Diabetes Mellitus, and Severe Infection.
8. Consider administering Epinephrine (1:1000) 0.3 – 0.5 mg SQ every 15 – 30 minutes x 3 total doses. If the patient is experiencing a severe life threatening reaction or shows signs of shock. Use caution in patients with risk factors for known cardiovascular disease. In these patients administer Epi only in cases of severe bronchospasm and when imminent threat to life exists. Pediatric dose of Epinephrine for Bronchospasm is 0.01 mg/kg SQ up to 0.3 mg every 15 – 30 minutes to total 3 doses.

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma; COPD, Bronchitis</td>
<td>Shortness of breath</td>
<td>Asthma</td>
</tr>
<tr>
<td>Congestive heart failure CHF</td>
<td>Pursed lip breathing</td>
<td>Anaphylaxis</td>
</tr>
<tr>
<td>Home treatment (O2, Neb)</td>
<td>Decreased ability to speak</td>
<td>Aspiration</td>
</tr>
<tr>
<td>Rx (inhalers, steroids)</td>
<td>Increased resp rate and effort</td>
<td>Pleural effusion</td>
</tr>
<tr>
<td>Toxic exposure (smoke)</td>
<td>Wheezing, ronchi</td>
<td>Pulmonary embolism</td>
</tr>
<tr>
<td>PMHX</td>
<td>Accessory muscle use</td>
<td>Pneumothorax</td>
</tr>
<tr>
<td></td>
<td>Tachycardia</td>
<td>Myocardial infarction</td>
</tr>
<tr>
<td></td>
<td>Diaphoretic skin</td>
<td>Pericardial Tamponade</td>
</tr>
<tr>
<td></td>
<td>Stridor</td>
<td>Hyperventilation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inhaled toxins</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upper vs. lower obstruction</td>
</tr>
</tbody>
</table>

Pearls
- Status Asthmaticus – Severe prolonged asthma attack, unresponsive to therapy. A life threatening condition.
Seizure (SZ)

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Witnessed</td>
<td>Decreased mental status</td>
<td>CNS (head) trauma</td>
</tr>
<tr>
<td>Type of SZ activity</td>
<td>Sleepiness</td>
<td>Tumor</td>
</tr>
<tr>
<td>PMHX of SZ</td>
<td>Incontinence</td>
<td>Metabolic, Hepatic, Renal failure</td>
</tr>
<tr>
<td>Medic alert tag</td>
<td>Observed SZ activity</td>
<td>Hypoxia</td>
</tr>
<tr>
<td>SZ Rx compliance</td>
<td>Evidence of trauma</td>
<td>Electrolyte abnormality</td>
</tr>
<tr>
<td>HX of trauma</td>
<td></td>
<td>Drugs, Rx compliance</td>
</tr>
<tr>
<td>HX of pregnancy</td>
<td></td>
<td>Infection/fever</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alcohol withdrawal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Eclampsia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CVA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hyperthermia</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply high flow oxygen by NRB.
3. Apply cardiac monitor and pulse ox.
4. Consider spinal movement restriction, if suspected trauma.
5. Establish IV access 0.9% NS at KVO rate. Consider 2 IV lines for seriously ill patients.
6. Obtain BGL reading
   a. If BGL < 70; administer 25 grams D50% IVP. If no patent IV available, administer 1 mg Glucagon IM. If suspected ETOH abuse, administer 100 mg Thiamine prior to D50% administration.
   b. If BGL > 70 proceed with protocol and consider other causes.
7. If patient is status epilepticus or has reoccurring SZ, administer 2 – 4 mg Ativan (Lorazepam) slow IV, IO, IM over 2 – 5 minutes. **Dose > 4mg requires Online Medical Control Order.** Pediatric dose, up to total of 0.1 mg/kg IV, IO, IM over 2 – 5 minutes.

Pearls
- Status Epilepticus is defined as two or more consecutive seizures without a period of consciousness or recovery. This is a true emergency requiring rapid airway control, treatment, and transport
- Focal SZ effect only a part of the body and are not usually associated with loss of consciousness
- Jacksonian SZ start as a focal SZ and become generalized
- Be prepared for airway problems with continued SZ
- Assess possibility of trauma and substance abuse
- Be prepared to assist ventilations, especially if Ativan is used
- For any pregnant patient, follow the OB emergencies protocol on page ___
**Sepsis**

1. Assess ABC’s.
2. Apply oxygen appropriate for condition.
3. Establish IV access. Consider 2 IV lines for seriously ill patients.
4. Bolus with 0.9% NS at 30 ml/kg, may repeat once to achieve adequate BP (volume resuscitation is the most important therapeutic step in the management of patients with severe sepsis).
5. If fluid bolus > 60 ml/kg and patient continues to be hypotensive, vasopressors should be started.
   a. Consult staff for Levophed at 2 – 20 mcg/min and titrate to obtain adequate perfusion.
6. Consult staff for Broad spectrum antimicrobials to be started and continued by transport team. Consult with sending/receiving physician regarding appropriate antimicrobials.
7. Stress dose steroids can be given if not already administered.
   a. Solumedrol (Methylprednisolone) 25 mg IV.
8. If already initiated, insulin should be continued at rates approaching 0.1 u/kg/hr with hourly measurements to keep blood glucose between 80 – 120.
Supraventricular Tachycardia (SVT)

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medications</td>
<td>HR &gt; 150</td>
<td>Heart Disease (WPW, LGL)</td>
</tr>
<tr>
<td>(Aminophylline, Diet pills, Thyroid supplements, Decongestants, Digoxin)</td>
<td>QRS &lt; 0.12 sec</td>
<td>Sick Sinus Syndrome</td>
</tr>
<tr>
<td>Diet (caffeine, chocolate)</td>
<td>Sinus Tachycardia</td>
<td>Myocardial Infarction</td>
</tr>
<tr>
<td>Drugs (nicotine, cocaine)</td>
<td>A-Fib / A-Flut</td>
<td>Electrolyte imbalance</td>
</tr>
<tr>
<td>PMHX</td>
<td>Multifocal atrial tachycardia</td>
<td>Exertion, pain, emotional state</td>
</tr>
<tr>
<td>History of heart palpitations</td>
<td></td>
<td>Fever</td>
</tr>
<tr>
<td>Syncope</td>
<td></td>
<td>Hypoxia</td>
</tr>
<tr>
<td>Ablation (WPW, LGL)</td>
<td></td>
<td>Hypovolemia or anemia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Drug effect/overdose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hyperthyroidism</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pulmonary embolus</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply oxygen appropriate for condition.
3. Apply cardiac monitor and pulse ox. Obtain 12 lead early in assessment. If clear or inferior MI, obtain 15 lead. If positive for STEMI, transport to nearest PCI center by air or ground.
4. Establish IV access. Consider 2 IV lines for seriously ill patients.
5. If patient has no other signs & symptoms beyond heart rate, monitor and transport.
6. If patient is borderline symptomatic, attempt vagal maneuver(s), see Pearls for list.
7. If patient is symptomatic and stable, consider 6 – 12 mg Adenosine rapid IVP with 20 ml flush. May repeat twice at 1 – 2 minute intervals.
8. If patient is symptomatic and unstable (No palpable BP, AMS, decreased LOC, CP, SOB) perform synchronized cardioversion 50 j – 100 j.
   a. Consider sedation with Ativan (Lorazepam) 0.05 – 0.1mg/kg IV. May repeat every 15 – 30 minutes as necessary. Usual adult dose is 2 – 4mg IV.

Pearls
- Adenosine may not be effective in identifiable A-flut/A-fib, yet is not harmful
- Continuous pulse oximetry is required on all SVT patients
- Obtain rhythm strips during/after all therapeutic interventions and rhythm changes
- Approved vagal maneuvers include; coughing, straining as if attempting a bowel movement, and attempting to “inflate” a glass bottle. Carotid Sinus Massage is not approved.
- LGL is a preexcitation syndrome characterized by atrial tachycardia together with a short PR interval and a QRS complex of normal duration – called Lown-Ganong-Levine syndrome.
- WPW is a preexcitation of the ventricle and an ECG tracing with shortened PR interval and widened QRS complex – called Wolff-Parkinson-White syndrome.
Syncopal Episode

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac Hx, CVA, SZ</td>
<td>Loss of consciousness with recovery</td>
<td>Vasovagal</td>
</tr>
<tr>
<td>Occult blood loss (GI, ectopic)</td>
<td>Lightheadedness, dizziness</td>
<td>Orthostatic hypotension</td>
</tr>
<tr>
<td>Females; LMP, Vaginal Bleeding</td>
<td>Palpitations, slow or rapid pulse</td>
<td>Micturation/Defecation syncope</td>
</tr>
<tr>
<td>Fluid loss; nausea, vomiting</td>
<td>Pulse irregularity</td>
<td>Psychiatric</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>Decreased blood pressure</td>
<td>CVA</td>
</tr>
<tr>
<td>Diabetic</td>
<td>Cardiac arrhythmia</td>
<td>Hypoglycemia</td>
</tr>
<tr>
<td>Recent trauma</td>
<td>CP/SOB</td>
<td>Myocardial infarction</td>
</tr>
<tr>
<td>PMHX</td>
<td></td>
<td>SZ</td>
</tr>
<tr>
<td>Substance abuse</td>
<td></td>
<td>Toxicological</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medication effect</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply oxygen appropriate for condition.
3. Apply cardiac monitor and pulse ox. Obtain 12 lead early in assessment. If clear or inferior mi, obtain 15 lead. If positive for STEMI, transport to nearest PCI center by air or ground.
4. Establish IV access. Consider 2 lines for seriously ill patients.
5. Obtain BGL.
   a. If < 70; administer 25 grams D50% slow IVP. If no patent IV line available, consider 1 mg Glucagon IM.
   b. If ETOH abuse is suspected, administer 100 mg Thiamine IV/IM prior to D50%.
6. If patient is bradypneic or apneic, administer 2 mg Narcan IV/IM.

Pearls
- Assess for signs and symptoms of trauma if associated or questionable fall with syncope
- Consider dysrhythmias, GI bleed, ectopic pregnancy, and SZ as possible causes of syncope
- These patients should be transported
- More than 25% of geriatric syncope is cardiac dysrhythmia based.
### Ventricular Ectopy (PVC)

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMHX</td>
<td>Symptomatic</td>
<td>Artifact / Device Failure</td>
</tr>
<tr>
<td>Rx, diet, drug abuse</td>
<td>PVC’s&gt; 6/min</td>
<td>Cardiac</td>
</tr>
<tr>
<td>Palpitations</td>
<td>R on T PVC’s</td>
<td>Endocrine/Metabolic</td>
</tr>
<tr>
<td>Pacemaker</td>
<td>Bigeminy PVC’s rate &gt; 60</td>
<td>Drug Abuse</td>
</tr>
<tr>
<td>Syncope or Near syncope</td>
<td>pairs or runs of PVC’s</td>
<td>Pulmonary</td>
</tr>
<tr>
<td>Allergies: Lidocaine, Novocain</td>
<td>Multifocal PVC’s</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Decreased LOC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hypotensive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Associated with chest trauma</td>
<td></td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply oxygen appropriate for condition.
3. Apply cardiac monitor and pulse ox. Obtain 12 lead early in assessment, if clear or inferior MI, obtain 15 lead. If positive for STEMI, transport to nearest PCI center by air or ground.
4. Establish IV access. Consider 2 lines for seriously ill patients.
5. If patient is symptomatic with adequate heart rate, administer Lidocaine at 1.0 – 1.5 mg/kg IV push. **Ensure the absence of Bundle Branch Blocks, AV blocks, hemifascicle and/or bifascicular blocks or any combination of those blocks, and review pearls prior to administration.**
6. May repeat Lidocaine at 0.5 mg/kg q 3 – 5 minutes to max dose of 3mg/kg.
7. If patient is hypersensitive to Lidocaine or is refractory, consult facility to administer Procainamide at 20 – 50 mg/min IV. Base dosage on age and size of patient; older and smaller patients the greater the dose. Up to 50 mg/minute.
8. If bradycardic with symptomatic PVC’s, administer 0.5 – 1 mg Atropine. May consider repeat of Atropine to max dose of 0.4mg/kg.
9. If no response to Atropine, consider transcutaneous pacing.

### Pearls
- **The American Heart Association recommends that ventricular ectopy NOT be treated in the field**
- Monitor patient for signs and symptoms of Lidocaine toxicity (AMS, SZ, irritability)
- **Reduce the dosage of Lidocaine by ½ for patients 70 or > years of age OR with a history of hepatic disease, or in shock**
- End points of Procainamide administration; Dysrhythmia resolved, hypotension, max dose of 17 mg/kg achieved or the QRS complex is widened by 50%
- Lidocaine infusion: 2 – 4 mg/min. Procainamide infusion: 1 – 4 mg/min
Midlands MedTech LLC
Patient Care Guidelines

Ventricular Fibrillation/ Pulseless V. Tach

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated down time</td>
<td>Unresponsive, apneic, pulseless</td>
<td>Asystole</td>
</tr>
<tr>
<td>PMHX</td>
<td>V-fib or V-tach on ECG</td>
<td>Artifact / Device failure</td>
</tr>
<tr>
<td>Rx</td>
<td></td>
<td>Cardiac</td>
</tr>
<tr>
<td>Events leading up to arrest</td>
<td></td>
<td>Endocrine / metabolic</td>
</tr>
<tr>
<td>Renal failure / dialysis</td>
<td></td>
<td>Drug use and abuse</td>
</tr>
<tr>
<td>DNR or living will</td>
<td></td>
<td>Pulmonary problems</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Witnessed arrest, attach hands free pads and analyze for shockable rhythm.
3. Defibrillate at 360j monophasic for adult patient if indicated every 2 minutes throughout arrest. Note: Hypothermia patients generally do not respond to defibrillation.
4. Unwitnessed arrest, perform CPR for five cycles and ventilation via BVM with OPA placed, attached to high flow oxygen.
5. Apply cardiac monitor and pulse oximetry. Record rhythm strip and attach to patient care report.
6. Intubate patient and confirm tube placement if unable to obtain adequate ventilation using BVM. Confirm tube placement by direct visualization, clear equal breath sounds, quiet epigastrium, and end tidal CO2 detector. Have second attendant confirm tube placement. Document all confirmations used on patient care report. If unable to successfully place ETT, use secondary device such as a CombiTube or LMA. Reassess ET Tube placement after each move.
7. Establish IV or IO access. Consider 2 IV lines.
8. Administer 1mg Epinephrine 1:10,000 IV/IO. Repeat every 3 – 5 minutes throughout arrest.
9. Administer 1.5mg/kg Lidocaine IV/IO, may repeat in 3 – 5 minutes to max dose of 3mg/kg OR 300mg Amiodarone IV/IO, may repeat 150mg in 3 – 5 minutes, max daily dose of 2.2g in 24hrs.
10. Administer Magnesium Sulfate 1 – 2 g IV push for Torsades de Pointes OR if suspected Hypomagnesemic state OR for refractory V-fibrillation.
11. Consider Sodium Bicarbonate 1 mEq/kg IV in prolonged arrest or unknown down time, renal failure, or dialysis patients. ONLY if advanced airway is placed.
12. Consider continuous infusion of the antidysrrhythmic that proved to be effective in converting rhythm.
   a. Amiodarone 60mg/hr x 6 hours (360min) then 30mg/hr x 18 hours (1,080min).
   b. Lidocaine 2 – 4 mg/min, using pre-mix Lidocaine, set pump at 30ml/hr – 60ml/hr.
Ventricular Tachycardia with a Pulse

<table>
<thead>
<tr>
<th>History</th>
<th>Signs &amp; Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMHX</td>
<td>V-Tach on ECG</td>
<td>Artifact / Device failure</td>
</tr>
<tr>
<td>Rx, diet, drug abuse</td>
<td>Conscious, Rapid pulse</td>
<td>Cardiac</td>
</tr>
<tr>
<td>Syncope or near syncope</td>
<td>Chest Pain, SOB</td>
<td>Endocrine/Metabolic</td>
</tr>
<tr>
<td>Palpitations</td>
<td>Dizziness</td>
<td>Drug abuse</td>
</tr>
<tr>
<td>Pacemaker</td>
<td>Rate usually 150-180 BPM sustained</td>
<td>Pulmonary</td>
</tr>
<tr>
<td>Allergies: Lidocaine/Novocaine</td>
<td>wide complex tachycardia</td>
<td></td>
</tr>
<tr>
<td>Chemo therapy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply high flow oxygen by NRB mask.
3. Apply cardiac monitor and pulse ox. Obtain 12 lead ECG early in assessment to confirm V-tach.
4. Apply hands free pads to patient’s chest. May proceed directly to cardioversion if patient unstable, go to step 6.
5. Establish IV access, consider 2 IV lines. Consider IO unable to obtain IV.
6. If patient is unstable (BP <90, chest pain, pulmonary edema, showing evidence of clinical deterioration) perform synchronized cardioversion at 100J, 200J, 300J, 360J monophasic energy. Consider sedation prior to cardioversion see protocol page 31.
7. If patient is stable, initiate antiarrhythmic therapy.
   a. Amiodarone 150mg IV/IO over 10 minutes. Mix 150mg in 100ml bag, using 10gtts/ml rate is 100gtts/min. May repeat every 10 minutes as needed (max dose 2.2g over 24 hours).
   b. Lidocaine 0.5 – 1.5mg/kg IV/IO. May repeat every 5 minutes as needed (max dose 3mg/kg).
   c. Magnesium Sulfate 2 – 4g IV/IO over 2 minutes for Torsades de Pointes or known hypomagnesemic state.
8. If VT is resolved, consider continuous infusion of antiarrhythmic that resolved the VT.
   a. Amiodarone infusion at 60mg/hr x 6 hours then 30mg/hr x 18 hours.
   b. Lidocaine infusion at 2 – 4 mg/min, using pre-mix Lidocaine, set pump at 30ml/hr – 60ml/hr.
Pediatric/OB Protocols
Childbirth / Labor

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due Date</td>
<td>Spasmodic pain</td>
<td>Abnormal presentation</td>
</tr>
<tr>
<td>Time contractions started/</td>
<td>Vaginal discharge or bleeding</td>
<td>buttock</td>
</tr>
<tr>
<td>How often</td>
<td>Crowning or urge to push</td>
<td>foot</td>
</tr>
<tr>
<td>Rupture of membranes</td>
<td>Meconium</td>
<td>hand</td>
</tr>
<tr>
<td>Time/ amount of any vaginal bleeding</td>
<td></td>
<td>Prolapsed cord</td>
</tr>
<tr>
<td>Sensation of fetal activity</td>
<td></td>
<td>Placenta previa</td>
</tr>
<tr>
<td>Past medical and delivery history</td>
<td></td>
<td>Abruptio placenta</td>
</tr>
<tr>
<td>Medications, C sections are High Risk Pts</td>
<td></td>
<td>Toxemia</td>
</tr>
</tbody>
</table>

1. Assess ABCs.
2. Place patient in left lateral recumbent position. Obtain Hx: Gravid a/Para, V-births vs. C-Sections
3. Apply oxygen appropriate for condition.
4. Apply cardiac monitor and record rhythm strip. Apply Pulse oximetry.
5. Determine frequency and duration of contractions. Inspect perineum for crowning.
7. If abnormal delivery (abnormal presentation, breech, prolapsed cord, limb presentation), proceed to Abnormal Childbirth Protocol page 65.
8. If delivery imminent, proceed with delivery.
9. Support head/perineum to prevent explosive delivery.
10. Suction the baby’s mouth first, then nose as soon as the head delivers.
11. Check for cord around neck. If present, gently attempt to slip it over the neonate’s head. If not able to remove cord, clamp and cut cord.
12. Hold and support infant during delivery.
13. Dry infant quickly and place in skin-to-skin contact with mother while keeping both warm.
14. APGAR score at 1 and 5 minutes.
15. When cord ceases pulsating, clamp at 10 and 7 inches from umbilicus, cut cord between clamps.
17. Monitor for placenta delivery while en route to hospital.

Pearls:
- Document all times (delivery, contraction frequency and length)
- If maternal seizures occur, proceed to the obstetrical emergencies protocol
- Some perineal bleeding is normal with any childbirth. Large quantities of blood or free bleeding are abnormal.
- Consider multiples with birth
New Born

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due date and gestational age</td>
<td>Respiratory distress</td>
<td>Airway failure</td>
</tr>
<tr>
<td>Multiple gestations (twins, etc.)</td>
<td>Peripheral cyanosis or mottling (normal)</td>
<td>Secretions</td>
</tr>
<tr>
<td>Meconium</td>
<td>Central cyanosis (abnormal)</td>
<td>Respiratory drive</td>
</tr>
<tr>
<td>Delivery difficulties</td>
<td>Altered level of responsiveness</td>
<td>Infection</td>
</tr>
<tr>
<td>Congenital disease</td>
<td>Resp Distress</td>
<td>Maternal medication effect</td>
</tr>
<tr>
<td>Medications (maternal)</td>
<td>Nasal Flaring</td>
<td>Bradycardia Hypovolemia</td>
</tr>
<tr>
<td>Maternal risk factors</td>
<td>Retractions</td>
<td>Hypoglycemia</td>
</tr>
<tr>
<td>Substance abuse</td>
<td></td>
<td>Congenital heart disease</td>
</tr>
<tr>
<td>Smoking</td>
<td></td>
<td>Hypothermia</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Dry infant and keep warm. Bulb syringe suction mouth/nose.
3. Stimulate infant and note APGAR score.
4. Apply oxygen if indicated via blow-by as tolerated.
5. Apply cardiac monitor and record rhythm strip. Apply pulse oximetry.
6. Assess heart rate.
7. If HR < 100; Ventilate 30 seconds via BVM at 40-60 breaths/minute; reassess heart rate and APGAR; Continue with appropriate level of protocol.

**Heart < 60 after stimulation and ventilatory assistance**

1. Continue BVM ventilation with 100 % oxygen.
2. Begin chest compressions.
3. If no improvement after 30 seconds, intubate patient and confirm tube placement. Secure ET Tube. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry if available.
4. Establish IV Normal Saline following IV protocol.
5. Obtain BGL reading
   - If BGL< 70: Administer Dextrose 10% at 0.5ml/kg slow IV push.
   - If BGL> 70: Continue with protocol.
   - May consider Glucagon 0.1 mg/kg IM to max dose of 1 mg.
6. Consider Epi 1:10,000 at 0.01 mg/kg IV/IO or 1:1000 at 0.01 mg/kg ET flushed with 2 ml saline.
7. Consider Fluid bolus at 10mL/kg. May be repeated to total dose of 60 ml/kg as long as lungs remain clear.
8. Consider Narcan at 0.1 mg/kg, if known or suspected substance abuse by mother.

*Continued on next page*
New Born – Continued

Heart Rate 60-100
1. Continue assisting ventilation via BVM. Intubate patient and confirm tube placement. Secure ET Tube. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry if available.
2. Stimulate infant.
3. Heart rate < 60 after 30 seconds; return to previous level of treatment.
4. Heart rate > 100 after 30 seconds; continue with protocol.
5. Establish IV normal Saline.
6. Obtain BGL reading.
   - If BGL< 70; administer Dextrose 10% at 0.5 ml/kg.
   - If BGL> 70; continue with protocol.
   - May consider Glucagon 0.1 mg/kg IM to max dose of 1 mg if no IV available.
7. Consider fluid bolus at 10ml/kg. May be repeated to total dose of 60 ml/kg as long as lungs remain clear.
8. Consider Narcan at 0.1 mg/kg, if known or suspected substance abuse by mother.
9. Contact medical control as soon as feasible.

Heart rate > 100
1. Continue oxygen via blow-by. Avoid the patient’s eyes to prevent oxygen toxicity difficulties.
2. Obtain BGL reading.
   - If BGL< 70; administer Dextrose 10% at 0.5 ml/kg.
   - If BGL> 70; continue with protocol.
   - Consider Glucagon 0.1 mg/kg IM to max dose of 1 mg if no IV available.
3. Monitor patient for change. Reassess APGAR at 5 minutes.

Pearls:
- Maternal sedation or narcotics will sedate infant (Naloxone may be effective)
- Consider hypoglycemia in infant
- Use cord blood, if possible to determine neonate’s BGL
- Document 1 and 5 minute APGAR scores
- Make D10W by adding 2 ml of D50W to 8 ml of Normal Saline in a 10 ml syringe
Abnormal Childbirth/ Labor

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due Date</td>
<td>Spasmodic pain</td>
<td>Abnormal presentation</td>
</tr>
<tr>
<td>Time contractions started/</td>
<td>Vaginal discharge or bleeding</td>
<td>buttock</td>
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<tr>
<td>How often</td>
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<td>foot</td>
</tr>
<tr>
<td>Rupture of membranes</td>
<td>Meconium</td>
<td>hand</td>
</tr>
<tr>
<td>Time/ amount of any vaginal bleeding</td>
<td></td>
<td></td>
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<tr>
<td>Sensation of fetal activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past medical and delivery history</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medications</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Position mother in left lateral recumbent position to prevent supine hypotensive syndrome.
3. Apply oxygen; assist ventilations via BVM if indicated. Apply Pulse oximetry.
4. Apply cardiac monitor and record rhythm strip.
5. Establish IV Normal Saline.
6. Administer 200 ml fluid bolus then KVO rate; may consider up to 20ml/kg bolus.

Breech Birth
7. Allow spontaneous delivery with support of presenting part and perineum until legs and trunk delivered. Then assist head gently
8. If head not delivered within 4 minutes, insert a gloved hand into the vagina and form a “V” airway around infant’s nose and mouth.

Prolapsed Cord
9. Position mother in knee-chest position on the stretcher
10. Insert gloved hand into the vagina to push presenting part of baby off the cord to ensure continued circulation through the cord. You should be able to palpate a pulse in the cord.
11. Cover the exposed cord with a moist dressing.
12. Continue until relieved at the hospital.

Limb Presentation
13. Position mother with hips elevated

All Conditions
14. Transport immediately
15. Consider other treatment protocols as necessary

Pearls:
- Document all times (delivery, contraction frequency and length)
- If maternal seizures occur, proceed to the obstetrical emergencies protocol
- Some perineal bleeding is normal with any childbirth. Large quantities of blood or freebleeding are abnormal
Obstetrical Emergency

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past medical history</td>
<td>Vaginal bleeding</td>
<td>Pre-eclampsia/Eclampsia</td>
</tr>
<tr>
<td>Hypertension meds</td>
<td>Abdominal pain</td>
<td>Placenta previa</td>
</tr>
<tr>
<td>Prenatal care</td>
<td>Seizures</td>
<td>Placenta Abruptio</td>
</tr>
<tr>
<td>Prior pregnancies/births</td>
<td>Hypertension</td>
<td>Spontaneous abortion</td>
</tr>
<tr>
<td>Gravida/Parity</td>
<td>Severe headache</td>
<td></td>
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<tr>
<td></td>
<td>Visual changes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Edema to hands and face</td>
<td></td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply oxygen, assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Secure ET Tube. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply cardiac monitor and record rhythm strip.
4. Establish IV Normal Saline at appropriate rate. May consider INT.
5. If known or suspected pregnancy, place patient in left lateral recumbent position.
6. If evidence of fluid loss or dehydration, administer 200 cc fluid bolus for mother.
7. Obtain BGL reading.
   - If BGL< 70, administer 25 grams of Dextrose 50% solution IV push.
   - If BGL> 70, continue with protocol.
   - Consider Glucagon 1 mg IM, if no patent IV present if no IV is available.
8. If patient presents with seizures or seizure-like activity, administer 1-2 grams Magnesium Sulfate slow IV push.
10. May consider Diazepam 5mg IV or 10mg IM for seizure activity.
11. Consider other treatment protocols as necessary.

Pearls:
- Severe headache, vision changes, or RUQ pain may indicate pre-eclampsia
- In the setting of pregnancy, hypertension is defined as a BP > 120 systolic or greater than 80 diastolic, or a relative increase of 30 systolic and 20 diastolic from the patient’s normal BP
- Maintain left lateral recumbent to prevent supine hypotensive syndrome
- Ask patient to quantify bleeding – number of pads used per hour
- Any pregnant female involved in an MVA should be seen immediately by a physician for evaluation and fetal monitoring
- For any hypoglycemic patient suspected of abusing alcohol, always administer 100 mg Thiamine before D50W
Pediatric Bradycardia

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past medical history</td>
<td>Decreased heart rate</td>
<td>Respiratory effort</td>
</tr>
<tr>
<td>Foreign body exposure</td>
<td>Delayed capillary refill or cyanosis</td>
<td>Respiratory obstruction</td>
</tr>
<tr>
<td>Respiratory distress or arrest</td>
<td>Mottled, cool skin</td>
<td>Foreign body/secretions</td>
</tr>
<tr>
<td>Apnea</td>
<td>Hypotension or arrest</td>
<td>Croup/epiglotitis</td>
</tr>
<tr>
<td>Possible toxic or poison</td>
<td>Altered LOC</td>
<td>Hypovolemia</td>
</tr>
<tr>
<td>Exposure</td>
<td></td>
<td>Hypothermia</td>
</tr>
<tr>
<td>Congenital disease</td>
<td></td>
<td>Infection/sepsis</td>
</tr>
<tr>
<td>Medication (maternal or infant)</td>
<td></td>
<td>Medication or toxin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hypoglycemia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trauma</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Secure ET Tube. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available.
3. Apply cardiac monitor and record rhythm strip. Apply pulse oximetry.
4. If patient asymptomatic, monitor for change. If symptomatic, continue with protocol.

**If heart rate < 60, begin CPR for infants**
5. Establish IV Normal Saline at appropriate rate. Consider IO method for children with marked hypotension and peripheral IV access not Established.
6. Administer 0.01 mg/kg Epinephrine 1:10,000 IVP/ IO (0.1 ml/kg, 1:10,000). May repeat every 3-5 minutes. If ET, the dose is 0.1 mg/kg Epinephrine 1:1000. Maximum dose is 1.0 mg.
7. Consider Atropine 0.02 mg/kg IV/IO. Minimum single dose is 0.1 mg. Max dose is 1.0 mg. May repeat once.
8. Obtain BGL reading.
   - If BGL< 70, administer 0.5 - 1.0 grams/kg, slow administration
     - Dilute D50W 1:1 with sterile water, Ringer’s Lactate, or Saline (2-4 ml/kg of D25 mixture)
     - If BGL> 70, continue with protocol.
   - Consider Glucagon 0.1 mg/kg IV, if no IV access available. (max dose of 1 mg)
9. Consider fluid bolus at 20 ml/kg. May repeat to max total dose of 60 ml/kg.
10. Consider Narcan 0.1 mg/kg, if known or highly suspected narcotics involvement.
12. Consider transcutaneous pacing.

**Pearls:**
- Most maternal medications pass through breast milk to the infant
- Number 1 cause of Bradycardia is Hypoxia
- Hypoglycemia, severe dehydration and narcotic effects may produce bradycardia
Pediatric Head Trauma

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of injury</td>
<td>Pain, swelling, bleeding</td>
<td>Skull fracture</td>
</tr>
<tr>
<td>Mechanism (blunt vs penetrating)</td>
<td>Altered mental status</td>
<td>Brain injury (concussion, contusion</td>
</tr>
<tr>
<td>Loss of Consciousness</td>
<td>Unconscious</td>
<td>hemorrhage or laceration)</td>
</tr>
<tr>
<td>Bleeding</td>
<td>Respiratory distress/failure</td>
<td>Epidural hematoma</td>
</tr>
<tr>
<td>Past medical history</td>
<td>Vomiting</td>
<td>Subdural hematoma</td>
</tr>
<tr>
<td>Medications</td>
<td>Major traumatic mechanism of injury</td>
<td>Subarachnoid hemorrhage</td>
</tr>
<tr>
<td>Evidence for multi-trauma</td>
<td>Seizure</td>
<td>Spinal injury</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply oxygen. Assist ventilation via BVM if indicated. Intubate patient and confirm tube placement. Secure ET Tube. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry if available.
3. Place patient in spinal movement restriction.
4. Assess AVPU responsiveness.
5. Establish IV Normal Saline KVO. May consider INT adapter. Consider IO method for patients with marked hypotension and peripheral IV access not established within 90 seconds or 2 unsuccessful IV attempts.
6. If signs of brain stem herniation (unequal pupils, posturing); hyperventilate patient with 100% oxygen until signs and symptoms are resolved. Maintain ETCO2 at 25 – 30 mmHg during hyperoxygenation.
7. If seizure occurs; proceed to Pediatric Seizure Protocol 74.
8. Obtain BGL reading
   - If BGL< 70, administer 0.5 - 1.0 grams/kg, slow administration
     - Dilute DSOW 1:1 with sterile water, Ringer’s Lactate, or Saline (2-4 ml/kg of D25 mixture)
     Consider 0.1mg/kg Glucagon if no IV present. (max dose of 1mg)
   - If BGL> 70, continue with protocol
9. Consider Narcan 0.1 mg/kg, if known or suspected narcotics involvement.

Pearls:
- If GCS, 12, consider air transport and if GCS < 9 intubation should be anticipated.
- Hyperventilate patient only if signs of herniation (blown pupil, posturing, bradycardia) (35 per minute for infants & 25 per minute for children > 1 year)
- Increased ICP may cause hypertension and bradycardia (Cushing’s response)
Pediatric Hypotension/Shock (Non-Trauma)

<table>
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<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood loss</td>
<td>Restlessness, confusion, weakness</td>
<td>Trauma</td>
</tr>
<tr>
<td>Fluid loss</td>
<td>Dizziness</td>
<td>Infection</td>
</tr>
<tr>
<td>Vomiting</td>
<td>Increased HR, rapid pulse</td>
<td>Dehydration</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>Pale, cool, clammy skin</td>
<td>Vomiting</td>
</tr>
<tr>
<td>Fever</td>
<td>Decreased BP</td>
<td>Diarrhea</td>
</tr>
<tr>
<td>Infection</td>
<td>Delayed capillary refill</td>
<td>Fever</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.  
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Secure ET Tube. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available.  
3. Apply cardiac monitor and record rhythm strip. Apply pulse ox.  
5. Obtain BGL reading  
   - If BGL< 70, administer 0.5 - 1.0 grams/kg, slow administration  
   - Dilute D50W 1:1 with sterile water, Ringer’s Lactate, or Saline (2-4 ml/kg of D25 mixture)  
   - Consider 0.1mg/kg Glucagon if no IV present. (max dose of 1mg)  
   - If BGL> 70, continue with protocol  
6. Consider Normal Saline bolus at 20 ml/kg. May repeat to total dose of 60 ml/kg.  
8. Consider 5-20 mcg/kg/min Dopamine infusion Only with Online Med Control Order.  

Pearls:  
- Consider all possible causes of shock and treat per appropriate protocol.  
- Decreasing heart rate is a sign of impending collapse  
- Most maternal medications pass through breast milk to the infant
Pediatric Multiple Trauma

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time and mechanism of injury</td>
<td>Pain, swelling</td>
<td>Chest – Tension pneumothorax</td>
</tr>
<tr>
<td>Damage to structure or vehicle</td>
<td>Deformity, lesions, bleeding</td>
<td>flail chest, pericardial tamponade</td>
</tr>
<tr>
<td>Location in structure or vehicle</td>
<td>Altered mental status</td>
<td>Open chest wound, hemothorax</td>
</tr>
<tr>
<td>Others injured or dead</td>
<td>Unconscious</td>
<td>Intra-abdominal bleeding</td>
</tr>
<tr>
<td>Speed and details of MVC</td>
<td>Hypotension or shock</td>
<td>Pelvis/ Femur fracture</td>
</tr>
<tr>
<td>Restraints/ Protective equipment</td>
<td>Arrest</td>
<td>Spine fracture/ cord injury</td>
</tr>
<tr>
<td>Car seat</td>
<td></td>
<td>Head injury</td>
</tr>
<tr>
<td>Helmet</td>
<td></td>
<td>Extremity fracture/ dislocation</td>
</tr>
<tr>
<td>Pads</td>
<td></td>
<td>HEENT</td>
</tr>
<tr>
<td>Ejection</td>
<td></td>
<td>Hypothermia</td>
</tr>
<tr>
<td>Past medical history</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medications</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Assess ABCs.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Secure ET Tube. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available.
3. Apply cardiac monitor and record rhythm strip. Apply pulse ox.
4. Place patient in spinal movement restriction.
5. Establish IV Normal Saline. Consider second IV Normal Saline, if patient hypotensive. Consider IO method for patients with marked hypotension and peripheral IV access not established.
6. Consider fluid bolus at 20 ml/kg. May be repeated to total dose of 60 ml/kg as long as lungs are clear. Fluid bolus for infants is 10ml/kg.
7. If known or highly suspected tension pneumothorax, perform chest decompression.

Pearls:
- Mechanism is the most reliable indicator of serious injury. Examine all restraints/ protective equipment for damage
- In prolonged extrications or serious trauma, consider air transportation for transport times and ability to give blood
- Do not overlook the possibility for child abuse
Pediatric Pulseless Arrest, Asystole/ PEA

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of arrest</td>
<td>Unresponsive</td>
<td>Respiratory failure</td>
</tr>
<tr>
<td>Medical history</td>
<td>Cardiac Arrest</td>
<td>Foreign Body, Secretions</td>
</tr>
<tr>
<td>Possibility of foreign body</td>
<td></td>
<td>Infections (croup, epiglotitis)</td>
</tr>
<tr>
<td>Hypothermia</td>
<td></td>
<td>Hypovolemia (dehydration)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Congenital heart disease</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trauma / Electrocution</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tension pneumothorax</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hypothermia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Toxin or medication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hypoglycemia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acidosis</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Perform “Quick Look” with pediatric paddles or pads for witnessed arrest. Confirm Asystole in 2 leads.
3. Begin CPR with 100% oxygen via BVM.
4. Apply cardiac monitor and record rhythm strip. Apply pulse oximetry.
5. Perform ET Tube intubation. Confirm placement. Secure ET Tube. Reassess tube placement every few minutes and after every patient move. Apply End Tidal CO2 detector or similar device if available.
6. Establish IV Normal Saline. Consider IO if marked hypotension and peripheral IV access not established.
7. Administer 0.01 mg/kg Epinephrine 1:10,000 IV/IO (0.1 ml/kg, 1:10,000). If no IV/IO access, consider 0.1 mg/kg Epinephrine 1:1000 via ET tube. Repeat every 3-5 minutes.
8. Obtain BGL reading
   - If BGL< 70, administer 0.5 - 1.0 grams/kg, slow administration
   - Dilute D50W 1:1 with sterile water, Ringer’s Lactate, or Saline (2-4 ml/kg of D25 mixture)
   - May consider 0.1mg/kg Glucagon if no IV present (max dose of 1 mg)
   - If BGL> 70, continue with protocol
9. Administer fluid bolus at 20 mL/kg. May be repeated to total dose of 60 mL/kg
10. Consider 0.1 mg/kg Narcan, if known or suspected drug involvement.

Pearls:
- Attempt to identify at treat cause of arrest: hypoxemia, acidosis, volume depletion, hypothermia, hypoglycemia
- Airway is the most important intervention. This should be accomplished immediately
Pediatric Pulseless Arrest, V-Fib/V-Tach

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of arrest</td>
<td>Unresponsive</td>
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</tr>
<tr>
<td>Medical history</td>
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<td>Possibility of foreign body</td>
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<td>Infections (croup, epiglotitis)</td>
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<td>Hypothermia</td>
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<td>Hypovolemia (dehydration)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Congenital heart disease</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trauma</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tension pneumothorax</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hypothermia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Toxin or medication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hypoglycemia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acidosis</td>
</tr>
</tbody>
</table>

1. Assess ABC's.
2. Perform “Quick Look” with pediatric paddles or pads in witnessed arrest.
3. Defibrillate 2 joules/kg.
4. Continue CPR for five (5) cycles. Ventilate with 100% oxygen via BVM.
5. Defibrillate 4 joules/kg.
6. Perform ET Tube intubation. Confirm placement. Secure ET Tube. Reassess tube placement every few minutes and after every patient move. Apply End Tidal CO2 detector or similar device if available.
7. Establish IV Normal Saline.
   Consider IO method for patients with marked hypotension and peripheral IV access not established.
8. Administer 0.01 mg/kg Epinephrine 1:10,000 IV/IO (0.1 ml/kg, 1:10,000). If no IV/IO access, consider 0.1 mg/kg Epinephrine 1:1000 via ET tube. Repeat every 3-5 minutes.
9. Obtain BGL reading
   - If BGL< 70, administer 0.5 - 1.0 grams/kg, slow administration
   - Dilute D50W 1:1 with sterile water, Ringer’s Lactate, or Saline (2-4 ml/kg of D25 mixture)
   May consider 0.1mg/kg Glucagon if no IV present. (max dose of 1 mg)
   If BGL> 70, continue with protocol.
10. Continue CPR for five (5) cycles.
11. Repeat defibrillation 4 joules.
12. Consider Amiodarone 5 mg/kg IV/IO or Lidocaine 1mg/kg IV/IO.

Pearls:
- Attempt to identify at treat cause of arrest: hypoxemia, acidosis, volume depletion, hypothermia, hypoglycemia
Pediatric Respiratory Distress

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of onset</td>
<td>Wheezing or stridor</td>
<td>Asthma</td>
</tr>
<tr>
<td>Possibility of foreign body</td>
<td>Respiratory retractions</td>
<td>Aspiration</td>
</tr>
<tr>
<td>Medical history</td>
<td>Increased heart rate</td>
<td>Foreign body</td>
</tr>
<tr>
<td>Medications</td>
<td>Altered LOC</td>
<td>Infection</td>
</tr>
<tr>
<td>Fever or respiratory infection</td>
<td>Anxious appearance</td>
<td>Pneumonia, croup, epiglotitis</td>
</tr>
<tr>
<td>Other sick siblings</td>
<td></td>
<td>Congenital heart disease</td>
</tr>
<tr>
<td>History of trauma</td>
<td></td>
<td>Medication or toxin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trauma</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Secure ET Tube. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available.
3. Apply cardiac monitor and record rhythm strip. Apply pulse ox.
4. Establish IV Normal Saline. Paramedic may consider PRN adapter dependant upon level of distress.
5. If wheezing present, administer Albuterol 5 mg via nebulizer. If patient on ventilator, consider inline treatment.
6. Repeat Albuterol 5 mg via nebulizer.
7. Consider Epinephrine 0.15mg SQ 1:2000 for severe respiratory distress.
8. Even if the patient experiences relief, he/she should receive Solumedrol 1 mg/kg IV bolus.
9. Consider other treatment protocols as necessary.

Pearls:
- The most important component of respiratory distress is airway control.
- Croup typically affects children < 2 y.o. It is viral, possible fever, gradual onset, no drooling is noted
- Epiglotitis typically affects children > 2 y.o. It is bacterial, with fever, rapid onset, possible stridor, patient wants to sit up to keep airway open. Drooling is common. Airway manipulation may worsen condition
**Pediatric Seizure**

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>Observed seizure activity</td>
<td>Fever</td>
</tr>
<tr>
<td>Prior history of seizures</td>
<td>Altered mental status</td>
<td>Infection</td>
</tr>
<tr>
<td>Seizure medications</td>
<td>Hot, dry skin, or elevated body temp</td>
<td>Head trauma</td>
</tr>
<tr>
<td>Reported seizure activity</td>
<td></td>
<td>Medication or toxin</td>
</tr>
<tr>
<td>History of recent head trauma</td>
<td></td>
<td>Hypoxia or respiratory failure</td>
</tr>
<tr>
<td>Congenital abnormality</td>
<td></td>
<td>Hypoglycemia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Metabolic Abnormality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Acidosis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tumor</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Secure ET Tube. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available.
3. Apply cardiac monitor and record rhythm strip. Apply pulse ox.
4. If patient is febrile, begin cooling measures.
5. Obtain BGL reading.
   - If BGL < 70, administer 0.5 - 1.0 grams/kg, slow administration
   - Dilute D50W 1:1 with sterile water, Ringer’s Lactate, or Saline (2-4 ml/kg of D25 mixture)
   - May consider 0.1mg/kg Glucagon if no IV present. (max dose of 1 mg)
   - If BGL > 70, continue with protocol.
6. Establish IV Normal Saline. Consider IO method for patients with marked hypotension and peripheral IV access not established.
8. If patient experiences multiple seizures or is status epilepticus, administer 0.1 mg/kg Ativan IV/IO/IM over 2 – 5 minutes.

**Pearls:**

- Status Epilepticus is defined as two or more consecutive seizures without a period of consciousness or recovery. This is a true emergency requiring rapid airway control, treatment, and transport.
- Grand Mal seizures are associated with loss of consciousness, incontinence, and tongue trauma.
- Focal seizures effect only a part of the body and are not usually associated with loss of consciousness.
- Jacksonian seizures are seizures which start as a focal seizure and become generalized.
- Be prepared for airway problems and continued seizures.
- If evidence or suspicion of trauma, spinal immobilization should be performed.
- Be prepared to assist ventilations.
- In an infant, a seizure may be only evidence of closed head injury.
Pediatric Supraventricular Tachycardia

## History:
- Past medical history
- Medications or toxin ingestion
- (Aminophylline, diet pills, thyroid supplements, decongestants, digoxin)
- Drugs (nicotine, cocaine)
- Congenital heart disease
- Respiratory distress
- Syncope/near syncope

## Signs & Symptoms:
- Heart rate: child > 180 bpm
- infant > 220 bpm
- Pale or cyanosis
- Diaphoresis
- Tachypnea
- Vomiting
- Hypotension
- Altered LOC
- Pulmonary congestion
- Syncope

## Differential:
- Heart disease (congenital)
- Hypo/Hyperthermia
- Hypovolemia or anemia
- Electrolyte imbalance
- Anxiety/ pain/ emotional stress
- Fever/ infection/sepsis
- Hypoxia
- Hypoglycemia
- Medication/toxin/ drugs
- Pulmonary embolus
- Trauma
- Tension pneumothorax

### 1. Assess ABC’s.

### 2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Secure ET Tube. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry if available.

### 3. Apply cardiac monitor and record rhythm strip.

**Patient asymptomatic**
1. Monitor for deterioration and transport.

**Borderline symptomatic**
1. Attempt valsalva’s maneuver
2. Establish IV Normal Saline. Consider IO method for patients with marked hypotension and peripheral IV access not established.
3. Consider Adenosine 0.1 mg/kg rapid IV/IO followed by 10 ml rapid fluid flush. Maximum single dose 6 mg. May be repeated at 0.2 mg/kg rapid IV/IO, if no response to initial dose.

**Symptomatic (No palpable pulse, Altered mental status)**
1. Establish IV Normal Saline. Consider IO method for patients with marked hypotension and peripheral IV access not established.
2. Consider 0.1 mg/kg Diazepam for sedation prior to cardioversion
3. Synchronized cardioversion at 0.5 joule/kg - 1 joule/kg - 2 joules/kg or equivalent biphasic energy.
4. **Contact medical control as soon as feasible.**
5. Consider other treatment protocols as necessary

**Continued on next page**
Pearls:

- Carefully evaluate the rhythm to distinguish Sinus Tachycardia, Supraventricular Tachycardia, and Ventricular Tachycardia
- Separating the child from the caregiver may worsen the child’s clinical condition
- Pediatric paddles or pads should be used in children < 10kg or Broselow Tape color purple
- Monitor for respiratory depression and hypotension
- Continuous pulse oximetry is required for all SVT patients, if available
- Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention
Trauma Protocols
Transportation of Trauma Patients

- All “Trauma Alert” patients will be transported to the nearest trauma center.

- “Trauma Alert” patients are defined as patients having any one or more of the following:
  - A Revised Trauma Score of 11 or less
  - Penetrating trauma to the head, neck, torso, or extremities proximal to the knee or elbow
  - Combination of burns with trauma
  - Ejection from a motor vehicle
  - Pelvic fractures
  - Paralysis
  - Open fracture(s)
  - Potential head injury
  - Penetrating trauma proximal to the knee or elbow
  - Pelvic fractures
  - Paralysis
  - Amputation proximal to the wrist or ankle

- Significant burn patients should be evaluated for helicopter transportation to Augusta Burn Center in Augusta, Ga. Significant burns are defined as > 25% BSA; 3° burns > 10% BSA; 2° and 3° burns to face, eyes, hands, or feet; electrical burns; respiratory burns; deep chemical burns; burns with extremes of age or chronic disease; and/or burns with associated major traumatic injury.

Dr. Mullin’s Phone number (706) 830-7511

Patients with major trauma and burns must be transported to a trauma center first

LifeNet Helicopters  1-800-327-2611

- Location of the scene or pre-designated landing zone (LZ)
- Nature of emergency and any known medication information
- Contact unit on scene. This includes both the LZ briefing and Patient Report
Bites and Envenomations

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of bite/sting</td>
<td>Rash, skin break, wound</td>
<td>Animal bite</td>
</tr>
<tr>
<td>Description or bring creature/</td>
<td>Pain, soft tissue swelling, redness</td>
<td>Human bite</td>
</tr>
<tr>
<td>Photo with patient for ID</td>
<td>Blood oozing from the bite wound</td>
<td>Snake bite (poisonous)</td>
</tr>
<tr>
<td>Time, location, size of bite/sting</td>
<td>Evidence of infection</td>
<td>Spider bite (poisonous)</td>
</tr>
<tr>
<td>Previous reaction to bite/sting</td>
<td>Shortness of breath, wheezing</td>
<td>Insect bite/sting</td>
</tr>
<tr>
<td>Domestic vs. wild</td>
<td>Allergic reaction, hives, itching</td>
<td>Infection risk</td>
</tr>
<tr>
<td>Tetanus and rabies risk</td>
<td>Hypotension or shock</td>
<td>Rabies risk</td>
</tr>
<tr>
<td>Immunocompromised patient</td>
<td></td>
<td>Tetanus risk</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply oxygen, if indicated. Assist ventilation via BVM if indicated. Apply Pulse oximetry.
3. Remove all jewelry and clothing from the affected extremity.
4. Immobilize bite area. Do Not Elevate.
5. Apply cardiac monitor and record rhythm strip. Apply pulse ox.
6. Establish IV Normal Saline KVO rate. May consider INT.

Pearls:
- Human bites are worse than animal bites due to the normal mouth bacteria
- Carnivore bites are more likely to become infected and all have risk of rabies exposure
- Cat bites may progress to infection rapidly due to a specific bacteria
- Poisonous snakes in this area are generally of the pit viper family: rattlesnake, copperhead, and water moccasin. Coral snake bites are rare: very little pain but very toxic
- Amount of envenomation is variable, generally worse with larger snakes and early in Spring.
- If no pain or swelling – envenomation is unlikely
- Black Widow spider bites tend to be minimally painful, but over a few hours, muscular pain and severe abdominal pain may develop
- Brown Recluse spider bites are minimally painful to painless. Little reaction is noted initially, but tissue necrosis at the site of bite develops over the next few days
- Evidence of infection: swelling, redness, drainage, fever, red streaks proximal to wound.
- Immunocompromised patients are at an increased risk for infection: diabetes, chemotherapy, transplant patients
- Consider contacting SC Poison Control for guidance. 1-800-922-1117
Burns

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of exposure</td>
<td>Burns, pain, swelling</td>
<td>Superficial (1°)red and painful</td>
</tr>
<tr>
<td>(heat, gas, chemical)</td>
<td>Dizziness</td>
<td>Partial thickness (2°) blistering</td>
</tr>
<tr>
<td>Inhalation injury</td>
<td>Loss of consciousness</td>
<td>Full thickness (3°) painless and</td>
</tr>
<tr>
<td>Time of injury</td>
<td>Hypotension/shock c</td>
<td>harred leathery skin</td>
</tr>
<tr>
<td>Past medical history</td>
<td>Airway compromise/distress</td>
<td>Chemical</td>
</tr>
<tr>
<td>Medications</td>
<td>Singed facial or nasal hair</td>
<td>Thermal</td>
</tr>
<tr>
<td>Other trauma</td>
<td>Hoarseness/wheezing</td>
<td>Electrical</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Radiation</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
3. Remove jewelry and clothing from affected area which is not adhering to the burn.
4. Cool the burn thoroughly with sterile irrigation fluid.
5. Assess burn depth and severity.
6. Establish IV Normal Saline. Rate sufficient to maintain Systolic BP > 90 mm Hg by administering 20 ml/kg fluid boluses as long as lungs are clear. Consider second IV Normal Saline. Avoid initiating IV’s in affected area if possible. Calculate Parkland Formula 4ml(KG)xBSA = amount of fluid over first 24 hours. Administer ½ over first 8 hours and rest over next 16 hours.
7. Apply cardiac monitor and record rhythm strip. Electrodes may be placed on patient’s back.
9. If pain is severe consider Fentanyl 1 – 2 mcg/kg SLOW IVP,IM, IO, may repeat every 10 minutes, titrated to effect. Pediatric dose same as adult. **Fentanyl dose is based and administration is ONLY WITH ONLINE MED CONTROL.**

Pearls:
- Critical burns: > 25% BSA; 3° burns > 10% BSA; 2° and 3° burns to face, eyes, hands, or feet; electrical burns; respiratory burns; deep chemical burns; burns with extremes of age or chronic disease; and burns with associated major traumatic injury. These burns may require hospital admission or transfer to a burn center
- Early intubation is required in significant inhalation injuries
- Potential CO exposure should be treated with 100% oxygen
- Circumferential burns to extremities are dangerous due to potential vascular compromise 2° to soft tissue swelling
- Burn patients are prone to hypothermia – never cool burns that involve > 15% BSA.
- Never overlook the possibility of multi system trauma.
- Do not overlook the possibility for child abuse with children and burn injuries
Rules of nine

<table>
<thead>
<tr>
<th>Body Part</th>
<th>0 yr</th>
<th>1 yr</th>
<th>5 yr</th>
<th>10 yr</th>
<th>15 yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>a = 1/2 of head</td>
<td>9 1/2</td>
<td>8 1/2</td>
<td>6 1/2</td>
<td>5 1/2</td>
<td>4 1/2</td>
</tr>
<tr>
<td>b = 1/2 of 1 thigh</td>
<td>2 3/4</td>
<td>3 1/4</td>
<td>4</td>
<td>4 1/4</td>
<td>4 1/2</td>
</tr>
<tr>
<td>c = 1/2 of 1 lower leg</td>
<td>2 1/2</td>
<td>2 1/2</td>
<td>2 3/4</td>
<td>3</td>
<td>3 1/4</td>
</tr>
</tbody>
</table>
Drowning/Near Drowning

**History:**
- Submersion in water regardless of depth
- Possible history of trauma (ie. Diving board)
- Duration of submersion
- Temperature of water

**Signs & Symptoms:**
- Unresponsive
- Mental status changes
- Decreased or absent vital signs
- Vomiting
- Coughing

**Differential:**
- Trauma
- Pre-existing medical problem
- Pressure injury (diving)
- Barotrauma
- Decompression sickness

1. Assess ABC’s.
2. Perform Spinal Immobilization.
3. Begin CPR if indicated and follow appropriate rhythm protocol.
4. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Secure ET Tube. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available.
5. Apply cardiac monitor and record rhythm strip. Apply pulse ox.
6. Go to appropriate specific rhythm protocol, if indicated.
7. Establish IV Normal Saline KVO rate. May consider INT.
8. If associated respiratory distress present, administer Xopenex 1.25 mg via nebulizer.
9. **Contact medical control as soon as feasible.**

**Pearls:**
- With cold water – no time limit – resuscitate all patients. Consider hypothermia even with warm ambient temperatures
- All victims should be transported for evaluation due to potential for worsening over the next several hours
- Drowning is a leading cause of death among would-be rescuers
- Allow appropriately trained and certified rescuers to remove victims from areas of danger
- With pressure injuries (decompression/barotrauma), consider transport or availability of hyperbaric chamber. Palmetto Health Richland chamber 1-800-757-4625
Electrical Injuries

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lightning or electrical exposure</td>
<td>Burns</td>
<td>Cardiac arrest</td>
</tr>
<tr>
<td>Single or multiple victims</td>
<td>Pain</td>
<td>Seizure</td>
</tr>
<tr>
<td>Trauma 2° to fall from</td>
<td>Entry and exit wounds</td>
<td>Burns</td>
</tr>
<tr>
<td>high wire or MVC into line</td>
<td>Hypotension/ shock</td>
<td>Multiple trauma</td>
</tr>
<tr>
<td>Duration of exposure</td>
<td>Arrest</td>
<td></td>
</tr>
<tr>
<td>Voltage and current (AC/DC)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Assess ABC’s.

2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Secure ET Tube. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.

3. Apply Spinal Movement Restriction.

4. Apply cardiac monitor and record rhythm strip.

5. Establish IV normal Saline KVO rate. May consider INT.

6. Go to appropriate rhythm protocol as indicated.

7. If pain is severe consider Fentanyl 1 – 2 mcg/kg SLOW IVP,IM, IO, may repeat every 10 minutes, titrated to effect. Pediatric dose same as adult. **Fentanyl dose is based and administration is ONLY WITH ONLINE MED CONTROL ORDER**

Pearls:

- Ventricular fibrillation and Asystole are the most common dysrhythmias
- Damage is often hidden; the most severe damage will occur in muscle, vessels and nerves
- In a mass casualty lightning incident, attend to victims in full arrest first. If the victim did not arrest initially, it is likely they will survive
- Do not overlook other trauma (ie. Falls)
- Lightning is a massive DC shock most often leading to Asystole as a dysrhythmia
- In lightning injuries, most of the current will travel over the body surface producing flash burns over the body that appears as freckles
- Assess for entrance and exit wounds for burn care
Extremity Trauma

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of injury</td>
<td>Pain, swelling</td>
<td>Abrasion</td>
</tr>
<tr>
<td>Mechanism: crush/penetrating</td>
<td>Deformity</td>
<td>Contusion</td>
</tr>
<tr>
<td>Amputation</td>
<td>Altered sensation/ motor function</td>
<td>Laceration</td>
</tr>
<tr>
<td>Time of injury</td>
<td>Diminished pulse/ capillary refill</td>
<td>Sprain</td>
</tr>
<tr>
<td>Open vs Closed wound/fracture</td>
<td>Decreased extremity temperature.</td>
<td>Dislocation</td>
</tr>
<tr>
<td>Wound contamination</td>
<td></td>
<td>Fracture</td>
</tr>
<tr>
<td>Medical history</td>
<td></td>
<td>Amputation</td>
</tr>
<tr>
<td>Medications</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Assess ABC’s
2. Apply oxygen, if indicated. Assist ventilation via BVM, if indicated. Apply pulse oximetry.
3. Perform wound care, hemorrhage control.
4. Immobilize affected extremity.
5. Establish IV Normal Saline KVO rate. May consider INT. Consider bolus of 200ml up to 20 ml/kg Normal Saline to maintain systolic BP of >90 mm Hg.
6. If amputation; wrap amputated part in clean sterile dressing moistened with normal saline.
   
   - Place in airtight container such as a plastic bag.
   - Place container in water with a few ice cubes, if available
7. If pain is severe consider Fentanyl 1 – 2 mcg/kg SLOW IVP,IM, IO, may repeat every 10 minutes, titrated to effect. Pediatric dose same as adult. **Fentanyl dose is based and administration is ONLY WITH ONLINE MED CONTROL ORDER**

**Pearls:**
- In amputations, time is critical. Transport and notify medical control immediately, so that the appropriate destination can be determined
- Hip dislocations and knee and elbow fracture/dislocations have a high incidence of vascular compromise
- Urgently transport any injury with vascular compromise
- Blood loss may be concealed or not apparent with extremity injuries
- Lacerations must be evaluated for repair within 6 hours from the time of injury
Head Trauma

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of injury</td>
<td>Pain, swelling, bleeding</td>
<td>Skull fracture</td>
</tr>
<tr>
<td>Mechanism: blunt/penetrating</td>
<td>Altered mental status</td>
<td>Brain injury (concussion, contusion</td>
</tr>
<tr>
<td>Loss of consciousness</td>
<td>Unconscious</td>
<td>hemorrhage, or laceration)</td>
</tr>
<tr>
<td>Bleeding</td>
<td>Respiratory distress/failure</td>
<td>Epidural hematoma</td>
</tr>
<tr>
<td>Medical history</td>
<td>Vomiting</td>
<td>Subdural hematoma</td>
</tr>
<tr>
<td>Medications</td>
<td>Significant mechanism of injury</td>
<td>Subarachnoid hemorrhage</td>
</tr>
<tr>
<td>Evidence of multi – trauma</td>
<td>Cushings Triad</td>
<td>Spinal injury</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Abuse</td>
</tr>
</tbody>
</table>

1. Assess ABC’s
2. Apply oxygen. Assist ventilation via BVM if indicated. Intubate patient and confirm tube placement. Secure ET Tube. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available.
3. Apply cardiac monitor and pulse ox.
4. Place patient in spinal movement restriction.
5. Establish IV Normal Saline KVO. May consider INT.
6. If signs of brain stem herniation (unequal pupils, posturing, bradycardia, HTN); hyperventilate patient with 100% oxygen for 2 – 3 minutes until symptoms are resolved. Maintain ETCO2 at 25 – 30 mmHg
7. If seizure occurs; proceed to Seizure Protocol.
8. Obtain BGL reading:
   - If BGL < 70, administer 12.5 g Dextrose 50%, and then recheck BGL.
   - May consider 1mg Glucagon IM if no IV present.
   - If BGL > 70, continue with protocol.

Pearls:
- If GCS < 12, consider air transport and if GCS < 9 intubation should be anticipated.
- Hyperventilate patient only if signs of herniation (blown pupil, posturing, bradycardia)
- Increased ICP may cause hypertension and bradycardia (Cushing’s response)
- Hypotension usually indicates injury or shock unrelated to the head injury and should be treated aggressively
- The most important item to monitor and document is a change in the LOC
- Consider restraints, if necessary, for patient’s and/or personnel’s protection, document reasoning and reassess patient every 5 minutes
- Limit IV fluids unless patient is hypotensive (systolic BP < 100), maintain systolic BP 120mmHg
- For any hypoglycemic patient suspected of abusing alcohol, always administer 100 mg Thiamine before D50W
Hyperthermia

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Altered mental status or unconsciousness</td>
<td>Fever (infection)</td>
</tr>
<tr>
<td>Exposure to increased temperatures and/or humidity</td>
<td>Hot, dry, or sweaty skin</td>
<td>Dehydration</td>
</tr>
<tr>
<td>Past medical history/medications</td>
<td>Hypotension/shock</td>
<td>Medications</td>
</tr>
<tr>
<td>Extreme exertion</td>
<td>Seizures</td>
<td>Hyperthyroidism(Storm)</td>
</tr>
<tr>
<td>Time and length of exposure</td>
<td>Nausea</td>
<td>Delirium Tremens(DT’s)</td>
</tr>
<tr>
<td>Poor PO intake</td>
<td></td>
<td>Heat cramps</td>
</tr>
<tr>
<td>Fatigue and/or muscle cramping</td>
<td></td>
<td>Heat exhaustion</td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Secure ET Tube. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Obtain and document patient temperature, if available.
4. Remove from heat source. Loosen or remove constrictive clothing.
5. Apply cardiac monitor and record rhythm strip.
6. Apply room temperature water to skin and increase airflow around patient.
7. Establish IV Normal Saline.
8. If the patient’s Systolic BP falls below 90 mm Hg, administer saline bolus 200ml up to 20 ml/kg if lungs are clear. Repeat as needed with dry lung sounds.
10. Obtain BGL reading:
   - If glucose < 70; administer 25 grams of Dextrose 50% solution IV push.
   - Consider 1 mg Glucagon IM, if no patent IV present.
   - If glucose > 70; proceed with protocol
11. Consider 2 mg Narcan IVP, if known or highly suspected narcotics involvement.
12. If seizures occur; go to Seizure Protocol page 54.

Pearls:
- Extremes of age are more prone to heat emergencies (young and old).
- Cocaine, amphetamines, and salicylates may elevate body temperatures.
- Sweating generally disappears as body temperature rises above 104° F
- Intense shivering may occur as patient is cooled.
- For any hypoglycemic patient suspected of abusing alcohol, always administer 100 mg Thiamine before D50W.
Hypothermia

<table>
<thead>
<tr>
<th>History:</th>
<th>Signs &amp; Symptoms:</th>
<th>Differential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past medical history</td>
<td>Cold, clammy</td>
<td>Sepsis</td>
</tr>
<tr>
<td>Medications</td>
<td>Shivering</td>
<td>Environmental exposure</td>
</tr>
<tr>
<td>Exposure to environment even in normal temperatures</td>
<td>Mental status changes</td>
<td>Hypoglycemia</td>
</tr>
<tr>
<td>Exposure to extreme cold</td>
<td>Extremity pain or sensory abnormality</td>
<td>CNS dysfunction</td>
</tr>
<tr>
<td>Extremes of age</td>
<td>Bradycardia</td>
<td>Stroke</td>
</tr>
<tr>
<td>Drug use: Alcohol, barbiturates</td>
<td>Hypotension/ shock</td>
<td>Head injury</td>
</tr>
<tr>
<td>Infections/Sepsis</td>
<td></td>
<td>Spinal cord injury</td>
</tr>
<tr>
<td>Length of exposure/ wetness</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Assess ABC’s.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Secure ET Tube. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
4. Apply cardiac monitor and record rhythm strip.
5. Establish IV Normal Saline.
6. Obtain BGL:
   - If glucose < 70; administer 25 grams of Dextrose 50% solution IV push.
   - May consider 1 mg Glucagon IM, if no patent IV present.
   - If glucose > 70; proceed with protocol.

**Pearls:**
- **NO PATIENT IS DEAD UNTIL THEY ARE WARM AND DEAD!!**
- Defined as core temperature < 95° F.
- Extremes of age are more susceptible (young and old).
- With temperature less than 88° F, V-fib is common cause of death. Handling patients gently may prevent this.
- If the temperature is unable to be measured, treat the patient based on the suspected temperature.
- Hypothermia may produce severe bradycardia.
- Shivering stops below 90° F.
- Hot packs can be activated and placed in the armpit and groin areas if available.
- Care should be taken not to place the packs directly against the patient’s skin.
- For any hypoglycemic patient suspected of abusing alcohol, always administer 100 mg Thiamine before D50W.
Multiple Trauma

History:  
Time and mechanism of injury  
Damage to structure or vehicle  
Location in structure or vehicle  
Others injured or dead  
Speed and details of MVC  
Restraints/protective equipment  
Past medical history  
Medications

Signs & Symptoms:  
Pain, swelling  
Deformity, lesions, bleeding  
Altered mental status or unconscious  
Hypotension/ shock  
Arrest

Differential:  
Chest:  Tension pneumothorax  
Flail chest  
Pericardial tamponade  
Open chest wound  
Hemothorax  
Intra-abdominal bleeding  
Pelvis/Femur fracture  
Spine fracture/ cord injury  
Head injury  
Extremity fracture/ dislocation  
HEENT (airway obstruction)  
Hypothermia

1. Assess ABC’s.  
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Secure ET Tube. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.  
3. Perform rapid trauma assessment.  
4. Apply spinal movement restriction.  
5. Establish IV Normal Saline at rate appropriate to maintain systolic BP > 90 or radial pulses. Consider second IV Normal Saline, if indicated.  
6. Consider 20 ml/kg fluid bolus if lungs are clear. Repeated as needed to maintain BP > 90 systolic.  
7. Obtain BGL reading:  
   If BGL< 70, administer 12.5 g Dextrose 50%, and then recheck BGL. May consider 1mg Glucagon IM if no IV present  
   If BGL> 70, continue with protocol  
8. If known or highly suspected tension pneumothorax, perform chest decompression.  
9. Contact medical control as soon as feasible.  
10. Consider other treatment protocols as necessary

Pearls:  
- In prolonged extrications or serious trauma, consider air transport for transport times and the ability to give blood.  
- Do not overlook the possibility of associated domestic violence or abuse
Reference Materials